

Suresh C. Babu<sup>1</sup>

## ABSTRACT

In spite of the continued efforts of nutritionists to address nutrition problems in sub-Saharan Africa, the levels of undernutrition remain high. This paper is an attempt to provide an overview of the challenges that face nutrition planners and policymakers in implementing and evaluating nutrition policies and program interventions. Presenting a conceptual framework for analyzing the causes of nutritional outcomes, it reviews past experiences in implementing

various nutrition policies and program interventions in sub-Saharan Africa. Identifying capacity gaps for designing nutrition policies and programs, it outlines strategies for increasing the nutrition policy capacity in Africa. It is argued that unless the profile of nutritionists is elevated through appropriate capacity strengthening, their role in influencing nutrition policies and programs and hence nutritional outcomes will remain low in Africa.

## INTRODUCTION

Improved child nutrition resulting from well-designed food and nutrition policies and programs contributes to enhancement of human capital. Enhanced human capital is fundamental for increasing productivity of the society and for economic growth. Continued economic growth is necessary for poverty reduction and to increase further investment in social sectors, including nutrition. Thus, improving child nutrition should be seen as a national development priority and as an important economic development strategy (Martorell, 1999). Yet most countries in sub-Saharan Africa are facing major challenges in making needed investment for improving child nutrition. While this lack of investment is partly due to inadequate advocacy from the nutrition community, several other related factors contribute to this situation. First, nutritionists are not well placed in decision-making ministries such as Planning and Finance. Second, there is inadequate nutrition capacity in the government to design appropriate nutrition intervention programmes and policies and to demonstrate the benefits of these interventions. Third, estimation of costs and resources needed for nutrition interventions is often left to planners who have little or no interaction with nutritionists. Finally, nutritionists, in general, lack policy analysis and program evaluation skills that are needed to convince policymakers of the importance of continued funding for nutrition. Due to aforementioned reasons, designing appropriate food and nutrition policies and programs as well as financing these programs and policies

in order to reduce child malnutrition continues to be a major development challenge in most sub-Saharan African countries. Understanding the causal factors that affect nutritional outcomes and formulating policies and programs require, among other things, a strong multidisciplinary capacity.

This paper is an attempt to provide an overview of the issues, constraints, and challenges that face nutrition planners and policymakers in designing, implementing, and evaluating the outcomes of nutrition policies and program interventions. First, the paper lays out conceptual framework linking direct and indirect food and nutrition policies and programs to nutritional outcomes. Then, past experiences in implementing various nutrition policies and program interventions in sub-Saharan African countries are briefly reviewed. Next, the capacity gaps in designing nutrition policies and programs and evaluating them for intended outcomes are identified and an outline of the strategies for filling the capacity gaps is presented in section four. Concluding remarks form the last section.

## A CONCEPTUAL FRAMEWORK FOR ASSESSING THE FOOD AND NUTRITION POLICIES AND PROGRAMS

Many sub-Saharan African countries continue to suffer from chronic food insecurity and high levels of malnutrition, and they are under constant threats of hunger caused by economic crises and natural disasters. Designing policies and programs to improve nutritional status requires an understanding of the factors that cause malnutrition, knowledge of the pathways in which these factors affect vulnerable groups and households, and an awareness of policy options available to reduce the impact of these factors on hunger and malnutrition.

A multitude and complex set of factors determine nutritional outcomes. These factors have been identified and their linkages to nutrition have been elaborated on by Smith and Haddad (2000). The food and nutrition policy-focused conceptual framework that is presented in Figure 1 identifies the causal factors of nutrition security and the

---

<sup>1</sup> Senior Research Fellow and Senior Training Advisor, International Food Policy Research Institute  
2033, K Street, NW, Washington, DC 20006, U.S.A. Tel: 202-862-5618, E-mail: S.Babu@cgiar.org

