

FOOD AND
NUTRITION
TECHNICAL
ASSISTANCE

FAM

Food Access Indicator Review

July 2003

Food and Nutrition Technical Assistance Project (FANTA)

Academy for Educational Development 1825 Connecticut Ave., NW Washington, DC 20009-5721
Tel: 202-884-8000 Fax: 202-884-8432 E-mail: fanta@aed.org Website: www.fantaproject.org



This workshop and report were made possible through the support provided to the Food and Nutrition Technical Assistance (FANTA) Project by the Office of Health, Infectious Disease, and Nutrition of the Bureau for Global Health and the Office of Food for Peace of the Bureau for Democracy, Conflict, and Humanitarian Assistance at the United States Agency for International Development under terms of agreement No. HRN-A-00-98-00026-00 awarded to the Academy for Educational Development (AED). The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the United States Agency for International Development.

Published September 2003

Recommended citation:

Food and Nutrition Technical Assistance (FANTA) Project and Food Aid Management (FAM). *Food Access Indicator Review*. Washington, D.C.: Food and Nutrition Technical Assistance, Academy for Educational Development, 2003.

Copies of the publication can be obtained from:

Food and Nutrition Technical Assistance Project
Academy for Educational Development
1825 Connecticut Avenue, NW
Washington, D.C. 20009-5721
Tel: 202-884-8000
Fax: 202-884-8432
Email: fanta@aed.org
Website: www.fantaproject.org

ACRONYMS

ACDI/VOCA	Agricultural Cooperative Department International/Volunteers in Overseas Cooperative Assistance
ADRA	Adventist Development and Relief Agency
AE	Adult equivalent
AED	Academy for Educational Development
CARE	Cooperative for Assistance and Relief Everywhere
CFW	Cash for work
CRS	Catholic Relief Services
CS	Cooperating sponsor
CSR4	Cooperating sponsor results reports and resource requests
DAP	Development Assistance Program, Title II
FAM	Food Aid Management
FANTA	Food Aid and Nutritional Technical Assistance Project
FFW	Food for work
FFP	USAID Bureau for Democracy, Conflict, and Humanitarian Assistance Office of Food for Peace
FHI	Food for the Hungry, Inc.
FY	Fiscal year
HH	Household
IPM	Integrated pest management
IR	Intermediate result
M&E	Monitoring and evaluation
MCH	Maternal and child health
ME	Microenterprise
MED	Microenterprise development
MF	Microfinance
NGO	Non-governmental organization
NRM	Natural resource management
OICI	Opportunities Industrial Centers International
PCI	Project Concern International
PHHS	Post-harvest handling and storage
PVO	Private voluntary organization
REST	Relief Society of Tigray (Ethiopia)
SCF	Save the Children Federation
SO	Strategic objective
SWC	Soil and water conservation
TANGO	Technical Assistance to NGOs International, Inc.
TNS	Technoserve
USAID	United States Agency for International Development
WV	World Vision, Inc.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	i
EXECUTIVE SUMMARY	ii
1. INTRODUCTION.....	1
1.1. Background/Problem Statement	1
1.2. Objectives and Methods.....	1
1.3. Organization of Paper	2
2. FOOD SECURITY FRAMEWORK.....	4
3. TITLE II FOOD ACCESS PROGRAMMING.....	11
3.1. Policy and Strategic Frameworks	11
3.2. Typical Title II Access Interventions Selected by Title II PVOs	11
3.3. Fulfilling a Food Access Objective with Multiple Interventions.....	13
4. INDICATORS OF FOOD ACCESS	15
4.1. Review of the Generic FFP Food Access Indicators	15
4.2. PVO Title II Food Access and Food Security Indicators	18
4.3. Innovative Title II Approaches	22
4.4. Assessment of Title II Food Access Indicators.....	23
4.4.1. Level 1 Food Security Impact or Income Indicators	24
4.4.1.i. Direct Measures of Income Change.....	24
4.4.1.ii. Indirect Measures of Income: Assets and Expenditures.....	26
4.4.2. Level 2 Food Security Impact or Consumption Indicators.....	28
4.4.2.i. Quantitative Measures of Food Access	28
4.4.2.ii. Quantitative Perceptions of Food Access.....	30
4.4.3. Summary of Observations	30
4.5. Gaps in Measuring Food Access	31
5. SUMMARY AND CONCLUSION.....	33
ANNEX 1 DAP and CSR4 Document Reviewed, References.....	34
ANNEX 2 Individuals Interviewed	37
ANNEX 3 Glossary of Terms.....	38
ANNEX 4 PVO Access-Related Interventions by Sector	40
ANNEX 5 Title II Food Security Interventions and Indicators.....	41
ANNEX 6 Potential Access Indicators	47

ACKNOWLEDGEMENTS

Mark Langworthy and Tim Frankenberger of TANGO conducted the study and drafted the report. Patricia Bonnard of FANTA, Charles Owubah of World Vision and Hank Green of FAM provided significant technical and editorial comments and drafted portions of the report. The FAM Monitoring and Evaluation Working Group developed the scope of work, provided Title II project documents and oriented to the review process.

EXECUTIVE SUMMARY

According to the 1995 United States Agency for International Development (USAID) *Food Aid and Food Security Policy* paper, the primary cause of food insecurity is the continued lack of economic opportunity to produce adequate amounts of food or to obtain sufficient income to purchase adequate amounts of food. Directly distributed food aid (i.e., food aid rations or direct distribution) only provides a small portion of the food that poor people need over a limited period of time. Therefore, food aid-assisted improvements to individuals' access to food, such as increased income or agricultural productivity, are key to ensuring continued food security. In Title II programs, a variety of interventions with different expected outcomes are implemented to improve households' access to food (e.g., improved rural roads, expanded household incomes, enhanced agricultural productivity).

For most Title II private voluntary organizations (PVOs), determining changes in food access is not easy, particularly because indicator values are difficult to interpret. Guidance and tools to assist in measuring access indicators are limited or not readily available to the field. However, measurement of food access is critical to every food security program. It is, therefore, critical to provide more and better guidance on the selection, measurement, and use of food access indicators in Title II projects.

These measures are used to identify the food insecure, assess the severity of their food shortfalls, and gauge the progress of interventions and programs designed to improve food security. *Food Aid and Food Security Policy* reviewed how Title II Development Assistance Programs (DAPs) are designed to improve food access and how PVOs assess and monitor food access. The paper also identified best practices.

The objective of this study is to review how Title II DAPs are designed to improve food access, assess how Title II PVOs currently address and monitor food access and identify good practices in monitoring food access. The results of the review will provide the basis for a food access monitoring and evaluation (M&E) guide to be used by PVO field staff. The project has been undertaken in two phases. The outcome of the first phase is this report, which reviews how Title II PVOs address and monitor food access in their Title II DAPs. The second phase will identify good practices for monitoring food access and present access measurement tools that have been field tested and are appropriate for use by PVO field staff.

Household food access is the ability to acquire sufficient quality and quantities of food to meet all household members' nutritional requirements. Consumption indicators can be used as proxies for food access by going one step beyond food access to measure what a household or its members have actually eaten. Food access improvements facilitate consumption and are absolutely necessary, but should not be considered sufficient for adequate consumption to take place.

PVOs measure food access using a broad range of indicators that are applied at both the strategic objective (SO) and intermediate result (IR) levels. The major findings of this review are as follows:

- In many projects, the linkages between the various interventions necessary to increase food access are not well developed. PVOs should work to strengthen those linkages.
- PVOs should collect more and better market information and use it to design market interventions that are more likely to increase household food access.
- The DAPs appear much stronger on measurement of project output and effects than on appraisal of outcomes such as changes in household access to food. One major shortfall is that PVOs normally do not combine proxies for food consumption and indicators that capture improvements in the means of access. Project designs fail to adequately consider the pathways through which improvements in food security can be achieved. This is especially true of micro-credit and infrastructure programs.
- In situations where first level food security impacts (income) are measured, PVOs must ensure that projects allocate the necessary resources, time, and skilled personnel to collect, synthesize, and interpret information.
- Some DAPs include proxy indicators for consumption and income. These indicators show promise and should be tested in a variety of locations before they are widely disseminated.
- Many of the current indicators used by PVOs are not listed as Generic Title II Indicators promoted by the Office of Food for Peace (FFP). This list should be revised, considering the promising indicators identified in this review.

Although FFP has developed a Generic Indicator List that provides useful suggestions for measuring the food security impacts of program activities implemented by PVOs, not all of the activities that PVOs undertake to improve food access are covered. For example, indicators of changes in income, particularly for non-agricultural activities, are not included. Furthermore, the list fails to capture factors such as vulnerability and households' ability to adapt to risk.

Because vulnerability is such a prominent characteristic of the environments in which food insecure households live, food security programs addressing food access need to explicitly address the concept of vulnerability in program design and incorporate indicators that evaluate some dimension of vulnerability. A number of PVOs currently use indicators that capture household and community vulnerability to food insecurity. Three such indicators are the coping strategies index, an asset index and the number of different household income sources. Given FFP's revised strategy emphasizing risk and vulnerability, it is important to incorporate and monitor vulnerability in future programming.

Using the results from this review, the second phase of this activity will focus on identifying good practices for monitoring food access and adapting field-tested access measurement tools for use by Title II field staff.

1. INTRODUCTION

1.1. Background/Problem Statement

According to the 1995 United States Agency for International Development (USAID) *Food Aid and Food Security Policy* paper, the primary cause of food insecurity is the continued lack of economic opportunity to produce adequate amounts of food or to obtain sufficient income to purchase adequate amounts of food. Directly distributed food aid (i.e., food aid rations or direct distribution) only provides a small portion of the food that poor people need over a limited period of time. Therefore, food aid-assisted improvements to individuals' access to food, such as increased income or agricultural productivity, are key to ensuring continued food security. In Title II programs, a variety of interventions with different expected outcomes are implemented to improve households' access to food (e.g., improved rural roads, expanded household incomes, enhanced agricultural productivity).

For most Title II private voluntary organizations, determining changes in food access is not easy, particularly because indicator values are difficult to interpret. Guidance and tools to assist in measuring access indicators are limited or not readily available to the field. However, measurement of food access is critical to every food security program. These measures are used to identify the food insecure, assess the severity of their food shortfalls, and help institutions characterize the nature of a given population's food insecurity within a country or other geographic area. These measures also gauge the progress of interventions and programs designed to improve food security. It is, therefore, critical to provide more and better guidance on the selection, measurement, and use of food access indicators in Title II projects.

1.2. Objectives and Methods

The objective of this study is to review how Title II DAPs are designed to improve food access, assess how Title II PVOs currently address and monitor food access and identify good practices in monitoring food access. The results of the review will provide the basis for a food access M&E guide to be used by PVO field staff. The project has been undertaken in two phases. The outcome of the first phase is this report, which reviews how Title II PVOs address and monitor food access in their Title II DAPs. The second phase will identify good practices for monitoring food access and present access measurement tools that have been field tested and are appropriate for use by PVO field staff.

The first phase of the access indicator study:

- evaluates how PVOs view food access and the extent to which their conceptualization coincides with that of FFP;
- reviews DAPs to extract and summarize key and innovative IRs that lead to improvements in household food security;
- summarizes the specific activities that support these IRs and their measurement;

- identifies key and innovative ways Title II PVOs measure access;
- reviews current strengths and weaknesses associated with current methods of measuring food access and reporting results; and
- identifies the gaps that currently exist in measuring and reporting access.

The first phase of the access indicator study is based on Title II PVO experiences measuring household food access. This paper reviews the kinds of indicators Title II PVOs have developed and measured in previous and ongoing DAPs, how the access indicators relate to project activities, and how well access indicators combine with other project indicators to communicate overall project impacts. The advantages and disadvantages of specific indicators are also discussed, along with the utility of several access indicators for project management and evaluation.

To understand the measurement issues associated with food access indicators, a number of documents were reviewed, including DAP proposals, cooperating sponsor results reports and resource requests (CSR4), and various other PVO evaluation reports (see Annex 1 for a full list of documents reviewed). The review focused on strategic objectives and results frameworks related to food access in order to capture key interventions and indicators and evaluate how PVOs constructed their programs to address food access. Twelve PVO and Title II representatives were also interviewed (see Annex 2 for the full list of interviews).

The study encompasses a subset of Title II food access programs. The Food Aid Management (FAM) Monitoring and Evaluation Working Group developed a preliminary list of DAPs to review, which included at least one example from each Title II PVO and fully exemplified the breadth of food access interventions. Representatives from each PVO were invited to add DAPs that contained innovative food access interventions or indicators. As a consequence of this purposive sampling, the observations and conclusions presented here do not represent the universe of all Title II food access programs.

