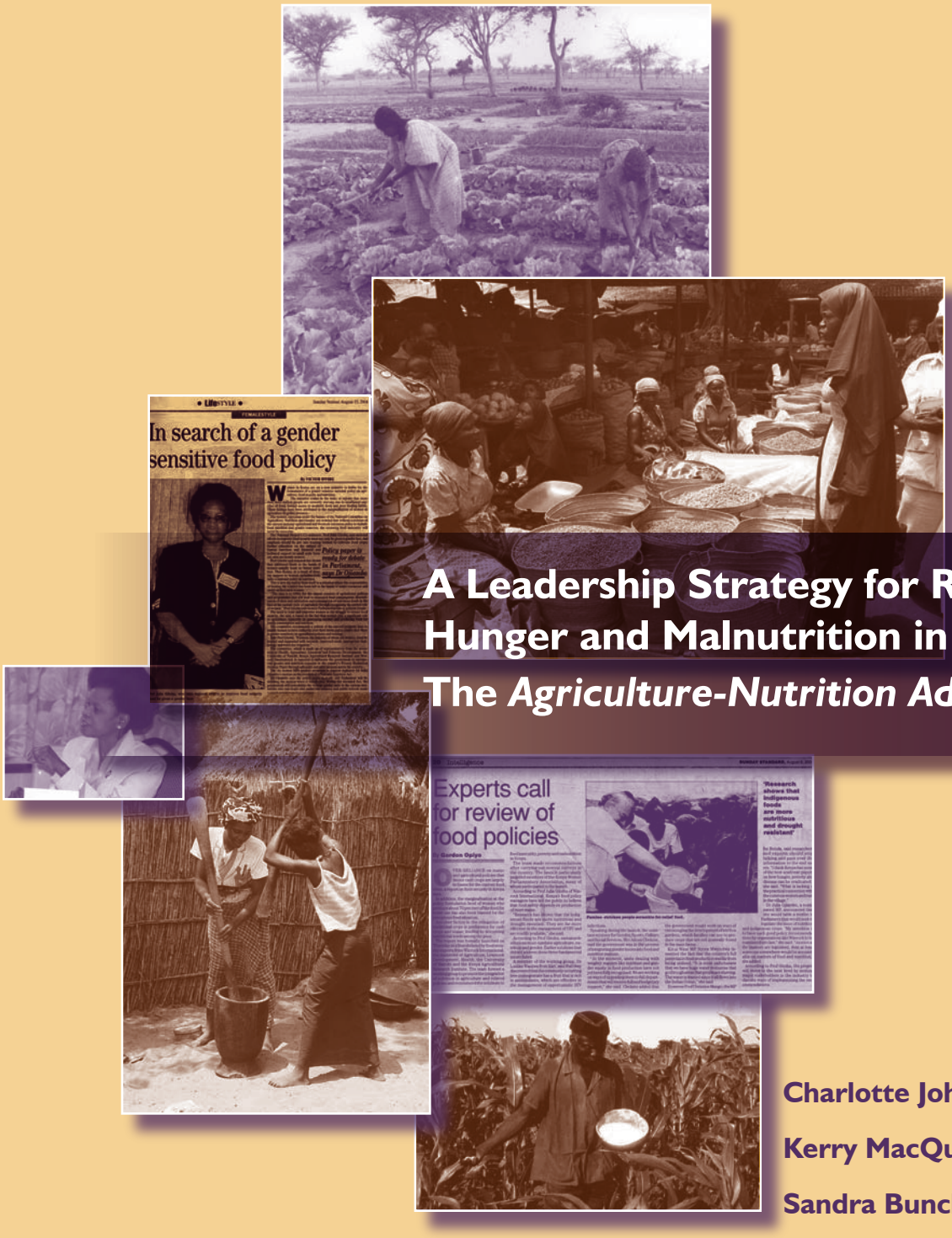
ICRW
International Center for Research on Women




# A Leadership Strategy for Reducing Hunger and Malnutrition in Africa: The *Agriculture-Nutrition Advantage*

**Charlotte Johnson-Welch**

**Kerry MacQuarrie**

**Sandra Bunch**

Design: Manu Badlani

Photo credit (bottom photo on cover): FAO/14519/D. Debert



The project on which this publication is based was funded by the U.S. Agency for International Development (USAID) under the terms of USAID Grant Number LAG-G-00-93-00042 and the U.S. Department of Agriculture (USDA) under the terms of USDA Agreement No. 59-3148-2-003. The opinions expressed herein are those of the authors and do not necessarily reflect the views of USAID or USDA.

# ACKNOWLEDGMENTS

This project and resulting report would not have been possible without the contributions of the 29 dedicated team members in the five African countries. Their hard work, technical expertise, and diligence ensured the success of this project, and they deserve particular recognition:

**Ghana** – Rosanna Agble and Esi Amoaful, Nutrition Unit, Ministry of Health;[1] Emelia Oberye Monney, Ministry of Food and Agriculture; Wisdom Plahar, Food Research Institute; Juliana Denis, Ministry of Food and Agriculture; and Albertha Nyaku, Micronutrient Operational Strategies and Technologies (MOST) project.

**Kenya** – Julia K. Gitobu, Winrock International; Daniel Mukunya, University of Nairobi; Mary N. Wabule and Lusike Wasilwa, Kenya Agricultural Research Institute (KARI); Edith P. Malebe, Ministry of Health; Charity Kabutha, gender consultant; and Grace Mitoko, Ministry of Agriculture and Livestock Development.

**Mozambique** – Manuel Amane, Department of Crops and Farming Systems, National Agriculture Research Institute (INIA); Calisto Bias, INIA; Armanda Gani, Nutrition Division, Ministry of Health; and Alcinda Abreu, Gedlide Institute.

**Nigeria** – Isaac Akinyele, Department of Human Nutrition, University of Ibadan; Victor Amuwah, Department of Agriculture, Oshimili North; Bussie Maziya-Dixon, International Institute of Tropical Agriculture (IITA); C.C.N. Nnonyelu, Federal Department of Rural Development; Ikemefuna C. Obizoba, Department of Home Science and Nutrition, University of Nigeria-Nsukka; Stella Omojokun, Nutrition Division, Federal Ministry of Health; Muyiwa Owolabi, IITA; and Liane Adams, U.S. Agency for International Development (USAID)/Nigeria.

**Uganda** – John R.W. Aluma, National Agriculture Research Organization (NARO); Joyce Kikafunda and Alex Bambona, Department of Food Science and Technology, Makerere University; and John Musinguzi, Africare.

We are also extremely grateful to the U.S. team for all of its contributions: Charlotte Johnson-Welch, Cheryl Morden, Kathleen M. Kurz, Kerry MacQuarrie, and Sandra Bunch, the International Center for Research on Women (ICRW); and Todd Benson, Lawrence Haddad, Bonnie McClafferty, Carole Douglis, and Ken Simler, the International Food Policy Research Institute (IFPRI).

We also thank Hye Bradshaw and Amanda Bartelme at ICRW; the team's consultants, Mary Hill Rojas and Hilary Sims Feldstein; our USAID project officer, Cheryl Jackson; Tammy Palmer, Congressional Hunger Fellow; and Robin Satcher, intern at USAID.

Special thanks go to those who added value to this paper through the review process – Kathleen M. Kurz and Kathleen Barnett, ICRW; Todd Benson and Marie Ruel, IFPRI; and the African country team members. We also would like to acknowledge the following people who provided communications support to this and other project materials: Stacia Burnham, Carole Mahoney, and Margo Young, ICRW; and Evelyn Banda and Nick Harvey at IFPRI.

We would also like to express our gratitude to community members and others who worked with the leadership networks and facilitated entrée to key policy forums and discussions; members of ICRW/IFPRI's Technical Advisory Committee; and USAID mission staff in the project countries, with particular thanks to those who participated in the project workshops.

***In Memoriam***

The authors would like to dedicate this report to Dr. John Aluma, deputy director for research, National Agriculture Research Organization (NARO) in Uganda. Dr. Aluma was a key project partner and advocate for an agriculture-nutrition linked, gender-informed approach. While his death is an irreplaceable loss, his enthusiasm and dedication to making development work was and will continue to be an inspiration to all of us who worked with him.

[1] Institutional affiliations for each person at the time they were working on the project.

# TABLE OF CONTENTS

# EXECUTIVE SUMMARY

The world has set a goal to cut hunger in half by 2015 as part of the U.N. Millennium Development Goals (MDGs). To achieve this goal, current efforts must be expanded greatly. The urgency is nowhere more critical than in sub-Saharan Africa, where a crisis of hunger and poverty is being compounded by HIV and AIDS. In this region, more and more people lack access to the food they need to lead full and productive lives.

To address the hunger problem, the *Agriculture-Nutrition Advantage* project was implemented over a three-year period, from 2001 to 2004, with funding from the U.S. Agency for International Development (USAID). The strategy of the project was to cultivate a network of leaders and advocates in sub-Saharan Africa who would promote an approach to combating hunger that is effective but rarely used in practice: linking agriculture and nutrition, while also accounting for gender. The decision to promote this approach was based on the premise that agriculture and nutrition communities are missing opportunities to reduce poverty, hunger, and malnutrition by failing to combine scarce resources, act collaboratively, and incorporate gender analysis throughout their work. Because hunger and malnutrition have multiple causes – each addressed by technical specialists and institutions from different sectors that rarely work together – the project sought to bridge sectoral gaps.

Those working on hunger generally agree – and evidence shows – that such a linked approach does reduce hunger and malnutrition. However, without leadership in promoting this approach, different sectors continue to work in isolation. The leadership strategy was borne out of the need for committed and credible leaders to advocate for greater use of this effective, yet underutilized approach. Toward this end, skilled, knowledgeable, and well-placed teams of advocates from relevant sectors and institutions were organized in Ghana, Kenya, Mozambique, Nigeria, Uganda, and the United States. The team members built on existing in-country networks and used the project's conceptual framework to identify areas of opportunity to strengthen agriculture and nutrition linkages and address relevant gender issues in their countries.

*Agriculture-Nutrition Advantage* team members emerged as leaders and strong advocates for an agriculture and nutrition linked, gender-informed approach to fighting hunger. They developed plans of action and collected evidence that illustrated the effectiveness of this approach. They brought community members together with technical specialists and, in one case, political decision makers to apply this approach at the grassroots level. They integrated the approach into organizations and used the evidence they collected to advocate for greater use of the approach in targeted policies and programs.

## Conclusions

By creating a leadership network involving a wide range of actors and institutions, the *Agriculture-Nutrition Advantage* project achieved a remarkable degree of success within a relatively short time. The following conclusions can be drawn about the leadership strategy and how to implement a linked, gender-informed approach within policies, organizations, and communities.

- ***Leadership Networks.*** A leadership network is a powerful strategy to promote the adoption of an agriculture-nutrition linked, gender-informed approach in reducing hunger and malnutrition. The country teams were able to bring the project approach to the attention of development practitioners and policymakers in large part because the members were recognized leaders, represented different types

of organizations and agencies, and had access to decision makers and communities. The leadership networks pooled their personal and professional assets, learned from each other, engaged other influential experts and, in the end, were able to influence diverse audiences.

- ***Evidence-based Advocacy.*** The teams achieved change not only because they were widely respected, but also because they used evidence from their own case studies, from empirical data, and from the literature to make their case, and could present their case in a compelling manner to strategically chosen audiences. By framing the evidence in the context of national priorities, the teams showed how a linked, gender-informed approach could enhance the effectiveness of key policy initiatives and community actions.

- ***Power of Participatory Processes.*** The teams' successes also stemmed from their ability to use participatory processes to promote the project's approach. Such processes provided opportunities to involve stakeholders, ranging from technical specialists to policymakers, in policy and program development, and in decisions regarding allocation of resources. In addition to the technical and political perspectives, input from communities helped put a human face on the benefits of using a linked, gender-informed approach.