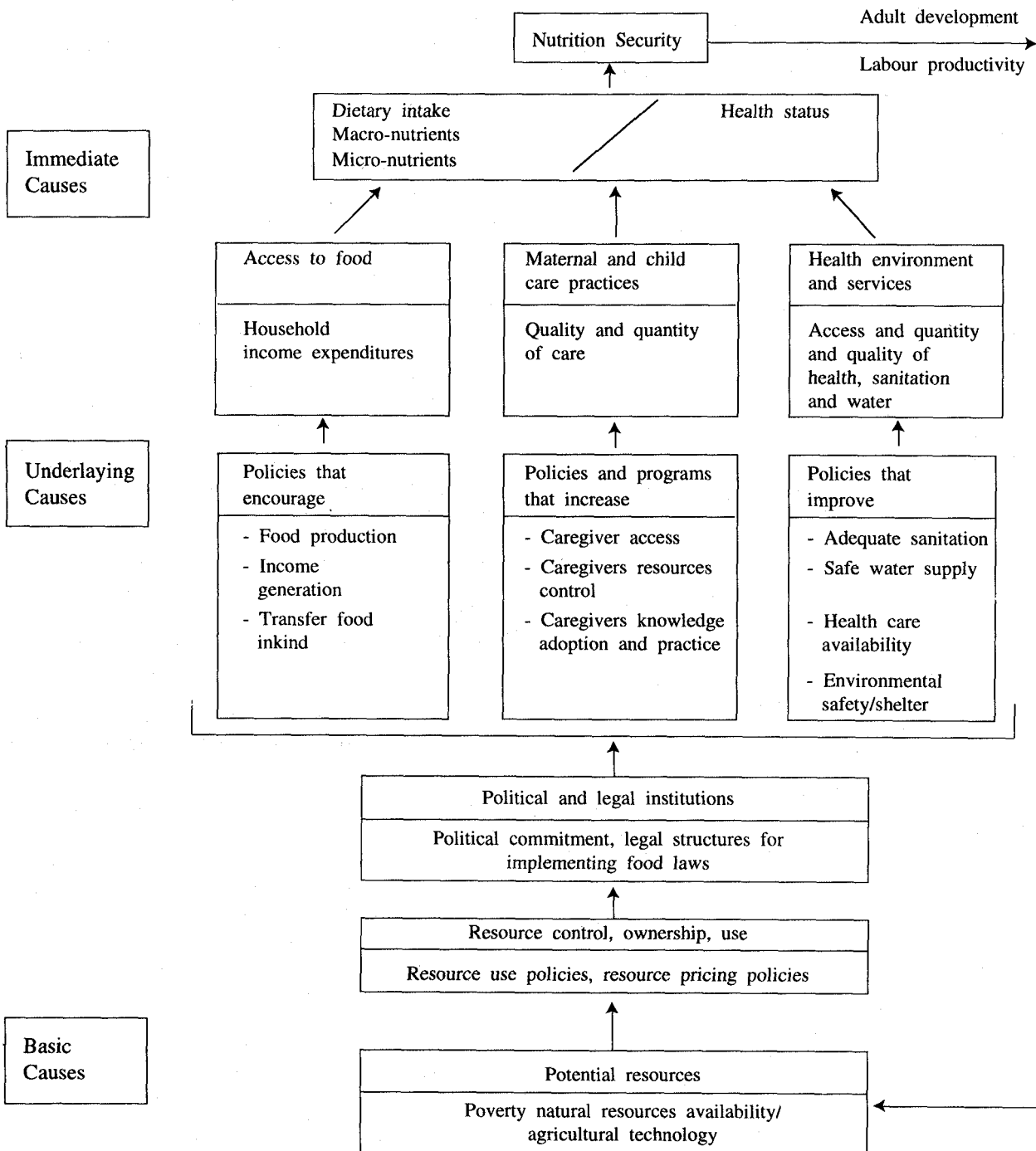
The author would like to thank Ruth Oniang'o, Bea Rogers, Jim Levinson, Per Pinstrup-Andersen, Klaus von Grebmer and Lawrence Haddad for discussion on the issues addressed in this paper. The author alone is responsible for its contents.

<sup>2</sup> A thorough review of the food security concept and the conceptual frameworks used in the literature for analyzing food security is beyond the scope of this paper. For such reviews see Maxwell and Frankenberger (1992); Clay (1997) and Von Braun *et al.*, (1992).

food policy linkages to them. It also identifies the points of entry for direct and indirect nutrition programs and policy interventions as well as the capacity gaps for analysis and evaluation of food and nutrition policies and programs.

This framework was originally developed and successfully used to explain child malnutrition (Smith and Haddad, 2000; UNICEF, 1998; Haddad, 1999). It was revised in this paper to incorporate policy and program dimensions (Babu, 2001). Given the role of nutrition in the human life cycle, this framework attempts to encompass

the life-cycle approach to nutrition. In addition, it includes the causes of nutrition security at both the macro and micro levels. As seen earlier, achieving food security at the macro level requires economic growth resulting in poverty alleviation and increased equity in the distribution of income among the population. In a predominantly agrarian economy, economic growth is driven by increases in agricultural productivity, and therefore, depends on the availability of natural resources, agricultural technology, and human resources. These are depicted as potential resources at the bottom of Figure 1.



Sources: Adapted from UNICEF (1998); Haddad (1999), and Smith and Haddad (2000)

Agricultural technology and natural resources are necessary, but by themselves are not sufficient to generate dynamic agricultural growth. Both policies that appropriately price the resources and allocate them efficiently along with stable investment in human and natural resources through political and legal institutions are necessary. These basic factors determine a set of underlying causes of nutrition security, i.e., food security, care, and health. These three underlying causes are associated with a set of resources necessary for this achievement. Attaining food security is shown to be one of the key determinants of nutritional status. Food security is attained when all people have physical and economic access to sufficient food at all times to meet their dietary needs for a productive and healthy life (World Bank, 1986) 2. While this definition is frequently applied at different levels, such as national, sub-national and household levels, it is more meaningful to use this concept at the household level. Resources for achieving food security are influenced by both policies and programs that increase food production, provide income for food purchases, and establish in-kind transfer of food through formal or informal supporting mechanisms.

Resources for the provision of care depend on policies and programs that increase the caregivers' access to income, strengthen their control of income use, and improve their knowledge, adoption, and practice of care. Care is the provision by households and communities of "time, attention, and support to meet the physical, mental, and social needs of a growing child and other household members" (ICN, 1992). Child feeding, health seeking behavior, caring and supporting mothers during pregnancy and breastfeeding are some examples of caring practices. Resources for health could be improved through policies and programs that increase the availability of safe water, sanitation, health care, and environmental safety.

As mentioned earlier, food security that ensures a nutritionally adequate diet at all times and a care and health environment that ensures the biological utilization of food, jointly determines the nutrition security of individuals. Thus, the immediate causes of nutrition security are dietary intake of macronutrients (energy, protein, and fat), micronutrients, and the health status of individuals. Adequate nutrition security for children results in the development of healthy adolescents and adults and contributes to the quality of human capital. Healthy female adults with continued nutrition security during pregnancy contribute to fewer incidences of low birth weight babies, thereby minimizing the probability of the babies becoming malnourished. In the case of adults, improved nutrition security in terms of timely nutrient intakes, increases labor productivity (given opportunities for productive employment) thus resulting in reduced poverty. This lower poverty increases the potential resources needed for attaining nutrition security.

