



**EXTERNAL  
EVALUATION  
PANEL**

**2007 REPORT**

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PANEL**

**2007 REPORT**

*REVIEW OF THE ENHANCING CHILD NUTRITION THROUGH ANIMAL SOURCE FOOD  
MANAGEMENT (ENAM) PROJECT*

*FIELD VISIT TO GHANA, FEBRUARY 16 TO 28, 2007*

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SUSAN JOHNSON

*From left to right, Alfred Neumann, Deborah Rubin and Nanna Roos, 2007 External Evaluation Panel members.*

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## ACRONYMS

ASF	Animal Source Foods
AT	Assessment Team
BIFAD	Board for International Food and Agricultural Development
Co-PI	Co Principal Investigators
CRSP	Collaborative Research Support Project
EEP	External Evaluation Panel
ENAM	Enhancing child Nutrition through Animal source food Management
EPAC	External Program Administrative Council
GL CRSP	Global Livestock Collaborative Research Support Program
GHS	Ghana Health Services
HC	Host Country
IGA	Income Generating Activity
ISU	Iowa State University
ME	Management Entity
MOFA	Ministry of Food and Agriculture
NGO	Non-governmental Organization
PARIMA	Improving Pastoral Risk Management on East African Rangelands (GL-CRSP Project)
PI	Principal Investigator
PM	Problem Model
PMgr	Project (Program) Manager
PRA	Participatory Rapid Appraisal
RIING	Research to Improve Infant Nutrition and Growth
SOW	Scope Of Work
SPSS	Statistical Package for the Social Sciences
RFP	Request For Proposal
UG	University of Ghana
US	United States
USAID	United States Agency for International Development
VEDCO	Volunteer Efforts for Development Concerns
WIAD	Women In Agriculture Development, Department of MOFA
WID	Women in Development Office, USAID

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## ACKNOWLEDGEMENTS

The External Evaluation Panel would like to thank, with deep sincerity and pleasure, the ENAM project – its researchers and staff – for the wonderful welcome they provided, although they are too numerous to list here. Despite the pressures and temptations of Ghana's 50<sup>th</sup> Independence celebrations in the week following our visit, Professors Grace Marquis and Owuraku Sakyi-Dawson, US and Ghanaian PIs, and Program Manager Dr. Esi Colecraft facilitated our travel to the multiple research sites and partner offices with calm and dedicated efficiency and accompanied us on the entire trip. The team was impressed by the collegiality of the project participants and their effective communication with each other, as well as how easily they made it seem to manage the multiple and often competing interests of time, distance, and review goals.

The University of Ghana and its many administrators who graciously took the time to meet with us are also remembered with thanks. These included Dr. Kwesi Yankah, Pro-Vice Chancellor of the University; Dr. Oduro Afriyie, Vice-Dean of the Faculty of Science; Dr. Kwame Offei, Dean, College of Agriculture and Consumer Sciences; Kofi Amaning-Kwateng, Head of the Department of Animal Science; and Dr. E. Ackah-Nyamike Jnr, Head of the Department

of Agricultural Extension. It is a tribute to the work of the project that each of these individuals was well-informed about the project and fully supportive of it.

We would also like to extend special thanks to the Co-PIs who were able to accompany us on different parts of the site visits along with the PIs and Program Manager. It helped the team enormously to have the opportunity to speak with them while in the field. In Ghana, we were joined by Professor Anna Lartey, Associate Professor and Head of the Department of Nutrition and Food Science, and Professor Benjamin Ahunu, Provost of the University and Professor of Animal Science, College of Agriculture and Consumer Sciences. From the US, we were joined by Professor Lorna Butler, Co-PI, Departments of Sociology and Anthropology, Iowa State University. Unfortunately, another Co-PI, Professor Manju Reddy, Department of Food Science and Human Nutrition, Iowa State University, became ill and was unable to travel to Ghana.

We also would like to mention the helpful input from the other partners that we met in Ghana. We thank the officials of the Ministry of Food and Agriculture, Mr. John Manu, Municipal Director in Techiman; Mr. Sextus Sawine, District Director in Navrongo; Mr. Martin Amponsah Tenkorang,

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District Agricultural Extension Officer; and Mr. Emmanuel Ochiro, District Crops Officer in Winneba. From the Ghana Health Services offices in Accra, we thank Wilhemina Okwabi, Acting Head of Nutrition Division and National Coordinator for the Infant and Child Feeding Program, and Esi Amoafu, Vitamin A Program Manager. Among the NGO partners we thank Roland Kanlisi, Deputy Country Director, Heifer International/Ghana and Josephine Martei, Deputy Executive Director, and Beatrice Kuuzume, Senior Program Officer, with Freedom From Hunger Ghana, Accra.

The ENAM project could not exist without the support and active involvement of its community members. We acknowledge the willingness of the local Chiefs and Sub-Chiefs to participate in this research activity and to allow the team access to the villages and to speak with the residents. We

are especially appreciative of the effort given by the member of each village's credit group for their enthusiastic welcome to us and patient responses to our many questions, both at the group meetings and in their homes. Their answers clarified many aspects of the project for the team, and this report is improved by their contributions.

The team also acknowledges the logistical assistance of the GL CRSP ME staff. Last, but definitely not least, the team thanks Susan Johnson, Associate Director of the GL CRSP, whose excellent management of and helpful participation on the trip contributed immensely to the ability of the EEP team to focus on its work. Susan's experience with both the broad scope of the CRSP program and the details of the ENAM activity were valuable assets to the team, informing their discussions and certainly improving the quality and accuracy of this report.

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## 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);

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- 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.

## RECOMMENDATIONS

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.



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## BACKGROUND AND OVERVIEW OF THE PROJECT

The Global Livestock Collaborative Research Support Program (GL CRSP) is one of nine CRSPs funded by USAID under the authorization of Title XII “to achieve the mutual goals among nations of ensuring food security, human health, agricultural growth, trade expansion, and the wise and sustainable use of natural resources.” The CRSP program is known for its long-term efforts to carry out multi-disciplinary research that is relevant to development goals in developing countries, and to ensure that student training is an integrated aspect of the research activities. Increasingly, USAID has looked to the CRSPs to provide policy-relevant and developmentally relevant research results that can inform the agency’s operations.

The Enhancing Child Nutrition through Animal Source Food Management (ENAM) project is one of the GL CRSP’s newer projects. ENAM, the project acronym, is also a word in one of Ghana’s indigenous languages, Twi, meaning “meat,” and encompasses the flesh of both animals and fish. The project was competitively selected from among several groups that had been awarded short planning grants (see *History of Project* section) in 2003. The planning grant was led by Grace Marquis, the US PI (Iowa State University and McGill University), and Owuraku Sakyi-Dawson, the Ghana PI (University of Ghana, Legon). Their

proposal and team was selected to continue as a three-year project, from 2004-2007.

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 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.

Project interventions and/or monitoring efforts are carried out in three locations in Ghana, corresponding to the country’s different ecological zones: Navrongo in the north (Upper East Region) which is a savannah grassland area, Techiman in the center (Brong Ahafo Region), which is a transitional forest area, and Winneba

in the south, along the coast (Central Region), a coastal savannah area. In each ecological zone, the project operates in two intervention communities and two control communities.

In this review, the EEP concludes that the ENAM project is making good progress towards its objectives on a topic that is of significant relevance to the development of Ghana, and that the term and funding of the activity should be extended through September 2008, which is the current limit of the Global Livestock CRSP's overall authorization.

If the final results of the community interventions combining caregivers' income-generating activities (IGA) with nutrition and microfinance education show a significant increase of children's ASF intake, it will have important policy implications for Ghana and other parts of Africa. This will emphasize the value of this innovative and integrated approach to improve children's nutrition by addressing the multiple constraints on availability, accessibility, and utilization of ASF.



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## ROLE OF THE EXTERNAL EVALUATION PANEL (EEP)

To achieve a dynamic, effective, and responsive project, the Global Livestock CRSP incorporates a results-driven framework, the keystone of which is a continuous cycle of evaluation. Project progress is monitored on an ongoing basis, and budget allocation decisions are based on performance. While the nature of the evaluation process varies from project to project, the performance of each GL CRSP project is assessed as part of routine management; continuation of the project is contingent on each research team's ability to deliver results. Projects are reviewed in the second or third year of activity.

External evaluations are carried out by independent reviewers who can offer a critical and impartial view about the quality and progress of the research projects. They provide evidence for objective decision-making about project components, and can help to address difficult institutional issues or biases. To carry out these evaluations, an External Evaluation Panel (EEP) is convened.

Members of the evaluation teams are senior scientists recognized by their peers and selected for their in-depth knowledge of a research discipline relevant to the CRSP and experience in research and/or research administration. At the GL CRSP, expertise is drawn from the External Program Administrative Council (EPAC) and the

Pool for External Evaluation of Research (PEER), a pool of accomplished research scientists and faculty members with expertise in disciplines complimentary to the EPAC. Candidates for the EEP are nominated by the Management Entity (ME), in consultation with the EPAC, and are subject to approval by USAID.

According to a Scope of Work (SOW) (Appendix 1) developed by the ME in consultation with the EPAC and USAID, each external evaluation will, as needed:

- Assess whether the research project is well-balanced, whether the different activities are progressing adequately, and whether they are relevant and helping to achieve the larger project goals;
- Identify inadequate performances;
- Gauge effective balance between research and training for development of institutional research capability;
- Assess the balance of domestic versus overseas research in terms of effectiveness of solving constraints in developing countries;
- Evaluate the performance and the productivity of each institution on each project;
- Assess the appropriateness of projected resource allocations; and,
- Evaluate the dissemination of research results,

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and the effectiveness of utilization (a measure of the appropriateness of the research).

### *Review Schedule and Limitations*

The ME consulted with its own advisory groups and collaborating institutions, including the ENAM Project PI, as well as USAID and the evaluation team, to develop an appropriate work schedule for the external review of the ENAM project. The review included site visits and meetings with project participants and collaborators in Ghana. The team visited the six intervention communities and interviewed community members and local government officials. The team also met with university administrators at the University of Ghana, Legon, as well as key partners in the NGO community, and participating national government offices (see Appendix 2). The team believes that these informants provided a comprehensive and valuable overview of the activities in Ghana, and of the state of the project.

Nonetheless, in the short time available, there were several key limitations to the review. The EEP team did not include any visit to the lead US institution, Iowa State University, to meet with either the co-PIs based there or the departmental or other administrative staff that supervise them. The US participation was represented by the Lead US Principal Investigator, Marquis; the US-based co-PI Butler; as well as the Ghana-based ISU staff member Colecraft, all of whom participated in the review in Ghana. The EEP was not able to travel to Uganda to meet with collaborators at Makerere University or the staff of the NGO, VEDCO, with whom the Ugandan student at the University of Ghana, Legon, has been working.

### *Review Team*

The EEP review team for the ENAM project included one member of the EPAC and two external specialists with extensive experience in related disciplines. The members of the panel were Dr. Deborah Rubin, Director, Cultural Practice LLC, Bethesda, Maryland, USA; Dr. Alfred Neumann, Professor Emeritus, Department of Community Health Sciences, UCLA School of Public Health, Los Angeles, California; and Dr. Nanna Roos, Associate Professor, Department of Human Nutrition, University of Copenhagen, Denmark. Dr. Rubin is a member of the GL CRSP External Program Administrative Council, and served as the team leader for the review. Ms. Susan Johnson, Associate Director of the Global Livestock CRSP, traveled with the review team, providing assistance and representing the Management Entity.

### *Outcome of the Review*

The EEP recommendations will serve as the basis for bringing about changes in the specific activities of the project, including deciding on its continuance or discontinuance. If the CRSP governing bodies or its ME disagrees with a recommendation, the ME will submit the rationale and justification for such disagreement to USAID. Copies of these documents (both the review and the response) will be made available to the Board for International Food and Agricultural Development (BIFAD) and its relevant committees, the Administrative Management Review Team, and USAID, in their roles in reviewing the CRSP.

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## HISTORY OF THE PROJECT

In June 2002, the GL CRSP convened a conference on Animal Source Foods and Nutrition in Developing Countries. The conference brought together researchers, educators, and development agents to evaluate the role of food-based solutions in relieving malnutrition in the international development process. Results of the GL CRSP Child Nutrition Project in Embu, Kenya were among the studies presented. The conference facilitated a dialogue between nutrition and agriculture specialists on the challenging issues of micronutrient malnutrition, and developed a consensus for future activities that address the problems of malnutrition. The outcome of the conference was to establish a set of constraints and priorities for research that would set the agenda for CRSP activities in nutrition.

In the standard GL CRSP funding process, before a project begins its research program, it completes a short-assessment or planning grant phase. The objective of the planning and assessment process is to refine the problem model through a collaborative assessment process before the project partners and activities are determined. The several months of the assessment phase allow the teams to refine the problem model iteratively, determine and adjust team composition to fit the evolving problem model, and ensure that colleagues are compatible and the team is functional. Only the

most successful assessment teams continue with full research projects.