- ***Action-oriented Solutions.*** The leaders went beyond the "why" to the "how" by providing decision makers and other actors with specific measures they could take to use a linked, gender-informed approach. As a result, policymakers and community members were able to quickly consider the suggestions and take action, leading to changes in a relatively short time.

- ***Capacity Strengthening and Learning.*** The project's annual workshops strengthened the team members' knowledge of agriculture and nutrition linkages, skills in using gender analysis as a planning tool, and leadership and advocacy skills. The workshops created the space for members to ask questions of, seek assistance from, and share information with other team members. The multi-disciplinary nature of the teams, including gender specialists, and the team members' experience working with communities provided more opportunities for learning and applying their enhanced knowledge and skills.

- ***Gender Knowledge and Skills.*** As a result of the *Agriculture-Nutrition Advantage* project, network members improved their understanding and use of gender analysis as a research and planning methodology. Using practical, hands-on learning was critical to moving the members from knowing about gender in the abstract to their more concrete understanding of the role gender plays in the hunger problem and potential solutions.

To achieve the goal of cutting hunger in half by 2015 and realizing all citizens' rights to be productive, healthy, and well-nourished, we must build on the momentum that was created by the *Agriculture-Nutrition Advantage* leadership network and continue to expand the use of successful efforts – particularly those that can show quick results, such as the agriculture-nutrition linked, gender-informed approach.

# INTRODUCTION

The world today is wealthier than ever before and produces enough food to feed everyone. Yet hundreds of millions of people continue to struggle against poverty, hunger, and malnutrition. The crisis is nowhere more urgent than in sub-Saharan Africa, where HIV/AIDS is exacerbating this alarming situation. In this region, all nutritional indicators are moving in the wrong direction, and, except in a few countries, more and more people do not have good health and access to the food they need to lead full and productive lives (Standing Committee on Nutrition 2004).

The consequences of malnutrition are enormous. Being underweight was estimated to cause 3.7 million deaths in 2000, accounting for about one in 15 deaths globally (World Health Organization 2002). The costs are even higher for children: 56 percent of childhood deaths are the result of malnutrition (Pelletier et al. 1995). Malnutrition also impairs children's physical, cognitive, and psychological growth, which over time diminishes their ability to learn and be productive.

The world has set a goal to cut hunger in half by 2015 as part of the U.N. Millennium Development Goals (MDGs), but to achieve this goal and reduce malnutrition, current efforts must be expanded greatly. Fortunately, significant progress toward reducing hunger and malnutrition is possible. Program experience and research show that when interventions address the multiple causes of malnutrition, harmonize the way institutions provide services and work with communities, and attend to the resource needs of both men and women, nutritional well-being improves in a timely and sustainable manner.

The *Agriculture-Nutrition Advantage* project drew on this evidence in devising a strategy to promote greater use of practices that link agriculture and nutrition while also considering gender.[2] Specifically, the project was anchored by teams of leaders in five African countries – Ghana, Kenya, Mozambique, Nigeria, and Uganda – and one U.S.-based team (the International Center for Research on Women and the International Food Policy Research Institute) who could advocate for such a linked approach. The project was implemented over three years, from 2001 to 2004, with funding from the U.S. Agency for International Development (USAID). In subsequent sections, this report describes the leadership strategy and its results: (1) creating an effective leadership network; (2) advocating for policy changes; (3) operationalizing a linked, gender-informed approach; and (4) mainstreaming the approach to promote sustainable change. Finally, conclusions are drawn, followed by recommendations for future steps.

[2] For the remainder of this report, the term "linked approach" is used to refer to practices that link agriculture and nutrition; "gender-informed" refers to the use of gender analysis and its findings to design policies and programs; and the term "gender-informed, linked approach" or "the project's approach" is used to refer to such practices that link agriculture and nutrition and address gender-related factors.

# BACKGROUND

In sub-Saharan Africa, maternal malnutrition is not improving in 70 percent of the countries. This is also the only region in the world in which children's malnutrition rates are increasing (Standing Committee on Nutrition 2004) (Figure 1). The social and economic consequences are enormous for individuals, their families, and communities – in terms of quality of life, lost productivity, income and learning, and most fundamentally, survival.

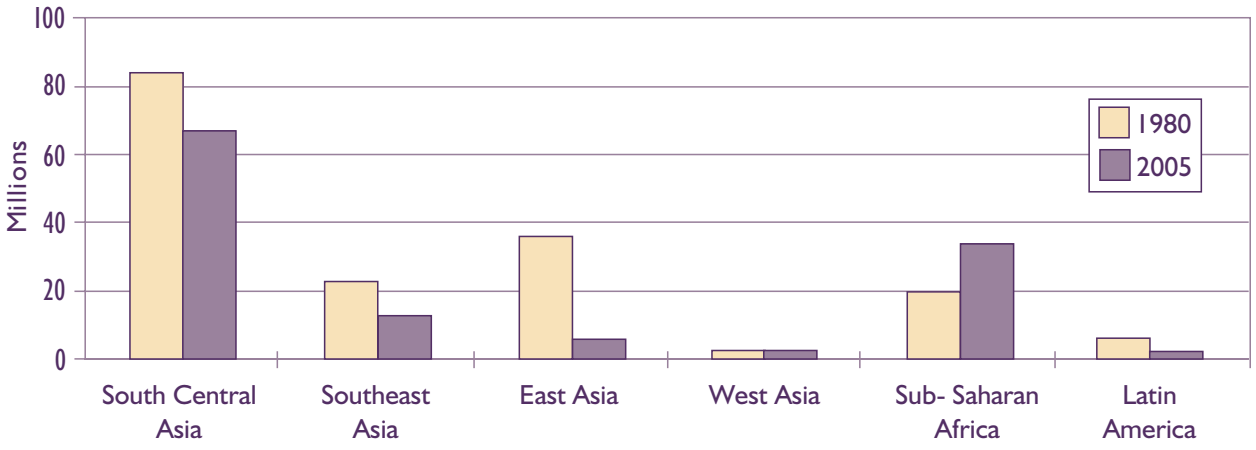
Hunger and undernutrition[3] arise from multiple, interactive causes, both direct (food consumption, care, and health) and indirect (agricultural production, employment opportunities, women's status, and service delivery systems) (Kurz and Johnson-Welch 2001). To address these causes, it is necessary 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.

## Limits in Efforts to Reduce Hunger and Undernutrition

UNICEF developed a framework (Figure 2) which shows the factors that contribute to good nutrition (United Nations Children's Fund 1990). The framework illustrates how health, food, and care, particularly the feeding practices of young children, contribute to nutrition. Although the framework includes basic contextual factors such as policies and resources, most nutrition programs tend to focus on addressing dietary intake, health, and other more immediate factors near the top of the diagram. The nutrition field generally gives less weight to contextual factors such as agriculture's role in food supply or gender's role in both agriculture and nutrition.

The *Agriculture-Nutrition Advantage* project built on and expanded the UNICEF framework to emphasize the resource base and specifically include agriculture. The project's framework

**Figure 1: Malnourished Children (weight-for-age of under-5 year olds) by Region, 1980 and 2005**




Source: Standing Committee on Nutrition, 2004

[3] This project focused specifically on undernutrition. This decision was motivated by the need to link the project to key international development initiatives, including the Millennium Development Goals (MDGs). One of the MDG indicators for hunger is weight-for-age – a measurement of undernutrition.

includes two realms – agriculture (box on left) and nutrition (box on right) – with food as the common link (Figure 3). Agriculture helps ensure good nutrition, and good nutrition builds human capital. While human capital is an end in itself, it also is an input for agricultural production, creating a circular pathway between agriculture and nutrition.

The *Agriculture-Nutrition Advantage* framework also includes a set of assets and resources at the household, community, and institutional levels that support the agriculture-nutrition pathway. These assets and resources include distribution systems such as intra-household decision-making power, markets, and physical infrastructure, all of which influence an individual's access to and use of other resources. Decision-making power also is a reflection of gender, the widely shared expectations and norms within a society about the roles, rights, and responsibilities of men and women, boys and girls. Gender shapes opportunities and choices available to men and women, including their access to and use of resources (International Center for Research on Women 2004).

**Figure 2: UNICEF Nutrition Framework**

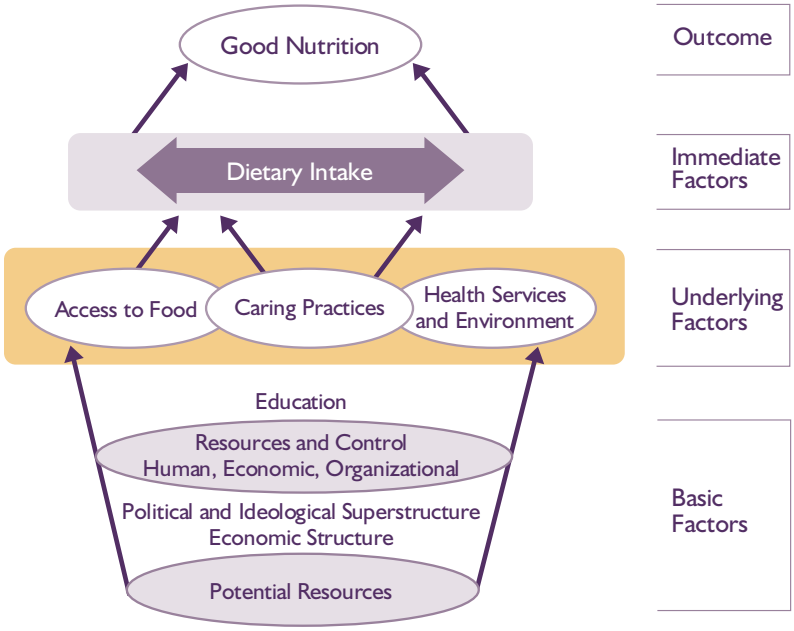
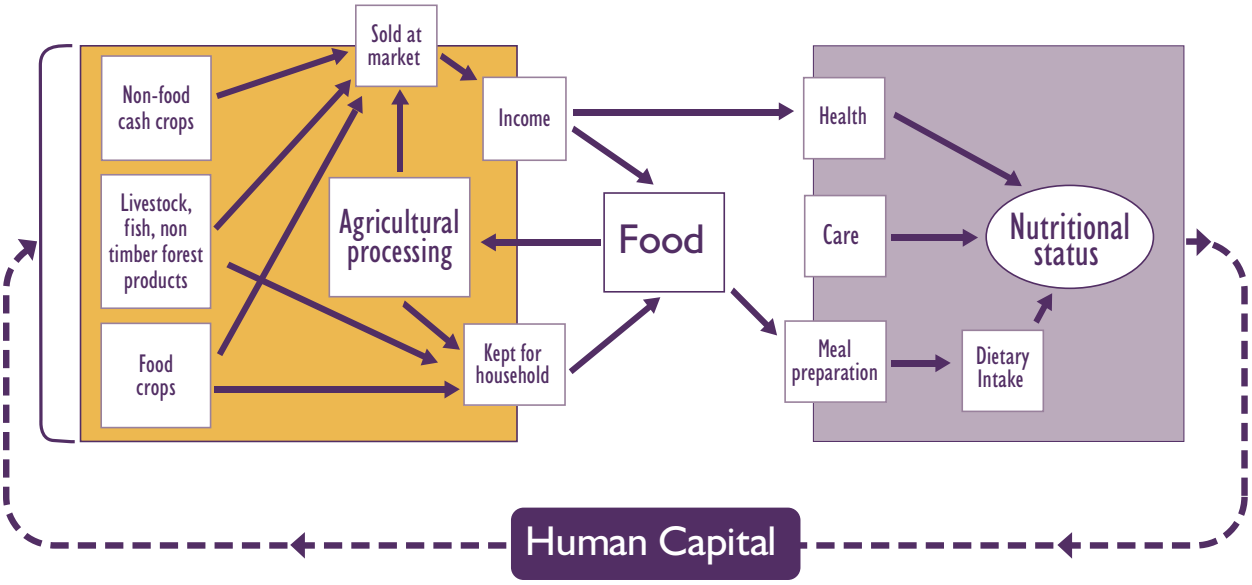



**Figure 3: The *Agriculture-Nutrition Advantage* Conceptual Framework**




The effectiveness of this chain is conditioned at several levels by the level of resources available to and used by men and women and by institutional mechanisms:

*Household:* Land, labor and labor saving technologies, seed and fertilizer, pest control, extension services, credit & savings, irrigation, information, human capital, social capital, intra-household decision-making patterns, off-farm employment, potable water.