1.3. Organization of Paper

The paper begins with a discussion of the food security framework, describing the three elements of food security and explaining the relationship between food access and overall food security goals. The food security framework section delineates the difference between indicators that directly measure food access as a project outcome and indicators that measure access indirectly, such as proxies for income. This section also reveals how vulnerability influences food access over the short and long term.

The next section of the paper focuses on Title II food access programming. It provides a brief summary of typical food access interventions and the importance of multiple interventions synchronized to achieve food access and introduces several PVOs' innovative tactics for increasing food access.

The third section of the paper presents generic food access indicators currently endorsed by FFP, typical Title II PVO strategic frameworks, and indicators and innovative PVO performance monitoring methods. The paper concludes with an assessment of Title II food access indicators, an identification of access measurement gaps and recommendations on the design of access measurement tools.

2. FOOD SECURITY FRAMEWORK

In 1992, USAID adopted the following definition of food security: “When all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life.”

The *USAID Food Aid and Food Security Policy Paper*, published in 1995, identified factors that affect the food security of households and individuals, including chronic poverty, rapid population growth, declining per capita food output, poor infrastructure, ecological constraints, limited access to land, inappropriate policies, disease, poor water and sanitation, inadequate nutritional knowledge, and civil war and ethnic conflicts. Clarifying the pathways through which these factors influence food security status is critical to the design, monitoring, and evaluation of successful interventions.

The complexity of food security problems requires consistent analysis of the mechanisms that undermine specific populations’ food security status (Riely et al. 1999). Food security is the product of many agroecological, socioeconomic, and biological factors. Diagram 1 on page 9 outlines the USAID food security framework, highlighting the three elements of food security—availability, access, and utilization—and their relationships to one another. At the apex of the model is utilization, or nutritional status. The conceptual framework suggests a hierarchy of causal factors that influence the three pillars of food security and, ultimately, nutritional status. Adequate food availability at the aggregate level is a necessary condition, but insufficient to achieve adequate food access at the household level which, in turn, is itself necessary but not sufficient for adequate food consumption at the household or individual level (Bonnard 2001). Access represents the household’s capacity to fulfill nutritional requirements, but household decision-makers must elect to use this capacity to acquire appropriate foods. Furthermore, adequate access promoting sufficient dietary intake, combined with good health- and childcare, results in well-nourished children or achievement of food security according to this conceptual framework.

The Three Elements of Food Security

Aggregate food availability means that sufficient quantities of appropriate, necessary types of domestically produced food, commercial imports or food aid are consistently available to individuals or are within reasonable proximity to them. At the national level, it is the sum of domestic food stocks, net commercial imports, food aid, and domestic production. (USAID 1992)

Individuals have sufficient *access* to food when they have “adequate incomes or other resources to purchase or barter to obtain levels of appropriate foods needed to maintain consumption of an adequate diet/nutrition level” (USAID 1992). Food access depends on the ability of households to obtain food from purchases, gathering, current production, or stocks or through food transfers from relatives, members of the community, the government, or donors. A household’s store of wealth (e.g., savings, liquid assets) is an important determinant of food access when regular livelihood strategies are obstructed or curtailed by disastrous agro-climatic conditions, loss of employment, prolonged illness, or another food security shock. A household’s access to food

also depends on the resources available to individual household members and the steps they must take to utilize those resources, particularly exchange of other goods and services. Intra-household distribution of these resources is an important determinant of food security for all household members.

Food access is also influenced by the aggregate availability of food in the market and by market prices (USAID 1992). Additional factors underlying food access are the markets for labor, productive inputs, and credit. For example, key factors influencing the food security status of households relying on market purchases as an important source of food include the availability of food, prices, and income-earning opportunities. Poor market infrastructure and an unfavorable policy environment may lead to high and variable prices for food and inputs, further undermining agricultural productivity, food supplies, and derived incomes.

Finally, adequate food utilization is realized when “food is properly used, proper food processing and storage techniques are employed, adequate knowledge of nutrition and child care techniques exists and is applied, and adequate health and sanitation services exist” (USAID 1992). Utilization includes both food factors, or dietary intake, and health factors that influence child and maternal nutritional status. Constraints to food utilization include loss of nutrients during food processing, inadequate sanitation, improper care and storage, and cultural practices that negatively impact consumption of nutritious foods for certain family members.

Improved nutritional status effects health and survival of household members, labor productivity, and household income-earning potential. Food factors influencing nutritional status include food availability, household access to adequate quantities and qualities of food, appropriate feeding practices (e.g., breastfeeding, complementary feeding), and distribution of food within the household. Health factors that affect the nutritional status of mothers and children include health status (i.e., prevalence and severity of illness), immunization, personal and domestic hygiene, and availability of, access to, and quality of health services. (Bonnard et al. 2002)

Food availability, access, and utilization can be assessed at the national, regional, community, household, or individual level. Macroeconomic planners tend to look at availability, access and utilization at the national and regional levels (e.g., United Nations Food and Agriculture Organization statistics and analyses). FFP and its implementing partners focus on food availability at the community or regional level, food access at the household level and food utilization at the individual (e.g., child) level.

In any context, food security problems may result from inadequate food availability, inadequate access to food for a specific population, or improper utilization by households. Food security constraints such as disease can influence the physiological needs of individuals, affect important complementarities and basic household trade-offs (e.g., food, healthcare, education, shelter), lead to changes in people’s livelihood strategies, and affect assets on which households sometimes rely for sufficient food access. These constraints can be influenced by time, risk (i.e., vulnerability to shocks that result in food insecurity), and uncertainty (Maxwell et al. 2002).

In designing a program to address food insecurity, it is necessary to determine the immediate and root causes of the problem, which are context or program specific. Understanding the causes

requires a considerable amount of information at the national, regional, program, and household levels (Riely et al. 1999). This includes an understanding of the three basic pillars of food security; how the three are interrelated and reinforcing in the specific context; what constraints or impediments there are to attaining sufficient food availability, access, and utilization; and what opportunities there are for overcoming these constraints.

According to a recent review of Title II programs, PVOs diagnose and define the food security problems or constraints well. But, in many cases, their subsequent DAP designs do not sufficiently address the critical links and synergies between increased food availability, access, and utilization (Bonnard et al. 2002). For enhanced food security results, DAP components need to be integrated and reinforcing.

Dimensions of Food Access

When designing program interventions, six dimensions of food access must be taken into account, considering appropriate performance monitoring and selecting indicators:

1. Household food access may not adequately reflect food access for individual household members. Because households are the social institutions through which individuals access food, household-level measures are typically used to determine impact (Maxwell et al. 2002). However, inequalities of food distribution within the household have been well documented in the literature (Bonnard 2001). Unfortunately, the inherent costs associated with data collection often make it impossible to measure food access at the individual level. For this reason, measuring whether a household has sufficient cash or in-kind income to provide all household members the necessary access to food is a more common practice. Per capita food access is measured in addition to total food access to more fully capture sufficient food access for all members of the household. However, the limitations of using household-level measures as proxies for individual-level effects must be acknowledged.
2. Food access is a necessary but insufficient condition for appropriate food utilization by all members of a household. Appropriate healthcare practices are critically important. Even if households have sufficient resources to provide adequate food for all their members and they spend these resources on food, this does not ensure that each member of the household actually receives and utilizes an adequate diet. Food has to be distributed such that each member receives the appropriate quantity and quality of food and is in good health and receiving the appropriate care.
3. Food access depends on the income available to the household relative to the price of food. Access depends on how much food a household is able to purchase with a given level of income, which depends on the prices of different food commodities. It is important to consider the price of food even in situations where households produce food for their own consumption. Many producers are net consumers of the food commodities they produce. For example, they produce maize, but not in sufficient quantities to meet their needs and, thus, must resort to the market to cover the gap. Moreover, many producers sell one food crop in order to purchase another. The relative prices of the two crops determines how much of the desired crop producers can acquire in exchange for, or with the revenue from, the other.

4. Households often pursue complex strategies to earn income. As shown in Diagram 1, households have access to a range of resources, such as household labor, land, livestock, and capital. Some households are also able to acquire or use resources through interactions with other households, organizations, or governing bodies. They use these resources and relationships to earn a living, and most households engage in a range of livelihood strategies. In rural areas, they may grow a variety of crops, keep different kinds of livestock, hire out their labor, or engage in non-agricultural income-generating activities.
5. Households have only limited resources to secure their food and other household needs. Trade-offs involving labor, land, and food require important decisions about how to use available resources to meet basic needs. Diversion of productive resources to one enterprise like cotton production could cause shrinkage in another enterprise like coffee production, resulting in either net income loss or gain.
6. There are time dimensions to food access. Many households face great fluctuations in cash and in-kind income, both within a single year and from year to year. Agricultural households may face seasonal fluctuations in income related to crop cycles. Year-to-year fluctuations in income can result from varying agro-climatic conditions. Urban households may face seasonal patterns in income as well. Earnings from microenterprises (MEs) and employment often fluctuate according to seasonal patterns in demand for labor and prices of goods and services. A temporary decline in a household's access to food is referred to as transitory food insecurity, in contrast to chronic food insecurity that results from a household's continuing inability to meet its basic food needs.

These six dimensions of food access have several important implications for measurement of food access:

- Access measurement should consider the number of individuals in the household.
- Interventions aimed at increasing food access should be combined with interventions that address utilization in order to achieve desired improvements in nutritional status.
- Changes in household income should be adjusted for changes in the prices of basic commodities, including food. Therefore, information on food prices is needed to complement household income data. Price information can be collected directly by the project or gathered from secondary sources. Strategies for adjusting household income are discussed in more detail below.
- Measures of household income must capture the income earned by all members of the household as well as the various income flows over the year. Individual household members may not know about, or be able to accurately recall, the income earned by other household members. Therefore, information must be gathered directly from all significant income earners within the household. In addition, households that rely on multiple sources of income during different times of the year may have difficulty recalling all the sources and amounts of income available to the household. Methods for gathering information on income must be designed to capture various income sources throughout the year.

- An access indicator needs to account for a household's resource allocation trade-offs. Partial income measures that evaluate change to one enterprise at a time (e.g., rice production, basket making) run the risk of incorrectly measuring changes in total household income. The total change in income or food access is the combined result of all the household's enterprises. An appropriate indicator of access must measure the net effect of all these changes.
- A single-year snapshot of income is not a sufficient measure of household food security status if income fluctuates widely from year to year. Similarly, a single-point snapshot measure of income at one time of year is not a sufficient measure of household food security status if income fluctuates widely over the year.
- Household assets play an important role in buffering households against food insecurity and help to temporarily smooth household food consumption. Households build up assets in good years to tide them over during less productive times. Some households gradually erode their assets over time in an effort to meet food needs and other household necessities. Thus, asset ownership (i.e., wealth) is an important element in the measure of household food access.

Distinguishing Between Changes in Food Access and Food Consumption Impacts

Household food access is the ability to acquire sufficient quality and quantity of food to meet nutritional requirements of all household members. Consumption indicators go one step beyond food access (i.e., ability) to measure what a household and/or its members have actually eaten (i.e., actualization). Changes in agricultural productivity and income indicate changes in a household's ability to acquire food, but these indicators do not confirm that a household actually acquired and consumed these foods. Improvements in food access facilitate greater consumption. However, increased access should be considered a necessary but insufficient condition for increased consumption. Changes in consumption can be used to capture changes in access as long as it is made clear that this is a proxy for food access.