The GL CRSP released a Request for Assessment Team (AT)/Planning Grant Proposals (RFP) in December 2002. The RFP presented a broadly focused problem model with possible activities that were developed during the conference. The ENAM project was one of four assessment teams funded through an open competition. At the end of the assessment phase, the four teams submitted proposals for a research program of three years duration. The ENAM proposal was considered the strongest and was invited to continue as a full three-year research project.

The assessment activities early in 2004 involved selection of the research sites, three months of preliminary data collection on the characteristics of the communities and their caregivers and children, and the development of the conceptual model for the full research proposal. A workshop was held involving key stakeholders in a participatory process to identify and flesh out the themes for the proposal.

Since beginning the research efforts associated with the full project later in September 2004, the project has been progressing well. In May 2005, the project sponsored another workshop

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to launch the ENAM project officially, which was attended by a number of ministries, NGOs, and other stakeholders. Members of the project presented their initial results about good practices in income-generating activities (IGA).

In the field, the project staff and researchers have completed the project baseline survey and an additional three of four planned follow-up surveys in the control and intervention communities.

Selected Ghanaian students and one visiting Ugandan student have begun the field research for their master's theses, and are in varying stages of completion.

Finally, the project has completed the development of an interdepartmental course on nutrition extension that will be offered during the next academic session as an elective, 300-level undergraduate option.

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## DESCRIPTION OF THE PROBLEM MODEL

The overall problem model guiding the project activities is presented in the approved project proposal submitted to the Global Livestock CRSP in March 2004, and according to the two submitted annual reports, has not been revised.

The method for developing the problem model was described in detail in the project proposal. The problem model is a result of a participatory and iterative process carried out during the planning grant phase. The final problem model was formulated during a stakeholder workshop held in Ghana in February 2004. The workshop was planned and carried out with the aim of reaching consensus among invited key stakeholders on identifying the major constraints for availability, accessibility, and utilization of ASF across ecological zones in Ghana. The participating stakeholders from Ghana were community members from the study sites, representatives from ministries, community health and nutrition workers from the three selected study districts, and representatives from national and local governmental and non-governmental organizations (NGOs). The ISU and UG PI and Co-PI teams participated. Ugandan stakeholders were not represented.

The key constraints identified by the workshop participants for ASF availability, accessibility, and

utilization were: 1) low income of the household, 2) poor producer-consumer market linkages, 3) inadequate food processing and storage facilities, 4) inadequate knowledge and skills of field staff and caregivers, 5) low empowerment of women and inequitable household food allocation practices, and 6) cultural beliefs and attitudes.

The core objectives and activities of the project are in the project proposal described according to four areas: 1) training activities with community groups in selected study communities representing three ecological zones and rural and semi-rural/peri-urban communities, 2) income-generating activities for caregivers in the communities, 3) support for community building, and 4) facilitating knowledge transfer.

Based on the problem model, the specific objectives of the project were grouped according to four goals, here briefly summarised as: 1) improving caregivers access to ASF through income generating activities (IGAs); 2) enhancing human resource capacity to address the needs for increased ASF intake; 3) improving caregivers' knowledge and skills about child feeding; and 4) improving the nutritional status of children through interventions to increase access and use of ASF.



*Caregivers who have a child between the ages of two and five years are the targeted subjects for the interventions on income generating activities, education, and microcredit.*

The EEP recognizes the strength of the participatory and iterative approach to the development of the PM in ensuring that the PM is addressing a relevant development issue in Ghana. The identified constraints for improved availability, accessibility, and utilization of ASF are presented in the project PM as general and not site-specific constraints. Therefore the PM addresses a relevant and important development issue, not only in Ghana, but also presumably in Uganda, as well as other sub-Saharan developing countries.

It can be argued that the simplified PM presented in the project proposal does not represent a new conceptual understanding of constraints for ASF intake in poor households in developing countries. The presented PM essentially points out the causes and links also identified elsewhere, for example:

*Hunger and undernutrition arise from multiple, interactive causes, both direct (food consumption, care, and health) and indirect (agricultural production, employment opportunities, women's status, and service delivery systems) (Kurz and Johnson-Welch 2001).<sup>1</sup> To address these causes, it is necessary to look at the individual, the individual's relationships with other people, and the social, economic, and political institutions that mediate access to and control over resources, choices, and benefits. Interventions that address a single contributing factor such as food availability without considering the broader context are less likely to show sustainable gains in reducing hunger and undernutrition (Johnson-Welch, MacQuarrie, and Bunch 2005:4).<sup>2</sup>*

However, the iterative and participatory process applied to develop the PM is very valuable, and it is recognized that the PM serves as a meaningful framework for the project objectives and activities.

<sup>1</sup>Citation refers to Kathleen Kurtz and Charlotte Johnson-Welch, "Enhancing Women's Contributions to Improving Family Food Consumption and Nutrition." *Food and Nutrition Bulletin* 22(4): 443-453 (2001).

<sup>2</sup>This quotation is found in the report by Charlotte Johnson-Welch, Kerry MacQuarrie, and Sandra Bunch, "A Leadership Strategy for Reducing Hunger and Malnutrition in Africa: The Agriculture-Nutrition Advantage" (Washington, DC: International Center for Research on Women, 2005), page 4.

### *Overall Progress and Quality of Research*

In the project proposal, the goals of the project are presented so that the development, capacity-building, and research objectives and activities are all integrated. This integrated approach is recognized by the EEP as a unique strength of the ENAM project. The EEP's visit in Ghana confirmed that the project team is highly capable of working within this framework. It was observed through visits to study sites and interaction with project PIs and staff that the ENAM research activities in the intervention communities are in fact integrated with the education of university students and capacity building in the communities.

The main overall research component - which is integrated with the development and capacity components - is to monitor the effectiveness of implementing the community activities (IGA, microcredit, nutrition education, and

entrepreneurial training) on increasing the access and intake of ASF in children - and thereby the nutritional status - in the intervention households.

The progress and quality of the research carried out in Ghana was evaluated based on the project documents, the EEP visits to all project intervention sites, and interviews and interaction with stakeholders, PIs/Co-PIs, and project staff. However, the integrated description of the development, capacity-building, and research objectives and activities of the project did create some difficulties for EEP to evaluate the research quality and progress. In the project proposal, a summary of the project goals and objectives are presented in a logical framework, and in this summary, development and research goals and objectives are separated. In this logical framework presentation, the description of indicators and means of verification do not clearly state how

*Community activities to increase the availability, accessibility, and utilization of animal source foods have the ultimate goal of increasing a child's nutritional status. ENAM's integrated approach is a unique strength of the project.*



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indicators for development and research outcome can be separated or distinguished. The annual reports for Year 1 (2004-5) and Year 2 (2005-6) and other publications (one peer-reviewed paper, five abstracts, and two approved student project proposals) provide useful insight into a range of the specific research questions.

During the EEP visit and its interaction with project PIs and staff, a better understanding of the research objectives and activities - including the selection of impact indicators for the interventions - was obtained. A better overall description in the project documents of how data from the various completed and on-going research activities will in the end contribute to overall research questions, would help the specific evaluation of the research quality, including an evaluation of relevance and appropriateness of selection of methods and indicators for monitoring impact of the IGA and education interventions on ASF intake.

The community intervention trial is designed to assess intervention impact in intervention communities by comparing them with control communities that were selected to match the intervention communities on a range of variables such as size and wealth. The targeted subjects for the interventions on IGA, education, and microcredit are caregivers who have a child between the ages of 2-5. After the selection of interventions and control communities and households, a baseline survey was completed, and the community intervention activities carried out for approximately one year.<sup>3</sup>

<sup>3</sup>The ENAM project has recently received additional funding from the Women in Development Office of USAID that will allow them to hand over the microcredit activity to other implementers (described later in the report), and continue the loan and education components for longer than one year.



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*With additional funding from the USAID's Women in Development office, the ENAM project will be able to continue the loan and education component for longer than one year. Sustaining these activities will benefit the communities, the caregivers, and their children.*

The ISU project manager permanently stationed in Ghana, Dr. Colecraft, is responsible for the overall implementation of the community interventions, as well as for the planning of surveys and data collection. It is the impression of the EEP that implementation, surveys, and data collection for the research components are conducted impressively well in a timely and efficient manner, and according to the work plans.

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## PROGRESS AND QUALITY OF THE RESEARCH COMPONENTS

### NUTRITION RESEARCH COMPONENTS

The completed and on-going research components on nutrition are aimed at monitoring the impacts of the community interventions on child ASF intake and nutritional status. The specific methods and impact indicators are reported in different sections in project documentation, and are not always easily followed.

The methods for the core impact assessment of the community interventions on ASF and nutritional status was developed iteratively during the baseline surveys for the community interventions. Both quantitative and qualitative methods are being used to collect and analyze data. In addition, the students' surveys contribute complementary data throughout the period of intervention.

The EEP gained a better understanding of the selection of methods for assessing food intake and nutritional status and selection of indicators for impacts of community interventions during the Ghana visit, through interviews and interaction with PIs and project staff, complementing the information available from the project documents.

The quantitative measures of food intake that

have been used are food frequency, food recall, and food weighing records. Food frequency questionnaires report the weekly frequencies for ASF intake of children. This was surveyed at baseline and at four-month intervals in follow-up survey rounds in all targeted intervention and control households. Quantified measures for ASF intake were monitored by 24 hour recall and 12 hour weighted food records of total diet for children were conducted at the start of the project in the baseline survey. These measures are planned for the end of the project survey as well for sub-groups of the children in the intervention and control communities.

The assessment of child nutritional status was based on anthropometric measures (height and weight). Anthropometric measurements were collected for all intervention children in intervention- and control households at baseline, in the follow-up surveys, and at the end of the [originally planned] intervention phase after approximately one year.

Other semi-quantitative and qualitative research components related to nutrition were also conducted or planned as parts of UG students' work, and the work of one student from Uganda.

These survey components included assessment of, for example, child feeding practices, caregivers' knowledge on child nutrition, and mothers' nutritional status. The semi-quantitative and quantitative survey components were conducted on sub-samples of various sizes of the intervention- and control households.

The EEP found that selection of nutrition methods and indicators were not presented clearly in the project documents. However, the EEP also recognizes that the team of PIs from UG and ISU together possess the needed experience and qualifications to ensure that the selected methods and indicators for nutrition assessments are valid, and that the impact assessment of the community interventions on children's ASF intake and nutritional status are relevant - one of the core

objectives of the project - and are conducted with the needed quality.

The EEP learned that the children's intake of macro- and micronutrients was calculated from the assessed food intake (using recall and weighted records) by the use of a food composition table developed by the Co-PI Dr. Anna Larrey. The food composition table was developed during a previous research project and contains values for nutrient composition of common complementary foods in Ghana. The access to this improved food composition table contributes to the strengthening of the project outcome. The availability of this improved food composition table justifies the decision to drop the planned nutrient analysis that had been identified in the project proposal, given its high cost relative to results.



*Quantitative measures of food intake have included food frequency questionnaires, 24 hour food recall, and 12 hour weighted food records of total diet for children in the project. Anthropometric measurements were collected for all children at baseline.*

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### Concerns

Neither in the project documents nor in the additional information obtained during the EEP visit was there any discussion of how much the intake of ASF in children in the intervention households needs to increase to have a nutritional significance. The project goals and objectives for increasing ASF intake in children are not transferred to goals for absolute values for desired ASF intake, thus we neither know where the children are currently located on the scale for intake of ASF, nor where they would be after a recommended increase in ASF intake. Although this point was not directly a component of the study design, to have wider policy relevance, the ENAM project findings will need to address this issue.

### *The procedure and quality of the data collection, data entry, and data cleaning*

Data collection on food intake, feeding practices, and anthropometry were conducted in various ways. An overview of who was involved in data collection and how data was collected for the different survey components was not immediately available to the team. In response to the EEP's request, an overview was compiled by the PIs and Program Manager, and is presented in slightly abbreviated form in Appendix 4.

The core data collected for monitoring the effect of the intervention activities on IGA and education on child ASF intake and nutritional status were:

- A questionnaire for baseline and follow-up



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*Gloria Kobati, MPhil candidate at University of Ghana, speaks with women in the Wuru Village near Navrongo. Students, under the supervision of the Principal Investigators, have been directly involved in collecting data for the project.*

surveys (approximately each quarter) on food expenditure, socio-economics, IGA, and ASF food frequency.

- Baseline and follow-up surveys on anthropometry of children in intervention households.
- Baseline and final survey on food consumption: 12-hour weighted food records on a subgroup of the children in the intervention and control households.
- A number of additional surveys were conducted by Masters' level students under the close supervision of the project PIs and Co-PIs.

It was the understanding of the EEP team that after data collection in the field, the completed questionnaires were checked by either the ENAM field officers first, and then by other staff either in the field or at the project office in Accra. The

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data sheets were transferred to the ENAM office in Accra, and entered into computer databases. The Ghana PI and Co-PIs have taken care so that the data collected under the project, whether taken by the field officers or by students for their thesis work, have been entered in a compatible format for later analysis in the computer software program, SPSS, originally entitled “Statistical Package for the Social Sciences,” but now known by its abbreviation.