Based on this conceptual framework, a set of non-exhaustive relationships that should be studied and understood for analyzing the food and nutrition programs

and policies is given in Box 1. This conceptual framework forms the basis in the following section for discussing the policies and programs for attaining food and nutrition security in African developing countries.

### **Box 1. Selected Policies and Programs and their Relationship to Nutritional Outcomes**

#### *Basic Level*

Poverty reduction strategies, food security, and nutrition  
 Poverty reduction strategies and natural resource ownership  
 Poverty reduction and agricultural technology adoption  
 Land tenure policies and resource ownership  
 Land tenure policies and agricultural technology adoption  
 Water rights, irrigation policies, and technology adoption  
 Institutional policies/arrangements and resource control and use  
 Political economy of resource ownership and use  
 Political economy of food and nutrition interventions

#### *Underlying Level*

Input and output pricing policies and food production  
 Crop diversification/income generation and food production  
 Availability of microcredit and food production  
 Institutions for childcare  
 Policies and programs for improving childcare  
 Infrastructure policies, safe water supply and healthcare  
 Social sector investment and health care availability  
 Trade policies and food security  
 Urban development, provision of safe water, and sanitation  
 Agricultural research and investment and food production

#### *Immediate Level*

Food price policies and dietary intake  
 Targeted food interventions and nutrition security  
 Microfinance for consumption and food intake  
 Safety nets and household food security  
 Nutrition education, childcare, and nutrition  
 Access to primary health care, use of health care, and nutrition  
 Micronutrient intake and nutrition security  
 Food-based approaches and nutrition security  
 Nutritional status and labor productivity  
 Food, nutrient intake, and child development

### **ASSESSING THE IMPACT OF NUTRITION PROGRAMS AND POLICIES – A BRIEF REVIEW OF THE AFRICAN EXPERIENCE**

Understanding the direct and indirect impacts of various food and nutrition intervention programs and policies is important for redesigning them towards intended benefits and outcomes. This section presents a brief review of selected studies that evaluate the policies and programs

for their effectiveness in improving the nutritional status of people in African developing countries. Such a review also helps to identify the capacity needs for nutrition policy analysis and program evaluation in sub-Saharan Africa.

## **FOOD AND NUTRITION POLICIES AND PROGRAMS**

There is a consensus that broad-based economic growth that generates employment reduces poverty and increases food security is what is needed. Macroeconomic and political stability is essential for creating an enabling environment for the investment of capital and human resources for productive purposes. Equal access to productive assets such as land is vital for increasing the benefits of economic growth to a large segment of the population. Increasing access to input and output markets through improved rural infrastructure increases the benefits of productivity growth to the poor. Improved access to financial markets that provide credit, savings, and insurance services is also important for the adoption of new technology, the smoothing of consumption levels over time and for borrowing during emergencies. Appropriate price policies that provide incentives for increasing food production will result in increased national food availability and eventually improved household and individual food security.

Several countries in sub-Saharan Africa continue to experience slow and stagnating economic growth. This slow growth combined with frequent natural disasters result in chronic food shortages. Food security remains a development problem even in regions and among specific groups of households that have shown considerable progress in combating poverty. A number of programs and policies that are designed to improve food security have been implemented in these countries and selected policy and program approaches are briefly reviewed for their effectiveness and lessons in assuring food and nutrition security.

## **TRADE AND MACROECONOMIC POLICIES**

Macroeconomic stability is undeniably a necessary condition for sustained economic growth. A stable macroeconomic environment associated with low inflation rates, low fiscal deficits and low external debt has been the foundation for the high performance of the East Asian countries (World Bank, 2000). Macroeconomic imbalances invariably lead to rapid inflation, real exchange rate appreciation and chronic balance of payment difficulties. Sustained over time, macroeconomic imbalances may seriously undermine the reforms undertaken in other sectors of the economy (Bautista, 1999). Lofgren et al (2001), using a computable general equilibrium model, found that a more diversified production and export structure would make Malawi less vulnerable to external price shocks and reduce the pressure that leads to sharp fluctuations in exchange rates.

Through their policy experiments, Bautista and Thomas (2000) showed that trade policy reform alone would increase aggregate household income in Zimbabwe. Policies that encourage the generation of foreign exchange by focusing on the individual country's comparative advantage will help in achieving food security. However, the choice between increasing food supply through domestic food production and food import should depend on the reliability of the food supply in the world or regional markets, the comparative advantage of the country in international trade, and the cost of foreign exchange.

## **TARGETED FOOD AND NUTRITION INTERVENTIONS**

Food and income transfers are nutrition interventions that have direct impact on malnutrition. Supplementary feeding programs that address the nutritional status of vulnerable groups of the population such as pregnant women and pre-school children have shown mixed results in sub-Saharan Africa. The impact of direct food transfers on nutritional status depends on several critical factors such as quantity of food transferred, frequency of feeding, nutritional quality of food supplied, timing of the intervention, and the availability of health and other services that complement food (Kennedy and Knudsen, 1985).

Food-for-work programs that provide drought affected households access to food in periods of distress have not been effective in improving the nutritional status of the vulnerable groups. Poor targeting and high levels of leakage have plagued food transfer programs. For example, in the case of Ethiopia and Sudan, which have frequently faced food shortages due to drought and famine, food for work programs have not reached the intended beneficiaries (Webb and von Braun, 1994).