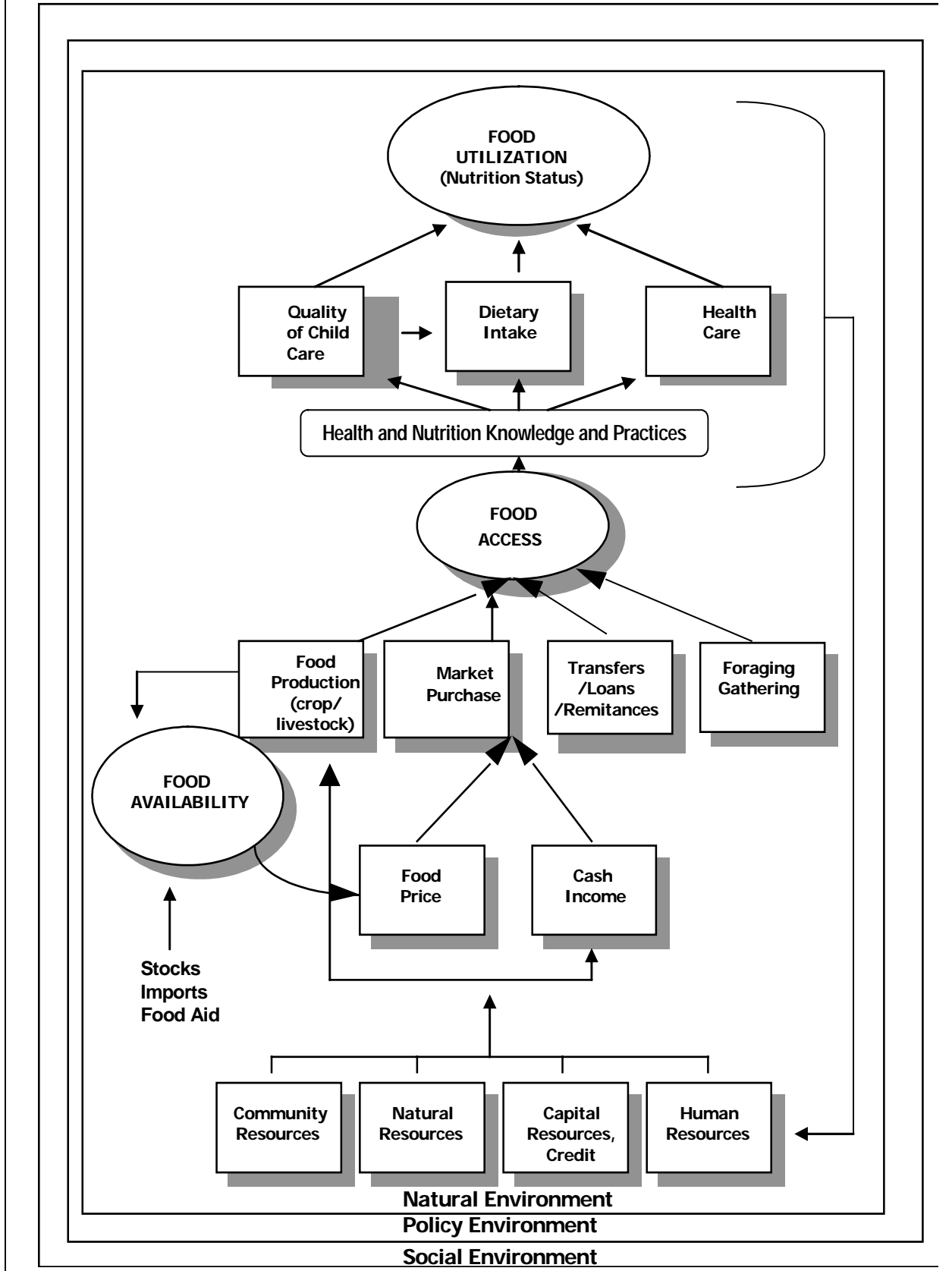
Vulnerability as a Dimension of Food Insecurity

The food security conceptual framework presented herein and in Diagram 1 does not explicitly account for vulnerability to food insecurity at the national, community, or household level (FFP 2003). Where incomes tend to fluctuate due to drought, flooding, conflict, or changes in government policy, an important determinant of income instability level is the exposure to any one or more of these risk factors (Bonnard et al. 2002). These shocks can affect household resources endowments and livelihood options in the short run and, in some cases, for prolonged periods of time.

Risks can come from many sources, including drought, flooding, government policies, or conflict. Food availability can be affected by climatic fluctuations, depletion of soil fertility, or the loss of household productive assets. Access to markets can be disrupted by changing global terms of trade or a disruption of markets during a crisis. Food access can be negatively affected by physical insecurity stemming from conflict or the collapse of institutions that had provided safety nets for low-income households. Food utilization can be impaired by epidemic diseases, gender-biased socio-cultural practices, or a health system collapse. (FFP 2003)

Household vulnerability to food insecurity is determined by the ability of a household to cope with these risks and shocks. Vulnerability to food insecurity can be reduced by decreasing exposure to risks and shocks and/or increasing the ability to manage risk and its consequences. Food security programs addressing food access should explicitly address the concept of vulnerability in program design. To do this effectively, Title II programs should design programs that explicitly address these risks and consequences as well as incorporate indicators that capture some dimension of vulnerability. Some of these indicators are discussed in more detail in the following sections.

Diagram 1: Food Security Conceptual Framework (Source: USAID)



3. TITLE II FOOD ACCESS PROGRAMMING

3.1. Policy and Strategic Frameworks

In 1995, USAID issued the *Food Aid and Food Security Policy Paper*, which provided a framework and guidance for all Title II programs although further guidance on emergency programming was originally anticipated. The strategic framework for the Title II development program put into effect the policy paper's priorities for using Title II resources to maximize impacts on food security, adopting a strategic objective of "sustained improvement in household nutrition and agricultural productivity for vulnerable groups served by USAID food aid activities" (USAID 1995).

Four IRs were identified to support the SO:

1. improved health, nutrition, and maternal-child health services and practices;
2. improved water and sanitation infrastructure, services, and practices;
3. improved natural resource management practices in marginal areas; and
4. improved agricultural infrastructure and practices, including food for work (FFW)/cash for work (CFW) for roads improvements.

Based on the policy paper and strategic plan, FFP developed a results framework for itself and supported the development of M&E guidance for Title II PVOs. In collaboration with the PVOs, FFP identified a small set of generic indicators corresponding to the key types of interventions that PVOs undertake to achieve these IRs. These indicators were designed to reflect the range of program interventions and technical capacities of Title II PVOs. The complete set of generic indicators is presented in section 4.1. of this paper, entitled Table 2: Title II FFP Generic Indicator List. As noted by Bonnard et al. in 2002, the development of the results framework has contributed to a better understanding of performance indicators. Since the policy paper was issued, PVOs have incorporated strategic frameworks into DAP designs and, in the process, improved the designs of their food security programs.

3.2. Typical Title II Access Interventions Selected by Title II PVOs

Prior to 1995, FFP supported activities that had predominantly an indirect relationship to agriculture, such as road rehabilitation and reforestation. Today, the portfolio has a heavy emphasis on agricultural production, post-harvest technologies and practices, marketing, and agriculture-based ME components. For most Title II PVOs, these changes constituted a dramatic shift in Title II programming and implementation, and the transition required considerable retooling (Bonnard et al. 2002). Table 1 on page 11 lists some of the more common food availability and food access interventions used to address typical objectives or IRs.

Table 1: Range of Title II Agricultural Interventions by Objective (Intermediate Result)

Objective	Increase agricultural production	Reduce seasonal food gap	Increase market access	Protect or restore resource base (NRM)
Program intervention	<ul style="list-style-type: none"> • Adaptive research • New seed varieties for local food crops • Improved cultural practices (planting in lines) • Application of organic matter (animal or green manure) • IPM/low external inputs • Inventory credit • Increase market access as incentive to produce more 	<ul style="list-style-type: none"> • Increase production • Improve storage • Inventory credit • Support community grain storage • Diversify crops • Encourage agro-processing • Support income-generating activities • Build greenhouses • Support agriculture-based MEs 	<ul style="list-style-type: none"> • Build marketing associations • Attract input suppliers • Supply price information • Improve rural road work • Add value • Establish rotating credit fund for input purchase • Diversify crops (including tree crops) 	<ul style="list-style-type: none"> • Agroforestry • SWC measures (terraces, barriers, drainage) • Reforestation • Irrigation • Water harvesting • IPM/low external inputs • Incorporation of organic matter • Controlled burning (no burning)
<p>SOURCE: Bonnard, Haggerty and Swindale. March 2002. <i>Report of the Food Aid and Food Security Assessment: A Review of the Title II Development Food Aid Program</i>. Food and Nutrition Technical Assistance Project. Washington, D.C.</p> <p>NRM = natural resource management, IPM = integrated pest management, SWC = soil and water conservation</p> <p>Note: Some interventions appear in more than one column because they address more than one objective. Increased production can be an objective in itself or contribute to reducing the seasonal food gap, just as increasing market access can increase income, increasing purchasing power and reduce the seasonal food gap.</p>				

Annex 5 presents a summary of typical Title II food access interventions and indicators, based on a review of DAP proposals and discussions with PVO staff and FAM and FANTA personnel. Interventions, or the slate of activities a PVO implements to convert resources (i.e., inputs) into goods and services (i.e., outputs), correspond to IRs. Table 1 highlights four main categories of food access interventions:

1. agriculture, including farm productivity and profitability, protection or restoration of natural resources, post-harvest storage and handling, and land tenure security;
2. rural credit and marketing services, including ME development and value-adding processing;
3. infrastructure development, including FFW/CFW projects; and
4. capacity to address food security.

In the agriculture sector, most DAPs include IRs aimed at increasing crop yield and farming system productivity, thereby increasing economic access and/or direct household food consumption. The most common approach to enhancing productivity is the introduction of improved seed and a large menu of improved cultural practices. A less common intermediate result is the provision of secure land titles. Titling is considered an important primary step to increasing agricultural productivity for two basic reasons:

1. Farmers that have more secure ownership or user rights are more inclined to steward and invest in the land.
2. Titled land can be used as collateral for loans.

Many DAPs are designed to introduce small-scale, cost-effective technologies. Improved storage capacity allows a household to store stocks over the year and smooth consumption or cash flow, which in turn improves a household's access to food. Better post-harvest handling and storage are also integral to increasing household income and food access. These activities range from new storage technologies to simple post-harvest handling techniques. For example, Technoserve (TNS) assisted farmers in accurately filling their grain sacks instead of overstuffing the bags—a traditional practice that had cost the farmer and awarded market intermediaries as much as 30 percent greater volume per bag (Bonnard et al. 2002).

Marketing components of DAPs are designed to help farmers capture a greater market share, which can include greater access to market information, improved bargaining power through the formation of associations, facilitation of market transactions, and training in contract negotiation. Credit and savings programs are less common. These programs aim to increase incomes and protect assets while helping to ensure sufficient household finances to meet daily needs. Agricultural diversification into livestock, home gardens, tree crops, or value-added processing may hold promise for increasing incomes, food availability, and food access, ultimately leading to food security.

Infrastructure development relies heavily on FFW/CFW programming. DAPs concentrate on rehabilitating feeder roads and developing micro-irrigation structures. Roads provide benefits to rural farmers by expanding farmers' marketing opportunities and facilitating access to critical services, including credit. Improved road networks may result in decreased transport costs, translating into considerable household savings, particularly during the rainy season (Bonnard et al. 2001). The food and cash transfer also supplements incomes.

A number of DAPs include IRs designed to strengthen the capacity of communities and organizations to address food security problems. The USAID policy paper states the importance of capacity-building in Title II programming, and PVOs have responded by including activities aimed at improving the capacity of households and communities to meet their food security needs. Many DAP interventions work through, or aim to transfer activities to, community-based partners. The sustainability of interventions depends on the capacity of these organizations. Africare-Niger, for example, implements participatory interventions with community groups to improve capacity in problem analysis and the formulation of food security plans that address food access constraints.

3.3. Fulfilling a Food Access Objective with Multiple Interventions

A review of DAP proposals demonstrates that many PVOs undertake multiple interventions aimed at improving access. This is because food insecurity tends to be the result of a number of factors, including rural households' lack of access to appropriate inputs and credit. Greater economic access can be achieved through provision of credit, promotion of non-farm MEs, and enhancement of local partners. Improvement of community group household capacities to address food access constraints is critical for the sustainability of interventions.

The Adventist Development and Relief (ADRA)-Ghana program, for example, emphasizes agricultural education and training to increase agricultural productivity, income, and nutritional

status. The ADRA-Ghana DAP activities encourage farmers to incorporate agroforestry technologies into farming systems and to improve post-harvest storage. It also aims to facilitate the acquisition of microfinance (MF), promote the small business and marketing capacities of subsistence farmers, and foster collaboration with local government and non-government technical support services.

World Vision, Inc. (WV)-Mozambique utilized several multi-sectoral interventions aimed at improving food security, involving road rehabilitation, agricultural production and marketing, and mother and child health (MCH) and nutrition. As a result of improved roads, traders were able to travel more easily into agricultural areas to buy produce. The community-based health program worked with health committees, volunteers, and women's groups to conduct growth monitoring. Additionally, health teams provided training to agricultural extension staff on nutrition information as it relates to agricultural production.

In summary, PVOs have gained significant experience in the design of IRs and interventions to increase food access. A review of annual reports and evaluations reveals that PVOs are working to incorporate lessons-learned into DAP design. DAP problem statements recognize linkages between food availability, food access, and food utilization. However, many projects inadequately address food access, as increased yield does not necessarily translate into increased food consumption. Income and consumption will potentially benefit from tighter integration of the various DAP components.