It is the clear impression of the EEP that the ENAM team possesses the needed experience and knowledge for collection and entry of data on nutrition assessments to ensure high quality.

However, clearer documentation and a more precise protocol for the procedure for data collection and quality check would have improved the team’s ability to evaluate the project’s accomplishments. Also, a more precise protocol would have contributed to a better estimate of the needed resources for data entry. In the second year of the project, an additional staff member was employed for data entry. This task was not accounted for initially in the project proposal. Now in the third year of the project, the EEP anticipates that data entry is an emerging bottleneck for the timely completion of publications and dissemination of project results, and additional staff should be hired to assist in the data entry process.

### *Recommendation*

- ❑ Priority should be given to employing an additional data entry staff person(s) in the extension year.
- ❑ The EEP recognizes that an important and unique strength of the project is the integration of development, capacity-building, and research goals. The PI team is recommended to consider developing a clearer presentation of the overall and specific research objectives in relation to the PM, both in the coming annual report and as part of planned publication efforts.



*At the weekly meeting in Wuru, Navrongo District, Margaret Aguu (right) assists officers of the credit group in collecting the weekly loan repayments. Loans begin small, and after successful repayment, group members can take out larger loans, up to USD\$90.*

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#### MICROCREDIT<sup>4</sup> RESEARCH COMPONENTS

As a result of baseline studies carried out under the planning grant and the discussions held during the problem model workshop in 2004, lack of adequate income was identified as a key barrier to the consumption of animal source food (ASF) by children, especially those between two to five years of age. The project expected to support several pilot activities to increase the income of its targeted caregivers to overcome this constraint, and to monitor their progress.

In the original proposal, ENAM expected to have the assistance of local NGO partners to support a range of income-generating activities in the intervention communities (see 2004 proposal Table 2, and page 12). Despite extensive

consultations with partners, it was not possible to initially establish partner-supported activities in the intervention villages chosen by the ENAM project. The selected study villages were not among those with functioning village groups of the sort required for participation in most partners' programs. To work in new locations, the potential partner NGO groups required payments for their services that were too high for the original budget of the project. The ENAM project reviewed existing programs and concluded that those which integrated the provision of small loans for IGA with nutritional and business development education offered the most successful model (see discussion in June 2005 workshop report) for replication.<sup>5</sup>

<sup>4</sup>In this report, we distinguish between microcredit and microfinance. Microcredit refers to the provision of credit services to low-income entrepreneurs, in this case selected caregivers in the intervention communities, as well as the loan itself. Microfinance is the larger, umbrella term, that refers to a range of financial services (i.e., not only loans or credit, but also savings, mortgages, insurance, etc.) to low-income entrepreneurs who do not receive financial services from others (see also "Microcredit and Microfinance Glossary" (<http://www.gdc.org/icm/glossary/hindex.html#M>, accessed 3/14/2007)).



*Microcredit groups of up to 28 women have been formed in each of the ENAM project intervention sites. Members must live in the village and have a child between the ages of two and five. This group in Fiaso near Techiman is one of the larger ENAM microcredit groups.*

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The aim of establishing a microcredit component within the project was to support the caregivers in the intervention communities to enhance their IGA. The hypothesis being tested is whether the increased income from the successful IGA is being used to more frequently purchase ASF that are then fed to the children aged two to five. At the present time, the results of the surveys have not been analyzed and the project has not determined the validity of this hypothesis. It will be possible, however, to determine whether women in certain IGA are more successful than others, and whether this has influenced the frequency of their children's intake of ASF, both within and across research sites.

The project component on microcredit replaced the planned activity of linking the community

interventions to existing microcredit facilities or other IGA programs. In February 2006, all the members of the project to be involved in the microcredit program attended an instructional workshop in Winneba to review the theory behind the program, and to learn about its principles of operations.<sup>6</sup> The project's credit conditions differ from those provided through most commercial institutions by being interest free.

The project has assisted each intervention village in forming a "microcredit group." Each microcredit group is made up of between 16 to 28 women and meets weekly. The members must live in the village and must have a child between two and five years of age. Two members of each village group are chosen as officers (chair person and treasurer), based on literacy, leadership, and respect from

<sup>5</sup>As referenced in the 2005-2006 workplan (page 1), "The IGA documentation exercise and workshop indicated that the best strategy was through a group approach where the support or assistance package is provided to individuals within existing groups that are already engaged in some economic ventures."

<sup>6</sup>This workshop is reviewed in the document "Report on 3 Day Micro Finance Workshop for the ENAM project" that is an annex to the projects second year annual report (2005-2006).

*The microcredit groups, like this one in Wuru near Navrongo, elect two officers, a chair person and a treasurer. The officers work closely with the field officer and field officer assistant.*



DEBORAH RUBIN

their peers, to work closely with the ENAM field officer and field officer assistant. Alternates to each of these positions are also identified. The officers of the credit group collect the weekly loan repayments and deposit installments in the bank under the supervision and with the assistance of the ENAM staff.

Within each group there are smaller ‘solidarity groups’ of three to seven women. Each woman is required to justify her request for a loan to this small group, and to have it accepted before presenting it to the larger group for final approval of the project. Loans begin small and are disbursed about one week after group approval. Successful repayment, which begins two weeks after the loan is received, allows women to take out larger loans, up to a maximum of about US \$90. If a woman defaults, her ‘solidarity group’ is required to repay her debt: this peer pressure helps to ensure timely repayments. Occasionally, the period for

repayment is extended. Women are also expected to put about 20% of the profits from their enterprise activity into savings.

An important component of this activity is the close connection between the loan program and the provision of one course on nutrition education during the first loan cycle of sixteen weeks, and one of business education during the second loan



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*The education program is an important part of the ENAM credit program. Presentations, small group activities, as well as drama are used in the lessons. Here, the group in Fiaso, near Techiman, present a skit on good business practices for the market.*



DEBORAH RUBIN

*Many women in the groups have chosen to use their loans to enter or expand microenterprises. Small shops for local vegetables, household items, and canned foods are among the income generating activities selected by the women.*

cycle (also of sixteen weeks). Both of these education programs are offered to the credit groups by the Field Officers and their assistants. The nutrition course uses a flipchart produced by the project in conjunction with consultants from the Ghana Health Service. It covers topics such as food choice and preparation, symptoms of nutritional diseases, and food sanitation, among others. Cooking demonstrations are also given. The business development course addresses entrepreneurial skills, prioritizing income streams, handling of income and expenses, saving, loan repayments, and other topics. The methods are highly participatory, and the field officers use drama as well as small group activities to good effect.

Because the ENAM credit program will soon be supplemented by a USAID-funded grant from the Women in Development Office that will allow the hiring of and involvement of Freedom from Hunger/Ghana and local rural development banks to take over the implementation, the third loan cycle will provide a course to transition the women from the interest-free ENAM activity into the interest-charging program that will be run by Freedom from Hunger.

ENAM has monitored many aspects of the microcredit program, looking at size of loans, repayments, and choice of IGA. Women have chosen to use their loans to enter or expand microenterprises including fish smoking and processing, retail trade of various agricultural crops, cloth dyeing, establishment of small shops for local vegetables, household items, and tinned foods, used clothing businesses, and prepared food stalls, among other businesses.

The ENAM field officers are very closely involved



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*Rice parboiling was one of the processing income generating activities supported in Wuru. EEP member Deborah Rubin (left) takes notes as the process is explained.*



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*A prototype fish smoking oven was constructed with community members during the training in fish smoking. The trainings were open to all community members and were attended by 88 participants (83 female, 5 male). Thomas Kambonga (center), Field Officer-Navrongo, explains the fish smoking process to EEP members Nanna Roos and Alfred Neumann (left).*

with both the intervention and control villages. They visit each intervention village at least twice weekly for the meetings, and on another day, to provide support to the women and to maintain good relationships with the local government officials. They also visit the control villages regularly, often weekly, so that the villagers are not surprised by their appearance when it is time for the follow-up surveys after each four month period. The ENAM project has not, as yet, determined what benefit will be provided to the control communities at the end of the survey period.

*The procedure and quality of the data collection, data entry, and data cleaning*

As noted above, information about the progress of the loan program is maintained by the Field Officers (e.g., attendance, amount of each loan and its repayments, reconciliation of loan accounts with the bank, use of the loan, among others). Their reports are sent every two weeks to Accra to be reviewed by Richard Tweneboah-Kodua the Microcredit field supervisor. He is assisted

with data entry by the office staff. Dr. Colecraft works in close collaboration with the Ghana PI to supervise this reporting system and the general progress of the microcredit component.

This is a very labor intensive program for the ENAM staff. They have managed it extremely well, however, and clearly have the support of the intervention communities in which they work.

*Recommendations*

- ❑ Over the next few months, the ENAM project should engage the control communities in a discussion to determine how their time and efforts in participating in the surveys will be acknowledged, and an appropriate benefit package should be identified and scheduled for implementation.
- ❑ Complete the documentation on the establishment and progress of the microcredit program.

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## LINKAGES BETWEEN THE ENAM PROJECT AND OTHER ORGANIZATIONS

Within the short time it has been operating and given its limited budget, the ENAM project has done an excellent job in reaching out to communities, NGOs, departments of national universities, and government ministries. During the assessment phase prior to the award of the full proposal, the team held an initial workshop with regional collaborators, including various ministry and NGO representatives, community members, and some members in private industry, to receive input from and to establish a wide network of partners.

### *Ministerial Linkages*

The ENAM project has already developed an excellent relationship with the Ministry of Food and Agriculture (MOFA). Ministry staff had been involved in the project from its initial design stage, and had later been involved in the selection of the intervention and control communities.

The officers with whom the EEP had an opportunity to meet in each district all demonstrated a high level of knowledge about the project. In the Upper East Region, the District Director of Agriculture has both provided office space for the ENAM project in the main MOFA building, and has seconded two staff members to work as the field officer and field officer's assistant in the Navrongo field sites. These officers regularly

report back on their activities during regular MOFA staff meetings, providing additional outreach to other MOFA employees. In the Techiman Municipality as well as in the Awutu/Effutu/Senya District around Winneba, there was also strong stated support for the project's efforts.

It was suggested that the project should also establish a relationship with the Municipal Assemblies governing their project sites by giving briefings on the project, and later to organize municipal workshops to present the results of the research. The Municipal Assembly allocates funds to the ministry offices at the municipal level, and improving their understanding of the project has the potential of influencing future funding allocations. There are also other programs supported by the Assembly, such as the school feeding assistance programs, which could benefit by integrating ENAM's feeding recommendations and nutrition education.

The project also has a good functioning relationship with the Nutrition Division of the Ghana Health Services. In addition to providing input into the initial design of the program, the staff of the Nutrition Division provided technical assistance through a consultancy agreement, for the preparation of several components of ENAM's training materials, including the flip charts used

in the community nutrition education programs as well as materials for the nutrition extension course. Community nutrition and health workers from the GHS participated as stakeholders in the initial data collection process in the selected project communities during the Participatory Rapid Appraisal (PRA) used at the start of the project.

The Ministry of Women and Children participated in the initial stakeholder meeting to identify key constraints to feeding children ASF, but there has been no significant involvement with the ENAM activities since then.

It was also suggested that the project initiate conversations with the Ministry of Cooperatives, and to begin the process of formally registering the women's loan associations as official cooperatives. This process would make the groups eligible for various cooperative services as well as other government benefits. The process can be started with the assistance of the local Agricultural Extension Agents already working with the villages.

### *University Linkages*

The ENAM project has also established a close cooperation between the main departments involved in the project: Nutrition and Food Science, Agricultural Extension, and Animal Science. They have excellent relationships, through the PI and Co-PIs, with college and university deans, as well as the provost's and chancellor's offices. The Department of Animal Science has provided office space without cost to the project.

ENAM also works very closely with the US government supported RIING project that is housed in the Department of Nutrition and Food Science, occasionally sharing equipment and power as needed. It was suggested that additional effort be made to connect with the University's School of Public Health.

### *NGO Linkages*

As noted above, several NGOs have been involved since the early days of the assessment team efforts, and participated in the workshop that established the project's conceptual model and set of activities. More recently, discussions have been underway



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*In the Upper East Region, Sextus Sawine (left), District Director of Agriculture, Ministry of Food and Agriculture, Navrongo has provided office space and seconded two employees to the ENAM project. Thomas Kambonga (right), Agricultural Extension Agent; and Margaret Aguu (center), District Women in Development Officer, Women in Food and Agricultural Development (WIAD) serve as ENAM Field Officer and Field Officer Assistant for Navrongo.*

with two NGOs to establish a Memoranda of Understanding for working together to facilitate the maintenance of the loan program through Freedom from Hunger/Ghana and to initiate a poultry raising program with Heifer International/Ghana. An additional project component to institutionalize these arrangements is being supported through supplementary funds from the USAID Women in Development Office.