Targeted interventions are more effective in transferring income to the poor compared to universal subsidies provided through public food distribution programs. IFPRI studies that evaluated targeted intervention programs indicate that poor households are highly responsive to changes in income and rising prices in adjusting their food consumption patterns. Self-targeting of commodities is one way to reduce the cost involved in universal subsidies. Foods that are inferior to staple foods are useful as a self-targeting tool, hence cost-effective. Cash-based programs are more effective as income transfer mechanisms than food transfers (Low et al, 1999). Because the cost of transportation and handling of foodgrains is at least 25 percent more expensive than cash transfer programs; however, food consumption impacts are larger for food-based programs compared to cash transfer programs. In addressing nutritional vulnerability, the higher cost of food-based transfer is at least partly compensated by its increased impact on food security. Furthermore, geographic and seasonal targeting is beneficial in reducing the program costs.

While the targeted programs have been successful in improving household food security, they have had little impact on child nutrition. This limited impact is partly due

to the absence of a nutrition education component in any of the targeted food transfer programs. Participation of beneficiary representatives in the choice of intervention programs and in the selection of beneficiaries themselves will increase the accountability of the implementing agencies and reduce inefficiencies associated with leakage. Improving cost-effectiveness also requires building monitoring and evaluation systems that assess program impacts both in terms of process and outcomes (Gillespie, 2000).

Safety net programs, which are comprised of food and nutrition programs including food subsidies, targeted income transfers, food for work, school feeding programs and social development funds have been increasingly recognized as key components of poverty reduction strategies. A recent review of safety net programs in Malawi, Mozambique and South Africa indicated that there exists a large gap in our knowledge about the design of safety-net programs along with a high level demand for short-run solutions (Haddad and Zeller, 1997). It argues that further research is needed to better understand and improve the ability of program managers to guide the choice of safety net programs.

Geographical targeting of the nutritionally vulnerable households in urban areas is the most widely used approach to increase the cost effectiveness of nutrition interventions. However, a recent study in Accra and Abidjan found that geographical targeting would lead to large under-coverage of nutritionally vulnerable groups unless additional screening methods were used (Morris et al, 1999). Thus self-targeting food and nutrition interventions that are based on characteristics other than location of the residence may be more effective than geographical targeting alone.

### FOOD PRICE STABILIZATION

Stabilization of food prices continues to be an important element of food policy in many African countries. Due to uncertainties in food production resulting from large dependency on rainfall and international trade, domestic food price stabilization has found a central place in the management of the food economy.

Food price stabilization policies are designed to meet one or more of the following objectives:

- To maintain food prices low enough to be affordable to most consumers,
- To maintain food prices high enough to meet production objectives,
- To provide stability of price levels to protect the poor from price shocks,
- To keep domestic prices close enough to world market prices to reduce distortions and illegal trade, and
- To allow enough seasonal fluctuations to permit the domestic private sector to profitably operate in the market (Timmer, 1997).

The stabilization of food prices, if accompanied by the provision of necessary investment in rural infrastructure and agricultural research, could contribute

to macroeconomic stability and accelerated economic growth. Price stabilization could be cost-effective if it goes hand in hand with building an active and competitive private sector. The role of price-stabilization agencies must be constantly modified to meet the changing role of foodgrains in the economy and to adjust to evolving domestic private marketing systems.

### FOOD AID AND PUBLIC WORKS

The provision of food commodities to developing countries from donor countries in the form of food aid has been a major method of international assistance to improve food security. Food aid is usually classified into three categories: program food aid, project food aid, and emergency food aid. Program food aid is used to generate local currency by selling surplus food in the recipient country market. The funds generated through the local market operations are used for implementing development interventions. Project food aid provides food for projects specifically designed to help the vulnerable groups in a recipient country to improve their food security. Targeted supplementary feeding programs and food-for-work programs in poor developing countries typify project food aid. Emergency food aid is the provision of food directly to the victims of manmade or natural disasters including refugees and internally displaced people.

Clay et al. (1998) provides a recent review of the performance and effectiveness of the food aid programs in the 1990s. As economic growth reduced the relative share of food aid in total consumption, the dependency of Asian developing countries on food aid has been declining except for situations requiring emergency assistance. The share of food aid in official development assistance (ODA) for all countries has declined over the past thirty years from 22 percent in 1965 to 3 percent in 1995. The total shipment of cereals from donor countries declined in the early 1990s from 15.1 million tons in 1992/93 to 4.9 million tons in 1996/97.

Over the years, international price variability, levels of foodgrain stocks in donor countries, and the budgetary commitments of donors have made food aid an uncertain source of food assistance programs. Clay et al. (1998) reviewed a large literature on the effectiveness of food aid interventions in reducing poverty and food insecurity. The review highlights several important conclusions:

- First, emergency food aid continues to play an important role in saving lives and protecting the most vulnerable from crisis-related nutritional deficiencies. The quantified impact of such interventions on food security and poverty reduction, however, is unavailable. Studies have documented leakages in food aid delivery, delays in meeting the food security needs due to untimely arrival of food, and inflexibility of the food aid assistance.
- Second, program food aid is an ineffective instrument for poverty reduction and improving nutrition. Poor monitoring and evaluation systems hinder attempts to assess the effectiveness of the program and its

effectiveness in reaching the needy and in contributing to their improved food security and nutritional status.

- Third, the provision of funds rather than food aid is a more efficient way to finance development activities such as food for work, supplemental feeding programs, and other interventions for increasing food security.
- Finally, given the persistence of hunger in several developing countries, food security intervention programs that are designed and implemented by national governments along with international food aid will continue for some time to come.