*Community:* Associations, political power, economies of scale, access to markets (input, output, labor, financial, etc.), rural infrastructure, health facilities.

*National and International:* Research & development efforts, monetary & fiscal policies, trade opportunities, level of decentralized policy formulation & decision-making.

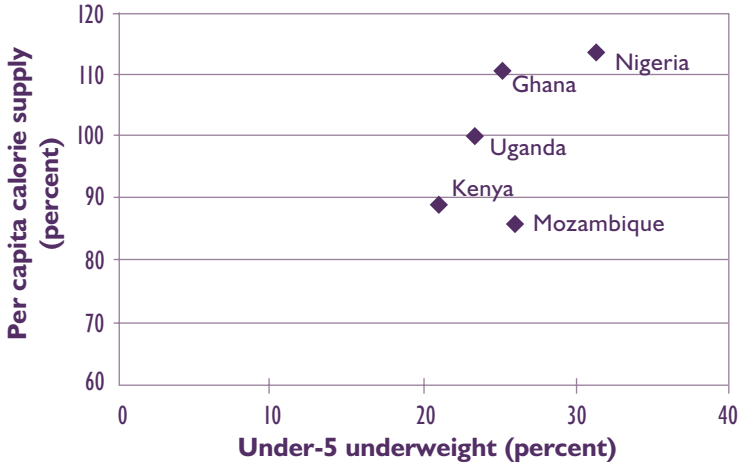
## Agriculture

On the left side of the framework is the agriculture realm. Agriculture, including post-harvest processing, contributes to the quality and quantity of the food supply (Peduzzi 1990; Soleri et al. 1991a; Soleri et al. 1991b). Increased agricultural production means more food enters the marketplace, reducing food prices. This is critical for people in low-income countries who spend an average of 55 percent of their expenditures on food, as compared to 16 percent in high-income countries (Regmi 2001).

Agriculture also provides income for people living in rural areas: 75 percent of poor people in developing countries live in rural areas and derive their livelihoods from agriculture (International Fund for Agricultural Development 1993). By reducing production costs, creating incentives to produce more nutrient-rich and diversified crops, and improving access to markets, agricultural policies can contribute to both food supply and income (Chavas and Uriarte 1999; Xinshen et al. 2003).

The *Agriculture-Nutrition Advantage* framework makes clear, however, that agricultural productivity and income gains are not sufficient to reduce hunger and undernutrition. Larger yields may increase food supply, but mono-crop production or greater quantities of low-nutrient content crops do not necessarily translate to adequate quality with respect to nutrition (Arroyave 1995; Canadian International Development Agency 2000). Greater yields also do not ensure that all households or every household member has access to that food, and neither do higher household incomes. Figure 4 uses data from the *Agriculture-Nutrition Advantage* project countries to illustrate that food supply is not enough to ensure well-nourished children. Ghana, Uganda, and Nigeria are meeting their national food supply needs, yet they have a large proportion of children who are underweight (Benson et al. 2004; Benson and Satcher 2004; United Nations Food and Agriculture Organization 2004).

**Figure 4: Food Supply (per capita calorie supply) and Malnutrition (under-5 weight-for-age) in the Five Project Countries**




Source: United Nations Food and Agriculture Organization, 2004

## Nutrition

On the right side of the project framework (Figure 3) is the nutrition realm. Health and nutrition interventions generally focus on increasing knowledge, changing attitudes, and improving practices related to the three pillars of good nutrition: health, care, and dietary intake (International Nutrition Planners Forum 1989; Cerqueira and Olson 1995; Gillespie and Lindsay 2001). They tend to target women as the primary caregivers, although recognition of men's roles in family health and nutrition is increasing (Kurz and Johnson-Welch 2000). Community nutrition interventions may touch on agriculture by promoting home gardening but tend to leave larger-scale production to the formal agriculture sector.[4]

Education on nutrition and health can stimulate demand for more or different foodstuffs, health services, or disease-prevention products, but the effect of education will be limited if individuals do not have the means and opportunities to act on that knowledge (O'Donnell 2004). Some nutrition projects recognize and account for this fact. For example, to better suit women's time availability, some have included income-generating activities, or provided agricultural inputs such as seeds (Johnson-Welch and MacDonald 1990; MkNelly 1997; Ayalew et al. 1999; Iannotti and Gillespie 2002). Similarly, nutrition-friendly policies may promote child care services for working women, aim to improve the quality of health services through budgetary allocations for education and training, or address other structural constraints to good health, care, and food (Covey 2003).

[4] "Sector" in this paper embodies two senses of the term: (1) a particular aspect of life or activity; (2) a part, division or group of people in a city, government or economy. Nutrition usually is not viewed as a sector but for the purposes of this paper and for the sake of simplicity, the authors refer to it as such.

But just as the *Agriculture-Nutrition Advantage* framework points out the shortcomings of a traditional agricultural-based approach to achieving nutritional outcomes, it also highlights the limited effects of nutrition interventions if they focus primarily on health, care, and food. Without attending to factors that support the three pillars of good nutrition, nutrition-only interventions will fall short of ensuring sustainable changes.

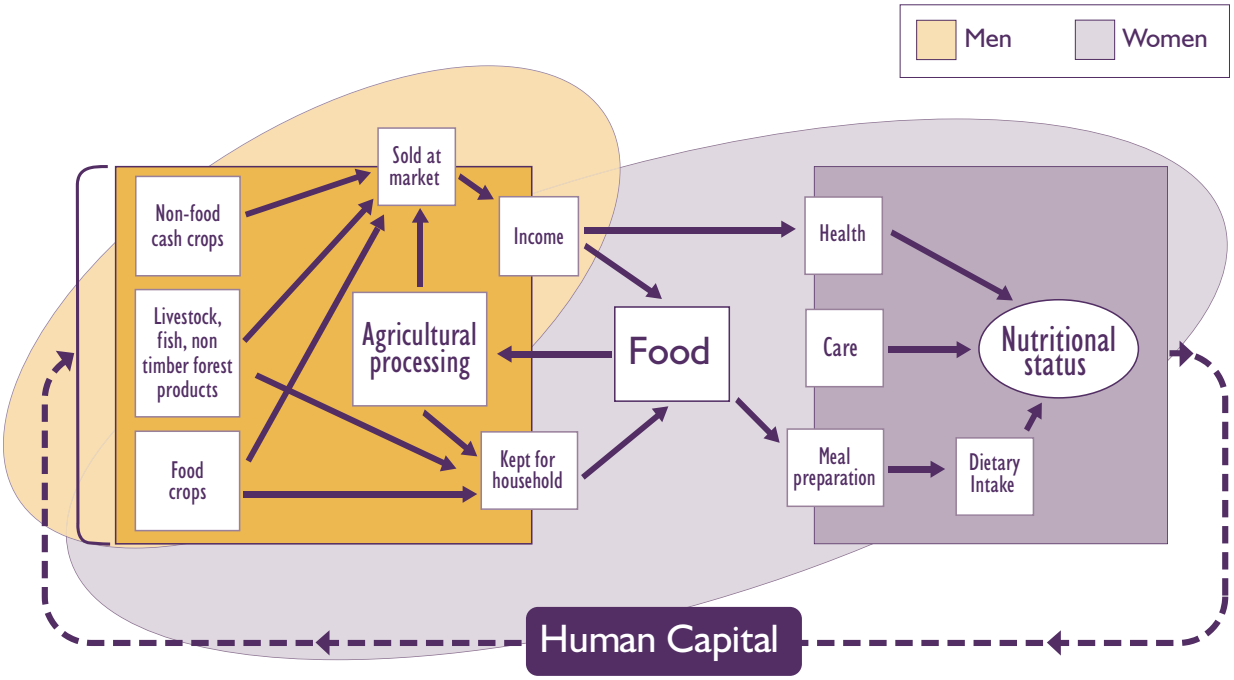
### Gender Roles

Part of the strength of the *Agriculture-Nutrition Advantage* framework is its focus on who is responsible for the food and income pathway to good nutrition (Figure 5). While women and girls tend to have primary responsibility for family nutrition (box on right), both men and women are engaged in agricultural production, marketing and post-harvest processing, and earning income. Men tend to do all three agricultural activities on a larger scale than women, but women provide much of the labor in subsistence and increasingly in market agriculture, and they outnumber men farmers in many countries (United Nations Food and Agriculture Organization 2004). Yet agricultural policies and programs historically have failed to address women's production-oriented constraints, including their lack of access to and control over assets and resources (Feldstein and Poats 1989; Whitehead 1994).

Both men and women earn income. Although women's earnings may be less overall than men's, these earnings tend to be steady and women generally control their use (Quisumbing et al. 1998; Blackden 1999; Johnson 2004). Moreover, women's income – more than men's – tends to be used to meet their families' food, health, and nutritional needs. As such, their income earning opportunities are key to family well-being, especially in poor households that are net food buyers (von Braun and Pandya-Lorch 1991; Pena et al. 1994; Katz 2000).

The larger size of the female domain also illustrates that women have much to do, which may lead to untenable tradeoffs. In West Africa, for example, research shows that women will not use technologies that increase yields if they add to their time burden (Alderman et al. 1995; Doss 2001). Some of these tradeoffs could be avoided if women had access to the same productive resources as men. Indeed, one study found that if women had the same use of certain agricultural inputs as men, agricultural outputs would increase between 7 percent and 24 percent (Quisumbing, Haddad et al. 1998). In Burkina Faso, women's crop production increased by 16 percent when they had access to productive resources (Alderman, Hoddinott et al. 1995).

**Figure 5: Overlap of Male and Female Domains with Agriculture and Nutrition Realms**



Reducing women's time and labor burdens also can contribute to family nutrition. The Tanzania Food and Nutrition Center introduced portable solar dryers in rural, semi-arid communities. Because food dried in solar dryers retains more nutrients and helps increase year-round availability of nutrient-rich foods, the project resulted in improved vitamin A intake among children. It also improved labor productivity of women and children because they could leave the area to do other things, whereas the traditional method of drying required their presence to keep animals and insects away from the food (Mulokozi et al. 2001).

### Agriculture, Nutrition, and Gender: The *Agriculture-Nutrition Advantage* Approach

Traditional efforts to reduce hunger and malnutrition using agriculture- or nutrition-based interventions alone fail to address hunger's complexity and multiple causes. Such efforts also fail to address the challenges men and women face as producers, consumers, and caregivers, which can further undermine traditional interventions. In contrast, the *Agriculture-Nutrition Advantage* approach – which links agriculture and nutrition and is informed by gender – not only helps bridge sectoral gaps, but also helps define men's and women's specific contributions to the agriculture-nutrition pathway.

Interventions that link agriculture and nutrition, invest in women, and address gender constraints are readily available, have been proven effective, show immediate results, and can be sustained by local communities (United Nations Food and Agriculture Organization 1984; Bonnard 1999; Ramirez 2002; Levin et al. 2003). The *Agriculture-Nutrition Advantage* project's literature review, opinion survey, and country-specific case studies further support this evidence.