### *Intra-CRSP Linkages*

During the trip, the interaction between the GL-CRSP Associate Director and project researchers identified a new area for linkages within the CRSP between the ENAM project and the effort to establish Avian Flu Schools. It was agreed that the ENAM project would initiate discussion with the Avian Flu activity, which had already been considering Ghana as a possible pilot site, to start a training program for villagers and possibly extension workers in the village poultry component that is now being



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*After an outbreak of avian flu in neighboring Nigeria and a subsequent ban on the sale of day-old chicks in 2006, plans to include poultry farming as an income generating activity had to be postponed. WID funds have enabled the project to now initiate a poultry raising program with Heifer International. A linkage with the GL-CRSP Avian Flu School would benefit the ENAM and Avian Flu School projects, as well as partners such as Heifer International.*

planned in conjunction with Heifer International/Ghana. This program is being considered for the Winneba area villages.

### *Recommendations*

- ❑ Initiate discussions with the GL CRSP Avian Flu School activity to begin a pilot program in Ghana.
- ❑ Over the coming year and a half, should the GL CRSP ME agree to an extension of the activity, the EEP recommends that the project maintain and expand its key relationships with other groups by developing a plan to systematically engage key stakeholders in organizing and holding an end-of-project workshop to disseminate the project's research results, and to create a jointly agreed-upon plan of action for ministerial uptake of project recommendations, expanding and continuing the project's development activities.

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## POLICY IMPACT

If the final results of the community interventions combining IGA with nutrition and microcredit education show a significant increase of the intake of ASF by the children of 2 to 5 years of age involved in the study, this will have important policy implications for Ghana and other parts of Africa. A positive outcome will emphasize the value of this innovative and integrated approach to improve children's nutrition by addressing the multiple constraints on availability, access, and utilization of ASF.

Although it is too early to determine what the final policy impact of the ENAM activity will be, thus far, the project has done an excellent job of keeping policy issues and contact with policy makers and policy-making institutions at the forefront of their work. They have made efforts to consult with, in a participatory fashion, key stakeholders including policy makers at meetings and in the field through workshops as well as in visits with key personnel.

Their consultations with the Ministry of Food and Agriculture, in particular, have ensured that the ENAM project supports many aspects of its national policy, for example, on utilizing group approaches in agricultural extension, on increasing food production, on building public-private partnerships, and on improving the quality of children's diets. In addition, the project's attention to reducing gender inequalities in access to credit and supporting women's responsibilities in the home also supports MOFA's national policy on mainstreaming gender.

Several respondents suggested that the project's PIs build stronger linkages with local government bodies as well as other ministries to create broader support for the project, and to enable the ministries to maintain the activities as part of their own work when the project is completed (see Gender Integration section).

### *Recommendation*

- ❑ Build on existing strong relationships with MOFA and the Ghana Health Services and initiate a new relationship with the relevant municipal assemblies and district governments to promote understanding, support, and engagement with the project.

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## PROJECT MANAGEMENT

The management of this project is an example of a truly collaborative effort with a high level of Host Country participation that should serve as a model for other CRSP projects. Both the US and Ghanaian project members spoke exceedingly well of each other and mentioned repeatedly that they felt their colleagues treated them respectfully and handled decisions in as collaborative a manner as possible.

Maintaining this complex project and keeping it on schedule requires clear communication among team members. It also requires a willingness to be flexible and to be understanding among team members. These qualities were demonstrated throughout the EEP trip, and are clearly reflective of how well relationships work in this project. The excellent performance of the project manager, Dr. Esi Colecraft, deserves special recognition. She is an excellent manager not only of all of the administrative, financial, and logistical aspects of the project, balancing the interests and responsibilities of both ISU and the University of Ghana, but also of her own teaching and research responsibilities.

The core project team members (PIs, Co-PIs, and Project Manager) initially made a decision to compete many aspects of the project, such

as the hiring of project staff through public advertisements and holding a competition for student fellowships. This decision has ensured that project staff and students are of an extremely high quality and appear fully dedicated to their work with the project.

### *Involvement of Host Country Researchers*

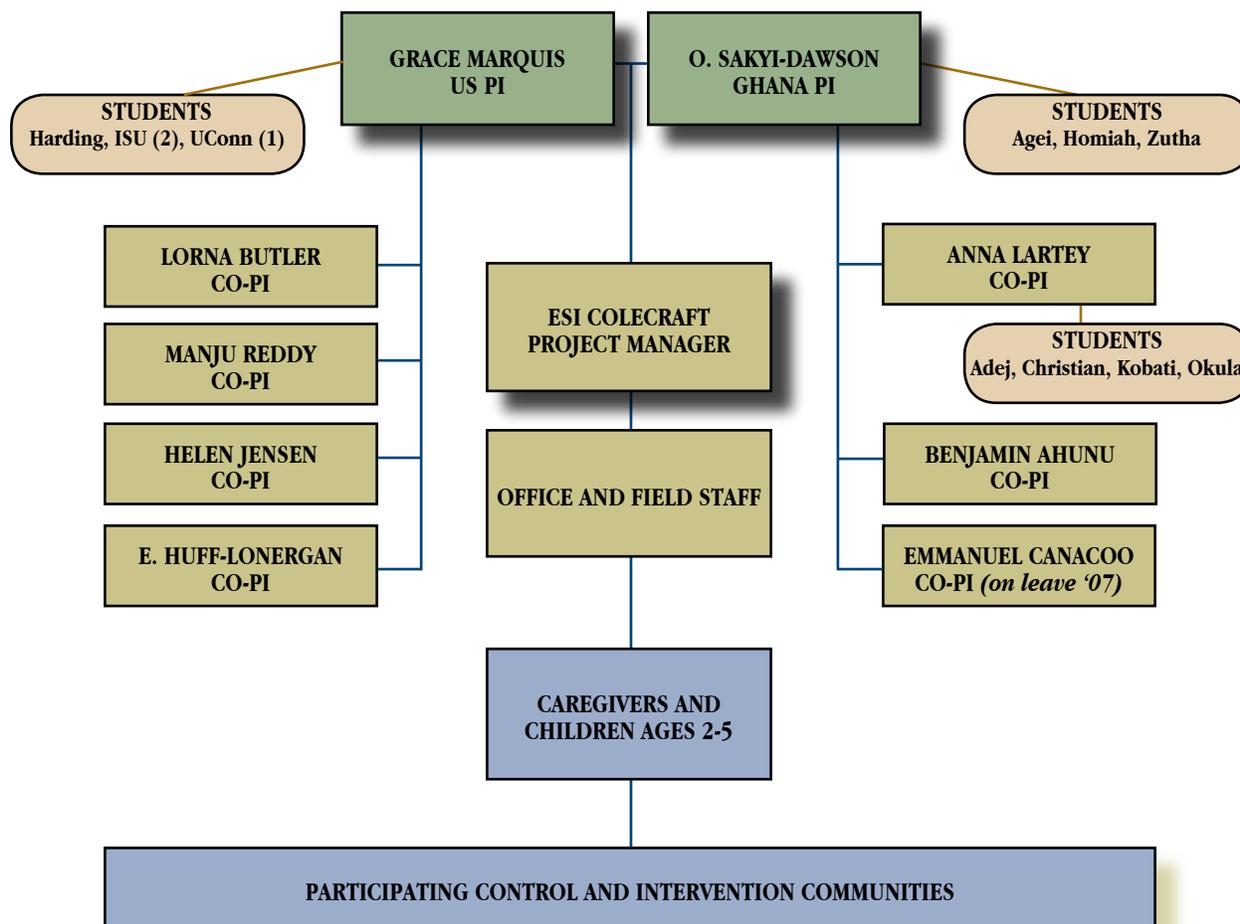
As noted throughout the report, the decisions that were taken about the project's concept were developed through initial collaborative discussions between US and Ghanaian researchers and stakeholders.

The full ISU team was actively involved in the grant proposal phase, and has co-authored the peer-reviewed article published in *Ecology of Food and Nutrition*. ISU Co-PIs are not co-authoring abstracts submitted for presentations at scientific meetings. ISU Co-PIs contribution to research design and data analysis is not clearly reported in the project documents.

The role of the Ghanaian researchers is considerable. They have worked hard on the project despite heavy teaching, advising, and service loads within the University of Ghana.

The EEP team recognized a high level of team spirit and mutual respect between PIs and Co-PIs

Figure 1. ENAM Project Structure



met during the Ghana visit. There clearly appears to be an open exchange of ideas and thoughts, stimulating progressive research.

#### *The Project Manager and Staff Responsibilities*

The project structure is illustrated in Figures 1 and 2. There is a US PI, Prof. Grace Marquis, and a Ghanaian PI, Prof. Owuraku Sakyi-Dawson. Co-PIs from both the US and Ghana are also closely involved in different aspects of the research. The Project Manager (PMgr) is a Ghanaian national, Dr. Esi Colecraft, who formally holds the position of “Program Manager” of the ENAM Project

through Iowa State, and is also on a part-time appointment with the University of Ghana. Dr. Colecraft is the lynchpin of project operations as she reports directly to both the US and Ghanaian PIs, and supervises both the local research and the administrative work of the project. She is responsible for ensuring that field data is collected in a timely manner, and that field staff are given needed support (e.g., equipment, payments, and transport arrangements among other things). She also ensures that data is received from the field on a regular schedule, and does spot checks for quality assurance, both in the field and in the

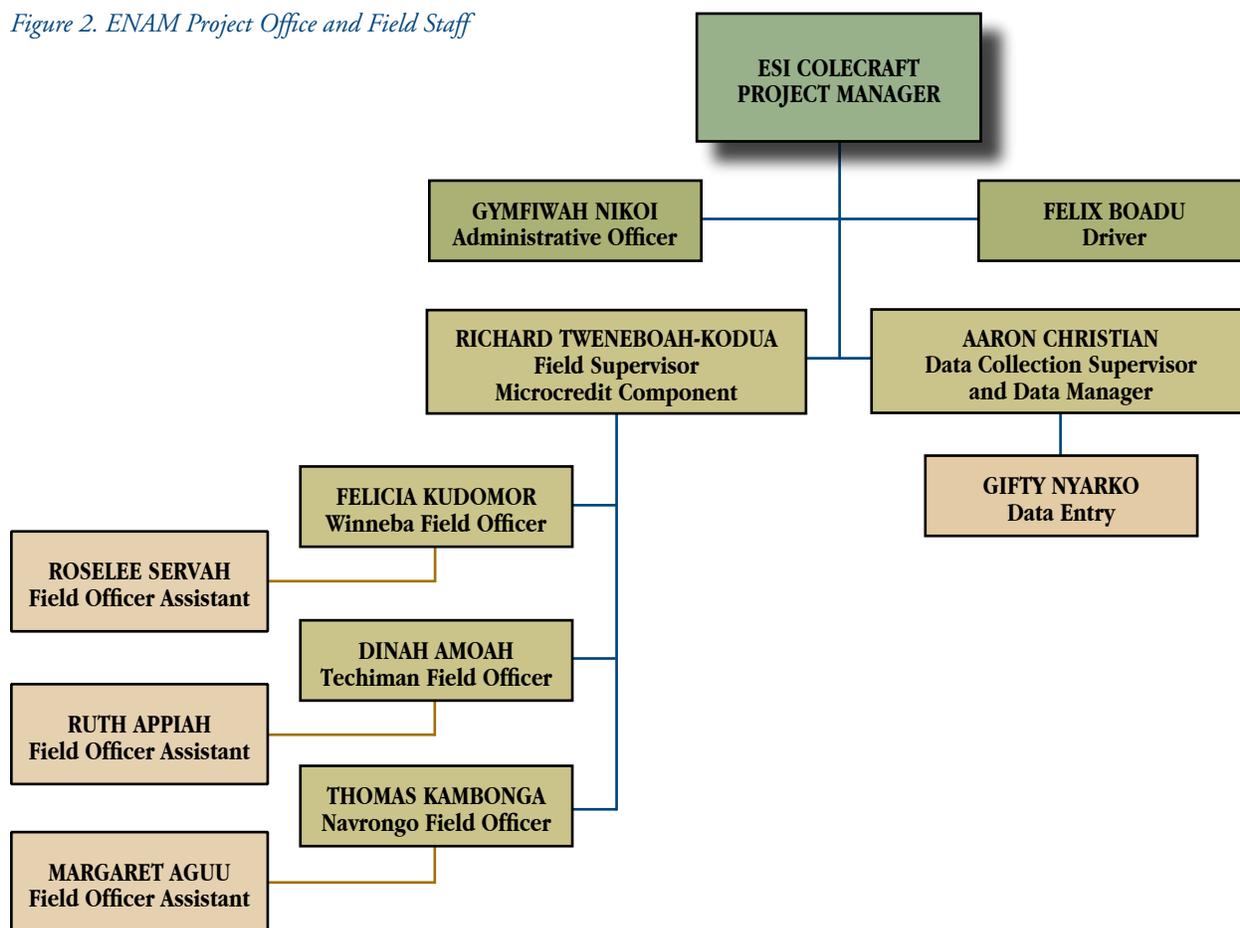
office. Dr. Colecraft has additional teaching responsibilities, and will be the lead instructor in offering an interdisciplinary nutrition extension course that will be housed within the Department of Nutrition and Food Science at the University of Ghana, Legon. She also drafts papers and briefing materials about the project and its research.