The transition of emergency interventions that use food aid into development oriented programs and policies has proved difficult due to the poor design of intervention programs. The food aid programs, which distribute food to vulnerable groups through feeding camps, have not been successful in targeting the most vulnerable and hence have shown little impact on improving the nutritional status of the beneficiaries (Clay et al, 1999). In addition, the nutrition interventions based on food aid have had negative effects on the incentives for local production and have fallen short of providing non-food inputs in reducing malnutrition (Reutlinger, 1999). Although few studies have evaluated food aid programs for their nutritional benefits, a large gap remains in understanding the role of such programs as nutritional interventions in sub-Saharan Africa.

## **MICROFINANCE FOR FOOD SECURITY AND NUTRITION**

Microfinance programs that improve the access of the poor to credit, savings, and insurance services have the potential to reduce poverty and to increase household food security. Zeller et al. (1997) identified three different pathways through which access to financial markets can increase food and nutrition security – generating income, smoothing consumption over time, and meeting immediate consumption needs. Access to credit increases the adoption of new technologies such as improved seeds and chemical fertilizers, which in turn increases crop output. Higher crop output results in increased income. However, low access to financial services, tends to incur high costs for the poor's informal savings. Thus, increasing the access to savings services through microfinance programs could reduce this cost. However, imperfections in labor, food, and other commodity markets may also reduce the incentive for formal saving mechanisms (Zeller and Sharma, 1998; Diagne, 1998).

Access to financial markets also reduces the cost of borrowing and protecting poor households from food security shocks. Unless microfinance policies and programs address all these pathways, their effectiveness in contributing to household food security is likely to be lower (Zeller and Sharma, 2000). Access to formal credit for both production and consumption purposes is necessary to increase household income and thereby reduce poverty and malnutrition. However, the magnitude of the impact of formal credit on income and food security may be context specific. For example, Diagne (1998) found that

access to formal credit enabled the Malawian rural households to reduce their borrowing from informal sources with high interest rates, but it did not have significant impact on food security and nutritional status of the borrowing households. Land scarcity and unfavorable agricultural terms of trade continue to be major constraining factors in increasing rural income. Thus complementary policies and institutions are needed to take full advantage of availability of microfinance.

Several lessons emerge from the use of microfinance for improving food security and poverty alleviation. First, microfinance policies and programs must be innovative to meet the varying needs of the poor and the food insecure. They must be adapted, for example, to meet the liquidity preferences and security objectives of the poor. A concerted effort from governments, donors, civic organizations, community-based institutions, and the private sector is necessary to identify institutional innovations to meet the specific needs of the poor to protect themselves from food and income shortages in the short-run as well as smoothing their consumption in the long-run. Second, the provision of microfinance services alone is insufficient to improve the welfare of the poor and the food insecure. Well-functioning markets for food, labor, and other rural services are also necessary to maximize the benefits from microfinance services. Third, the future design of microfinance programs should recognize the savings needs of the poor in addition to the credit needs. This awareness will increase the risk-bearing capacity of the poor and help them in smoothing out their consumption.

Finally, microfinance institutions could be encouraged to provide insurance services by using the local knowledge of their members in determining the payment mode and in monitoring the extent of loss of the insurers. Public support is needed to support research and pilot programs that experiment with member-financed and member-based insurance services (Zeller and Sharma, 1998). This insurance is particularly important to protect vulnerable groups in situations of natural and economic disasters.

## **FOOD-BASED APPROACHES FOR NUTRITIONAL ENHANCEMENT**

Food based approaches to nutritional enhancement include increasing nutrition availability and accessibility to nutrient-rich foods, increasing the intake of such foods, and increasing the bioavailability of nutrients from these foods through improved home processing techniques, better selection of dietary combinations and breeding methods. Ruel and Levin (2001) review several studies that evaluate food-based approaches to nutrition. In Ethiopia, Ayalew et al (1999) found that home gardening combined with nutrition education increased the knowledge, attitude, and practices related to intake of Vitamin A and prevention of night blindness. In Kenya, the introduction of new varieties of beta carotene rich sweet potatoes with appropriate nutrition education increased the frequency of consumption of Vitamin A rich

foods compared to a control group which received minimal support (Haginimana et al, 1999). Thus well-designed food-based interventions that combine production and nutrition education can have significant improvement in the nutritional status of the beneficiaries.

Urban agriculture has shown to have a positive impact on the food security and nutritional status of low-income households. A formal study on the urban households in Kampala, Uganda showed positive and significant influence of urban agriculture on the height-for-age of children less than five years of age (Maxwell et al, 1998). However, the use of urban agriculture as a nutrition intervention depends highly on the availability of and the accessibility of land in African cities for farming. Given the increasing migration from rural population to urban areas in search of employment this approach may not be a sustainable solution to urban child nutrition.

### **NUTRITION EDUCATION AND CARE**

A recent study in Accra, Ghana showed that maternal education was the most consistent constraint in providing child care, a major determinant of child nutrition. However, effective nutrition education is needed in addition to maternal education and knowledge to achieve positive child nutrition outcomes (Armar-Klemesu et al, 2000). Further effective targeting of specific education messages to improve child feeding practices and use of preventive health care could have a major impact on child nutritional status (Ruel et al, 1999). School nutrition programs do not improve the nutritional status of young children unless the program contains an appropriate nutrition education component (Meme et al, 1998). Similar is the case with nutrition supplementation programs, where effective communication measures were required for the successful implementation of supplementation program in Tanzania (Muro et al, 1999).