## What a Linked, Gender-informed Approach Looks Like

Efforts that link agriculture and nutrition take a variety of forms. They range from policies that aim to increase year-round supply of nutrient-rich foods to interventions that address gaps in sector-specific efforts, such as production or income gains that fail to translate into improved nutritional status. Further, a linked, gender-informed approach may: reduce women's resource constraints by improving their access to productive technologies such as seeds and extension services; identify characteristics of different crop varieties that may be preferred more by men or women, then provide extension support to enhance uptake of the preferred varieties; or focus on developing technologies that increase productivity in parts of the food chain that fall largely within women's domain. The following examples of past projects illustrate the linked, gender-informed approach.

A 1995-97 study in Kenya compared two interventions in terms of their impact on children's dietary consumption (Hagenimana et al. 1999; Hagenimana et al. 2001). One promoted women farmers' adoption and use of orange-fleshed sweet potato varieties –*Agriculture-only*. The other used the same agriculture-focused intervention but packaged it with health and nutrition education, food processing, and marketing – *Agriculture-plus*. Children whose mothers participated in the *Agriculture-plus* group benefited the most in terms of their dietary intake of vitamin A-rich foods. The integrated package made a difference because it addressed the set of factors that contribute to good nutrition and the gender constraints hindering access to technologies.

In a project in Uganda that took place in 1997-98, community development and extension agents, working with agricultural researchers, met separately with men and women to identify agronomic characteristics of beans most valued by each group (Johnson-Welch et al. 2000). Men preferred varieties that were high-yielding with market value. Women, because of their time and labor constraints, preferred varieties that were easier to process. With this information, extension agents were better able to tailor and promote varieties that met men's and women's different preferences. As a result, bean consumption increased and protein consumption improved; women spent less time foraging for wild vegetables during the dry season; and of households that earned income through market sales, 69 percent used that income to purchase food.

## Identifying Challenges to a Linked, Gender-informed Approach

Despite the evidence, a linked, gender-informed approach is not widely used. To better understand why, the International Food Policy Research Institute (IFPRI) and the International Center for Research on Women (ICRW) used the

Q methodology (Brown 1980) to analyze the opinions of more than 600 technical experts and policymakers from all regions of the world with a particular focus on Africa (Levin, Long et al. 2003). The study – conducted prior to implementing the *Agriculture-Nutrition Advantage* project – finds no strong opposition to strategies that link agriculture and nutrition and address gender, but suggests why different sectors fail to work together to implement integrated interventions and programs:

(1) Nutrition specialists tend to work in Ministries of Health, where malnutrition is viewed as a disease and treatable using biomedical interventions such as vitamin capsules.

(2) Institutions operate in a vertical fashion, denying agriculturalists and nutritionists opportunities to collaborate.

(3) Funding streams follow the same vertical pattern. Consequently, each sector is reluctant to use its scarce resources for activities that might seem to be another's responsibility.

(4) Technical specialists have not learned how to apply gender methodologies to the design and implementation of interventions, thereby missing opportunities to link agriculture and nutrition by addressing gender-related factors.

Meetings in Nairobi and Washington, D.C., organized by ICRW and IFPRI, concluded that a broad base of support exists for agriculture-nutrition collaboration with a gender perspective, but the support is nascent, often not articulated, and even less often acted upon. A cadre of articulate, skilled, and knowledgeable proponents of a gender-informed, linked approach would be needed to use evidence to demonstrate the benefits of such an approach and advocate for policy and program changes. This conclusion laid the groundwork for the *Agriculture-Nutrition Advantage* project's leadership strategy to reduce hunger and malnutrition.

# PROJECT STRATEGY AND OBJECTIVES

The *Agriculture-Nutrition Advantage* project's strategy was to develop teams of informed and skilled leaders and advocates across sectors, disciplines, and institutions who could promote a linked, gender-informed approach. To do this, the project sought to strengthen the team members' knowledge and skills related to linking agriculture, nutrition, and gender; provide them with the means to work together and with targeted communities; and collect and disseminate evidence-based results.

By the end of the project, it was expected that the following objectives would be achieved:

(1) Members of the five African country teams would have the skills and knowledge to convince decision makers in their countries of the important contributions a linked, gender-informed approach can make in achieving national development objectives;

(2) The five African country teams would have planned, implemented, and evaluated activities that strengthen commitment to and use of such an approach; and

(3) The U.S.-based team (ICRW and IFPRI) would have created greater recognition of and support for this approach among international development and donor agencies.

## Selection Criteria

Five countries – Ghana, Kenya, Mozambique, Nigeria, and Uganda – were selected as project sites, based on the following criteria:

### Annual Events Provided a Crucial Forum for Learning and Network Building

**April 2001, Kenya**
At the first *Agriculture-Nutrition Advantage* project workshop, "Strengthening Agriculture, Nutrition, and Gender Linkages: Opportunities to Reduce Hunger and Promote Economic Growth," participants learned of the Q-survey findings, discussed their relevance to each country, and drafted action plans to address barriers and build on opportunities to promote greater use of a linked, gender-informed approach in their respective country. The teams identified groups in their countries representative of the multi-sector approach to reducing hunger and undernutrition and developed a list of persons who could expand and enhance the core team's influence and outreach.

**June 2002, Ghana**
The second workshop, "Gender, Agriculture, and Nutrition Strategies to Reduce Hunger in Africa," strengthened team members' leadership and advocacy skills. The workshop focused on developing participants' understanding of the advocacy process and strengthening their skills in using particular tools and planning processes for developing, implementing, and evaluating advocacy strategies. By the end of the workshop, each team had a measurable advocacy objective and the working elements of a strategy for achieving that objective and measuring results.

**August 2003, Uganda**
The third workshop, "Gender Makes a Difference: Using Gender Analysis to Enhance Results," was designed to increase team members' practical skills in using gender analysis to link agriculture and nutrition, and to reduce hunger and undernutrition. They learned the elements of gender analysis and applied them to the project's conceptual framework, the interpretation of data, and field visits to observe community-based interventions. They learned what a "gender indicator" is, the differences between equity and efficiency models, and why it is sometimes important to focus only on men, sometimes only on women, and other times on both.

**August 2004, Nigeria**
In the final workshop, entitled "Reducing Hunger through Gender-Informed Agriculture-Nutrition Links: Lessons from a Multi-country Project," team members presented their findings and identified common themes and lessons learned from the three-year *Agriculture-Nutrition Advantage* project. Participants also discussed ways they found most useful for operationalizing multi-disciplinary, multi-sectoral, and multi-institutional strategies to reduce hunger and undernutrition.

- Institutional capacity to take a leadership role in promoting the project approach;
- Existing professional relationships between African and U.S.-based partners;
- Characteristics and prevalence of malnutrition; and
- Presence of policy environments that were supportive of a linked approach, e.g., a national food and nutrition policy that explicitly mentioned agriculture; gender policy or sectoral policies that integrated gender (Table 1).

The five African country teams and the U.S. team were composed of specialists and recognized leaders with expertise in agriculture, health, nutrition, and gender; skilled in research, program design and implementation, and policy development; and who worked in institutions viewed by policymakers and program practitioners as credible and influential (Table 2).

Each team developed a plan of action with country-specific objectives and activities. Though the plans varied, all included gathering new and existing

**Table 1: Policy Environment of Country Teams**

| Policy document | Ghana | Kenya | Mozambique | Nigeria | Uganda |
|---|---|---|---|---|---|
| **Master development policy** | Ghana Poverty Reduction Strategy 2003-05 – An Agenda for Growth and Prosperity – PRSP document | Kenya Poverty Reduction Strategy Paper 2001-2004<br>National Development Plan 2002-2008 | PARPA - Action Plan for the Reduction of Absolute Poverty – PRSP document | none highlighted | Poverty Eradication Action Plan – PRSP document |
| **Agricultural development policy** | Food & Agriculture Sector Development Policy, 2002 | Kenya Rural Development Strategy 2002-2017 | PROAGRI - National Program for Agrarian Development | National Policy on Integrated Rural Development | Plan for the Modernization of Agriculture |
| **Agricultural extension planning framework** | none highlighted | National Agricultural Extension Policy | none highlighted | none highlighted | National Agricultural Advisory Services Programme (NAADS) Master Document |
| **National nutrition policy** | none in place | none in place | Estratégia de Segurança Alimentar e Nutrição (National food security and nutrition strategy) | National Policy on Food and Nutrition in Nigeria | Uganda Food and Nutrition Policy |
| **National nutrition action plan** | National Plan of Action on Food and Nutrition, 1995-2000 | National Plan of Action for Nutrition 1994 | Strategic Plan for Nutrition in Mozambique (Nutrition Section of Ministry of Health) | in preparation | Food and Nutrition Strategy and Investment Plan |
| **National gender policy** | none in place | National Gender and Development Policy 2000 | none highlighted | none highlighted | The National Gender Policy |
| **Decentralization policy** | Local Government Act of 1993 | none highlighted | none highlighted | none highlighted | The Local Governments Act, 1997 |

Source: Benson et al., 2004; Benson and Satcher, 2004

**Table 2: The *Agriculture-Nutrition Advantage* Teams**

| Ghana | Kenya | Mozambique | Nigeria | Uganda | United States |
|---|---|---|---|---|---|
| Nutrition Unit (MOH) | Winrock | National Agriculture Research Institute (INIA) | International Institute for Tropical Agriculture (IITA) | Dept. of Food Science & Technology, Makerere University | International Center for Research on Women (ICRW) |
| MOST (USAID Micronutrient project) | University of Nairobi | Nutrition Dept., MOH | Dept. of Agriculture, Oshimili North | Africare | International Food Policy Research Institute (IFPRI) |
| Ministry of Food & Agriculture | Kenya Agricultural Research Institute (KARI) | Gedlide Institute | Federal Dept. of Rural Development | National Agriculture Research Organization (NARO) | U.S. Agency for International Development (USAID) |
| Food Research Institute | Ministry of Agriculture & Livestock Development | | Nutrition Division, Federal MOH | | |
| | Ministry of Health | | U. Nigeria/Nsukka; U. Ibadan | | |
| | | | U.S. Agency for International Development (USAID) | | |

evidence of linked, gender-informed techniques and how they contribute to nutritional outcomes, and using the evidence to influence changes in policies, resource allocations, and program implementation. Three of the country plans also included testing pilot interventions that used linked, gender-informed techniques.

To promote greater use of gender methodologies in the project's activities, three steps were taken. First, each team included at least one gender specialist. Second, ICRW and the country teams reviewed the literature and, in some cases, generated case studies of policies and programs to identify success factors in addressing gender constraints and using a linked approach to achieve nutritional (and other) benefits. Finally, the third project workshop (see box p.10) strengthened the team members' skills in using gender analysis as a planning, implementation, and evaluation methodology.

# PROJECT INTERVENTIONS

Following the first workshop in Nairobi, each country team organized national stakeholder meetings to present and discuss its draft action plan to promote policies and programs that linked agriculture and nutrition, with attention to gender. The plans were modified based on the stakeholders' input, and participants were invited to join the country teams. This section provides an overview of each country's plan of action and activities.[5] Results from the teams' interventions are presented in the next section.

## Ghana

Although Ghana has the highest per capita gross domestic product (GDP) of the five project countries and is meeting its food supply needs, malnutrition persists and nearly four in 10 people live below the poverty line. Eleven percent of women have low body mass, and about a quarter of children are stunted or underweight (Ghana Statistical Service and Macro International 1999; Bread for the World Institute 2002; United Nations Development Program 2003; United Nations Food and Agriculture Organization 2004).