The other project staff based at the University office include an administrative assistant, data collection supervisors, data entry staff, and, in the field, field officers and their assistants (see Figure 2). Both the field supervisor and the data collection supervisor have been fully involved in the data collection and its processing. They travel

to the research sites regularly to provide support and to review the data collection processes, train additional enumerators as necessary, and to provide data quality control.

Each of the field officers is responsible for supporting the women's loan association groups with technical assistance and providing the educational components at their weekly meetings. Two of the six officers and assistants are employed by the District Agriculture office and seconded to the project. The other four have been hired directly by the project. The field officers visit each participating village at least twice weekly, and each control village once weekly. They accompany

Figure 2. ENAM Project Office and Field Staff



*US Principal Investigator,  
Grace Marquis with her  
namesake, little Grace.*



the loan association officers on their trips to the bank to deposit the weekly loan payments. The field officers and their assistants play a critical role in the project, and were clearly respected and appreciated not only by the women's groups, but also by the village officials and other residents.

### *Communication and Meetings*

The Ghana-based project office staff members are in constant communication regarding progress and problems. There is an informal project staff meeting almost weekly, depending on travel schedules and field visits, to review project performance and discuss needed issues. The project provided cell phones to the project manager, several staff members, and the project driver to enhance communication, although they recently stopped supporting the costs of cell phone usage.

In addition, at the beginning and end of each semester, the core team members in Ghana (PI, co-PIs, and PMgr) meet to discuss the project's progress and immediate goals. They meet monthly

throughout the year for routine reporting out, and also meet as needed on an emergency basis.

Communication with the US PI is less structured but similarly on-going. There is frequent email and phone contact between the PMgr, the Ghanaian PI, and the US PI. Discussions on key topics are also planned for periods during which the US PI and/or co-PIs are visiting in Ghana.

Decisions about higher-level project issues, such as choice of activities, clarification of the project concept, use of particular methodologies, etc., are generally made by consensus among the five members that are considered the core project team (i.e., Marquis, Sakyi-Dawson, Butler, Lartey, and Colecraft) with other co-PIs or staff providing input on their areas of expertise as needed. Interviews with project participants revealed only minor topics on which differences of opinion were not resolved through consensus.

### *Inter-project collaboration*

There are several different aspects of inter-project



*Field officers visit each participating village at least twice weekly and each control village once weekly. The Field Officers and their assistants play a critical role in the project. They provide technical assistance and educational training for the groups. Field Officer Dinah Amoah facilitates the Fiaso Women's Group meeting in February.*

collaboration. The first type involves collaboration across sites within the project. This appears to be functioning well. Communication is good. Field officers appear to have a strong foundation of understanding about what is happening in other sites. They have met together several times over the course of the project to ensure that activities are carried out similarly, from training to data collection.

A second type of intra-project collaboration is between the three university departments that are most centrally engaged in the project: Nutrition and Food Science, Agricultural Extension, and Animal Science. This is addressed elsewhere in the report under relationships within the University of Ghana.

The third area of intra-project collaboration is the linkage between Ghana and Uganda, which involves both faculty and students. In the original proposal, the collaboration between the two

countries was presented as an opportunity to strengthen regional nutritional research capacity related to ASF and child nutrition<sup>7</sup> as both countries suffered from high rates of childhood undernutrition, and it spoke to the requirement in the call for proposals for a regional orientation. Letters supporting the involvement of Makerere University's Faculty of Agriculture and Institute of Public Health were included in the proposal. The choice of Uganda was questioned by the EPAC in their review of the project in 2004, at which time the project responded with the following justification:

*The inclusion of Uganda in this project is a reflection of the unique situation of the ISU team that has established a long-term relationship in both Ghana (through several grants) and Uganda (through a 15+ year Sustainable Rural Livelihoods program [SRL]). This is reinforced by the expressed interest of the faculty of agriculture in Uganda and faculty at the University of Ghana. Drs. Butler and Marquis are*

<sup>7</sup>“ Collaborations among Ghana, Uganda, and the US stakeholders will strengthen the sub-Saharan regional capacity to address the challenges of ASF and child nutrition” (Original three year proposal 2004:3).

currently collaborating with agriculture and health professionals in Uganda through SRL. This program focuses on the development of sustainable livelihood approaches to improve health and agriculture of rural populations. The nutrition and health (especially HIV) aspect is considered to be a very high priority for its critical association with agriculture. Through our interactions with Ugandan collaborators, we have identified a major limitation in Uganda—a lack of trained nutrition professionals—as well as an acknowledgment that nutrition, health, and agriculture have not been well integrated at the field level. In Ghana, where the graduate program in nutrition is well established, the UG-team enthusiastically welcomed the idea of providing graduate nutrition training to a Ugandan student as part of the project. In contrast, the Ugandan mandate for grassroots participation and the integration of HIV issues in all programmatic considerations offers a unique opportunity. The inclusion of Uganda is seen as an opportunity to establish a foundation

for student exchange between African universities, and so enhance professional development within the continent.

In reviewing the following year's workplan (2005-2006), the EPAC again questioned the substance of the linkage between Ghana and Uganda. The project response clarified the role of Makerere University as a project partner through the participation of Dr. Charles Muyanja, a food scientist, in the Department of Food Science and Technology of the Faculty of Agriculture. Samuel Oluka, the ENAM project student from Uganda who is studying in Ghana was being advised by Dr. Muyanja while completing his field research in Uganda in 2006.

Since the start of the ENAM project, the project documentation reports the following activities completed in connection to Uganda:



*ENAM Ghana PI, Owuraku Sakyi-Dawson (left), pictured here with EEP member Alfred Neumann, offered a short course on community and rural development research methods and their application to improved child nutrition and more food secure systems at Makerere University in Uganda. The visit was part of the collaboration between Uganda and Ghana facilitated by the ENAM project.*

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- Iowa State University maintains a Memorandum of Understanding with Makerere University as part of its collaboration on the Iowa-managed Sustainable Rural Livelihood's program.
- The SRL program works with an NGO in Uganda, VEDCO. VEDCO is helping Samuel Oluka with the logistics of his field work. Discussions between VEDCO and the ENAM project have taken place that address some of the nutrition education activities carried out by the NGO's Community Health and Nutrition workers.
- Samuel Oluka, a student from Uganda, is supported by the CRSP for his course work in Ghana at the University of Ghana, and for his Masters' degree thesis field work in Uganda.
- ENAM researchers (Marquis, Butler, Sakyi-Dawson, and Colecraft) have visited Uganda and met with professors at Makerere University, and have also visited the field sites in Kamuli District that are part of the SRL program and are part of Mr. Oluka's research.
- Prof. Sakyi-Dawson of the University of Ghana, on the same visit, offered a short course on community and rural development research methods and their application to improved child nutrition and more food secure systems.

It is the opinion of the EEP that the primary connection between Ghana and Uganda is through short visits of the PIs, and through the Masters' work of the Ugandan student and his relationship with the Ugandan NGO, VEDCO. These links, though potentially capable of growing more institutionalized, remain a function of the happenstance of having two programs co-located

at Iowa State University. While in the words of the EPAC in 2006, this does not "preclude there being instructive parallels or differences" that could be built upon, this more substantive interchange does not appear to be a priority for the Ghanaian-based team, and changes in the faculty involvement at Iowa State (transfers and retirements) appears to make it less attractive to them as well. Given the need to concentrate on completing, analyzing, and publishing the data from the Ghanaian field sites, it is the recommendation of the EEP that no further expansion of the Ugandan work be planned during the extension year of the project.

#### *Relations within the University of Ghana*

The working arrangement between the ENAM project and the University of Ghana is quite good. The University provides space for the project and handles payments of project staff through the University payroll (see also the next section on Financial Management).

Interviews with Department Heads and University Administrators revealed excellent knowledge of the purpose of the project as well as its progress. There was universal agreement that having the project on-site was a benefit for the University – both faculty and students – as well as more generally for the people of Ghana. Interviewees expressed strong appreciation for the project's financial support of master level student training, particularly in the field. This support has allowed students who had completed their course work to begin field work directly without waiting (sometimes a year or more) to receive funds, and thus reduces the time it takes to receive the degree. One Department Head commented that "ENAM is doing a beautiful job to build capacity."

Several officials also commented on the university's promotion of interdepartmental collaboration, and pointed to ENAM's successful development of the interdisciplinary nutrition extension course as an excellent example. The nutrition extension course has been approved and will be offered for the first time in the next semester as a 300-level undergraduate elective class, offered through the Department of Nutrition and Food Science.

The university officials expressed a desire to expand interdepartmental collaboration to other topics, including:

- A cross-departmental course on participatory research methods;
- Support for interaction between ENAM and the "Convergence of Science Program," which links social sciences and natural scientists across the university;
- Collaboration between ENAM and the university-supported demonstration school for children (approximately 3-5 years of age) that is part of the College of Agriculture's home science program;
- Promotion of additional faculty and student exchanges with collaborating US universities.

The University agreed to provide office space for the project, which is currently housed within



*The ENAM project has strong support on the University of Ghana campus. The project has facilitated interdepartmental collaboration and developed an interdisciplinary nutrition extension course. Pictured from left to right, Benjamin Ahunu, Provost & Professor of Animal Sciences, Univ. of Ghana; Anna Lartey, Head of the Dept. & Associate Professor, Nutrition & Food Science, Univ. of Ghana; Grace Marquis, Iowa State Univ. & McGill Univ.; Esi Colecraft, Iowa State Univ. & Lecturer, Nutrition & Food Science, Univ. of Ghana; Alfred Neumann, EEP member; Deborah Rubin, EEP Team Leader; Susan Johnson, GL-CRSP Management Entity; Owuraku Sakyi-Dawson, Senior Lecturer, Dept. of Agricultural Extension, Univ. of Ghana.*

the Department of Animal Sciences. The space, although small, has been adequate for the project until now. As staff has increased and the number of graduate students actively involved in the work of the project has grown, additional space or a transfer of space is seriously needed. It is important that new or additional space be found in the near term to accommodate extra staff members to assist with data entry and data analysis, or the project may face difficulties in maintaining an adequate pace of work as it approaches its final stages.

#### *Relations between the ENAM project and the CRSP Management Entity*

The ENAM project has a remarkable record of timely submission of materials, and relatively

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quick and complete turnaround of requested clarifications. The project has not required extensive support or engagement on the part of the CRSP ME at the University of California-Davis. Requests by the project for action from the CRSP ME have been met as needed.

### *Recommendations*

- ❑ While in Ghana, the EEP recommended that the project team needed to codify its policies on several key issues such as authorship of reports and of future publications and ownership of project data. This process has already been started.
- ❑ That, as a high priority, the core project members assess systematically and project what effort is needed, who will provide it, and what additional resources will be required to accomplish the project goals (e.g., completing data entry and analysis, writing key publications, planning for final workshop, and completing final report).
- ❑ Minimize time and funds expended on additional strengthening of the Ugandan component during the extension period to better consolidate results in Ghana.
- ❑ The project should review with the staff the current policies on project-related cell phone use that is supported by the project.

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## FINANCIAL MANAGEMENT

The financial management of this project is exemplary. Records in Ghana are detailed and kept in a clear and easily monitored form. Vouchers are prepared in a timely manner. There have not been any indications of difficulties in either the preparation of or receipt of records. Despite the large volume of cash that is required for payments of project costs and reimbursements for staff at the multiple research locations, there have been no examples of difficulties or leakage of funds. Receipts are required for nearly all expenses and the paper copies are copied and referenced back to the category and date of the expense.

The University's financial office has worked closely with the project, and has been able to provide operating funds as soon as confirmation has become available from Iowa State University that the funds are en route. There are minor difficulties in getting confirmation of these funds from the Bank used by the University, but that has never interfered with project allocations, and

is a university-wide issue. Similarly, the university limits signatory authorization on check-writing and there are occasional delays of short duration if the signor is not available.

The project has received some leveraged funding, but it has not fully recognized nor reported on the amounts, in part a result of confusion over differences in the reporting requirements for matching and for leverage funds. This was discussed at length with the PIs, the Project Manager, and the GL CRSP Associate Director, and an expanded reporting of leveraged funds will be forthcoming.

The USAID and GL CRSP financial management guidelines have been implemented properly. Budgets are presented to illustrate US and Ghana expenses. The US university match has met the 25% requirement through the contribution of Iowa State University faculty salaries and fringe benefits.

### *Recommendation*

- ❑ Improve reporting on leveraged funds.

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## STUDENT AND OTHER TRAINING

### STUDENT DEGREE TRAINING

The ENAM project has made a tremendous effort to involve students in the project research, to use the project activities as training opportunities, to provide access to US undergraduate and graduate students to project households and data, and to support Ghanaian Master's students in their own research using projects households and data. As noted above, the University of Ghana as well as the Master's students themselves expressed sincere appreciation for the support from the project that has allowed them to complete their degree and field work in a timely manner, and which offers significant infrastructural support (e.g., the ability to stay in the project office houses during fieldwork, and the access to transportation and field support).

