

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 undernutrition³ 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

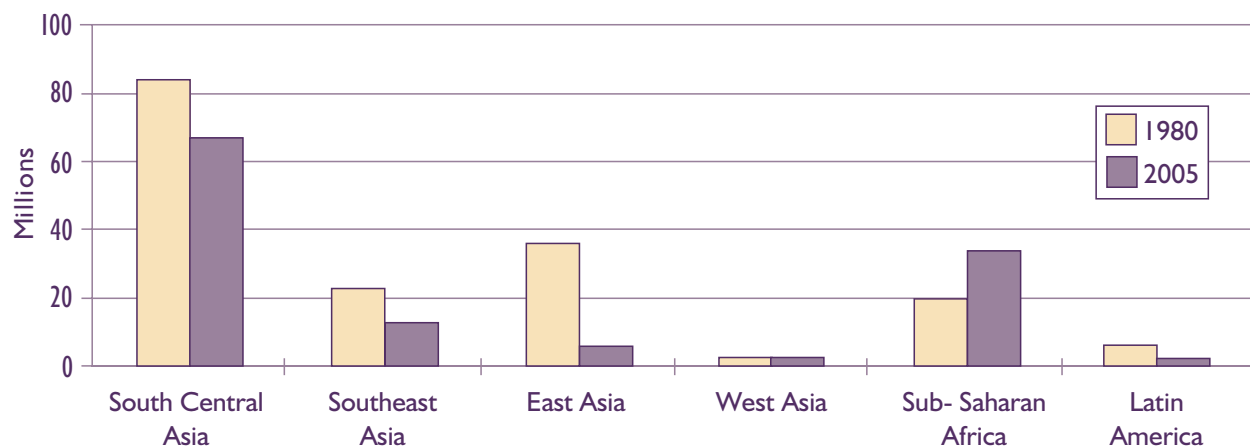
likely to show sustainable gains in reducing hunger and undernutrition.

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

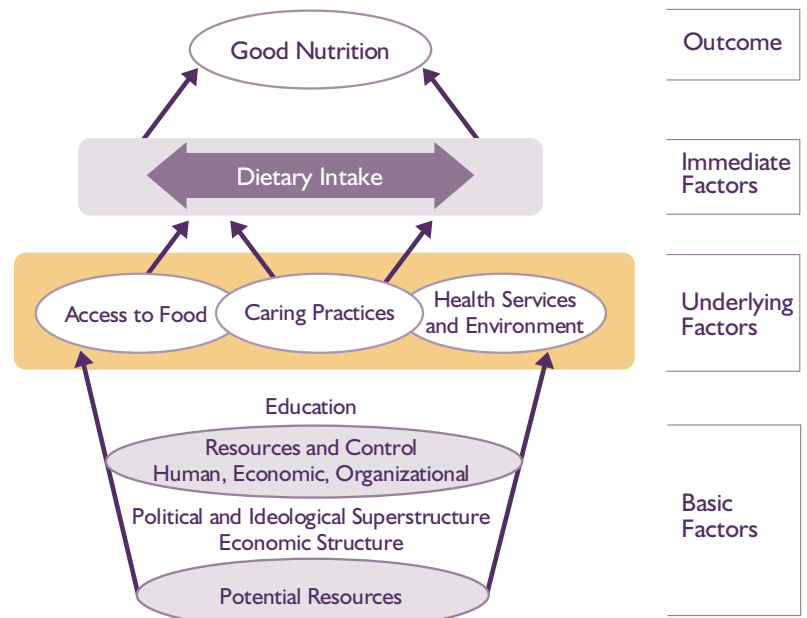
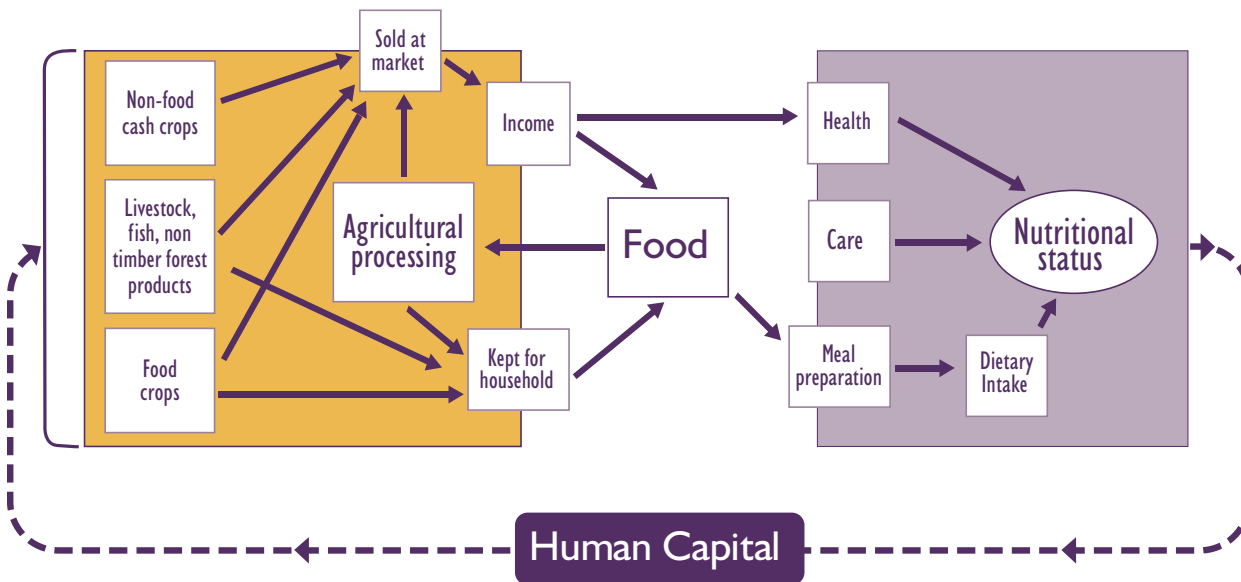