The *Agriculture-Nutrition Advantage* Ghana team established a National Coordinating Committee and organized its activities around the country's National Plan of Action on Food and Nutrition. The committee included team members and 18 representatives from the Ministries of Agriculture, Health, Science, Education, and Environment; universities; research organizations; nongovernmental organizations (NGOs); and donor agencies such as the U.N. Food and Agriculture Organization. This network met on a regular basis and provided technical guidance and support while learning from the project.

The Ghana team also analyzed seven projects and identified best practices for linking agriculture and nutrition, and addressing gender. It then developed a planning manual for project design and implementation. Nine districts – representing the range of agro-ecological zones from north to south – were selected as pilot sites to test the project's approach to reduce micronutrient deficiencies. Four of the districts received support from the *Agriculture-Nutrition Advantage* project; the others were supported by UNICEF and the World Bank. Forty communities implemented the *Agriculture-Nutrition Advantage* approach. Sixty nutrition and agricultural officers in the four districts were trained to use gender methodologies and the planning tools. The team gave presentations on the important contributions that nutrition makes to economic development to 18 principals and deans of agriculture in universities and colleges, and tutors in health schools. In addition, 16 persons from agricultural institutions participated in 10 days of gender training.

## Kenya

Despite sufficient economic and agricultural resources, 87 percent of Kenyans consume fewer calories than the recommended adult equivalent daily allowance, and half of rural households cannot meet their minimum calorie requirement. Previous declines in infant and childhood mortality rates are reversing, and nutritional status, including stunting for children under 5 and undernutrition for women, has deteriorated (National Council for Population and Development and Macro International 1999; United Nations Food and Agriculture Organization 2004).

The *Agriculture-Nutrition Advantage* Kenya team organized an advisory group as a means to expand the network of advocates promoting the project's linked, gender-informed approach to fighting hunger. This group included representatives from the Ministries of Agriculture, Fisheries and Livestock Development, Health, Gender, Education, Planning and National Development,

[5] For more information about country-specific interventions and communications and planning tools, contact the country teams directly. See the project Web site, www.agnutritionadvantage.org, for contact information.

and Sports, Culture and Social Services; and donor agencies such as the U.S. Agency for International Development. The team also forged an ongoing working relationship with chief executive officers in influential institutions such as the Kenya Agricultural Research Institute.

Based on an analysis of national development policies and two community-based projects, the Kenya team developed messages about gender-informed linkages tailored for key audiences. For example, parliamentarians were encouraged to support the cultivation of indigenous crops – typically grown and marketed by women – because this would contribute significantly to improving food security and rural livelihoods. The team developed written materials, which were used in a meeting with six parliamentarians to generate discussion on actions they could take to reduce undernutrition in a timely manner. In addition, the team capitalized on media coverage in newspapers, television, and radio to inform the general public about hunger in Kenya and build political support for interventions.

## Mozambique

Mozambique is not meeting its food supply needs, as indicated by a per capita calorie supply of only 83 percent. Nearly 70 percent of people in Mozambique are living in poverty, and the country is vulnerable to recurrent natural disasters that affect agricultural production. Thirty-six percent of children are stunted; 26 percent are underweight; about 11 percent of women have low body mass; and the number of AIDS orphans is increasing at an alarming rate (Insitituto Nacional de Estatistica and Macro International 1998; Bread for the World Institute 2002; United Nations Food and Agriculture Organization 2004).

The *Agriculture-Nutrition Advantage* Mozambique team worked primarily with the Inter-sectoral Technical Secretariat for Food and Nutrition Security (SETSAN) (the national government's food and nutrition security committee), the National Agricultural Research Institution (INIA), the Ministry of Health, and NGOs. The team's nutritionist from the Ministry of Health, who was seconded to SETSAN, helped raise

### How Country Teams Used Gender to Add Value

Members of the *Agriculture-Nutrition Advantage* leadership networks found that linking agriculture and nutrition was sometimes enough to improve the effectiveness of an intervention to reduce hunger or undernutrition. However, a gender focus often could make the link between agriculture and nutrition, and add substantial value to what agriculture-nutrition linkages could achieve. How did the teams use gender to inform or strengthen their linked approach? Their efforts took a variety of forms, including:

***Gender Capacity Building***

- Creating gender awareness among senior level staff in educational and training institutions through presentations and group discussions.
- Building capacity in the use of gender methodologies through trainings for and sharing evidence of a linked, gender-informed approach with agricultural researchers, extension agents, and health and nutrition specialists.

***Education and Advocacy***

- Identifying ways to address gender-related issues, such as men's and women's time and labor burdens, access to resources, and decision-making power, in policies and programs.
- Using media, brochures, and direct dialogues to educate the general public and key decision makers about opportunities to improve food availability by addressing gender-related constraints to production and access.
- Leveraging relationships with government ministries and other institutions to integrate gender into policies. In one case, efforts to mainstream gender provided an entrée for introducing health and nutrition into Ministry of Agriculture planning and field-based activities.

***Community Interventions***

- Developing planning manuals that included gender analysis and other gender-sensitive methodologies.
- Involving all community members – women, men, girls, and boys – in community-based activities.
- Facilitating women's access to (in some cases, providing women with) labor-enhancing technologies, extension services, and learning opportunities.

awareness of the links between agriculture and nutrition, and integrated nutrition into SETSAN's activities. SETSAN, with assistance from the team, selected four districts to implement linked, gender-informed interventions, using maps that overlaid agricultural commodities with nutritional deficiencies. The team made presentations to agricultural researchers, providing reasons and opportunities for integrating nutrition into their research protocols, and published a one-page informational bulletin to raise awareness among technical specialists and policymakers of the value of the project's approach.

## Nigeria

Nigeria is meeting its per capita food supply needs; however, it has a high level of poverty, with 70 percent of people living below the international poverty line. Rates of malnutrition for women and children are the highest of all project countries, and women's economic activity as a percentage of men's is the lowest among the project countries (National Population Commission and Macro International 2000; Bread for the World Institute 2002; United Nations Development Program 2003; United Nations Food and Agriculture Organization 2004).

The *Agriculture-Nutrition Advantage* Nigeria team members worked closely with the Nutrition Partners' Forum, a national body of diverse stakeholders interested in nutrition. They focused on supporting the launch of the National Food and Nutrition Policy by providing input to the National Plan of Action for Nutrition and advocating for the secondment of a nutritionist to strengthen the National Committee of Food and Nutrition. They gave presentations to raise awareness among national and state policymakers of the contributions nutrition makes to economic and human development, and what is needed to reduce hunger and undernutrition in Nigeria. The team assessed the status of the Technical Committees of Food and Nutrition in 12 states and made recommendations for its revitalization. The team also produced a brochure about the need for using a linked approach, analyzed sector policies, and developed two manuals to train sector specialists in how to develop and implement gender-informed agriculture and nutrition interventions.

## Uganda

Of the five project countries, Uganda has the second highest per capita GDP. Yet more than a third of the Ugandan population remains below the international poverty line. Although Uganda is meeting its food supply needs (101 percent per capita calorie supply), 10 percent of women have a low body mass, about 40 percent of children experience stunting, and 23 percent are underweight. Rates of child malnutrition are higher in rural areas and slightly higher among boys than girls (Uganda Bureau of Statistics and ORC Macro 2001; Bread for the World Institute 2002; United Nations Development Program 2003; United Nations Food and Agriculture Organization 2004).

The *Agriculture-Nutrition Advantage* Uganda team chose to strategically link their activities to the country's Poverty Eradication Action Plan (PEAP) and the Plan for the Modernization of Agriculture (PMA) – key poverty reduction and agricultural development policies. It organized an advisory committee as an expanded group of advocates, which included members from government, research, and program institutions. The team worked with the PMA Secretariat on policies, participated on the PMA Food Security Subcommittee (later renamed the Food and Nutrition Subcommittee), organized stakeholder meetings, and provided input to the revision of the PEAP and the Food and Nutrition Security Strategy and Investment Plan.

To promote greater investment in gender informed, nutrition-agriculture interventions, the Uganda team published a brochure, provided information to the media, and made a variety of presentations to key policymakers (such as selected PMA subcommittees) on the importance of a linked, gender-informed approach and how to use it. The team implemented community-based activities in Kabale and Wakiso districts, including the following: visioning exercises – a problem-solving strategy – and nutrition education with farmers' groups; trainings for farmers in nutrition-linked, production-oriented technologies and practices; and exchanges between the two districts for women farmers to share different techniques for implementing nutrition-oriented, food-based agricultural activities. The team also encouraged the government to support community-based projects for improving nutritional outcomes by educating local government leaders about the important role nutrition plays in health and agricultural development.

## United States

The U.S. team of ICRW and IFPRI worked closely with the five African country teams and other partners to build leadership for the *Agriculture-Nutrition Advantage* approach. The team also worked to influence the U.S. political and policymaking environment, as well as international bodies that deal with hunger and poverty reduction, such as the U.N. Standing Committee on Nutrition (SCN).

Like the five African teams, the U.S. team organized a Technical Advisory Committee to advise the project team and provide entrée to groups that could use the project's approach and findings to influence key actors. The 12 members represented NGOs, development agencies, the U.S. government, institutions of higher learning, and research institutions.

The U.S. team compiled evidence showing the value of a linked, gender-informed approach and implemented an institutional study in partnership with project teams in Ghana, Mozambique, Nigeria, and Uganda[6] (see box). ICRW and IFPRI team members presented existing and emerging evidence to key audiences; developed communication tools, including a brochure and a project Web site (www.agnutritionadvantage.org); and wrote articles for development journals to educate and raise awareness of the project and its approach and findings. The U.S. team also organized the annual project workshops, provided ongoing technical support, and identified opportunities and supported participation of the teams in key international forums.

[6] Because the four countries represented the range of issues and geographic locations, valid generalizations and conclusions can be drawn from the study, even though the study was not implemented in Kenya.

### Institutional Barriers to a Linked, Gender-informed Approach: Findings from a Four-country Study

The institutional study included a review of literature and key informant interviews to identify barriers to, opportunities for, and potential gains from increased collaboration among agriculture, nutrition, and gender specialists in Ghana, Mozambique, Nigeria, and Uganda. Many of the study's findings mirrored what was learned from the Q-survey, but provided greater specificity. For example, the study found that, while leaders in each country valued the use of gender methods and a linked approach to reduce hunger and poverty, the leaders' influence primarily rests on personal relationships and informal communications – a foundation subject to change. Other findings include:

- ***Nutrition is invisible in political decision making:*** The study found that political interests trump technical input, minimizing investments in nutrition-relevant actions. Capital projects, such as schools or health centers, are more likely to get the support of politicians because they are tangible successes that politicians can show their constituents. Nutrition is not so tangible and has less political relevance. Moreover, a persistent belief that production and income gains are sufficient to reduce hunger and undernutrition undermines political will to address other factors that contribute to improved nutrition. This misconception is exacerbated by the fact that nutritionists (or others with nutrition knowledge) are seldom at the policymaking table.
- ***Nutrition is everyone's problem but no one's responsibility:*** No single sector or agency takes full responsibility for improving nutrition. While all sectors may state their commitment to reducing malnutrition, few use their resources to that specific end. Nutrition also sits in a range of places within the public sector, resulting in scattered influence and no common voice. Further, the vertical organization of government institutions and budgetary allocations makes it difficult for sector specialists to come together and pool their resources to promote sustainable improvements in nutrition.
- ***Nutrition capacity and influence varies:*** Despite the tradition in many countries of relying on technical input for policymaking, this practice has not extended to nutrition specialists. Even where a relatively large number of nutrition specialists exist, as in Nigeria, their role in influencing policymaking has been marginal. Where nutritionists are scarce, such as in Mozambique, they are even more limited in what they can do and the influence they have.
- ***Participatory processes create opportunities:*** Participatory processes that bring community members together with policymakers are key to relevant decision making. Involving community members provides an opportunity for them to express their concerns – some of which might not be obvious to policymakers. Uganda has significant experience with decentralization and devolution of decision making, but with varied degrees of success. Nigeria lacks a formal structure to bring communities into the policymaking process; Ghana and Mozambique fall between the two extremes.
- ***Creation of new organizational structures may provide entry:*** Governments and other organizations may bring nutritionists to the policy table by creating multi-sectoral structures. SETSAN in Mozambique reflects the government's multi-sectoral approach to improving food security, bringing together agriculture, nutrition, and gender specialists to design and implement a linked approach. Similarly, the Food and Nutrition Committees in Nigeria are designed to bring different sectors together to discuss how each contributes to achieving the government's nutritional objectives.
- ***Everyone "knows" gender, but they don't know what to do with it:*** Respondents in all four countries know the word "gender" but have varied opinions as to what it means and limited experience using gender methodologies. As long as gender remains a somewhat politicized term that is removed from daily work, development planners and practitioners will not be able to fully use gender methodologies to strengthen the links between agriculture and nutrition.