4. INDICATORS OF FOOD ACCESS

PVOs use a broad range of effect and impact indicators to measure food access, applied at both the strategic objective and intermediate results levels. This section reviews the FFP generic indicators and indicators that are typically used by PVOs, highlighting some of the more innovative approaches used in Title II programming and presenting some advantages and disadvantages of the existing tools. The discussion emphasizes the distinction between indicators that measure improved access to food and those that measure improved food consumption. The section concludes with an assessment of the Title II food access indicators and identifies some of the major gaps in measuring food access.

4.1. Review of the Generic FFP Food Access Indicators

FFP has provided cooperating sponsors (CSs) with a list of generic indicators for the various components of Title II programs. The indicators most relevant for food access programming are those included under household consumption, agricultural productivity, natural resource management, and FFW/CFW. Agricultural productivity, natural resource management, and FFW/CFW all measure some aspect of households' capacity to acquire food. Some indicators are directly related to food access, such as increased production, and others are indirectly related to food access, such as staple food transport costs.

A number of agricultural productivity indicators are presented in the generic list. Several of these indicators address yields while others capture the value of agricultural production and the number of months of household grain provisions. There are also measures of percent crop loss due to pests and environmental degradation. Monitoring indicators include the number of hectares where improved practices are adopted and the number of storage facilities built and used.

A number of important observations can be made related to the usefulness of some of these indicators as measures of food access. In terms of calculating an accurate and meaningful value of agricultural production, some of the key issues include: controlling prices and inflation for seasonality, determining the value of non-market (i.e., non-commercial) crops, determining the value of crop by-products, and accounting for increased labor and input costs.

The relationship between increased yields and increased food access is indirect. Using increased yields to imply increased food access requires a number of assumptions like the increase in yields more than compensates for increased production costs. Yield measurement can also be problematic. Yield data is heavily influenced by external factors such as weather, pest infestations, and the availability and price of critical inputs, most of which are beyond the project's control. There can also be significant differences between farmer estimates and crop cuts with no agreement on which is a preferred measure or how to rectify the differences. Furthermore, yield is difficult to measure and harder to compare across fields and time where intercropping is widely practiced.

With regard to the number of hectares in which improved practices are adopted, it is often difficult to calculate and compare measures where there is both full and partial adoption of

technology packages and where farmers are adopting on just an indeterminate portion of their land or parcel. Natural resource management practices present a similar problem. Moreover, many natural resource management practices are slow to produce significant changes and tend to be even more indirectly related to food access.

In the short-run FFW/CFW make a direct contribution to improved household food access. The food or cash earned represents an increase in household income. Most of the FFW/CFW relate to the market consequences of road improvements. The generic indicators concentrate on these improvements. However, these improvements and the affiliated indicators relate to factors that indirectly influence food access.

Household food consumption indicators provide information on whether households have used their capacity to acquire food (i.e., food access) to actually obtain that food. Adequate consumption implies adequate access; however, inadequate consumption does not necessarily imply inadequate access. A household can have enough resources to acquire a sufficient quantity and quality of food, but chooses not to acquire it. While there are some issues related to measures of dietary diversity covered later in this report, the number of different foods and food groups eaten has been shown to relate directly to income (Hoddinott and Yohannes 2002).

Although the indicator list provides some useful suggestions for measuring the impact of a number of program activities implemented by PVOs, not all of the activities that PVOs undertake to improve food access are covered by this list. For example, indicators for gauging improvements in livestock production, ME development, or marketing capacity (i.e., entrepreneurial capacity) are not included. Other proxies for income used by PVOs, particularly for non-agricultural activities, are not provided. Indicators of coping strategies, with the exception of the number of meals/snacks eaten per day, are not included. Nor are there indicators that capture access to assets. Examples of coping strategy indicators, which represent a household's vulnerability to food insecurity, include the Cooperative for Assistance and Relief Everywhere's (CARE's) coping strategy index and Africare's food security index. In general, the dynamic nature of vulnerability and households adapting to risk is not captured by the Generic Indicator List. The array of indicators used in Title II programs is much broader than the list of generic indicators. FFP is encouraged to expand the list to take into consideration the range of Title II PVO indicators already being used.

Table 2: Title II FFP Generic Indicator List

Category	Level	Indicator
Health, nutrition and MCH	Impact	% stunted children 24-60 months (height/age z-score)
		% underweight children (6-36 mo, 36-60 months) (weight/age z-score)
		% infants breastfed within 8 hours of birth
		% infants under 6 months breastfed only
		% infants 6-10 months fed complementary foods
		% infants continuously fed during diarrhea
		% infants fed extra food for 2 weeks after diarrhea
	Annual monitoring	% eligible children in growth monitoring/promotion
		% children immunized for measles at 12 months
		% of communities with community health organization
% children in growth promotion program gaining weight in past 3 months by gender		
Water and sanitation	Impact	% infants with diarrhea in last 2 weeks
		liters of household water use per person
		% population with proper hand washing behavior
		% households with access to adequate sanitation (also annual monitoring)
	Annual monitoring	% households with year-round access to safe water
		% water/sanitation facilities maintained by community
Household food consumption	Impact	% households consuming minimum daily food requirements
		number of meals/snacks eaten per day
		number of different food/food groups eaten
Agricultural productivity	Impact	annual yield of targeted crops
		yield gaps (actual vs. potential)
		yield variability under varying conditions
		value of agricultural production per vulnerable household
		months of household grain provisions
		% of crops lost to pests or environment
	Annual monitoring	annual yield of targeted crops
		number of hectares in which improved practices adopted
Natural resource management	Impact	imputed soil erosion
		imputed soil fertility
		yields or yield variability (also annual monitoring)
	Annual monitoring	number of hectares in which NRM practices used
		seedling/sapling survival rate
Food for work/cash for work	Impact	agriculture input price margins between areas
		availability of key agriculture inputs
		staple food transport costs by seasons
		volume of agriculture produce transported by households to markets
		volume of vehicle traffic by vehicle type
	Annual monitoring	kilometers of farm to market roads rehabilitated
		selected annual measurements of the impact indicators

4.2. PVO Title II Food Access and Food Security Indicators

This section reviews a large sample of indicators currently being used by PVOs in Title II projects. The indicators and their associated activities are presented in Annex 5. The table in Annex 5 is constructed from a representative sample of Title II projects and does not include the universe of all indicators or activities. The table is constructed to show the link between an IR, the interventions or activities proposed to support it, and the range of output, effect, and impact level indicators that Title II PVOs employ.

The impact indicators have been separated into three groups that have a hierarchical relationship corresponding to the conceptual framework presented in Diagram 1. Level 1 impact indicators measure changes in income, which represents improvements in capacity to acquire food; Level 2 impact indicators measure changes in food consumption or adequate dietary intake; and Level 3 impact indicators measure changes in nutritional status. Moving from one level to the next signifies moving up through the various levels presented in the conceptual framework.

Indicators are grouped according to the intermediate result with which they are associated. For example, the number of farmers using compost and the volume of selected crop are associated with the increase agricultural production IR.

Improved Agricultural Production or Food Availability

Four intermediate results commonly selected by PVOs to address improvements in agriculture production include:

1. increased agricultural production/farming systems productivity;
2. increased economic benefits through increases in production of specific crops;
3. improved profitability of production; and
4. improved post-harvest storage and handling.

Most PVOs use the adoption of improved practices as an effect or outcome indicator. For example, Food for the Hungry (FHI)-Bolivia uses the percentage of farmers adopting sustainable agricultural techniques; ADRA-Ghana uses the number of farmers adopting agro-forestry techniques; and CARE-Bangladesh uses the number of farmers producing locally produced improved seed.

With regards to Level 1 impact (i.e., changes in household income), a review of the DAPs indicated that the use of income indicators varied. Examples of income measures incorporated into DAPs include Catholic Relief Services (CRS)-Gambia and FHI-Bolivia, who both use increased income from livestock/crop sales; ADRA-Ghana, who uses the percentage increase of per capita income; and the Save the Children Federation (SCF)-Guatemala and CRS-Gambia, who use the percent increase in farm/crop productivity. All CSs in Mozambique compute a proxy of total household income using the econometric model, INCPROX. Michigan State University developed the tool for collecting the data and the USAID-Maputo Mission provides

funds for data collection related to this indicator. An external consultant, paid for by the Mission, is required to tabulate and analyze results.

Other PVOs use household assets as a proxy for income. These include FHI-Ethiopia, the Relief Service of Tigray (REST)-Ethiopia, SCF-Ethiopia, and CARE in Ethiopia, Madagascar, Mozambique, Guatemala, and Honduras. This indicator is used to track changes in income and changes in vulnerability.

Several PVOs use a Level 2 food security impact indicator or proxy measures of consumption. Consumption indicators can be good proxies of food access if consumption requirements are met. If individuals or households consume the necessary quantity and quality of food, they obviously had adequate food access or capacity to do so; however, if consumption requirements are not met, an individual or a household could still have adequate capacity to acquire that food, in which case the consumption indicator does not accurately reflect food access. Consumption indicators are appropriate measures for programs that have food security goals since they provide valuable information on whether capacity (i.e., food access) is being translated into actual dietary intake (i.e., food consumption).

Dietary diversity is increasingly being used as an indicator of food consumption and food access. A recent study concluded that dietary diversity, whether defined as the number of different individual food items or food groups, provides an inexpensive and reliable indicator of adequate food consumption at the household level. It is currently used by ADRA-Ghana, the Agricultural Cooperative Department International/Volunteers in Overseas Cooperative Assistance (ACDI/VOCA)-Uganda and -Rwanda, Africare-Uganda, CRS-Rwanda, and TNS-Uganda. FHI-Bolivia and ADRA-Ghana have also tried to look at changes in consumption of foods rich in Vitamin A.

Some PVOs tie coping strategies to food production, storage, and handling as a way to measure their intermediate results. The number of meals eaten per day, used by ADRA-Ghana, is a common coping strategy indicator that also measures vulnerability to food insecurity. OICI-Ghana uses months of stored grain and legume availability, and Africare-Niger and -Uganda use months of household provisioning as measures of vulnerability.

Level 3 indicators of food security or nutritional status are rarely used by PVOs working strictly on issues of food access or food availability. However, these indicators are found in DAPs where PVOs combine MCH interventions with agriculture (e.g., ADRA-Ghana, CARE-Mozambique). This is primarily because PVOs that combine health interventions with agricultural interventions simultaneously address multiple dimensions of food security, making it appropriate to measure nutritional outcomes.

Improved Natural Resource Management

IRs that address natural resource management (NRM) include:

- improved natural resource management in farming or fishing areas;
- improved watershed management; and
- improved land tenure security.

Most PVOs implementing NRM activities use the adoption of improved practices as an effect level indicator. Adoption is most often defined as a yes/no response corresponding to adoption or non-adoption of a particular improved practice or a number of improved practices. ADRA-Ghana uses the number of farmers not supported by the project adopting agro-forestry techniques and CRS-Guatemala uses the percent of fishermen adopting improved NRM practices as measures of improved NRM practices. Adoption is defined as the number of hectares under a particular improved practice. For example, Africare-Uganda uses the number of hectares of farmland newly protected as an indicator of improved natural resource management practices. CRS-Guatemala uses the number of farmers obtaining land titles as an effect level change.

A few PVOs use the Level 1 food security impact indicator (i.e., income) to measure performance of an NRM IR. For example, ADRA-Ghana uses the percent increase in revenue generated from tree nurseries. Level 1 and 2 impact indicators have not been specified by PVOs implementing NRM activities. Income indicators are less common than adoption indicators because improvements in natural resources are only indirectly associated with improvements in food access.

Rural Credit and Marketing

Many rural credit and market service IRs are closely associated with the agricultural interventions mentioned earlier. Examples of IRs used under this category include:

- ensure access to financial and technical services;
- train community savings and loans organizations/agro-businesses;
- increase access to markets;
- create and build capacity of marketing associations;
- increase the level of production for the market;
- increase processing of selected crops to increase economic benefits; and
- use improved processing and marketing channels/skills.

Many PVOs identify systemic changes, such as improvement in the institutional function, as critical to the success of the project. For example, OICI-Ghana measures the number of MEs created and improved. CARE-Mozambique counts the number of farmer groups establishing self-managed accounts, contracts, and activities. Other types of effect level changes captured under these IRs include OICI-Ghana's percent of farmers selling produce at the higher selling price and CRS-Gambia's percent increase in the amount of sesame processed.