### **CAPACITY NEEDS FOR EVALUATION OF FOOD AND NUTRITION POLICIES AND PROGRAMS IN AFRICA**

Studies evaluating food and nutrition programs and policies in sub-Saharan Africa remain few and far in between. Most of the studies have been conducted by external researchers with little or no involvement of African nutritionists. This exclusion is partly due to the lack of sufficient indigenous capacity to undertake such studies. This lack of capacity in turn asks the question "How does one develop capacity for program development, implementation, and evaluation?". What strategies and options do we have to increase program and policy analysis capacity of nutritionists in Africa? In the remainder of this section we identify various target groups who are involved in program design, implementation, and evaluation and suggest training options for developing policy analysis and program management capacity.

In spite of the continued efforts by nutritionists to

address the nutrition problems in sub-Saharan Africa, the levels of undernutrition remain high (ACC-SCN, 2000). It remains a challenge as to why nutritionists are not able to make the level of impact needed for nutrition development in a country. Several reasons are attributed to this scenario. First, the profile of nutritionists in the national economic development effort remains low. This low profile is because nutritionists are frequently pigeonholed in one of the units in the sectoral ministries. Second, rarely nutrition is seen as a national development objective and nutritionists are not placed at high levels of decision-making that will enable them to make needed policy and program changes. Third, nutrition units continue to remain as an appendix to most of the line ministries they belong to and thus not adequately included in the planning and policy analysis processes even in their own ministries. Finally, all of the above are a reflection of the lack of capacity of the nutritionists to engage in equal terms with planners and policymakers. What can be done to elevate the profile of nutritionists in the planning and policymaking processes of national economic development?

In this context, the field of agricultural economics may provide some directions and lessons for nutritionists. Agriculturalists have been enormously successful in influencing policy and program decisions within and outside their ministries by developing a separate discipline – agricultural economics. Almost all agricultural ministries in Africa have a department of agricultural planning and policy analysis (actual names may vary) that is staffed by agricultural economists. Similar is the case with the natural resource specialists in the recent years. The discipline of resource economics has played a major role in highlighting the problems and potential solutions that are needed to sustainably manage the natural resources. Although the quantity and quality of the natural resource economists in Africa remain low, significant progress has been made to train and recruit resource economists in the forest, irrigation, fisheries and wildlife sectors. Is it possible to develop a cadre of 'nutrition economists' who are specialized in policy analysis and program evaluation that will result in increased recognition and support for nutrition in the national development agenda?

The call for increasing the capacity of nutrition professionals to address policy and program issues is not new. Recently, Beatrice Rogers (1999) elegantly articulated the need for the development of such capacity under the rubric of public nutrition. She argued that it is the role of public nutrition professionals to identify the range of programmatic options available to address a nutrition problem, with an understanding of their earlier success under various political, economic and social contexts. They should also be equipped to provide program design or policy recommendations considering the economic and political feasibility of various nutrition interventions. Rogers and Schlossman (1997) identify three groups of professionals who will benefit from capacity strengthening in designing, implementing and evaluating

food and nutrition programs and policies. The first group includes the program managers who are involved in designing and implementing nutrition interventions with an objective of improving the nutritional status of the population. The second group includes policy analysts and policymakers who are involved in analyzing the nutritional implications of policies and programs and given appropriate placement within the decision-making systems in the government. Furthermore, they would be influential in promoting pro-nutrition policies and programs. The third group of professionals who will benefit from such training is the policy researchers in academic and research institutions who will contribute to the generation of information and knowledge building on the methods and approaches for successful nutrition programming, monitoring, and evaluation. The need for strengthening policy analysis, program management, and policy advocacy capacity in African countries also has been emphasized by several rounds of regional meetings of the Capacity Development for Nutrition in Africa Initiative with the technical assistance from the United Nations University and the International Union of Nutritional Sciences (ANCDI, 2001)

Based on a satellite meeting on public nutrition held during the 16th International Congress on Nutrition in Montreal, Mason et al (1999) compiled a set of curriculum and educational content for public nutrition training. They identified several major sets of courses. Communication and advocacy skills, research skills, and skills for monitoring and evaluation of nutrition programs:

- Applied program management and administration
- Basic concepts of nutrition science
- Nutrition policies and programs
- Social science concepts for food and nutrition
- Practical field experience

Recent rounds of discussions under the Capacity Development for Nutrition in Africa Initiative also endorsed several aspects of the above set of curriculum content as needed to address nutrition capacity development in sub-Saharan Africa. Some priorities set by the Initiative are: development of focused advocacy strategy to elevate the status of nutrition in the development process, training that concentrates on client-focused techniques in policy and program development, and stronger capacity for action-oriented research (ANCDI, 2001).

There is urgent need to develop course and teaching materials for offering the courses on the above aspects. In view of the limited capacity to teach these courses, it may be useful to start by including two major courses that combine several aspects of the curriculum identified at the Montreal meeting. The first course should address the issues related to program management including monitoring and evaluation of food and nutrition interventions. This course should include aspects of

data collection, processing and analysis. A variation of this course has been developed and offered by the SADC Food Security Unit for the southern African countries. A manual that incorporates several of the above issues is available in the public domain (Babu and Bhattarai, 1997). Several modules of the nutrition toolkit prepared by the World Bank (1996) could also be useful as teaching materials for this course.

The second course should address the economic principles applied to food and nutrition programs and policies. The following topics should be included in such a course: basic economic concepts of food demand and supply, food production, prices and incomes as determinants of food consumption, markets and their functions in food security, price-based food and nutrition interventions, income-based interventions, intra-household issues, impact of macroeconomic and trade policies on nutritional status, poverty measures and nutrition and institutional economics of nutrition. While the teaching material for this course is available in scattered sources, there is an urgent need for organizing the course contents of such a course for the benefit of the teachers in African universities. Given the limited capacity to teach nutrition economics in nutrition and home economics faculties in Africa, this course could be taught by a faculty member from agricultural economics or the economics department. As capacity is developed for offering more courses, additional courses identified under the rubric of public nutrition (Rogers, 1999) could be added to the curriculum of the post-graduate nutrition programs in Africa.