In the ENAM project, the three Ghanaian students and one Ugandan student at the University of Ghana who are working on their MA theses in nutrition get intensive supervision and feedback from both US and Ghana PIs and Co-PIs. A Ghanaian professor is their main advisor. When students are ready to begin their thesis work, they develop a proposal which is reviewed by a committee in Ghana, and is usually reviewed by a US researcher as well. The methodology has to be cleared by the Institutional Review Board at

the University of Ghana as well as at Iowa State University. Only after receiving this clearance are they allowed to start their research. They are also required to present the results of their work for critique by the ENAM core members. The process for the Agricultural Extension and Agricultural Business students parallels this process, but these students started somewhat later in the project and are not yet ready to carry out their field work. All thesis students are examined by two internal and one external reviewer. PI Grace Marquis is the external reviewer for some of the students. The Ghana team also expressed appreciation for the support from the project allowing students to do field work in a timely manner without delays.

The Ugandan student receives support for both course work at the University of Ghana as well as field support for his field work in Uganda.

Two ENAM students (Oluka and Christian) received supplementary support in 2005 - 2006 from Jim Ellis Graduate Mentorship awards that are offered on a competitive basis by the GL CRSP. One more student recently received Jim Ellis funding for 2006 - 2007.

Two undergraduate students from Iowa State

University also received some minor support from the project for work as research assistants in 2005-2006.

### COMMUNITY-LEVEL TRAINING

There have been numerous training activities delivered at the community level in conjunction with the microcredit program. The topics of these have been mentioned above, but it is worth repeating that these training programs can be considered as stand alone deliverables: the nutrition education flip chart and course materials, and the business development course and its materials. Although directed primarily at the loan holders, all of whom are caregivers of children aged 2-5, it was obvious during the visits of the EEP to the communities that these trainings are reaching a much wider section of the community. In several villages, chiefs, sub-chiefs, and their spouses were also observers of the lectures and dramatized programs led by the ENAM field officers. In all villages, children of the caregivers as well as other community members, adults and

children alike, were present in the audience. This wide participation is both an excellent indicator of community support, as well as a sign of the value of the program beyond its specific financial and nutritional objectives.

In addition to the communities, other community extension workers have also benefited from the program's instructional materials and trainings, both at the community level, and in staff meetings at the ministry when the activities are reported on. In the future, if the collaboration between ENAM and the GL CRSP Avian Flu School gets off the ground, there will be an additional benefit in the training of village level representatives in the identification of poultry diseases, and treatment and handling options.

All of these training elements will be assessed according to the level of knowledge exhibited by the participants, as well as the modules' impact on the frequency and quantity of ASF given to children.

*Support of village chiefs and leaders is critical to the success of the ENAM project. The Chief of Warabebe, his wife, and brother-in-law have been observers at the educational presentations led by project field officers. The educational trainings have reached beyond the microcredit group members to the wider community.*



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**DISSEMINATION AND OUTREACH**

One of the strengths of the project is its involvement with the communities and other stakeholders. In year two particularly, as the weekly training programs associated with the microcredit groups have been given, the numbers of villages exposed to both nutrition education and entrepreneurial trainings have increased dramatically. Each meeting's attendance is recorded, and the names, numbers, and cost of each training are maintained in meticulous detail and submitted with the annual reports. As part of these trainings, the project organized an exchange trip, taking the women's groups in the Navrongo area to visit the women's group in Techiman. Additional exchanges are planned later this year. These exchanges were

inspired by the reports of the success achieved by the GL CRSP's PARIMA project, which has been sponsoring women's group exchanges between Kenya and Ethiopia.

The project has also offered training to its field officers, to ensure consistency in the application of data collection methodologies and training procedures in the three research areas.

The project has done an excellent job of informing local government officials of the work of the project, including chiefs and sub-chiefs, and meeting with community leaders and ministerial representatives, as well as hosting an official "launch" meeting with many stakeholders.



*Esi Colecraft (right), Program Manager presents a member of the Warabebe microcredit group with an award for meeting attendance. Each meeting's attendance is recorded in meticulous detail for the ENAM project.*

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*Field Officer-Winneba, Felicia Kudomor, was hired by the project through a competitive process. All Field Officers are trained by the project to ensure consistency in the application of data collection methodologies and training procedures.*

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Up to this point, there has been relatively little emphasis on dissemination and outreach of project results since the research and implementation activities are on-going.

### ***Publications***

The project has thus far produced few publications. They have one peer-reviewed article published on the work conducted under the planning grant,

and have also produced several research briefs for publication by the GL CRSP. They have not yet developed as a project, a plan for which topics need to be written up, and by whom. This is a weakness of the project to date, and needs to be addressed quickly and fully.

### ***Recommendation***

- ❑ Make the completion of data analysis and writing of key publications a high priority.
- ❑ Prepare list of recipients for distribution of project deliverables.
- ❑ Carry out plans to bring field officers together to exchange experiences.
- ❑ Continue with additional exchanges between regional women's groups.

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## SUMMARY ON GENDER INTEGRATION

This is a project which focuses largely on women. Alone, this focus would not necessarily mean the project was successfully integrating attention to gender, as a gendered approach requires that the choice of a target population, or of a specific activity, is the outcome of an analytical process to identify and then address areas or issues of inequality between men and women. In this case, the project has made an excellent effort to consider such areas of inequality, and to consider how to address them in the project's research, training, and operations.

In the research, the issue of control over children's feeding, and control over household income, was crucial to the formulation of the problem model. As a result of initial research, it was clear that women-controlled income was key to the level of children's feeding, and the lack of income was a major constraint to increasing feeding of ASF to children. Thus, the targeting of microcredit to women's groups was an appropriate response to a situation in which women's earnings were lower, but their household feeding responsibilities were higher than those of men. Sex-disaggregated data analysis will be possible as the sex of each caregiver and child is being recorded.

In training, it was also discovered that women's access to formal education was lower than

that of men, so integrating both nutrition and entrepreneurial education into the microcredit program enhanced women's access to information. This is not done at the expense of men, however, as the educational aspects of the meetings are open to the community at large, and men are at least occasionally members of the audience.

In degree training, it was pointed out to the project that it would address a different inequality, that of more women than men typically studying in nutrition, by encouraging men to apply for program funding. Two men are supported by the program for degrees in nutrition, as well as two women. In agricultural business and agricultural extension, the students supported by the program are men; perhaps qualified women can be identified in the future, in these fields where they are underrepresented.

In the project operations, women are well-represented among the PIs and Co-PIs, as well as in project management. The office staff and field officers show a balance of men and women.

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## SUSTAINABILITY, SCALE-UP, AND REPLICABILITY

Anticipating a positive correlation between increasing women's income and nutritional education in a mutually reinforcing program, AND increases in children's intake of ASF, the project should now be making plans to institutionalize, replicate, and sustain its methodology in Ghana, and possibly elsewhere in the region. The receipt of new funds from

USAID's Women in Development Office will provide the resources to continue support to the women's credit groups through the work of partners, Freedom from Hunger and Heifer International. Summarizing points that have been made earlier in the report, the team makes the recommendations below.

### *Recommendations*

- ❑ Develop non-degree short course on nutrition extension.
- ❑ Initiate thinking for relevant courses on other cross-disciplinary topics.
- ❑ Expand linkages across the 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.
- ❑ Complete the process to establish memoranda of understanding and linked programs with Freedom from Hunger/Ghana and Heifer/Ghana to scale-up and sustain the women's loan associations and microenterprise activities.





## **APPENDIX**

<b>APPENDIX 1:</b>	<b>SCOPE OF WORK</b>	<b>A1</b>
<b>APPENDIX 2:</b>	<b>SCHEDULE OF PLACES AND PEOPLE VISITED</b>	<b>A3</b>
<b>APPENDIX 3:</b>	<b>ITINERARY</b>	<b>A6</b>
<b>APPENDIX 4:</b>	<b>LINKING ACTIVITIES TO RESEARCHER RESPONSIBILITIES</b>	<b>A10</b>
<b>APPENDIX 5:</b>	<b>TOTAL NUMBER OF RESEARCHERS AND STAFF IN PROJECT</b>	<b>A15</b>



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## APPENDIX 1: SCOPE OF WORK

### I. Adequacy of the Problem Model and the Quality of the Scientific Research

- a) How does the Problem Model (PM) address a development issue of importance to the country(s) in which the project functions? Is the PM clear, fully developed, and scientifically sound?
- b) Is the scope of the research appropriate given the budget and timeframe? Does the budget accurately reflect the needs of the project?
- c) How do the objectives and activities fit the problem model?
- d) Are there aspects of the PM that are missing or are inappropriate? What are they?
- e) What is the quality of research being conducted? How does the research make a significant contribution to the relevant field(s) of science and how does it advance understanding of appropriate development processes?
- f) How does the research support a problem solving objective and does it link logically with the PM? Does it develop a technology that has development/science value? How can that technology be applied?
- g) How does the team's expertise match the research agenda? Is the level of contribution appropriate to the area of investigation? How does the team interact?
- h) Is the research agenda appropriately matched to the project's resources? Why or why not?
- i) How effectively has new knowledge been applied in the modification of the original PM and work plans?
- j) Evaluate the quality of publications and papers.

### II. Progress

- a) Considering the funding history of the project, evaluate the accomplishments of the project and provide rationale for your evaluations.
- b) Have goals and objectives, as articulated in the work plans, been met? If not, please provide explanation.
- c) Should the project be continued or modified? Provide rationale for your evaluation.
- d) In what ways have the impacts and outputs been significant? Evaluate the mechanisms for dissemination of research results.
- e) What, if any, are the benefits to the US?
- f) Does the project have an effective plan for dissemination of research results? What is it?

### III. Policy

- a) Do the project goals have policy implications? What are they and how have they impacted national development?
- b) Has policy been incorporated in the project design? At what level are appropriate policy makers engaged? (ministries, provincial, regional, local, etc.)

### IV. Training

- a) Rate the adequacy of the amount and quality of the training. Is there an appropriate mixture of long- and short-term training? Evaluate the impact of the training on participants.
- b) How does the human capacity building provide the basis for long-term capability to institutionalize the goals of the project?
- c) Evaluate the role of students on the project. Are students an integral part of the project? How are they selected and mentored?

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## V. Project Management

- a) Has the team developed mechanisms to ensure that local, national and regional needs and priorities will continue to be incorporated into the development of the research agenda? What are these mechanisms?
- b) Do regional collaborators and team members have a substantive role throughout the life of the project? What are these roles?
- c) Describe the project management structure and function. Is it appropriate for the type of research being conducted?
- d) Evaluate the intra-project communication. Describe strengths or weaknesses.
- e) Does the project management function effectively? Why or why not?
- f) Evaluate the quality of communication with all members including host country collaborators. Is communication adequate and frequent enough, or are there problems?
- g) How effective are operational decisions? What mechanisms have been incorporated for evaluation of ongoing work? Are they effective?

## VI. Financial Management

- a) Have USAID and GL CRSP financial management guidelines been implemented? What has been the track record of the project in submitting vouchers and using funds in a timely manner each year?
- b) Have cost matching requirements been met? What has been the effect of the cost matching requirements?
- c) Have funds been provided to the project in a timely manner each year? If not, please provide explanation.
- d) What is the level of support that the lead university and host country university provides to the project? Do the universities have any formal reviews, oversight, and internal/external evaluations?
- e) Is the administrative cost of the project appropriate for the size of the project? Is the present structure cost-effective and efficient? What modifications should be made to improve the administrative performance of the project?

## VII. Gender

- a) How were gender issues taken into account during project design and implementation?
- b) Has a gender component been incorporated into all activities as appropriate? If not, why not?
- c) How have US professional women been incorporated into the CRSP program?
- d) What are the contributions of each research project in supporting participation by US and host country women at the science, training, and producer levels?
- e) Can project impact be disaggregated by sex?

## VIII. Miscellaneous

- a) Has the project leveraged significant funding from other sources? Why or why not?
- b) Is the project regional? Is the rationale for regionalization clear? What are the linkages to regional activities? How appropriate are they? Should changes be made? Why? Are its linkages appropriate to its regional activities?
- c) What is the level and quality of inter-project collaboration?
- d) Describe any significant linkages to other research/development projects (CRSP or non-CRSP)?
- e) Identify unexplored areas of collaboration between projects that are feasible and have potential.