In terms of Level 1 food security impact indicators (i.e., income), CRS-Guatemala tracks increases in capital funds and increases in savings. CARE-Mozambique captures the percent increase in revenue from marketing of agricultural products and percent increase in income.

Level 2 food security impacts (i.e., consumption) are infrequently tracked in the DAPs reviewed. Only CARE-Mozambique and CRS-Gambia track the percentage increase in consumption of household produce/processed crops (e.g., oil).

PVOs do not measure nutritional changes in conjunction with these IRs. The inclusion of Level 3 food security indicators is strictly associated with the presence of other IRs that are more closely related to food utilization.

Infrastructure Development

Examples of IRs proposed by PVOs under infrastructure development include:

- road development or improvement to increase farmer access;
- development of irrigation structures and flood preparedness; and
- rehabilitation of market/social infrastructure through FFW.

Performance monitoring under infrastructure IRs tends to focus on outputs (e.g., number of kilometers of road rehabilitated) rather than food security impacts (e.g., food price changes due to improvements in roads, reduced transportation costs) and, hence, overlook market access (Bonnard et al. 2002).

A number of PVOs track changes in traffic flow or transport costs as an effect level result of road rehabilitation. For example, Africare-Uganda, CARE-Bangladesh, and WV-Mozambique record percentage increase in freight traffic and total freight traffic volume during harvest and planting seasons.¹ WV-Mozambique also measures percent increase in roadside businesses. Africare monitors increases in the number of households selling goods in markets as an indication of the household's proximity to rehabilitated roads and the benefits stemming from the improvements in road conditions.

Level 1 food security impact indicators, or those related to income changes, include ADRA-Ghana's percentage of household production sold as a proxy for income, and CARE-Bangladesh's percentage decrease in assets/economic loss during annual floods and percentage increase of households living on the road. Additionally, CARE records percent increase in income of vulnerable households in Bangladesh.

In general, PVOs do not employ Level 2 and 3 food security impact indicators for assessing the performance of infrastructure rehabilitation IRs. However, ADRA-Ghana uses the percent increase in households consuming fruits and vegetables as a proxy for improved consumption. ADRA-Ghana also tracks Level 3 food security impacts on nutrition in conjunction with its MCH component.

Capacity Building

A number of CSs incorporate capacity-building into their DAPs. Despite many CSs' capacity-building efforts, there are often no indicators for capacity development or measures for how well organizations operate or how much additional capacity an organization has gained through the

¹ Freight traffic refers the number of vehicles that are now using the rehabilitated road, whereas volume essentially refers to the amount of goods that are transported.

DAP (Bonnard et al. 2002). Among the DAPs reviewed, examples of IRs focusing on capacity building include:

- strengthening community/partner capacity to address food security problems; and
- improving staff skills and capacity in food security programming.

For effect level indicators, Africare-Niger uses the percent increase of communities that have democratically and gender-equitably designed and implemented food security plans. ADRA uses the number of project committees with improved capacity to solve problems, and CRS-Guatemala uses community-based projects developed and financed as an effect level change.

Two PVOs, ACDI/VOCA and Africare-Niger, measure Level 1 food security impacts (i.e., income) as part of their capacity-building efforts. The PVO programs reviewed do not use Level 2 or 3 food security impact measures associated with their capacity building activities.

4.3. Innovative Title II Approaches

A number of PVOs use innovative measurements to gauge food access, including proxies for changes in income, wealth, and food consumption.² These indicators can be grouped into three different categories that proxy Level 1 food security impacts (i.e., income) and one additional category that proxies Level 2 food security impacts (i.e., food consumption).

The first group of proxy indicators for Level 1 food security impacts includes SCF-Ethiopia, FHI-Ethiopia, REST-Ethiopia, and CARE in Bangladesh, Honduras, and Madagascar. These programs have been developing income proxies based on household assets. CARE-Bangladesh uses asset values to establish wealth-ranking criteria for targeting and monitoring changes in wealth over time, with similar work being done in Madagascar. Assets are generally viewed as an indication of wealth, but assuming that wealth derives predominately from income and that the value of the assets being monitored is closely correlated with changes in income, these wealth proxies can also be used as income proxies.

The second group of Level 1 food security impact proxy indicators includes the work of two PVOs that have developed similar types of income proxies using expenditure patterns in place of asset values. SCF-Ethiopia measures expenditures on luxury food items as a proxy for total income. These luxury items are defined in the context of how SCF's beneficiary groups of poor and food insecure populations judge luxury. FHI-Ethiopia tracks expenditure on kerosene, a common household item that varies with income, as a proxy for income.

A third group of innovative proxies for income includes indicators used by PVOs engaged in strengthening marketing linkages. These indicators attempt to measure the increased income derived from agro-processing or adding value to primary agricultural production. For example, CRS-Gambia captures the added value of processing produce for market sales.

² Although many of these proxies have been used in other development programs, only recently have they been applied in Title II settings. For the purposes of this paper, the word innovative implies that the indicators are new to the Title II program.

A number of PVOs have developed or adopted proxy indicators for Level 2 food security impacts, measuring food consumption. Notably, food consumption is typically viewed as a proxy for income in poor and food insecure settings. Therefore, these indicators can also be used as proxy indicators of change in income. Africare-Niger and -Uganda track months of household food provisioning, the advantage of which is that it captures the combined effects of several agricultural interventions and strategies, such as production, storage, and purchasing power (Bonnard et al. 2002). When combined with yield figures, this indicator can help determine when increases in productivity and food availability translate into improved food access and consumption.

Although a number of PVOs track dietary diversity as an indicator of consumption, few use it to assess the performance or food security impacts of agriculture, credit, or MF interventions. Instead, they tend to limit monitoring and evaluation to standard measures of performance for these types of interventions (e.g., yields, loan repayment). Yet, these interventions were originally designed to address food insecurity. Agriculture programs primarily increase agricultural productivity and lead to increases in food availability. Micro-credit and savings programs can increase income or protect assets while ensuring sufficient funds are available to meet daily household food needs (Bonnard et al. 2002).

4.4. Assessment of Title II Food Access Indicators

As stated previously, food access indicators can be divided into those that measure improvements in the capacity to acquire food (i.e., food access) or improvements in the actual intake of food or food consumption. As with the previous section, the following section on assessment of food access indicators is framed by this distinction. This section relies heavily on the information in the tables in Annex 6. In the first section of Annex 6, alternative access indicators related to direct measures of household income, or a component of income, are presented. This is followed by a discussion of the indirect or proxy indicators for income. The second section of the Annex 6 considers alternative food consumption impact indicators. The first set of indicators contains potential quantitative measures of food consumption while the second set contains potential qualitative measures of food access.

To assess the utility of food access indicators, a number of criteria are used, including:

- cost to obtain the necessary information, in terms of project resources and time;
- analytical capacities required to construct and interpret the indicator (i.e., skill level);
- timeframe in which an indicator is likely to change (i.e., within the DAP program cycle);
- ability of the indicator to measure desired impacts of project interventions;
- adaptability of the indicator to a range of different conditions and circumstances; and
- ease of the indicator's interpretation, and its attribution of change to project interventions.

Using these criteria, Annex 6 provides an overall assessment of the indicators, details the advantages and disadvantages, and highlights the information gaps that still need to be addressed. Annex 6 also lists the underlying assumptions associated with each indicator.

4.4.1. Level 1 Food Security Impact or Income Indicators

4.4.1.i. Direct Measures of Household Production or Income Change

Households may derive income from a variety of sources, some with marked seasonal patterns. Quantifying incomes from all sources over the course of the year is difficult, time consuming, and beyond the financial and technical capacity of most PVOs. A number of alternative means of measuring income are summarized in the following paragraphs.

Household Income

The most direct way to capture income changes is to measure household income, including production, sales, wages, salaries, and transfers, at two points in time. However, collection of the necessary information and its synthesis into meaningful results is extremely costly in terms of project resources, time, and money. Moreover, this would require skilled enumerators and data analysts. Some of the complications associated with collecting household income information arise from the fact that individuals may have problems recalling all sources of income over the course of a year or the income earned by other household members. Furthermore, respondents may have a disincentive to report their incomes accurately to project staff.

To accurately measure food access, calculations of household income should incorporate the following:

- income from all possible sources—all agricultural production and sales (e.g., field, garden, and tree crops; livestock; fish; items hunted or gathered; added-value products such as cheese), wages and salaries, ME activities, transfers, etc., ensuring that all gross household income changes are measured;
- income per household member (i.e., each adult); and
- income corrected for the price of food by adjusting for overall inflation according to the consumer price index, if available and applicable.

Given the technical difficulty, cost, and time associated with collecting and analyzing income, it generally is not an appropriate PVO food access measurement. Box 1 on page 24 presents a few alternatives, although many of these indicators are also technically complicated, expensive, and time-consuming to measure, especially to measure accurately. The DAP's design, the PVO's capacity, and the program manager's information needs dictate whether each of these proxies is appropriate.

Box 1: Measures of Household Production or Income Change*Agricultural/Livestock Income*

This indicator is appropriate in situations where project interventions are designed to increase agricultural or livestock production. All agricultural enterprises should be considered because increased investment in one can mean decreased investment in another. When households have alternative income sources for securing food access, measuring only the agricultural and livestock enterprise will not adequately measure the total change of household income. Although this measure is less difficult to obtain than total household income, it is still difficult and costly to get accurate quantitative information. In addition, if expressed in percentage terms, this measure tends to overestimate increases in household food access. Caution should be exercised in applying this indicator for measuring food access because alternative income sources are not taken into account.

Value of Agricultural/Livestock Production

In addition to the assumptions implicit with the preceding indicator, this indicator assumes that there will be no change in the costs of agricultural and livestock inputs. If farmers adopt production techniques that utilize more inputs, perhaps as part of project recommendations, this measure will overestimate the increase in household access because it is a measure of gross value and not net value. This measure is still quite difficult and costly to implement. This indicator is not recommended for measuring food access.

Value of Agricultural/Livestock Sales

This measure only accounts for increases in agricultural and livestock products to be sold. If some portion of production increase is consumed directly by the household, this indicator will underreport changes in household access to food. This may not be an appropriate indicator for food access.

Net Production of Specific Crops (kg)

Many DAPs report production by crop. This indicator does not capture any reductions in other crops that households may incur in order to increase production of a single crop—the crop being measured. Land and labor may be taken out of production of alternative crops to increase production of the measured crop. Therefore, this is not a good access indicator.

Net Cash Income Per Hectare

This indicator has been used to compliment indicators of increased yield for basic food crops. This indicator calculates the cash cost and revenue associated with cultivated land. While it is relatively easy for farmers to remember and report on cash obtained from crop sales at the point of harvest, it is difficult for them to remember the costs of inputs and the details (price and quantities) of additional transactions over the year. This indicator assumes that there will be no major changes to the basic food crops grown in the area planted. This indicator should be tested in multiple contexts before it is recommended for wide distribution.

Crop Yields Per Hectare

Many DAPs use measures of crop yields as impact indicators. While this is a very important effect level indicator, crop yields are not appropriate indicators of food access. Households may plant less area when higher yields can be achieved, so total production may not increase at all. Furthermore, achieving increased yields may require households to expend more labor and purchase higher-cost inputs.

Percent of Crop Losses During Storage

This indicator is directly related to project interventions that include post-harvest and storage technologies and practices. Farmers can roughly state crop losses during storage, but it is difficult to get an accurate estimate and very costly to measure directly. This is a good indicator if used with an intervention aimed at increasing storage capacity in areas where storage losses are high.

4.4.1.ii. Indirect Measures of Income: Assets and Expenditures

PVOs have incorporated proxy indicators for income to avoid the difficulty of collecting direct, comprehensive income data. Some proxy indicators are discussed in the following paragraphs.

Statistically-Based Proxies of Household Income

All PVOs working in Mozambique use an income proxy indicator, INCPROX. The indicator is derived from an econometric model, which is based on a set of variables that are highly correlated with income. Most PVOs using this indicator have found that the information collected for the model is almost as difficult to obtain as direct measures of household income. Another problem is that changes in predicted income may be too difficult to attribute to project interventions. Finally, the resources, time, and skills needed to collect this information may be beyond most PVOs' scope; therefore, INCPROX is not a recommended indicator.

Total Household Expenditures

A number of research organizations, including the International Food Policy Research Institute, try to measure food access by collecting information on total household expenditures. Because this type of information is very expensive to collect at this time, PVOs do not currently use such measures. In situations where total household expenditure data are being collected, it is recommended that PVOs use this information for programming purposes.