Sources: Benson, Palmer et al., 2004; Benson and Satcher, 2004

# RESULTS

This section reports the *Agriculture-Nutrition Advantage* project's results. The results are grouped into four categories that define a framework for change: (1) creating effective leadership networks; (2) advocating for policy change; (3) operationalizing an agriculture-nutrition linked, gender-informed approach; and (4) mainstreaming the approach to promote sustainable change. Because the project viewed gender as a means to improve links between agriculture and nutrition, gender-related results are reported in each of the four categories.

The results illustrate the range of accomplishments and the potential to make significant inroads toward reducing hunger, improving nutritional well-being, and contributing to poverty reduction. The main results are supplemented with lessons learned (see boxes) as reported by team members upon reflection of their experiences at the conclusion of the project.

## Creating Effective Leadership Networks

Policy and program changes stem from a dynamic, iterative process fueled by advocacy that helps to define the problem, suggests solutions, and builds consensus around issues that have political relevance. Most often, "policy champions" or opinion leaders are needed to promote change, frequently through networks of change agents. Such agents must have access to key audiences, be trusted and viewed as objective sources of information, and have experience working with policy structures and programs. They also must have credible evidence that is grounded in local realities; demonstrate that their recommendations are feasible and relevant; and show how their audiences will benefit from the proposed change (Rogers 1962; Porter and Hicks 1994; Michelsen 2003).

After three years, the *Agriculture-Nutrition Advantage* project had active, informed and skilled networks of more than 30 leaders in Ghana, Kenya, Mozambique, Nigeria, Uganda, and the United States who were promoting greater use of a gender-informed approach that links agriculture and nutrition as a means to reduce hunger and undernutrition in a timely and sustainable fashion.

***Country-specific results***: Having learned from the evidence, their participation in skill-building sessions, and exchanges with colleagues and communities, the *Agriculture-Nutrition Advantage* teams applied their knowledge and skills to achieve these results:

- All teams either developed expanded leadership networks beyond their initial core members, or strengthened existing forums. Examples of the former include Ghana's National Coordinating Committee, the national steering committee

### What Was Learned About Gender Capacity Building?

*Gender methodologies can be the bridge that links agriculture and nutrition, but only if they are well understood and used by all.* All the participants in the gender analysis workshop had attended gender awareness-raising workshops but had little to no training in using gender analysis as a research and planning methodology. In the workshop, they learned about the elements of gender analysis and applied them in a series of hands-on exercises. The practical use of this research and planning methodology prompted some to have an "ah-ha" moment – as one participant declared, "Now, I understand what I can do in my work to identify and address gender-related issues."

### A Personal Testimony to Lessons Learned

A Nigerian team member, Mrs. C.N.N. Nnonyelu of the Department of Rural Development, Federal Ministry of Agriculture and Rural Development, shared how the project changed her thinking about nutrition and agriculture. Reflecting on her previous frustration with nutritionists who promoted vitamin and mineral supplements to reduce malnutrition in Nigeria, Mrs. Nnonyelu said she felt this approach was an insult to Nigerian farmers and agricultural specialists. She learned from the Agriculture-Nutrition Advantage project that food supplies were not always sufficient to reduce malnutrition. Good nutrition, she realized, also depends on sound health and care practices, and both supplementation and food-based strategies have roles in reducing undernutrition. She now is a strong proponent of a linked approach in her ministry.

in Uganda, and the ICRW/IFPRI Technical Advisory Committee; examples of the latter include the Food and Nutrition Committees in Nigeria and SETSAN in Mozambique.

- In Uganda, 30 persons from policy institutions, line ministries, university and research organizations, NGOs, and donor agencies actively advocated for integrating nutrition into the Poverty Eradication Action Plan based on the knowledge they gained from the *Agriculture-Nutrition Advantage* leadership network.
- Members of the Ghana team are using what they learned about gender in a new project[7] to reduce incidence of low birth weight infants by strengthening development programs that aim to improve women's nutrition and economic and social status throughout their lifecycle.
- Community members in the Kabarole District, Uganda, learned more about health and nutrition from weekly radio programs that drew on the *Agriculture-Nutrition Advantage* team's expertise and commitment.

## Advocating for Policy Change

"Advocacy" has various meanings. It can mean voicing concerns, beliefs, and recommendations to powerful people or institutions in order to stimulate change on behalf of others or oneself. It also can mean arguing in favor of a cause, idea or policy. The *Agriculture-Nutrition Advantage* project incorporated both meanings in building a network of articulate, knowledgeable, and skilled advocates.

Although the project's team members actually had been functioning as advocates, they initially did not see themselves as such because they thought advocacy was something pressure groups did, not technical specialists. In fact, technical specialists can be effective advocates. In workshop settings and through one-on-one technical assistance, the teams learned about the role of advocacy and about advocacy strategy development and implementation.

The country teams developed advocacy plans, applying what they had learned about the change process and the role of advocacy. The plans included a problem definition based on the evidence; an analysis of the policy context (identifying facilitating and constraining factors); and a map of the decision-making landscape. The teams formulated an advocacy objective, identified their key audiences, and developed a set of activities, including a communication strategy and messages that would allow them to achieve their expected outcomes.

Although each team's plan was specific to its particular audiences and issues, their communication strategies had common elements such as use of the media and the Internet; PowerPoint presentations; PROFILES (a powerful analytical tool that can illustrate costs and benefits of investing in nutrition, see Figure 6)[8]; articles in development journals and newsletters; and informational briefs. The teams leveraged their influence by attending international conferences

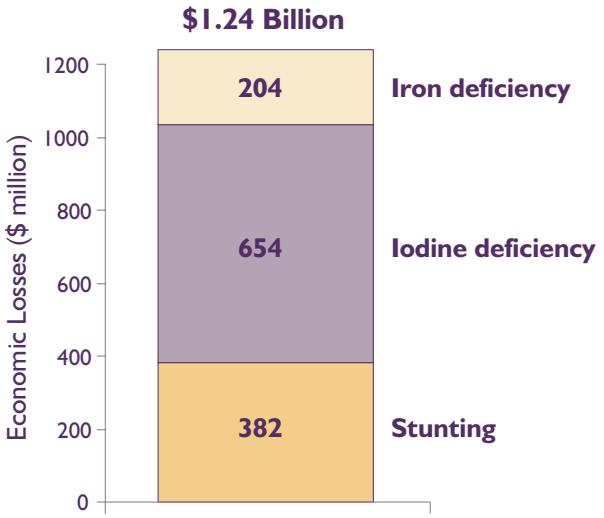
### What Was Learned About Leadership?

It takes more than passion or personal commitment. It took time and effort to build the leadership networks and work together. It also took time and technical support for the leaders to become fully conversant in the project's approach, even though they intuitively grasped the linkage concept and its benefits. The initial investment made by the *Agriculture-Nutrition Advantage* project generated momentum for this process.

[7] The Nutrition and Gender Initiative, implemented by ICRW.

[8] PROFILES was used by the Ghana, Mozambique, Nigeria, and Uganda teams.

**Figure 6: Total Value of Losses: 2000-2005**




*In Uganda, the team used PROFILES to illustrate the economic costs of nutritional problems. They also showed that investments of $62 million in nutrition programming between 2000 and 2010 could yield economic benefits valued at $447 million, a 7:1 benefit-cost ratio.*

and meetings, serving on advisory committees, and providing input to key development documents, such as the *5th World Report on Nutrition*, the draft report for the Millennium Development Goal's Hunger Task Force, and the *USAID Agriculture Strategy Paper*.

***Country-specific results***: All country teams prompted changes in knowledge and action at the policy level, such as:

- In Kenya, six parliamentarians and six CEOs from key organizations were educated about why, in the face of apparent plenty, hunger and undernutrition was still a critical and, for some, a growing problem. This prompted the parliamentarians to introduce a motion to legislate action for greater investment in indigenous food groups, typically grown, processed, and sold by women, as a means to reduce food insecurity in Kenya, and to shape the creation of a National Nutrition Act.
- Convinced of the project's approach, UNICEF and the World Bank joined the project in Ghana by supporting the development of district plans and community-based interventions in nine districts that used a linked, gender-informed approach to reduce micronutrient deficiencies.
- The Nigerian team's participation in the Nutrition Partners Forum helped catalyze the launch of the Nigerian National Food and Nutrition Policy. More than 100 million Naira (approximately US$77,000) of the 126 million Naira requested by the Ministry of Agriculture was released to train agricultural extension agents in nutrition. This was the first time, in the team's memory, that agricultural resources had been allocated to support nutrition-specific activities.
- In Uganda, team advocacy efforts contributed to the incorporation of nutrition into the revised Poverty Eradication Action Plan, and nutritional status was included as a monitoring indicator. The Food and Nutrition Security Strategy and Investment Plan, which had been primarily agriculture-oriented, for the first time included support for nutrition-specific activities – a critical development to making agriculture-nutrition linkages. In addition, the Plan for the Modernization of Agriculture's Food Security Subcommittee was renamed the Food and Nutrition Subcommittee, an important semantic shift indicating a stronger commitment to the linked approach endorsed by the *Agriculture-Nutrition Advantage* project.

***"I think Kenya has some of the best academic papers on how hunger, poverty, and disease can be eradicated. What is lacking is the practical connection with the common women and men in the village."***

—Prof. Christine Mango
Member of Parliament
Butula, Kenya

## Operationalizing an Agriculture-Nutrition Linked, Gender-informed Approach

An obvious criterion for success was the extent to which project-supported activities led to changes in policies and programs. In other words, did the activities move people to take action? The teams achieved remarkable success at the national policy level. Similar successes occurred at the agency and community levels. In fact, the teams noted that the closer they got to the household and community levels, the easier it was to stimulate action because it was easier to *see* what could be done, and community members needed less convincing than policymakers to take action.

### What Was Learned About Advocacy?

*The approach must be relevant to dominant policy issues*. The agriculture-nutrition linked, gender-informed approach is logical, effective, and feasible for improving nutrition. Still, policymakers are more open to listening and taking action when the approach is tied to key policy agendas, such as poverty reduction. Advocates also must be nimble and have mastery of their facts to take advantage of opportunities that arise on a moment's notice, and they must have allies in key places to alert them to those opportunities.

To operationalize the project approach within planning and implementing agencies, the teams used a number of strategies. One was to train agency staff on how to use gender analysis and how to link agriculture and nutrition, while another was to place technical specialists within institutions where they could educate and motivate others. For example, the Mozambican project nutritionist was seconded to SETSAN and provided technical assistance on how to operationally link agriculture and nutrition. Also in Mozambique, the gender specialist worked with the Ministry of Agriculture to mainstream gender into its work, which led to the integration of health and nutrition in its field operations.