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## APPENDIX 2: SCHEDULE OF PLACES AND PEOPLE VISITED

*Note: People are listed the first time that the team met with them and again if interviewed regarding a different position. Johnson, Marquis, Sakyi-Dawson, Colecraft, Butler, Kobati, and Christian traveled with the team to most of the field sites.*

### **Friday and Saturday, February 16-17, 2007**

*Travel to Ghana by Rubin, Roos, and Neumann; Arrival in Accra*

Anna Lartey, PhD, Co-PI, Head of the Department and Associate Professor, Nutrition and Food Science, University of Ghana, Legon  
Lorna Butler, PhD, Co-PI, Professor, Departments of Sociology and Anthropology, Iowa State University  
Susan Johnson, Associate Director, Global Livestock CRSP, University of California-Davis  
Charles Agyeman, Driver, University of Ghana, Legon

### **Sunday, February 18, 2007**

*Travel from Accra to Tamale by plane; Travel to Navrongo by car*

Gymfywa Nikoi, MS, Administrative Officer, ENAM Project, University of Ghana  
Grace Marquis, PhD, US Principal PI, Associate Professor, Department of Food Science and Human Nutrition, Iowa State University and Associate Professor, School of Dietetics and Human Nutrition, McGill University  
Owuraku Sakyi-Dawson, PhD, Ghana-based PI, Senior Lecturer, Department of Agricultural Extension, University of Ghana, Legon  
Esi Colecraft, PhD, Program Manager, ENAM Project, Iowa State University and Lecturer, Nutrition and Food Science, University of Ghana, Legon  
Felix Boadu, ENAM Project Driver, University of Ghana, Legon

### **Monday, February 19, 2007**

*Visits to Wuru and Gia Villages near Navrongo in Kassena-Nankana District*

Gloria Kobati, MPhil candidate, Department of Nutrition and Food Science, University of Ghana  
Aaron Christian, MPhil candidate, Department of Nutrition and Food Science, University of Ghana  
Thomas Kambonga, MS, Field Officer-Navrongo, ENAM Project/University of Ghana and Agricultural Extension Agent, Ministry of Food and Agriculture  
Margaret Aguu, Field Officer Assistant-Navrongo, ENAM Project/University of Ghana and Assistant Chief Technical Officer and District Women in Development Officer, Women in Food and Agricultural Development (WIAD), Ministry of Food and Agriculture  
Chief, sub-chiefs, and members of the local government in Wuru village  
Members of Women's Loan Association in Wuru Village  
ENAM project caregivers in Wuru who are participating in the project's credit scheme  
Chief, sub-chiefs, and members of the local government in Gia village  
Members of Women's Loan Association in Gia Village  
ENAM project caregivers in Gia who are participating in the project's credit scheme  
Frank Bekoe, Driver

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**Tuesday, February 20, 2007**

*Visit to project field office in Navrongo; Travel to Techiman by car (seven hours)*

Sextus Sawine, District Director of Agriculture, Ministry of Food and Agriculture, Navrongo

**Wednesday, February 21, 2007**

*Visits to Fiaso and Forikrom Villages near Techiman in Techiman Municipal District*

John Manu, M.Sc., Municipal Director of Agriculture, Techiman Municipal District  
Dinah Amoah, Field Officer-Techiman, ENAM project  
Ruth Appiah, Field Officer Assistant-Techiman, ENAM project  
Chief, sub-chiefs, and members of the local government in Fiaso village  
Members of Women's Loan Association in Fiaso Village  
ENAM project caregivers in Fiaso who are participating in the project's credit scheme  
Chief, sub-chiefs, and members of the local government in Forikrom village  
Members of Women's Loan Association in Forikrom Village  
ENAM project caregivers in Forikrom who are participating in the project's credit scheme

**Thursday, February 22, 2007**

*Travel from Techiman to Swedru by car (eight hours)*

Anna Lartey, PhD, Co-PI, Head of the Department and Associate Professor, Nutrition and Food Science, University of Ghana, Legon  
Benjamin Ahunu, PhD, Co-PI, Provost and Professor of Animal Science, College of Agriculture and Consumer Sciences, University of Ghana, Legon

**Friday, February 23, 2007**

*Visits to Warabebe and Nsuebyire Villages near Winneba in Awutu/Effutu/Senya District*

Martin Amponsah Tenkorang, District Agricultural Extension Officer, Ministry of Food and Agriculture, Awutu-Efutu-Senya District  
Emmanuel Ochiro, District Crops Officer, Ministry of Food and Agriculture, Winneba  
Felicia Kudomor, Field Officer-Winneba, ENAM project  
Chief, sub-chiefs, and members of the local government in Warabebe village  
Members of Women's Loan Association in Warabebe Village  
ENAM project caregivers in Warabebe who are participating in the project's credit scheme  
Chief, sub-chiefs, and members of the local government in Nsuebyire village  
Members of Women's Loan Association in Nsuebyire Village  
ENAM project caregivers in Nsuebyire who are participating in the project's credit scheme

**Saturday, February 24, 2007**

*Travel to Accra*

**Sunday, February 25, 2007**

*University Guest House, Legon*

Rubin, Neumann, and Roos writing draft report  
Roos departs Accra for Denmark (evening)

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**Monday, February 26, 2007**

*Meetings with Faculty, Students, and Administrators at the University of Ghana, Legon;  
Visit to Freedom From Hunger/Ghana office, Accra*

E. Ackah-Nyamike Jnr, PhD, Lecturer and Head of the Department of Agricultural Extension, University of Ghana,  
Legon

Kofi Amaning-Kwateng, Ph.D., Head, Department of Animal Science, University of Ghana, Legon

Anna Lartey, Ph.D., Associate Professor and Head of Department of Nutrition and Food Science, University of Ghana,  
Legon

Oduro Afriyie, Ph.D., Vice-Dean of the Faculty of Science, University of Ghana, Legon

**Student Presentations and Discussion:**

Gladys Adjei, MPhil candidate, Department of Nutrition and Food Science, University of Ghana, Legon

Aaron Christian, MPhil candidate, Department of Nutrition and Food Science, University of Ghana, Legon

Samuel Oluka, MPhil candidate from Uganda, Department of Nutrition and Food Science, University of Ghana, Legon

Gloria Kobati, MPhil candidate, Department of Nutrition and Food Science, University of Ghana, Legon

Philip Homia, MPhil candidate, Department of Agriculture Economics and Agribusiness, University of Ghana, Legon

Jacob Zuttah, MPhil candidate, Department of Agriculture Extension, University of Ghana, Legon

Eric Adjei, MS candidate, Department of Agricultural Extension, University of Ghana, Legon

**Meeting with ENAM Project Office Staff:**

Gymfywa Nikoi, MS, Administrative Officer, ENAM Project, University of Ghana, Legon

Richard Tweneboak Kodua, MS, Field Supervisor, ENAM Project, University of Ghana, Legon

Aaron Christian, Data Collection Supervisor and Data Manager, ENAM Project, University of Ghana, Legon

Giftey Nyarko, Data Entry, ENAM Project, University of Ghana, Legon

Josephine Martei, Deputy Executive Director, Freedom From Hunger/Ghana

Beatrice Kuuzume, Senior Program Officer, Freedom From Hunger/Ghana

**Tuesday, February 27, 2008**

*Meetings with Administrators, University of Ghana, Legon;  
Visit to Heifer International/Ghana and Ghana Health Services, Accra*

Kwame Offei, PhD, Dean, College of Agriculture and Consumer Sciences, University of Ghana, Legon

Kwesi Yankah, Professor and Pro-Vice Chancellor, University of Ghana, Legon

Roland Kanlisi, Deputy Country Director, Heifer International/Ghana

Wilhemina Okwabi, Acting Head of Nutrition Division and National Coordinator for the Infant and Child Feeding  
Program, Ghana Health Services

Esi Amoafu, Vitamin A Program Manager, Ghana Health Services

Exit debriefing by Rubin and Neumann with ENAM team of Marquis, Sakyi-Dawson, Lartey, Ahunu, and Colecraft and  
Susan Johnson of GL CRSP

Rubin departs for Washington, DC

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## APPENDIX 3: ITINERARY

### Saturday February 16-17

Evening EEP Member Arrivals

### Sunday, February 18

8:00 – 9:00 AM Breakfast meeting of EEP with GL-CRSP Assistant Director  
10:00 AM Departure for airport  
12:30 PM Flight departure for Tamale  
*(EEP will be met at airport by ENAM team and travel by road to Upper East Region  
~2 hour drive)*  
4:00 - 6:00 PM Introductions, history of ENAM team relationships, history of ENAM project,  
ENAM project update, review of itinerary  
6:30 PM Dinner

### Monday, February 19

7:00 – 8:00 AM Breakfast  
8:30 – 11:30 AM Field visit to Wuru, semi-rural intervention community, Navrongo *[EEP, and  
ENAM team with Thomas Kambonga (field officer) and Margaret Aguu (field officer's  
assistant)]*  

- Courtesy call on village chiefs and opinion leaders
- Attend weekly meeting of ENAM project credit and savings association  
(women's group)
- Community walk (see participant's home/compound; income generation  
activities of caregivers)

12:00 – 1:30 PM Lunch  
2:00 – 4:00 PM Field visit to GIA, rural intervention community, Navrongo *[EEP with Thomas  
Kambonga and Margaret Aguu only]*  

- Courtesy call on village chiefs and opinion leaders
- Attend weekly meeting of ENAM project credit and savings association  
(women's group)
- Community walk (see participant's home/compound; income generation  
activities of caregivers)

4:00 – 5:00 PM EEP meeting with Thomas Kambonga and Margaret Aguu  
6:00 PM Dinner  
7:30 - 8:30 PM EEP meeting to review locale visit

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**Tuesday, February 20**

7:00 AM	Breakfast
8:30 – 9:00 AM	Meeting with Mr. Sextus Sawine, District Director of Agriculture, Kassena Nankana District Visit project office
9:30 – 11:30 AM	Visit to Navrongo (Sirigu painted village cooperatives)
11:30 AM	Depart for Techiman (~ 6 hour drive; stop for Lunch in Tamale)
7:30 PM	Dinner

**Wednesday, February 21**

7:00 – 8:00 AM	Breakfast meeting with Lorna Butler, Co-PI
8:30 – 12:00 PM	Field Visit to Fiaso, rural intervention community, Techiman [ <i>EEP, and ENAM team with Dinah Amoah (field officer) and Ruth Appiah (field officer's assistant)</i> ] <ul style="list-style-type: none"><li>- Courtesy call on village chiefs and opinion leaders</li><li>- Attend weekly meeting of ENAM project credit and savings association (women's group)</li><li>- Community walk (see participant's home/compound; income generation activities of caregivers)</li></ul>
12:30 – 1:45 PM	Lunch with Mr. Manu, Techiman District Director for Agriculture, Ministry of Food and Agriculture
2:15 – 4:30 PM	Field Visit to Forikrom, semi-rural intervention community [ <i>EEP with Dinah Amoah and Ruth Appiah only</i> ] <ul style="list-style-type: none"><li>- Courtesy call on village chiefs and opinion leaders</li><li>- Attend weekly meeting of ENAM project credit and savings association (women's group)</li><li>- Community walk (sea participant's home/compound; income generation activities of caregivers)</li></ul>
4:30 – 5:15 PM	EEP interactions with Dinah Amoah at project office/house
6:00 – 6:45 PM	EEP meeting with Dr. Grace Marquis, US-PI
6:45 – 7:30 PM	EEP meeting with Dr. Owuraku Sakyi-Dawson, host country PI
7:30 PM	Dinner

**Thursday, February 22**

7:30 – 8:30 AM	Breakfast meeting with Dr. Grace Marquis, US-PI
8:30 – 11:00 AM	Techiman market visit
11:00 AM	Depart from Techiman to Swedru ( approx. 7 hour drive)
7:00 PM	Dinner meeting with Drs. Anna Lartey, Benjamin Ahunu and Owuraku Sakyi-Dawson

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**Friday, February 23**

7:00 – 8:00 AM	EEP Breakfast meeting
8:15 AM	Depart for Winneba
9:00 – 11:30 AM	Field Visit to Warabebe, rural intervention community, Winneba [EEP, and ENAM team with Felicia Kudomor (field officer) and Roselee Serwah (field officer's assistant)] <ul style="list-style-type: none"><li>- Courtesy call on village chiefs and opinion leaders</li><li>- Attend weekly meeting of ENAM project credit and savings association (women's group)</li><li>- Community walk (see participant's home/compound; income generation activities of caregivers)</li></ul>
12:00 – 1:30 PM	Lunch meeting with Dr. Anna Lartey, Benjamin Ahunu and Owuraku Sakyi-Dawson
1:45 – 3:45 PM	Field visit to Nsuekyire, semi-rural intervention community Winneba [EEP with Felicia Kudomor and Roselee Serwah only] <ul style="list-style-type: none"><li>- Courtesy call on village chiefs and opinion leaders</li><li>- Attend weekly meeting of ENAM project credit and savings association (women's group)</li><li>- Community walk (see participant's home/compound; income generation activities of caregivers)</li></ul>
4:00 – 4:30 PM	EEP visit to ENAM field office and interactions with Felicia Kudomor
4:45 – 5:15 PM	EEP meeting with ENAM project manager, Dr. Esi Colecraft
6:30 PM	Dinner
8:00 PM	EEP meeting to review locale visits

**Saturday, February 24**

7:00 – 8:00 AM	Breakfast and hotel check out
8:00 – 1:00 AM	EEP meetings
1:15 PM	Depart for Accra
6:00 PM	Dinner