Household Expenditures on Specific Items that are Highly Correlated with Income

Experience has shown that it is usually easier to obtain information about household expenditures for specific goods than about total income from all sources or all expenditures. If the expenditure on a single good or a small number of goods is highly correlated with household income, the observed expenditure on these goods can be used as a proxy of household income.

One problem with this approach, however, is that expenditure on particular goods may be highly correlated with income at some income levels, but weakly correlated at others. Staple foods, considered necessities, are highly correlated with income at low-income levels, but less correlated at high-income levels. Very low-income households will increase their expenditure on staple foods as their incomes increase. Richer households have generally already reached their desired level consumption of staple foods, so their expenditure on staples will not increase if their incomes rise.

Conversely, luxury goods (e.g., meat, fresh vegetables) correlate with income at high-income levels, but not at low-income levels. Very poor households consume only small amounts or none of these items, and their expenditure on luxury goods tends not to rise significantly even if the household income increases, instead opting to use additional income to acquire more necessities. On the other hand, richer households typically spend more on luxury goods as their incomes increase.

The challenge, therefore, is to identify goods that correlate broadly with household income levels across the range of incomes and geographic areas (e.g., settled agriculture versus pastoral areas, humid versus dry tropics) that characterize DAP beneficiaries.

Some PVOs track the consumption of specific items (e.g., meat, fish, medicines, fuel) as part of their performance monitoring for programs addressing other sectors, such as MCH. For example, SCF-Ethiopia measures household expenditures on luxury food items, and FHI-Ethiopia tracks expenditures on kerosene.

Diversity of Household Income/Agricultural Income

This indicator measures the number of different household income sources, or the number of different crops grown, as a measure of income diversity. It intends to capture household income diversification strategies that reduce income variation and is based on the assumption that a more diversified set of income sources will have lower variability in total income earned. However, the indicator does not provide any indication of whether income levels have increased or decreased. As specified by Title II PVOs, the indicator only measures the number of sources of income, not the actual income. This information is easy for PVOs to obtain and is often directly related to project interventions. Before recommending widespread use of this indicator, the contextual differences associated with negative correlations between income diversity and vulnerability must be determined.

Household Assets

Asset ownership is important to monitor in the food security context because assets buffer or insure household consumption when incomes are insufficient. As household incomes increase, additional income may be used to acquire assets. Households acquire assets that can be sold on a periodic basis to compensate for shortfalls in consumption, income, or other types of household assets (i.e., productive and non-productive assets) that are less likely to be sold unless food insecurity is severe (Maxwell and Frankenberger 1992). Livestock is a classic indicator asset. Asset sales are considered an indication of food insecurity, and productive asset sales are a good indication of household vulnerability to more severe food insecurity because, in this case, a household is willing to compromise future income streams for the fulfillment of immediate consumption. However, the interpretation of asset sales is to some extent context specific (e.g., livestock sales in pastoral societies are interpreted differently than livestock sales in agrarian societies).

While assigning assets value is difficult, counting them is easy and can generate an asset index for the purposes of creating wealth rankings. In this way, changes in asset ownership can be tracked as proxies for income change. Changes in the value of an asset index can also be a good indicator of household wealth and vulnerability to food insecurity. Therefore, it can serve as a food access indicator in the Title II context.

Food Provisions

Food provisions are a particular form of household asset closely tied to household food security status. Food stock level is directly related to a wide range of project interventions, such as those

focused on agricultural production, storage techniques, and marketing strategies. This indicator is relevant in subsistence areas where production is primarily for home consumption and households do not make significant sales in the market (Diskin 1997). In most contexts where PVOs operate, households are connected to markets and rely on produce sales and other non-agricultural sales as income sources. Therefore, caution should be exercised when using food stock level as a food access indicator. In these contexts, a measure of food provisions, the ability to obtain sufficient food, should be used.

4.4.2. Level 2 Food Security Impact or Consumption Indicators

These indicators describe household food consumption. They are divided into two types: quantitative measures of food access and qualitative perceptions of food access.

4.4.2.i. Quantitative Measures of Food Access

Dietary Diversity

Dietary diversity is the sum of the number of different foods or food groups consumed by an individual or household over a specific time period. This indicator is a proxy for quality of diet and is highly correlated with adequate caloric and protein intake, quality of protein consumption, and household income (Ruel 2002; Hoddinott and Yohannes 2002). This indicator is useful because of its easy interpretation, cost-effectiveness, accuracy, and simplicity to measure.

The use of dietary diversity as a proxy for consumption stems from the fact that households consume a wider variety of foods when their incomes rise. Dietary diversity is also highly correlated with household per capita consumption and household per capita caloric availability (FANTA 2002). It is a good proxy for vulnerability because of populations' tendency to decrease the number of items they eat as they become more food insecure. One difficulty associated with this indicator, however, is the inability to set targets for changes in diet because dietary diversity varies in different contexts. A solution is to develop targets using the average dietary diversity value for the top 25 percent of households in the programming area (FANTA 2002). Another issue involves determining minimum intake values before counting the item as a food. For example, some spices with relatively limited nutrient content are often added to traditional dishes. It is recommended that this indicator be used to capture changes in food access with the understanding that programmatic context must be considered.

Number of Eating Occasions Per Day

This indicator is a proxy for the adequacy of caloric intake by household members. Data collection is relatively easy and inexpensive and does not require determining meal size or composition (Ruel 2002). It is most useful in capturing transitory food insecurity. It is not sensitive to chronic food insecurity or deficiencies in diet. Cultural influences may determine the actual number of eating occasions that occur, as well as the definition of the term "meal," making it difficult to compare this indicator across locations. For example, in some parts of Zambia, people only consider a meal an eating occasion that includes rice. This indicator is

useful as a food access indicator, only if differences in context are taken into account (Swindale and Ohri-Vachaspati 1999).

Increased Percentage of Household Consuming Minimum Daily Caloric Requirements

Although this indicator is an excellent estimate of household food security, it requires careful definition to obtain accurate results. One strength of the increased percentage of household consuming minimum daily caloric requirements indicator is that data can be collected on an individual basis to determine the food security status of each household member. Some of the disadvantages of this indicator are that intake has to be measured repeatedly to account for day-to-day variations and that data collection requires significant resources, time, and skills not normally characteristic of PVOs (Ruel 2002; Hoddinott and Johannes 2002). An alternative is to use 24-hour recalls³ to measure the number of eating occasions, dietary diversity, and daily requirements met (Hoddinott 1999). It is not recommended that PVOs use this indicator to measure food access because of its associated cost and technical difficulty.

Percent of Total Expenditure on Food

The percent of total household expenditure spent on food is an effective measure of vulnerability (Smith 2002). Households that spend a high portion of their income on food (i.e., more than 70 percent) are very likely to be food insecure. To compute this proxy measure, data should be available on all household expenditures. Similar to the indicator described above, data collection requires considerable time, resources, and skill not often found among PVOs. For this reason, it is not recommended as a food access indicator in the Title II context.

Indices of Household Coping Strategies

Coping strategy indices evaluate the strategies employed by households that are unable to access adequate amounts of food (Maxwell et al. 2002). Because there are several strategies for coping with food insecurity, it is often quicker and less costly to measure the presence of these coping strategies than directly recording consumption information. There are four types of coping strategies that food insecure households typically use:

1. changing the diet to include less costly and less preferred alternative foods;
2. increasing food supplies through non-sustainable means (e.g., borrowing money, consuming seed stocks, begging);
3. decreasing the number of individuals being fed by the household (i.e., migration); and
4. rationing available foods by reducing meal size or frequency (Maxwell et al. 2002).

The advantage of a coping strategy index is that it captures notions of food adequacy and vulnerability. Some disadvantages of this approach are that: contextual differences make

³ According to Hoddinott (1999), there are several drawbacks to the 24-hour recall method. First, data for 24-hour recall must be obtained for seven consecutive days in order to capture the range of household food diversity. Second, skilled enumerators must be able to obtain accurate measures of quantities quickly. Third, the process of interviewing all household members regarding food type, quantity, etc. is time-consuming and must be done carefully and accurately.

comparisons across households and localities problematic, misreporting may lead to biased results, and the index tends to underreport the number of severely food insecure households (Hoddinott 1999). Although this may be a useful indicator of food access, care must be taken to contextualize this measure.

4.4.2.ii. Qualitative Perceptions of Food Access

Measures of Households' and Communities' Perceived Food Security Conditions

This measure captures food security criteria important to a community by asking households to identify what they perceive as the key food security dimensions. These dimensions may include food sufficiency, quality, or vulnerability. The data are less costly to collect than quantitative consumption data. This is a perception-based measure that reveals the local understanding of food insecurity.

Some of the problems with this activity are susceptibility to reporting biases, difficulty of confirming results independently, and challenges of cross country comparison. Before this measure is recommended as a good food access indicator for wide application, it must be subject to field tests in different contexts, two of which are currently supported by FANTA.

Number of Months of Adequate Household Food Provisions

This measure can either be obtained through surveys or community participatory techniques to determine the number of months a household has adequate food provisions. It captures information on production, storage, and purchasing power (Bonnard et al. 2002). Africare groups such measures in its Food Security Index. When combined with yield information, this measure can indicate when improved yields correspond to improved food consumption. As with other qualitative indicators, disadvantages of this measure are that it is susceptible to reporting biases and it is difficult to make cross-country comparisons due to context specificity. Before this indicator can be applied on a wide basis, adaptation and field testing for different contexts are required.

4.4.3. Summary of Observations

The previous discussion reviewed indicators that measure improved means of acquiring food and proxies for food access and food consumption. Instances where PVOs combine these measures will depend upon the types of interventions being promoted. For example, interventions focused on improved agricultural production and food availability often combine proxies for income or consumption. However, interventions focused on rural credit and marketing or infrastructure development rarely track changes in consumption.

The hierarchical relationships of these indicators must be taken into account in project design and M&E systems. M&E systems have to consider what outcome changes are possible given the types of interventions the PVO promotes. For example, changes in income will not necessarily lead to changes in nutritional status unless conditions that affect food utilization, such as health, are adequate.

Although direct measures of income are often the best measures of changes in a household's ability to obtain food, the data collection methods require resources, skills, and time that are beyond the scope of many Title II CSs. Thus, the most promising indicators are:

- agricultural/livestock income;
- net cash income per hectare;
- harvest crop yields per hectare; and
- percent of crop losses during storage.

Collecting data on proxy indicators for income is easier than collecting data on direct measures of income. Specific items may be used for estimating differences in income, including:

- asset ownership;
- diversity of income sources; and
- household expenditures.

Recommended proxy indicators for consumption include:

- dietary diversity;
- number of eating occasions per day;
- household coping strategy indices that suggest vulnerability; and
- perception of food access measured by household/community perceived food security condition or number of months of adequate household food provisions.

Additionally, qualitative information from project beneficiaries can help interpret changes in quantitative indicators. This type of information can also identify the particular goods and assets to track in specific projects.

PVOs currently use a number of indicators to capture information about household and community vulnerability to food insecurity. Many of these are not on the FFP Generic List of Indicators, including the coping strategies index, the asset index, and the number of different household income sources. Given FFP's new strategy, measuring and understanding changes in vulnerability will be more important in future programming.

4.5. Gaps in Measuring Food Access

The review of the Title II PVO approaches to measuring household food access revealed that PVOs are currently implementing procedures for capturing changes in food access. The wide range of PVO activities designed to improve household food access demonstrates that PVOs have a good understanding of the role and importance of access within the food security framework. Furthermore, some PVOs are aware that improving household access to food is necessary but not sufficient for improving overall food security.

The major findings of this review are as follows:

- In many projects, the linkages between the various interventions necessary to increase food access are not well developed. PVOs should work to strengthen those linkages.
- PVOs should collect more and better market information and use it to design market interventions that are more likely to increase household food access.
- The DAPs appear much stronger on measurement of project output and effects than on appraisal of outcomes such as changes in household access to food. One major shortfall is that PVOs normally do not combine proxies for food consumption and indicators that capture improvements in the means of access. Project designs fail to adequately consider the pathways through which improvements in food security can be achieved. This is especially true of micro-credit and infrastructure programs.
- In situations where first level food security impacts (income) are measured, PVOs must ensure that projects allocate the necessary resources, time, and skilled personnel to collect, synthesize, and interpret information.
- Some DAPs include proxy indicators for consumption and income. These indicators show promise and should be tested in a variety of locations before they are widely disseminated.
- Many of the current indicators used by PVOs are not listed as Generic Title II Indicators promoted by FFP. This list should be revised, considering the promising indicators identified in this review.