## CONCLUDING REMARKS

This paper has introduced a policy-founded conceptual framework that could be used to identify the points of entry for designing policy and program interventions to improve food security and nutritional outcomes. Some of the key programs and policies that have both direct and indirect impact on nutrition have been reviewed to identify the information gap and relate this gap to the existing capacity gap to generate such information. An outline of an approach to capacity strengthening was discussed to generate dialogue and debate among the designers of the food and nutrition capacity strengthening programs.

Information on the costs and benefits of food security and nutrition interventions in sub-Saharan Africa remains slim. Increasing investment for child nutrition programs will require demonstrating the short-term and long-term benefits of nutritional interventions. Inadequate capacity for such evaluation of food and nutrition policies and programs thwarts the generation of information that can be used for nutrition advocacy. Lack of policy analysis and program evaluation skills further reduces capacity for nutrition advocacy in the national planning and policymaking systems. Unless such capacity is developed and placed appropriately in the governmental and non-governmental agencies, investment in nutrition will continue to suffer. This paper has identified a set of



curriculum and course content for developing such capacity. Developing adequate capacity for elevating nutrition on the development agenda is not only good economics for the countries involved but a good service to the world nutrition community as well.

## REFERENCES

- ACC-SCN. 2000.** 4th Report on the World Nutrition Situation. UN - Administrative Committee on Coordination - Sub-Committee on Nutrition (ACC-SCN and International Food Policy Research Institute, Geneva, 2000).
- ANCDI. 2001.** Collection of Reports of the Regional Meetings of African Nutrition Capacity Development Initiative, mimeo. Paper circulated at the Capacity Development Session of the ACC/SCN meetings, Nairobi, April 2001.
- Armar-Klimesu, M., M. T. Ruel, D. G. Maxwell, C. E. Levin, and S. S. Morris. 2000.** The Constraints to Good Child Care Practices in Accra: Implications for Programs. FCND Discussion Paper No. 81. International Food Policy Research Institute, Washington, DC.
- Ayalew, W. Z., Wolde, G. and Kassa, H. 1999.** Reducing Vitamin A Deficiency in Ethiopia: Linkages with a Women-focused Dairy Goat Farming Project, OMNI Research Report Series No. 4, International Center for Research on Women, Washington, DC.
- Babu, S. C. 2001.** Food Policy and Nutrition Security in Asia-Strategies and Policy Options. International Food Policy Research Institute, Washington, DC.
- Babu, S. and S. Bhattarai. 1997.** Analysis of Food and Nutrition Policies: Application of Statistical Methods Using Microcomputer Software (Windows 95 version). International Food Policy Institute, Washington, DC.
- Bautista, R. and M. Thomas. 2000.** Macroeconomic and Agricultural Reforms in Zimbabwe: Policy Complementarities Toward Equitable Growth. Trade and Macroeconomics Division Discussion Paper No. 57. International Food Policy Research Institute, Washington, DC.
- Bautista, R. 1999.** Economic growth and poverty reduction in Indochina: lessons from East Asia. TMD Discussion Paper No. 45. Washington DC: International Food Policy Research Institute.
- Clay, D. C., D. Molla and D. Habtewold. 1999.** Food aid targeting in Ethiopia: A study of who needs it and who gets it. Food Policy 24:391-409.
- Clay, E., N. Pillai and C. Benson. 1998.** Food aid and food security in the 1990s: performance and effectiveness. Working Paper. Overseas Development Institute, London, UK.
- Clay, E. 1997.** Food security: a status review of the literature. Research report draft, ESCOR No. R5911, March 1997. Overseas Development Institute, London, UK.
- Diagne, A. 1998.** Impact of Access to Credit on Income and Food Security in Malawi. FCND Discussion Paper No. 46. International Food Policy Research Institute, Washington, DC.
- Gillespie, S. 2000.** Enlarging the space: management capacity building for nutrition. Draft Working Paper. Washington DC: International Food Policy Research Institute.
- Haddad, L. 1999.** Assessing Agriculture - Nutrition Linkages A Conceptual Framework. Paper presented at the Workshop on Improving Human Nutrition through Agriculture: The Role of International Agricultural Research. IRR, Los Banos, Philippines Oct. 5-7, 1999.
- Haddad, L. and M. Zeller. 1997.** Can Social Security programmes do more with less: General issues and the challenges for southern Africa. Development South Africa, Vol. 14, No. 2.
- Haginimana, V., Oyunga, M., Low, J. Njoroge, S. M., Gichuki, S. T. and Kabira, J. 1999.** Testing the effects of women farmers' adoption and production of orange-fleshed sweet potatoes on dietary vitamin A intake in Kenya. OMNI Research Report Series No. 3, International Center for Research on Women, Washington, DC.
- ICN. 1992.** Caring for the socioeconomically deprived and nutritionally vulnerable. Major Issues for Nutrition Strategies Theme Paper no. 3. ICN (92/INF/7). Rome: Food and Agriculture Organization of the United Nations and World Health Organization.
- Kennedy, E. and O. Knudsen. 1985.** A review of supplementary feeding programs and recommendations on their design. In Nutrition and Development, ed Margaret Biswas and Per Pinstrup-Andersen. 77-96. Oxford: Oxford University Press.
- Lofgren, H. 2001.** External Shocks and Domestic Poverty Alleviation: Simulations with a CGE Model of Malawi. Trade and Macroeconomics Division Discussion Paper No. 71. International Food Policy Research Institute, Washington, DC.
- Low, J. W., J. L. Garrett and V. Ginja. 1999.** Can Cash Transfer Programs Work in Resource-Poor Countries? The Experience in Mozambique. FCND Discussion Paper No. 74. International Food Policy Research Institute, Washington, DC.
- Martorell, R. 1999.** The nature of child malnutrition and its long-term implications. Food and Nutrition Bulletin, Vol. 20, No. 3, pp. 288-292.
- Mason, J. B., B. L. Rogers and Y. Agyeman. 1999.** Report of an International Union of Nutrition Sciences (IUNS) Satellite Meeting on Public Nutrition at the 16th International Congress of Nutrition held in Montreal, 24-26 July 1997. Food and Nutrition Bulletin, Vol. 20, No. 3, pp. 339-343.
- Maxwell, D., C. Levin and J. Csete. 1998.** Does Urban Agriculture Help Prevent Malnutrition? Evidence from Kampala. FCND Discussion Paper No. 45. International Food Policy Research Institute, Washington, DC.
- Maxwell, S. and T. R. Frankenberger. 1992.** Household Food Security: Concepts, Indicators, Measurements: A Technical Review. UNICEF, New York and IFAD, Rome.
- Meme, M. M., Kogi-Makau, W. Muroki, N. M. and Mwadime, R. K. 1998.** Energy Protein Intake and Nutritional Status of Primary School Children 5-10 Years of Age in Schools with and without Feeding Programmes in Nyambene District, Kenya. Food and Nutrition Bulletin, Vol. 19, No. 4, pp. 334-342.
- Morris, S. S., C. Levin, M. Armar-Klimesu, D. Maxwell and M. T. Ruel. 1999.** Does Geographic Targeting of Nutrition Interventions Make Sense in Cities? Evidence from Abidjan and Accra. FCND Discussion Paper No. 61. International Food Policy Research Institute, Washington, DC.
- Muro, G. S., Gross, R. and L. Wahyuniar. 1999.** Increase in Compliance with Weekly Iron Supplementation of Adolescent Girls by an Accompanying Communication Program in Secondary Schools in Dar es Salaam, Tanzania. Food and Nutrition Bulletin, Vol. 20, No. 4, pp. 435.
- Ruel, M. and C. Levin. 2001.** Food-based approaches for alleviating micronutrient malnutrition - An overview in P. Katakai and S. C. Babu (edited). Food Systems for Improved Nutrition. The Howarth Press. New York. (forthcoming).
- Ruel, M., C. Levin, M. Armar-Klimesu, D. Maxwell and S. Morris. 1999.** Good Care practices can mitigate the negative effects of poverty and low maternal schooling on children's