**Sunday, February 25**

AM	EEP report writing
PM	EEP meeting and report writing

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**Monday, February 26**

8:00 – 8:30 AM	EEP meeting with Dr. Ackah, Head, Agricultural Extension Dept., Univ. of Ghana
8:30 – 9:00 AM	EEP meeting with Rev. Dr. Amaning- Kwateng, Head, Animal Science Dept., Univ. of Ghana
9:00 – 9:30 AM	EEP meeting with Prof. Anna Lartey, Head, Nutrition & Food Science Dept, Univ. of Ghana
9:30 – 10:00 AM	EEP meeting with Dr. Oduro Afriyie, Vice-Dean of the Faculty of Science, University of Ghana
10:30 – 1:30 PM	EEP meeting with ENAM team and students <ul style="list-style-type: none"><li>• Project update 2: Nutrition extension course development, additional money for women centered activities: Dr. Esi Colecraft, Project Manager</li><li>• Presentations by students funded in 2005/2006<ul style="list-style-type: none"><li>Aaron Christian: MPhil in Nutrition</li><li>Gladys Adjei: MPhil in Nutrition</li><li>Samuel Oluka: MPhil in Nutrition</li></ul></li><li>• New student proposal presentations<ul style="list-style-type: none"><li>Philip Homiah in MPhil in Agri-Business</li><li>Gloria Kobati: MPhil in Nutrition</li><li>Jacob Zuttah: Mphil in Agricultural Extension</li><li>Isaac Agyei: Mphil Agricultural Extension</li></ul></li></ul>
1:30 – 2:30 PM	EEP meeting with ENAM Project Office Staff
3:15 PM	EEP meeting with Ms. Josephine Martei, Director, Freedom from Hunger, Ghana
6:30 PM	Dinner at Dr. Sakyi-Dawson's residence

**Tuesday, February 27**

8:00 – 8:30 AM	Courtesy Call on Dean of College of Agriculture and Consumer Sciences, University of Ghana
9:00 – 9:30 AM	Courtesy call on Pro-Vice Chancellor of the University of Ghana
10:00 – 10:40 AM	Meet with Heifer, Ghana Country Director: Mr. John Heloo
11:30 – 12:15 PM	Meet with representatives of the Nutrition Division, Ghana Health Services
1:00 – 2:00 PM	Lunch
3:00 – 4:00 PM	Final meetings for preliminary results of review

## APPENDIX 4: LINKING ACTIVITIES TO RESEARCHER RESPONSIBILITIES

RESEARCH QUESTION	DATA VARIABLES	COLLECTION METHOD	SAMPLE SIZE	TIME COLLECTED	PERSONS COLLECTING/ SUPERVISING # OF PEOPLE PER REGION
1) Does implementation of IGA program increase food security & ASF availability and utilization in home?	1A) Food security questions (8 + 2 qualifiers) 1B) Food frequency questions for whole household for last week. 1C) 10 food expenditure questions for household (total, ASF) (availability) 1D) Food frequency questionnaire with 10 (+ other) ASF foods consumed by child in last week (utilization for child)	1A-1D) Survey questionnaire collected through face-to-face interview with caregivers.	1A-1D) Includes intervention & matched control caregivers Numbers for baseline: Cases: N=57; T=52 ; W=28 Controls (external): N=104; T:104 ; W=52 Controls (internal): N=52; T=52 ; W=28 (# will be slightly different on the follow-ups, because of new intervention caregivers) Self-selected for intervention. Controls are matched on IGA & wealth rank	1A-1D) Baseline + 3 follow-ups (4 mo apart)	1A-1D) Training: Program manager (Esi) Field supervisor (T-K) Field data collection supervisor (Aaron Christian ) Collection: Temporary field staff hired locally (with at least secondary school completed) N=9 (teachers or MOFA staff) T=10 (SSS graduates; 1=community health training school) W=8 (teachers; Civic Education Program-above SSS; 1=U of Education) Supervision: Field data collection supervisor (Aaron Christian ) – main Field Officers (Thomas, Dinah, Felicia)
	1E) Weighed (grams) consumption of ASF by child	1E) 12-hr weighed observations of child intakes. All foods weighed	1E) Includes intervention & matched control caregivers T: 48 total N:56 total W:66 total  Random selected from intervention and external control caregivers.	1E) First and final cycles Unannounced visits Total 2 d/child One non-working day and one working day (working= market day or farming/fishing day, depending on community. All communities have a day when they don't work) Total days of observation = 180	1E) Training: N: Moses Klevor (MS graduate from UGL Nutrition program) trained field workers T:E Colecraft & Macurius Donneyong (BS graduate from nutrition) W: Gladys Adjei (trained as a MS nutrition student) Collection: Temporary field staff (described above) N=4; T=3; W= Gladys Adjei (MS student) + 4 local temporary staff Supervision N: E Colecraft/Moses Klevor T: Aaron Christian W: Glyds Adjei (temporary staff), E Colecraft

*(All tables in Appendix 4 prepared by Marquis and Colecraft; Modified by EEP Team)*

RESEARCH QUESTION	DATA VARIABLES	COLLECTION METHOD	SAMPLE SIZE	TIME COLLECTED	PERSONS COLLECTING/ SUPERVISING # OF PEOPLE PER REGION
2) Does implementation of IGA program increase caregiver's self efficacy to provide ASF – availability to household and use by children?	2A) Pending development of measures of self efficacy. Qualitative measures	2A) Interviews with caregivers	2A) Includes intervention & matched control caregivers. Selection is pending		2A) MS Agric Extension student
3) Do educational programs improve caregivers' and hh members knowledge and practices relative to ASF allocation and child feeding practices?	3A) 20 attitude and knowledge questions on child and household food habits and health	3A) Survey questionnaire collected through face-to-face interview with caregivers.	3A) Same as 1A-1D	3A) Baseline + 3 follow-ups (4 mo apart)	3A) Training: Program manager (Esi) Field supervisor (T-K) Field data collection supervisor (Aaron Christian )  Collection: Temporary field staff hired locally (with at least secondary school completed) N=9 (teachers or MOFA staff) T=10 (SSS graduates; 1=community health training school) W=8 (teachers; Civic Education Program-above SSS; 1=U of Education)  Supervision: Field data collection supervisor (Aaron Christian ) – main Field Officers (Thomas, Dinah, Felicia)
	3B) Child's weighed (g) consumption of ASF documents actual practices	Same as 1E	Same as 1E	Same as 1E	Same as 1E

RESEARCH QUESTION	DATA VARIABLES	COLLECTION METHOD	SAMPLE SIZE	TIME COLLECTED	PERSONS COLLECTING/ SUPERVISING # OF PEOPLE PER REGION
4) Do project training programs improve entrepreneurial knowledge and skills and practices related to IGA?	4A) Knowledge questions pending	4A) Survey questionnaire collected through face-to-face interview with caregivers.	4A) Includes intervention & matched control caregivers Approximate numbers: Cases: N=57 ; T=52 ; W=28 Controls (external): N=104 ; T=104 ; W=52 Controls (internal): N=52 ; T=52 ; W=28 Self-selected for intervention. Controls are matched on IGA & wealth rank	4A) once	4A) Training: Field supervisor (T-K) Field data collection supervisor (Aaron Christian ) Collection: Temporary field staff hired locally (with at least secondary school completed) N=9 (teachers or MOFA staff) T=10 (SSS graduates; 1=community health training school) W=8 (teachers; Civic Education Program-above SSS; 1=U of Education) Supervision: Field data collection supervisor (Aaron Christian ) – main Field Officers (Thomas, Dinah, Felicia)
	4B) Cash flows (increased profit)	4B) Survey questionnaire collected via face-to-face interview with caregivers.	4B) Includes 6/ community for intervention & matched control caregivers	4B) First and final cycles	4B) Collection: Field officers Supervision: T-K
	4C) IGA practices: caregiver economic activities	4C) Survey questionnaire collected through face-to-face interview with caregivers.	4C) Same as 1A-1D	4C) Baseline + 3 follow-ups (4 mo apart)	4C) Training: Program manager (Esi) Field supervisor (T-K) Field data collection supervisor (Aaron Christian ) Collection: Same as 4A) Supervision: Same as 4A)

RESEARCH QUESTION	DATA VARIABLES	COLLECTION METHOD	SAMPLE SIZE	TIME COLLECTED	PERSONS COLLECTING/ SUPERVISING # OF PEOPLE PER REGION
5) What factors are associated with caregivers' adoption of ASF-related child feeding recommendations?	5A) Household and caregiver demographic characteristics (family composition, education, economic activities)	5A) Survey questionnaire collected through face-to-face interview with caregivers.	5A) Includes intervention only Numbers for baseline: Cases: N=57; T=52; W=28 (# will be slightly different on the follow-ups, because of new intervention caregivers) Self-selected for intervention.	5A) Baseline + 3 follow-ups (4 mo apart)	5A) Same as 4C)
	5B) Estimates of adoption are pending and will be developed as composite variables from utilization variables described above (FFQ and weighed intake)  Adoption of: - increased diversity - increased frequency - increased amount  Adoption measured as: - Dichotomous (increased/no) - Degree (low/med/high)	5B) Survey questionnaire collected through face-to-face interview with caregivers  And  weighed 12 hr intake measurements (=1E).	5B) Same as 5A)	5B) Comparison of baseline and final data for estimate of change, controlling for change seen in the control groups	5B) same as 5A)
	5C) Estimates of exposure to education meetings (# or %, by type of activity)	5C) Records of attendance at weekly meetings	5C) same as 5A)	5C) Review of exposure over 3 cycles	5C) Field officers
	5D) Qualitative information on reasons for adoption	5D-1) Interview guide  5D-2) Documentation of educational content	5D-1) Selection pending from intervention caregivers  5D-2) All educational materials used in field	5D-1) once  5D-2) Once (2007)	5D-1) MS Agric Extension student  5D-2) MS Agric Extension student

RESEARCH QUESTION	DATA VARIABLES	COLLECTION METHOD	SAMPLE SIZE	TIME COLLECTED	PERSONS COLLECTING/ SUPERVISING # OF PEOPLE PER REGION
6) Do interventions improve children's dietary intakes and growth?	6A) Food frequency questionnaire with 10 (+ other) ASF foods consumed by child in last week (utilization for child)	6A) Same as 1D)			
	6B) Weighed (grams) consumption of ASF. (utilization by child)	6B) Same as 1E)			
	6C) Anthropometric measurements of height and weight	6C) Standard methods using duplicate measures of each	6C) Same as 1A-1D)	6C) Baseline + 3 follow-ups (4 mo apart)	6C) Training: Frederick Grant (MS graduate of UGL Nutrition Department) Collection: All measurements are taken by Aaron Christian (primarily), Gifty Nyarko, field officers, with one assistant in each region

## APPENDIX 5: TOTAL NUMBER OF RESEARCHERS AND STAFF IN PROJECT

	POSITION	#	NAME
<b>GHANA</b>	PI	1	Sakyi-Dawson
	Co-PI	2	Lartey, Ahunu, (Canacoo 2006 on sabbatical)
	Field supervisor	1	Richard Tweneboah-Kodua
	Administrative assistant	1	Selasie Agamah (until 2006), Gymfiwah Nikoi
	Data entry	1	Gifty Nyarko
	Field officers	3	Thomas Kambonga, Dinah Amoah, Felicia Kudomor
	Data programmer	1	Boateng
	Field officer assistants	3	Margaret Aguu, Ruth Apaih, Rosille Serawh
	Driver	1	Felix Boadu
	Graduate students	7	Nutrition: Aaron Christian, Gladys Adjei, Samuel Oluka, Gloria Kobati Agric Business: Philip Homia; Agric Extension: Jacob Zuttah, Isaac Agyei
	Temporary staff (Navrongo)	9	
	Temporary staff (Techiman)	10	
	Temporary staff (Winneba)	8	
	Temporary trainers/consultants	10	Anthropometry training: Frederick Grant Dietary weighing training: Moses Klevor & Macurius Donneyong Microfinance training: Florence Pipim (Rural Bank consultant) Field entry training: Kweku Annane (MOFA/IFAD consultant) Nutr Educ flipchart art work: Charles Agbeko (Health Promotion Unit/GHS) Entrepreneurial education: Naa Odey Asante (FSGN private consultant) Fish smoking training: Margaret Aguu (WIAD consultant - Navrongo) & Alice Dawson (WIAD consultant – Winneba) Food demonstration training: Victoria Tsekor (WIAD consultant)
<b>Total Ghana Participants</b>	<b>58</b>		

<b>NON-GHANA</b>	PI	1	Marquis
	Co-PI	4	Butler, Jensen, Reddy, Lonergan
	Program Manager	1	Colecraft
	Graduate students	3	Canada: Kim Harding; US: Richmond Aryeetey, Adophina Addo
	<b>Total Non-Ghana Participants</b>	<b>9</b>	

<b>TOTAL IN PROJECT</b>	<b>67</b>
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