5. SUMMARY AND CONCLUSION

Measurement of food access is critical to every food security program. These measures are used to identify the food insecure, assess the severity of their food shortfalls, and gauge the progress of interventions and programs designed to improve food security. This paper reviewed how Title II DAPs are designed to improve food access and how PVOs assess and monitor food access. Best practices were also identified.

Household food access is the ability to acquire sufficient quality and quantities of food to meet all household members' nutritional requirements. Consumption indicators can be used as proxies for food access by going one step beyond food access to measure what a household or its members have actually eaten. Food access improvements facilitate consumption and are absolutely necessary, but should not be considered sufficient for adequate consumption to take place.

PVOs use a broad range of indicators to measure food access, many of which are applied at both the SO and IR levels. Although FFP has developed a Generic Indicator List that provides useful suggestions for measuring the food security impacts of program activities implemented by PVOs, not all of the activities that PVOs undertake to improve food access are covered by the indicators in this list. For example, indicators of changes in income, particularly for non-agricultural activities, are not provided. Moreover, neither vulnerability nor households' ability to adapt to risk are captured by the list.

Because vulnerability to food insecurity is such a prominent characteristic of the environments within which food insecure households live, food security programs addressing food access should explicitly address the concept of vulnerability in program design and incorporate indicators that capture some dimension of vulnerability. A number of indicators are currently used by PVOs that measure household and community vulnerability to food insecurity, including the coping strategies index, an asset index, and the number of different household income sources. Given FFP's revised strategy emphasizing risk and vulnerability, it is important to incorporate and monitor vulnerability in future programming.

Using the results from this review, the second phase of this activity will focus on identifying good practices for monitoring food access and adapting field-tested measuring access tools for Title II field staff to use.

ANNEX 1

DAP and CSR4 Documents Reviewed

ACDI/VOCA-Rwanda. FY 2003 and 2004
ACDI/VOCA-Uganda. 2002-2006
ADRA-Ghana. FY 2003 and 2004
Africare-Niger. FY 2000-2005
Africare-Uganda. FY 1997-2001
CRS-Gambia.
CRS-Guatemala. FY 2003
CARE-Bangladesh. BUILD Project
CARE-Madagascar. FY 2004-2008
CARE-Mozambique. FY 2002-2006
FHI-Bolivia. FY 2002-2006
OICI-Ghana. FY 2003
TNS-Ghana. 1997-2001
WV-Mozambique. FY 1996-2000

References

- Bonnard, Patricia. *Improving the Nutrition Impacts of Agricultural Interventions: Strategy and Policy Brief*. Washington, D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development, 2001.
- Bonnard, Patricia et al. *Report of the Food Aid and Food Security Assessment: A Review of the Title II Development Food Aid Program*. Washington, D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development, 2002.
- Caldwell, Richard. *CARE Project Design Handbook*. Atlanta, GA: Cooperative for Assistance and Relief Everywhere, 2002.
- Cogill, Bruce and Tony Castleman. *Food Aid: Issues and Applications*. Washington, D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development, 2003.
- Diskin, Patrick. *Agricultural Productivity Indicators Measurement Guide*. Washington, D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development, 1997.
- Food and Nutrition Technical Assistance Project. *Technical Note No. 4: Dietary Diversity as a Household Food Security Indicator*. Washington, D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development, 2002.
- Food and Agriculture Organization of the United Nations. “Summary of Proceedings: Measurement and Assessment of Food Deprivation and Undernutrition.” Paper presented at the Measurement and Assessment of Food Deprivation and Undernutrition International Scientific Symposium, Rome, Italy, 26-28 June 2002.

Food for Peace. “Conflict and Humanitarian Assistance: Concept Paper for 2003-2008 Strategic Plan (Draft).” Washington, D.C.: United States Agency for International Development Bureau for Democracy, Conflict, and Humanitarian Assistance Office of Food for Peace, 2002.

Hoddinott, John. *Choosing Outcome Indicators of Household Food Security*. Washington, D.C.: International Food Policy Research Institute, 1999.

Hoddinott, John and Yisehac Yohannes. *Dietary Diversity as a Food Security Indicator*. Washington, D.C.: International Food Policy Research Institute, 2002.

Maxwell, Dan et al. “The Coping Strategies Index: A Tool for Rapidly Measuring Food Security and the Impact of Food Aid Programs in Emergencies (Draft).” Nairobi, Kenya: Cooperative for Assistance and Relief Everywhere and World Food Programme, 2002.

Maxwell, Simon and Timothy Frankenberger. *Household Food Security: Concepts, Indicators, Measurements*. Rome, Italy: International Fund for Agricultural Development and United Nations Children’s Fund, 1992.

Riely, Frank et al. *Food Security Indicators and Framework for Use in the Monitoring and Evaluation of Food Aid Programs*. Washington, D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development, 1999.

Ruel, Marie. *Discussion Paper No. 140: Is Dietary Diversity an Indicator of Food Security or Dietary Quality? A Review of Measurement Issues and Research Needs*. Washington, D.C.: International Food Policy Research Institute, 2002.

Smith, Lisa et al. *Understanding the Causes of Food Insecurity in Sub-Saharan Africa: Do the Determinants of Diet Quantity and Quality Differ?* Tucson, AZ: International Food Policy Research Institute and University of Arizona, 2003.

Smith, Lisa. “The Use of Household Expenditure Surveys for the Assessment of Food Insecurity.” Paper presented at the Measurement and Assessment of Food Deprivation and Undernutrition International Scientific Symposium, Rome, Italy, 26-28 June 2002.

Swindale, Anne and Punam Ohri-Vachaspati. *Measuring Household Food Consumption: A Technical Guide*. Washington, D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development, 1999.

United States Agency for International Development. *Food Aid and Food Security Policy Paper*. Washington, D.C.: United States Agency for International Development, 1995.

United States Agency for International Development. *Policy Determination 19: Definition of Food Security*. Washington, D.C.: United States Agency for International Development, 1992.

Wolfe, Wendy and Edward Frongillo, Jr. *Building Household Food Security Measurement Tools From the Ground Up*. Washington, D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development, 2000.

ANNEX 2

Individuals Interviewed

Ashley Aakesson, SCF
Sabinus Anaele, TNS
Paula Bilinsky, FANTA
Patricia Bonnard, FANTA
Judy Bryson, Africare
Gail Carlson, Counterpart
Eunyong Chung, USAID
Bill Frebig, SCF
Polly Eriksen, CRS
Anthony Koomson, CRS
Constance McCorkle, CRS
Mugo Muita, CARE
Claude Nankam, WV
Allyson Perry, ACDI/VOCA
Sandra Remancus, FANTA
Mara Russell, FAM
Suzanne Schwoebel, ACDI/VOCA
Guy Sharroc, CRS
Jen Steele, ACDI/VOCA
Keith Wright, FHI
Debee Yamamoto, Counterpart International
Steve Zodrow, FAM

ANNEX 3

Glossary of Terms

TERM	DEFINITION
Access	Adequate incomes or other resources to purchase or barter to obtain appropriate levels of foods needed to maintain consumption of an adequate diet/nutrition level (USAID 1992). Food access depends on the ability of households to obtain food from their own gathering, production, and stocks; purchases; or food transfers from relatives, community members, the government, or donors. A household's access to food is also determined by the resources available to it and the opportunities it has to utilize or exchange these resources to meet its food and other material needs.
Availability	Sufficient quantities of appropriate, necessary types of food from domestic production, commercial imports, or donors are consistently available to individuals or are within reasonable proximity to them or are within their reach (USAID 1992).
Baseline Study	The analysis of a situation before a programmatic intervention, used to set targets for an intervention and to assess its results.
Chronic Food Insecurity	An inadequate diet resulting from the continual inability of households to acquire needed food. Chronic food insecurity is generally rooted in poverty.
Complex Emergency	Human activity, including civil strife, war, and political repression, that often co-exists with and contributes to natural phenomena, such as famine. Complex emergencies frequently result in high mortality, population displacement, and the disruption of civil society and its infrastructure.
Coping Mechanism	The methods by which households deal with a crisis (e.g., making greater use of wild foods, seeking other sources of income, selling assets, migrating). Coping mechanisms should be discouraged if they reduce a household's capacity to recover its long-term food security or if they harm the environment. Others, which promote improved food security and do not have a deleterious affect on longer-term food security or the environment, should be encouraged and strengthened.
Disaster	A serious disruption of the functioning of a society, causing widespread human, material, or environmental losses that exceed the ability of the affected society to cope using its own resources.
Emergency	A demonstrably abnormal event that produces dislocation in the life of a community on an exceptional scale. Emergency is defined as an urgent situation in which there is clear evidence of an event causing human suffering or loss of livestock and the relevant government has not the means to remedy.
Evaluation	A periodic examination of the efficiency, effectiveness, and results—intended and unintended—of interventions in relation to their objectives.
Food Security	When all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life (USAID 1992).
Impact	The long-term changes, planned and unplanned, brought about by an intervention. They are the highest order of results in the sequence: outputs, outcomes, and impacts.
Indicator	Signs of progress resulting from an intervention. Qualitative or quantitative indicators may be chosen to measure the success of a process and its outputs, as well as outcomes and impacts. Indicators may be either direct or indirect (i.e., proxy), but should allow reasonable independent observers to agree if progress has or has not been made as planned.
Inputs	The goods, services, personnel, and other resources provided for an intervention to produce outputs and achieve objectives.
Livelihood	The capabilities, assets, and activities required for making a living. A livelihood is sustainable when an individual or household can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets, while not undermining its natural resources base.
Logical Framework	A format for summarizing or analyzing a project's hierarchy, the assumptions

TERM	DEFINITION
	underpinning it, and the framework for assessing its results.
Monitoring	The continuous oversight of an activity's implementation, which seeks to ensure that input deliveries, work schedules, desired outputs, outcomes, and other required actions are proceeding according to plan.
Objective	The desired outcome of an activity.
Outcome	Change caused by the outputs of an intervention.
Output	The tangible products of an intervention produced by the transformation of the inputs through the intervention processes.
Program/Project Design	Program and project designs encompass the systematic identification and prioritization of problems and opportunities to plan and execute appropriate solutions.
Qualitative Data	Observations that are categorical rather than numerical and often involve attitudes, perceptions, and intentions.
Quantitative Data	Numerical observations or measurements.
Targeting	The process by which areas and populations are selected to receive a resource. A targeting system comprises mechanisms to define target groups, identify members of a target group, and ensure that assistance reaches and meets the needs of the intended beneficiaries.
Transitory Food Insecurity	A temporary decline in a household's access to needed food. This can be seasonal or inter-annual.
Utilization	Food is properly used, proper food processing and storage techniques are employed, adequate knowledge of nutrition and child care techniques exist and are applied, and adequate health and sanitation services exist (USAID 1992). Utilization includes both food factors and health factors that influence child and maternal nutrition status (Bonnard et al. 2002).
Vulnerability	The extent to which an individual, household, community, socio-economic system, or physical infrastructure is likely to be adversely affected by a foreseeable bad event. It is comprised of the risk that an event will occur and the consequences of that event. It is a measure of the degree to which a household, population, or region risks being unable to meet its minimum food requirements.

ANNEX 4

PVO Access-Related Interventions by Sector

PVO	Rural Roads and Infrastructure	Agricultural Marketing	PHHS	MF	ME Development	Input Supply	Vocational Training	Field/Garden Crops – Agricultural Production	Tree Crops – Agroforestry	Livestock	Other
ACDI/VOCA	X	X	X	X	X	X	X	X	X		
ADRA	X	X	X	X	X	X	X	X	X		
Africare	X	X	X	X	X	X	X	X	X		
ARC						X	X	X		X	
CARE	X	X	X	X	X	X	X	X	X	X	
CRS	X	X	X	X		X		X	X		
Counterpart		X	X	X	X	X	X	X	X		
FHI	X	X	X	X	X	X		X	X	X	
OICI		X	X	X	X	X	X	X	X		
PCI	X	X	X	X	X	X	X	X	X	X	
SCF	X	X	X	X	X	X	X	X	X	X	
TNS		X	X	X	X	X	X	X	X	X	
WV	X	X		X	X	X	X	X	X	X	

PHHS = post-harvest handling and storage, MF = microfinance, ME = microenterprise

ANNEX 5

Title II Food Security Interventions and Indicators

The information included in this table is descriptive, i.e., it describes what Title II PVOs are currently doing and how they have developed their strategic frameworks and indicator performance tracking tables. It should not be considered prescriptive. The information is based on a purposive sample of Title II programs. Not all Title II programs are included and, therefore, the list is not exhaustive.