- nutritional status: Evidence from Accra. *World Development*. Vol. 27, No. 11: 1993-2010.
- Reutlinger, S. 1999.** From 'food aid' to 'aid for food': Into the 21st century. *Food Policy* 24:7-15.
- Rogers, B. and N. Schlossman. 1997.** "Public nutrition": The need for cross-disciplinary breadth in the education of applied nutrition professionals. *Food and Nutrition Bulletin*, Vol. 18, No. 2: 120-133.
- Rogers, B. L. 1999.** Public nutrition: Research and training needs to advance the field. *Food and Nutrition Bulletin*, Vol. 20, No. 3, pp. 331-338.
- Ruel, M., C. Levin, M. Armar-Klemesu, D. Maxwell and S. Morris. 1999.** Good Care practices can mitigate the negative effects of poverty and low maternal schooling on children's nutritional status: Evidence from Accra. *World Development*. Vol. 27, No. 11: 1993-2010.
- Smith, L. and L. Haddad. 2000.** Explaining child malnutrition in developing countries – a cross-country analysis. Research Report No 111. Washington DC: International Food Policy Research Institute.
- Timmer, C. P. 1997.** Food Security Strategies – The Asian Experience. *Agricultural Policy and Economic Development*. Series No. 3. Food and Agricultural Organization (FAO) of the United Nations: Rome.
- UNICEF. 1998.** The State of the World's Children. New York.
- Von Braun, J., H. Bouis, S. Kumar, and R. Pandya-Lorch. 1992.** Improving Food Security of the Poor: Concept, Policy, and Programs. International Food Policy Research Institute, Washington, DC.
- Webb, Patrick and J. von Braun. 1994.** Famine and food security in Ethiopia: Lessons for Africa. Chichester: John Wiley & Sons.
- World Bank. 1986.** Poverty and Hunger – Issues and Options for Food Security in Developing Countries. Washington DC: The World Bank.
- World Bank. 1996.** Poverty Reduction and the World Bank: Progress and Challenges in the 1990s. Washington DC: The International Bank for Reconstruction and Development/The World Bank.
- World Bank. 2000.** Global economic prospects and the developing countries. Washington DC: World Bank.
- Zeller, M., G. Schrieder, J. von Braun, and F. Heidhues. 1997.** Rural Finance for food security for the poor: implications for research and policy. *Food Policy Review* No. 4, Washington DC: International Food Policy Research Institute.
- Zeller, M. and M. Sharma. 1998.** Rural Finance and Poverty Alleviation. *Food Policy Report*. Washington DC: International Food Policy Research Institute.
- Zeller, M. and M. Sharma. 2000.** Many borrow, more save, and all insure: implications for food and micro-finance policy. *Food Policy*. Vol. 25: 143-167.