Figure 3: The Agriculture-Nutrition Advantage Conceptual Framework



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

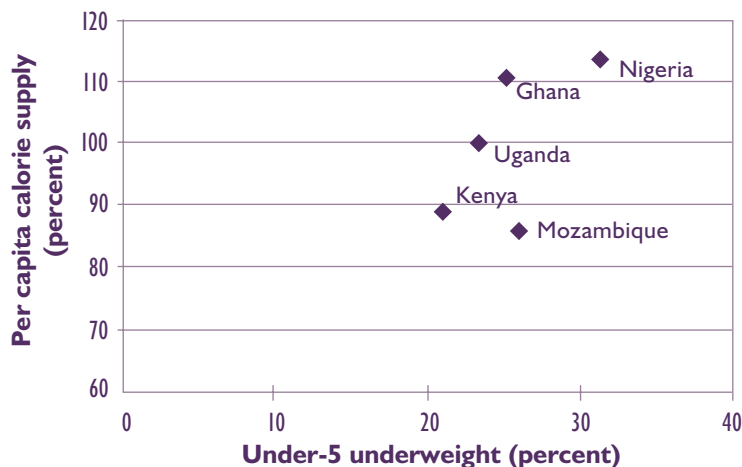
nutrition (Arroyave 1995; Canadian International Development Agency 2000). Greater yields also do not ensure that all households or every household member has access to that food, and neither do higher household incomes. Figure 4 uses data from the *Agriculture-Nutrition Advantage* project countries 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).

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).

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

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.

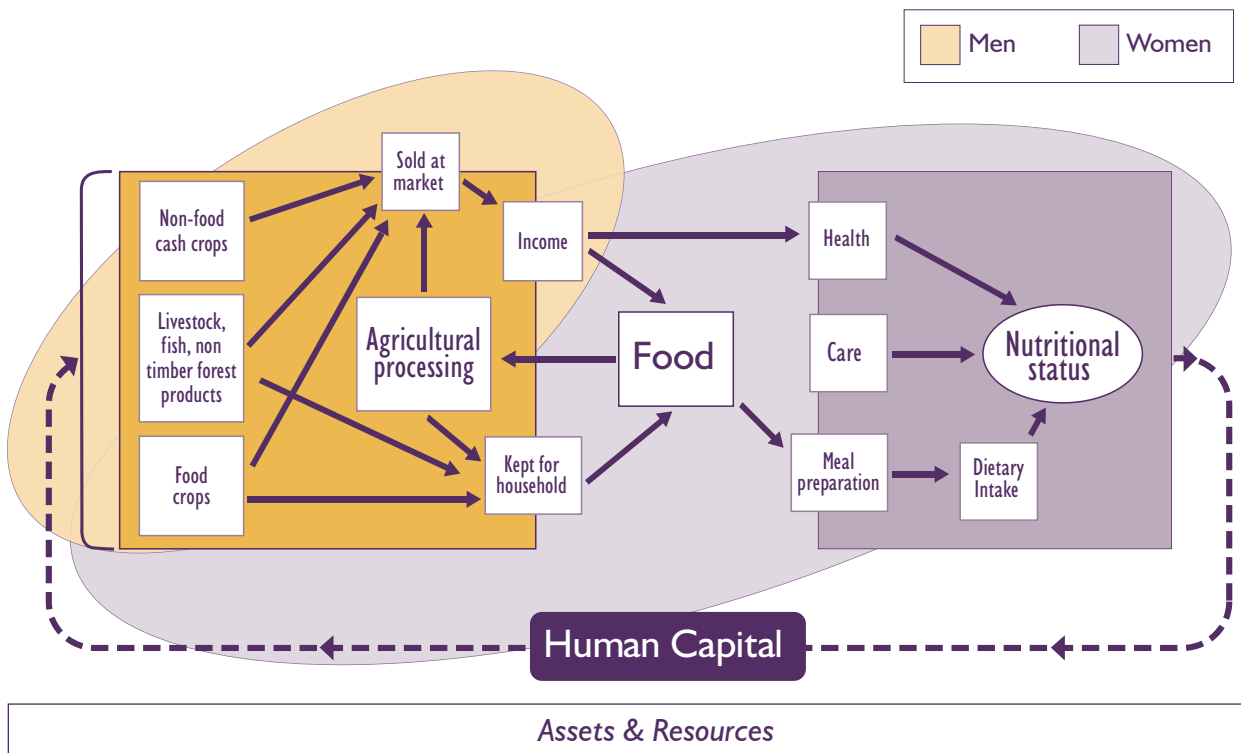
Gender Roles

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.