At the community level, teams in Ghana, Mozambique, and Uganda worked with implementing agencies and community members to design community-based activities that linked agriculture with nutrition and were informed by gender. They used learning strategies, such as farmer-to-farmer training, exchange visits between women farmers involved in different interventions as a means of sharing technical skills and knowledge, and demonstration plots to train men and women farmers in food crop production strategies and skills. They provided health and nutrition information to educate and stimulate action, and supplied the means such as seeds, planting materials, and, in the case of Ghana, money ($28,000 to the four target districts for training and purchase of agricultural inputs) to enable farmers and other community members to act on the knowledge they gained in the educational sessions. They also applied gender principles such as involving all community members – men and women, boys and girls – creating the opportunity for all to participate in and benefit from the project-supported activities according to their needs and interests.

***"It is now obvious that the secret of finding solutions lies in combining good qualities of men and women to, at least, work together if they cannot walk together!... Good nutrition of children cannot be left to women alone…"***

—Mrs. Mukankusi
Kabale District
Uganda

***Country-specific results***: Results at the institutional and community levels include:

- The Nigerian National Food and Nutrition Committee revitalized its activities, with plans to do the same in 12 states.
- Nigeria's Ministry of Health and Ministry of Agriculture developed a joint goal linking agriculture and nutrition.
- The Ghana team trained 60 technical specialists, including 10 district officers and five regional officers from four districts, in gender, gender analysis, behavior change communication strategies, and agricultural production practices.
- Eighteen principals and deans of agriculture in universities, agricultural and cooperative colleges, and tutors in health schools in Ghana acknowledged the need to link agriculture and nutrition and integrate gender to improve agricultural productivity.
- Three communities in Kabale District, Uganda, requested support for nutrition-related services, like growth monitoring and access to nutrient-rich food crop inputs, through the local councils and National Agricultural Advisory Service (NAADS).
- Farmers in targeted areas in western Uganda adopted and produced nutrient-rich food crops, such as orange-fleshed sweet potatoes, and increased the amount of land they used to cultivate such crops.

**What Was Learned About Operationalizing the Approach?**

*Sustainable change must involve communities as well as organizations.* Change happens best through a mix of exchanges both vertical (e.g., technical organizations and communities) and horizontal (e.g., farmer-to-farmer); and outreach efforts should be made through all possible channels including markets, schools, mosques, and churches. Further, communities are eager to learn through education and communication, but must have the means and opportunity to act on that knowledge. Thus, organizations must find the means to ensure this happens.

## Mainstreaming the Project Approach to Promote Sustainable Change

Sustainability is an inherently dynamic, indefinite and contested concept (Mog 2004). It is sometimes used to mean having sufficient financial resources to maintain systems, processes or learning. It can refer to an individual's internalization of learning so that it becomes an unconscious and integral part of what one does. At an institutional level, it can mean developing curricula so each new cadre of students receives the same education and skill building. According to Mog, a sustainable approach provides for continuous learning, adapting, and innovating. It involves participation and community organization; capacity building; use of local knowledge, skills, and initiative; and is diverse, dynamic, and responsive to external forces.

The *Agriculture-Nutrition Advantage* project used "sustainability" to refer to factors that would ensure that the results of actions taken and changes made are maintained over time. Because written documents formalize agreements and provide guidelines for others to follow over time, the project considered the following to be parts of a sustainable change process: education and training curricula; manuals for design and implementation of linked, gender-informed programs at the community level; and formal public documents that allocate resources to support activities linking agriculture and nutrition.

Although mainstreaming the knowledge and practice of a linked, gender-informed approach into existing systems and organizations can be time-consuming, the leadership networks were able to get others to take action in a relatively short time because the leaders worked in key organizations and were recognized as experts in their fields. Efforts to mainstream the approach were enhanced by building on and linking to others' ongoing or previous work – the team in Ghana, for example, built on prior gender training of Ministry of Agriculture staff.

***Country-specific results***: Examples of the teams' successes in mainstreaming the project's approach include:

- The Nigeria team developed two manuals to guide the training of trainers and the design and implementation of linked, gender-informed community-based interventions.
- The Ghana team developed a planning manual that was used to design food-based interventions in 40 communities.
- Education and training schools in Ghana issued guidelines to modify their agricultural curricula to reflect the country's nutritional problems and needs.
- National agricultural research institutions in Mozambique (INIA), Nigeria (IITA), and Uganda (NARO) integrated nutrition into their research agendas.
- The Ministry of Agriculture in Nigeria integrated nutrition into agricultural research, development, and extension.

**What Was Learned About Mainstreaming the Project's Approach?**

*Agriculturalists and nutritionists must learn from each other.* Nutrition can broaden the scope of what agriculture can do to improve economic and social development, such as making nutrition relevant in poverty reduction strategies that rely on agriculture as an engine of economic growth and development. But nutritionists need to better understand agricultural objectives and build on them, just as agriculturalists need to do the same vis-à-vis nutrition. Agricultural curricula and research agendas need to give more attention to how markets, employment, income, and post-harvest technologies affect, and are affected by, gender and nutrition. Finally, to increase the effectiveness of consumer marketing and public information campaigns, both agriculturalists and nutritionists (the latter in particular, as they traditionally have been less involved) need to be accessible to provide reliable, high-quality information.

# PROJECT CHALLENGES AND LIMITATIONS

Results from the multi-year, multi-country *Agriculture-Nutrition Advantage* project indicate that its leadership strategy was successful in raising the profile and acceptability of a linked agriculture and nutrition, gender-informed approach, changing policies, and integrating the approach into organizations and community-based activities. However, the complexity of the undertaking had some inherent challenges and limitations.

***Sectoral emphasis:*** By design, the project specifically focused on linking agriculture and nutrition. Less effort was made to bring in health, economic, and other sectors important to reducing hunger and undernutrition. As a result, the networks may have missed an opportunity to extend their learning and broaden the base of potential allies to convince others of the feasibility and value of the project's approach.

***Gender integration:*** The network members received a focused infusion of gender training in the five-day workshop held midway through the project. Workshop evaluations showed significant improvements in the participants' understanding of and ability to articulate what gender is, how it adds value to technical project design, and use of gender analysis to enhance outcomes. If this workshop had taken place earlier in the project, participants could have more fully applied this insight to their project activities.

***Attribution of changes:*** Each team's action plan was grounded in an assessment of local conditions and needs, and each plan had a monitoring and evaluation component. A pre-post design with comparison groups was not possible. Thus, it is not clear if the changes that occurred can be attributed solely to the network and its interventions or were partially the result of other, external factors.

***Cost-effectiveness:*** The *Agriculture-Nutrition Advantage* project built on the literature showing the contributions that an agriculture-nutrition linked, gender-informed approach makes to reducing hunger and undernutrition. It was designed as a pilot study to learn if and why a leadership strategy could be successful in increasing knowledge and use of such an approach. There were direct costs related to the project's implementation, as well as costs in terms of team members' time and energies; however, the study was not designed to measure these costs or link them to the outcomes in any way. Now that the leadership strategy has proven to be successful, a next step might be to explore its cost-effectiveness.

# CONCLUSIONS AND RECOMMENDATIONS

The *Agriculture-Nutrition Advantage* project has laid a strong foundation for promoting the use of a gender-informed approach that links agriculture and nutrition in order to reduce hunger and undernutrition in sub-Saharan Africa. What does the project reveal about the leadership network strategy, and how to implement the linked approach within policies, organizations, and communities? This section presents a set of conclusions drawn from the project and recommends what needs to be done to consolidate changes and address remaining gaps.

## Conclusions

The agriculture-nutrition linked, gender-informed approach promoted by the *Agriculture-Nutrition Advantage* project is an effective way to combat hunger and undernutrition. The project achieved a remarkable degree of buy-in to this approach in a relatively short time through its leadership strategy that involved a wide range of actors and organizations. In addition, individual team members have applied what they learned about using these linkages to their own work, creating a multiplier effect. The following conclusions can be drawn from the multi-country project.

***Leadership networks:*** The teams successfully brought the project approach to the attention of development practitioners and policymakers, prompting action. Their success was due in part to the members, who were recognized leaders in their sectors, represented different types of organizations and agencies, and had access to decision makers and communities. They pooled their personal and professional assets, learned from each other, and in the end, their influence was felt by a large number of audiences.

***Evidence-based advocacy:*** The teams achieved the changes they did partly because they had the evidence they needed to make their case and the skills to present it in a compelling manner to strategically chosen audiences. They showed how adoption of an agriculture-nutrition linked, gender-informed approach enhances the effectiveness of key policy initiatives and community programs.

***Participatory processes:*** The teams effectively used participatory processes to promote the project approach. Using these processes created the opportunity to bring a wide range of people into the decision-making process. Because hunger and undernutrition are most visible at the individual and household levels, having community input was invaluable, putting a human face on the problem and demonstrating the benefits of using the linked, gender-informed approach.

***Action-oriented solutions:*** The teams also were successful because they went beyond the question of "why" an agriculture-nutrition linked, gender-informed approach should be used to "how" it could be implemented. Advocacy strategies included specific actions decision makers should take, rather than leaving them to puzzle out what they should do. The leadership networks provided actual text to rephrase policies so that they would better reflect and support the linked approach. They trained specialists how to use gender methods to design and implement program interventions; they worked with community leaders and household members to demonstrate how to change production patterns to enhance family nutrition and health. All of this made a difference, especially in catalyzing change in a relatively short time.

***Capacity strengthening and learning:*** Annual workshops provided an efficient and effective means to strengthen capacity of all team members, and a forum in which team members could ask questions and learn from each other. The teams also learned on the job by working with their fellow team members and communities. This active, iterative learning process was key to

building a successful multi-country network of informed and skilled leaders.

***Gender knowledge and skills:*** Linking agriculture and nutrition while accounting for gender was a new approach for most of the team members, and they had to gain enough familiarity and comfort with the approach and how to articulate it before they could convince others of its value. Because the gender training focused on building skills in using gender analysis as a practical research and planning methodology, participants moved beyond simply learning more about what gender is.

## Recommendations

The *Agriculture-Nutrition Advantage* project made an initial investment in creating a strong and effective network of knowledgeable and skilled leaders who could promote greater use of a linked, gender-informed approach. The following recommendations are grounded in the belief that follow-on work lies, for the most part, in the hands of these leaders. International partners, donors, and professional organizations and universities also have roles to play in supporting their efforts.

***African leaders can:***

- Enlist the support of potential allies, such as health and budget specialists and economists, in framing the agriculture-nutrition-gender case, promoting its adoption, and ensuring it is translated to action at the community, institutional, and policy levels.
- Determine the best way forward for their nascent networks, access resources to continue work at the community level, and follow up with other actions initiated in the project.
- Use every opportunity, including regional meetings and international conferences, to continue to educate others about the approach to combating hunger and undernutrition, how to operationalize it, and its benefits.
- Remain engaged in policy formulation and review, and provide oversight and input to budgetary allocations so policies that truly reflect a linked approach are implemented and have their intended effects.
- Identify and address resistance to adopting and investing in the linked, gender-informed approach.

***International partners can*:**

- Support the country leaders in identifying and accessing resources to implement country-specific or regional projects to address the most critical institutional factors that inhibit building stronger links between agriculture and nutrition, and use of gender strategies and methods.
- Assist the country leaders in identifying opportunities to continue to strengthen their gender capacity and extend that learning to their fellow network members.
- Identify resources to evaluate the sustainability of leadership networks in reducing hunger and undernutrition.

***Donors can***:

- Provide resources to maintain this newly established and successful network.
- Develop a compendium of materials that articulate the approach and how to apply it in program development and implementation.
- Realign funding strategies to support efforts across sectors and disciplines to achieve sustainable development outcomes, including reducing hunger, malnutrition, and poverty.

***Professional organizations and education professionals can***:

- Explore ways to expand nutrition capacity in underserved countries and communities.

# REFERENCES


**Alderman, H, J Hoddinott, et al. 1995.**
*Gender Differentials in Farm Productivity: Implications for Household Efficiency and Agricultural Policy*. Washington, DC: International Food Policy Research Institute.

**Arroyave, G. 1995.**
"Agricultural and Food Policies: Some Concerns Regarding Their Nutritional Relevance." *Archivos Latinoamericanos de Nutricion* 45(1): 12-18.

**Ayalew, W, ZW Gebriel, et al. 1999.**
*Reducing Vitamin A Deficiency in Ethiopia: Linkages with a Women-Focused Dairy Goat Farming Project*. Washington, DC: International Center for Research on Women.

**Benson, T, T Palmer, et al. 2004.**
Crossing Boundaries to Reduce Malnutrition? An Institutional Study of Agriculture and Nutrition in Uganda, Mozambique, and Nigeria. *Report submitted to ICRW under the Agriculture-Nutrition Advantage project*. Washington, DC: International Food Policy Research Institute.

**Benson, T and R Satcher. 2004.**
Crossing Boundaries to Reduce Malnutrition? An Institutional Study of Agriculture and Nutrition in Ghana. *Report submitted to ICRW under the Agriculture-Nutrition Advantage project.* Washington, DC: International Food Policy Research Institute.

**Blackden, CM. 1999.**
*Gender, Growth, and Poverty Reduction*. Washington, DC: World Bank.

**Bonnard, P. 1999.**
*Increasing the Nutritional Impacts of Agricultural Interventions*. Washington, DC: Academy for Educational Development, Food and Nutrition Technical Assistance Project.

**Bread for the World Institute. 2002.**
*A Future with Hope: 12th Annual Report on the State of World Hunger*. Washington, DC: Bread for the World Institute.

**Brown, S. 1980.**
*Political Subjectivity*. New Haven, CT: Yale University Press.

**Canadian International Development Agency. 2000.**
*Towards a Healthy, Well-Nourished World: Making the Links Between Agriculture, Nutrition, Health and the Environment*. Gatineau, Quebec: Canadian International Development Agency.

**Cerqueira, MT and CM Olson. 1995.**
"Nutrition Education in Developing Countries: An Examination of Recent Successful Projects." *Child Growth and Nutrition in Developing Countries*. Pinstrup-Andersen, P, D Pelletier et al., ed. Ithaca: Cornell University Press.

**Chavas, J-P and A Uriarte. 1999.**
*Agriculture Policy, Employment and Resource Access: Micro Foundations for Sustainable Nutritional Improvements*. Madison, WI: University of Wisconsin-Madison.

**Covey, J. 2003.**
"Why Food Policy is Critical to Public Health." *Critical Public Health* 13(2): 99-105.

**Doss, CR. 2001.**
"Designing Agricultural Technology for African Women Farmers: Lessons from 25 Years of Experience." *World Development* 29(12): 2075-2092.

**Feldstein, H and S Poats. 1989.**
*Working Together: Gender Analysis in Agriculture*. West Hartford, CT: Kumarian Press.

**Ghana Statistical Service and Macro International. 1999.**
*Ghana Demographic and Health Survey 1998*. Calverton, MD: Ghana Statistical Service and Macro International.

**Gillespie, S and A Lindsay. 2001.**
*What Works? A Review of the Efficacy and Effectiveness of Nutrition Interventions.* Manila, Philippines: Asian Development Bank.

**Hagenimana, V, M Anyango-Oyunga, et al. 1999.**
*The Effects of Women Farmers' Adoption of Orange-fleshed Sweet Potatoes: Raising Vitamin A Intake in Kenya*. Washington, DC: International Center for Research on Women.

**Hagenimana, V, J Low, et al. 2001.**
"Enhancing Vitamin A Intake in Young Children in Western Kenya: Orange-Fleshed Sweet Potatoes and Women Farmers Can Serve as Key Entry Points." *Food and Nutrition Bulletin* 22(4): 376-387.

**Iannotti, L and S Gillespie. 2002.**
*Successful Community Nutrition Programming: Lessons from Kenya, Tanzania, and Uganda*. Washington, DC: Academy for Educational Development.

**Insitituto Nacional de Estatistica and Macro International. 1998.**
*Mozambique Demographic and Health Survey 1997*. Calverton, MD: Instituto Nacional de Estatistica and Macro International.

**International Center for Research on Women. 2004.**
Gender Definition. www.agnutritionadvantage.org. Accessed on April 25, 2005. Last updated September 30, 2004.

**International Fund for Agricultural Development. 1993.**
*Towards a Strategy for Improving Nutrition through Rural Investment Projects*. Rome: International Fund for Agricultural Development.

**International Nutrition Planners Forum. 1989.**
*Crucial Elements of Successful Community Nutrition Programs*. Fifth International Conference. Seoul, Korea, United States Agency for International Development and Academy for Educational Development.

**Johnson, S. 2004.**
"Gender Norms in Financial Markets: Evidence from Kenya." *World Development* 32(8): 1255-1374.

**Johnson-Welch, C, B Alemu, et al. 2000.**
*Improving Household Food Security: Institutions, Gender, and Integrated Approaches*. Madison, WI: Land Tenure Center, University of Wisconsin.

**Johnson-Welch, C and P MacDonald. 1990.**
*Improving Mothers' Participation in Growth Monitoring and Promotion. Final Report. PRICOR Project*. Bethesda, MD: University Research Corporation.

**Katz, E. 2000.**
"Does Gender Matter for the Nutritional Consequences of Agricultural Commercialization? Intrahousehold Transfers, Food Acquisition, and Export Cropping in Guatemala." *Women Farmers and Commercial Ventures. Increasing Food Security in Developing Countries*. Spring, A, ed. Boulder, CO and London: Lynne Reiner: 209-231.

**Kurz, K and C Johnson-Welch. 2001.**
"Enhancing Women's Contributions to Improving Family Food Consumption and Nutrition." *Food and Nutrition Bulletin* 22(4): 443-453.

**———. 2000.**
*Enhancing Nutrition Results: The Case for a Women's Resources Approach*. Washington, DC: International Center for Research on Women.

**Levin, CE, J Long, et al. 2003.**
*Cultivating Nutrition: A Survey of Viewpoints on Integrating Agriculture and Nutrition*. Washington DC: International Food Policy Research Institute.

**Michelsen, H. 2003.**
*Learning from Partnerships: Experiences from the Cornell International Institute for Food, Agriculture and Development (CIIFAD)*. Ithaca, NY: Cornell University.

**MkNelly, B. 1997.**
*Freedom from Hunger's Credit with Education Strategy for Improving Nutrition Security: Impact Evaluation Results from Ghana.* Mini-Symposium on Sustainable Nutrition Security for Sub-Saharan Women Subsistence Farmers, XXII International Conference of Agricultural Economists. Sacramento, CA.

**Mog, JM. 2004.**
"Struggling with Sustainability: A Comparative Framework for Evaluating Sustainable Development Programs." *World Development* 32(12): 2139-2160.

**Mulokozi, G, L Mselle, et al. 2001.**
"Reducing Subclinical Vitamin A Deficiency through Women's Adoption of Appropriate Technologies in Tanzania." *Food and Nutrition Bulletin* 22(4): 400-407.

**National Council for Population and Development and Macro International. 1999.**
*Kenya Demographic and Health Survey 1998*. Calverton, MD: National Council for Population and Development and Macro International.

**National Population Commission and Macro International. 2000.**
*Nigeria Demographic and Health Survey 1999*. Calverton, MD: National Population Commission and ORC Macro.

**O'Donnell, M. 2004.**
*Food Security, Livelihoods & HIV/AIDS: A Guide to the Linkages, Measurement & Programming Implications*. London: Save the Children.

**Peduzzi, C. 1990.**
*Home and Community Gardens Assessment Program Implementation Experience: The Tip of the Iceberg*. Washington, DC: International Science and Technology Institute.

**Pelletier, D, E Frongillo Jr, et al. 1995.**
"The Effects of Malnutrition on Child Mortality in Developing Countries." *Bulletin of the World Health Organization* 73(4): 443-448.

**Pena, C, P Webb, et al. 1994.**
*Women's Economic Advancement Through Agricultural Change: A Review of Donor Experience*. Washington, DC: International Food Policy Research Institute.

**Porter, R and I Hicks. 1994.**
*Knowledge Utilization and the Process of Policy Formation*. Washington, DC: Academy for Educational Development.

**Quisumbing, A, L Haddad, et al. 1998.**
"Gender Issues for Food Security in Developing Countries: Implications for Project Design and Implementation." *Canadian Journal of Development Studies* 19(special issue): 185-208.

**Ramirez, R. 2002.**
*Effectiveness of Small-Scale Agriculture Interventions on Household Food Security: A Review of the Literature (Phase 1, Part 2)*. Gatineau, Quebec: Canadian Foodgrains Bank; Inter Pares; Partners in Rural Development; Program Against Hunger, Malnutrition and Disease; and Canadian International Development Agency.

**Regmi, A, Ed. 2001.**
*Changing Structure of Global Food Consumption and Trade. Market and Trade Economics Division. Economic Research Service.* Agriculture and Trade Report. Washington, DC: ERS, U.S. Department of Agriculture.

**Rogers, E. 1962.**
*Diffusion of Innovations*. New York: The Free Press of Glencoe.

**Soleri, D, D Cleveland, et al. 1991a.**
*Gardens and Vitamin A: A Review of Recent Literature*. Washington, DC: International Science and Technology Institute.

**———. 1991b.**
*Vitamin A Nutrition and Gardens: Bibliography*. Washington, DC: International Science and Technology Institute.

**Standing Committee on Nutrition. 2004.**
*5th Report on the World Nutrition Situation*. Geneva: Standing Committee on Nutrition (SCN).

**Uganda Bureau of Statistics and ORC Macro. 2001.**
*Uganda Demographic and Health Survey 2000-2001*. Calverton, MD: Uganda Bureau of Statistics and ORC Macro.

**United Nations Children's Fund. 1990.**
*Strategy for improved nutrition of children and women in developing countries*. New York: United Nations Children's Fund.

**United Nations Development Program. 2003.**
*Human Development Report 2003: Millennium Development Goals.* New York: United Nations Development Program.

**United Nations Food and Agriculture Organization. 1984.**
*Integrating Nutrition into Agriculture and Rural Development Projects. Six Case Studies*. Rome: United Nations Food and Agriculture Organization.

**———. 2004.**
*The State of Food Insecurity in the World 2004*. Rome: United Nations Food and Agriculture Organization.

**von Braun, J and R Pandya-Lorch, Eds. 1991.**
*Income Sources of Malnourished People in Rural Areas: Microlevel Information and Policy Implications*. Working Papers on Commercialization of Agriculture and Nutrition. Washington, DC: International Food Policy Research Institute.

**Whitehead, A. 1994.**
"Wives & Mothers: Female Farmers in Africa." *Gender, Work and Population*. Adepoju, A and C Oppong, ed. London: James Currey: 35-53.

**World Health Organization. 2002.**
*Reducing Risks, Promoting Healthy Life*. Geneva: World Health Organization.

**Xinshen, D, P Dorosh, et al. 2003.**
*Market Opportunities for African Agriculture: An Examination of Demand-Side Constraints on Agricultural Growth*. Washington, DC: International Food Policy Research Institute.

International Center for Research on Women
1717 Massachusetts Avenue, NW
Suite 302
Washington, DC 20036, USA

Tel: (202) 797-0007
Fax: (202) 797-0020
e-mail: info@icrw.org

www.icrw.org