Strategic Objective or Intermediate Result	Interventions	Output Indicators	Effect-level Indicators	Food Security Impact Indicators Level 1: Income	Food Security Impact Indicators Level 2: Consumption	Food Security Impact Indicators Level 3: Nutrition
A. Agriculture <ul style="list-style-type: none"> Increase agricultural production/farming system productivity Increase economic benefits (profitability) generated through increases in production of specific crops 	<ul style="list-style-type: none"> Training in improved agriculture production technologies Seed multiplication schemes Training in sustainable agriculture techniques (IPM, agroforestry, composting, residue management) On farm/adaptive research Livestock restocking & 	<ul style="list-style-type: none"> # of training sessions/ farmers trained # of small scale irrigation systems constructed # of people benefiting from irrigation, road improvement, technology and marketing assistance # of production units receiving agricultural training or technological services # greenhouses/home gardens/ 	<ul style="list-style-type: none"> % farmers adopting sustainable agriculture techniques Tree survival rate # of farmers using compost # of farmers using IPM # of hectares protected or rehabilitated Increase in # of hectares irrigated # of farmers adopting agroforestry techniques HH ownership of livestock Increase in 	<ul style="list-style-type: none"> % increase in HH income (per AE) Increase in net income from agricultural sales % increase in per capita income (of participants) % increase in HH productive assets Value of HH assets Volume and value of selected crops Increase income from livestock/ crop sales HH expenditure on food, health services HH expenditure on luxury food items Expenditures on kerosene 	<ul style="list-style-type: none"> % increase in dietary diversity % increase in farmers consuming selected crops Meals per day during lean season % decrease in hunger period Months of HH food provisioning % HH consuming fruit, protein rich foods, Vitamin A during hunger season % increase in villages with 	<ul style="list-style-type: none"> % increase in children with normal weight % increase in nutritional status of children Measurable decrease in stunting of children (2-5 years old)

	<p>management training (health, nutrition, breeding practices, shelter construction)</p> <ul style="list-style-type: none"> ▪ Greenhouse construction ▪ Home garden establishment ▪ Business and management training for farmers ▪ Develop training manuals, workbooks 	<p>demo gardens established</p> <ul style="list-style-type: none"> ▪ # of livestock shelters constructed during project ▪ # of farmer groups established ▪ # farmers trained in management (production, processing, and marketing) 	<p>diversity of crop production</p> <ul style="list-style-type: none"> ▪ % increase in farm/ crop productivity ▪ % of farmers planting increased area of selected crops ▪ % increase in volume of selected crops ▪ % reduction of yield gap ▪ number of rural jobs created ▪ % farmers adopting new variety ▪ Farmers purchase locally produced improved seeds ▪ % increase in functional literacy ▪ Demonstration of financial sustainability 	<ul style="list-style-type: none"> ▪ % HH in debt during hungry season ▪ % of participants living in poverty ▪ % increase in profit ▪ Diversification of income/fundraising sources ▪ % increase in farm gate value of crops 	<p>Vitamin A consumption scores above risk level</p>	
<ul style="list-style-type: none"> ▪ Improved post harvest storage & handling 	<ul style="list-style-type: none"> ▪ Training in harvesting ▪ Training in post harvest grain and legume handling ▪ Training in storage practices ▪ Construction of HH storage structures ▪ Construction of 	<ul style="list-style-type: none"> ▪ # farmers trained in improved storage practices ▪ # of storage structures constructed ▪ # of HH trained in farm marketing and business practices 	<ul style="list-style-type: none"> ▪ % reduction in post-harvest losses ▪ % farmers who sell farm produce at highest selling period ▪ Increase farmer holding time of crops ▪ # farmers adopting improved stores practices 	<ul style="list-style-type: none"> ▪ HH per capita income 	<ul style="list-style-type: none"> ▪ Quantity and percent of food commodities stored at harvest for sale, and redeemed for consumption ▪ Number of months of stored grain and legume availability 	

	community storage/group storage				% decrease in hunger period
B. Natural Resource Management					
<ul style="list-style-type: none"> Improved natural resource management (NRM) in farming and fishing areas 	<ul style="list-style-type: none"> Training in NRM – soil conservation & erosion control (agroforestry) Establishment of nurseries Flood control Early warning and monitoring 	<ul style="list-style-type: none"> # of fisherman organized # of fisherman trained in NRM # of nurseries established # of seedlings produced and sold 	<ul style="list-style-type: none"> % farmers using environmental protection techniques # ha of farmland newly protected % of fishers adopting improved NRM practices # of farmers not supported by project adopting agroforestry techniques % nurseries financially stable # of nurseries in production # trees outplanted from nurseries 	<ul style="list-style-type: none"> Diversification of income sources % increase in revenue generated from tree nurseries % increase in income 	
<ul style="list-style-type: none"> Land tenure security 	<ul style="list-style-type: none"> Training in land tenure rights/legal framework, obtaining legal tenure, advocacy 	<ul style="list-style-type: none"> # farmers trained # farmers registered 	<ul style="list-style-type: none"> Communities & associations knowledgeable of rights framework & act to secure rights # of farmers obtained land title 	<ul style="list-style-type: none"> % increase in income 	
Rural Credit and Marketing Services					
<ul style="list-style-type: none"> Ensure access to financial and technical services (SO) 	<ul style="list-style-type: none"> Training in business management & MED (bee 	<ul style="list-style-type: none"> # of lenders trained Volume of loans provided by 	<ul style="list-style-type: none"> # of community saving and loans operating # of MIEs created 	<ul style="list-style-type: none"> Mean volume of maize marketed by HH in target area Increase in capital 	

<ul style="list-style-type: none"> Increase access to markets Community savings and loan organizations/ agribusinesses trained and functioning 	<p>keeping, pottery, processing)</p> <ul style="list-style-type: none"> Provide supply price/ marketing information Foster linkages with government extension services and private sector 	<p>project lenders supported</p> <ul style="list-style-type: none"> # of women trained in MED # farmers receiving updated marketing information 	<p>or improved lenders</p> <ul style="list-style-type: none"> Farmer groups established self-manage accounts, contracts, activities Marketing information systems operational % of self-negotiated contracts fulfilled 	<p>funds</p> <ul style="list-style-type: none"> Financial indicators of lenders' operations Increase in savings % increase in income 	
<ul style="list-style-type: none"> Increase in economic benefits generated through increase processing of selected crops Use of improved processing and marketing channels/ skills 	<ul style="list-style-type: none"> Training in value-added processing techniques (linked to crop production, e.g., soy, sunflower) Installation of processing equipment Training in improved farm marketing and business practices 	<ul style="list-style-type: none"> # farmers trained # processing units installed Conduct marketing/comm ercialization studies 	<ul style="list-style-type: none"> % increase in the amount of commodity processed % increase in HH marketing processed agricultural products % farmers selling produce at higher selling price 	<ul style="list-style-type: none"> % increase in profit margin % increase in total net value added through processing % increase revenue from marketing of agricultural products 	<ul style="list-style-type: none"> % increase in consumption of HH produced /processed crops (oil)
Infrastructure Development					
<ul style="list-style-type: none"> Road development or improvement to increase farmer access Development of irrigation 	<ul style="list-style-type: none"> Road construction, rehabilitation, and maintenance Provision of equipment and staff for road construction 	<ul style="list-style-type: none"> Length (km) of road (farm to market road) constructed # bridges/culverts built, repaired # of villages trained 	<ul style="list-style-type: none"> % increase in total freight traffic volume, during harvest and planting season % decrease in transport cost % increase in roadside 	<ul style="list-style-type: none"> % decrease in assets/economic loss during annual floods % increase in income (of vulnerable HH) % increase in income of HH 	<ul style="list-style-type: none"> % increase in HH consuming fruits & vegetables
					<ul style="list-style-type: none"> % increase in nutritional status of children <5

<ul style="list-style-type: none"> structures Flood preparedness Rehabilitation of market/social infrastructure through FFW 	<ul style="list-style-type: none"> Slope, village wall and mound protection Construction of flood shelters Distribution of FFW commodities to agroforestry/agriculture projects 	<ul style="list-style-type: none"> # of HH with homesteads raised during project # of HH with home gardens 	<ul style="list-style-type: none"> businesses Increase market access Increase in # of HH selling goods at market due to proximity of new roads 	<ul style="list-style-type: none"> living on road % decrease in expenditures on erosion protection Increase in annual value transactions % household production sold 	
<p>Capacity Building and Institutional Collaboration: Enabling Condition</p>					
<ul style="list-style-type: none"> Strengthen community /partner capacity to address food security problems Improve staff skills and capacity in food security programming 	<ul style="list-style-type: none"> Improve capacity in participatory problem analysis, formulation of food security plans Improve management, financial and technical skills Improve advocacy skills Improve linkages with government extension & other support services Improve food security monitoring systems 	<ul style="list-style-type: none"> # of staff workshops # of planning sessions held with community/partner organizations # of food security/farmer groups formed by the project Number of people participating in food security organizations Number of farmers trained in food security organizations Facilitators trained organized financial reports 	<ul style="list-style-type: none"> Food Security Community Capacity Index score % increase of communities that have democratically and gender equitably designed and implemented food security plans Linkages with other NGOs and state actors Community based projects developed and financed # project committees with improved capacity to solve problems Improved institutional capacity 	<ul style="list-style-type: none"> Increase in levels of financial sustainability/diversification % increase in income 	

		<ul style="list-style-type: none"> completed <ul style="list-style-type: none"> # proposals developed 	<ul style="list-style-type: none"> Staff performance review scores 			
<p>AE = adult equivalent, normally based on food consumption requirements using the average adult male as the base or number, HH = household, IPM = integrated pest management, NRM = natural resource management, ME = microenterprise, SO = strategic objective</p>						

Impact can occur at multiple levels. For this reason, there are three hierarchical levels related to achieving improved food security cited in this table. There are a number of indicators at the effect level as well as proxies for income that essentially indicate means to promote better access, but do not necessarily indicate that access was achieved. For example, indicators such as assets, a proxy for income, represent the means of promoting better access, but households may not spend additional income on food or sell assets in times of stress to acquire food. Level 2 impacts try to capture proxy measures for food consumption (e.g., dietary diversity, other measures of consumption).

Nutritional measures that are found at Level 3 are only going to change when food access is the primary factor influencing nutritional outcomes, taking into consideration health and care status of the population. These nutritional proxies are less likely to change even though food access improved if care and health are also having a negative effect on nutritional outcomes. Therefore, using nutritional measures as an impact related to interventions aimed at improving food access may or may not be effective.

ANNEX 6

Potential Access Indicators

Indicator	Assumptions	Advantages	Disadvantages	Assessment	Information Gaps
I. Indicators of Improved Means of Access to Food (First Level Food Security Impact -Income)					
A. Direct Measures of Household Income (or Components of Income)					
Gross Household Income** - <i>Deflated by the Price of Food</i>		- Theoretically appropriate measure.	- Very difficult and costly to get accurate quantitative information about HH incomes - Also need food price data or some price index - Sensitive to changes in food prices, usually a factor outside the control of projects.	- Extremely costly for PVOs to undertake over project cycle. - Captures access impacts of all types of project interventions. - Applicable in all circumstances	
Agricultural / Livestock Income (per AE)* - <i>Deflated by the Price of Food</i>	- No tradeoffs in household activities between farm and off-farm activities	- Less difficult to obtain quantitative information than total household income. - More directly related to agricultural project interventions.	- Difficult and costly to get accurate quantitative information.	- Possibly significantly less difficult to obtain necessary information	- Relationships and tradeoffs between on-farm and off-farm employment patterns.
Value of Agricultural/Livestock Production (per AE, real)	- No tradeoffs in household activities between farm and off-farm activities. - No changes over time in agricultural input costs	- Less difficult to obtain than agricultural income.	- Still quite difficult and costly to get accurate quantitative information	- Only applicable if project is not promoting significant purchased inputs. If farmers are adopting more purchased inputs, this indicator will overstate income increases.	- Information about costs associated with new technologies

Value of Agricultural Sales (per AE, real)	<ul style="list-style-type: none"> - No tradeoffs in household activities between farm and off-farm activities. - No changes over time in agricultural input costs - All increases in agricultural production are sold. 	<ul style="list-style-type: none"> - Less difficult to obtain than total production. Farmers more likely to have good recall of quantities sold and prices 	<ul style="list-style-type: none"> - Requires very strong and restrictive assumption that all increases in production will be sold. 	<ul style="list-style-type: none"> - Not an appropriate indicator, even though may be significantly easier to obtain the information. 	
Net Production of Specific Crops (kg)	<ul style="list-style-type: none"> - Increases in specific crops are not offset with decreases in other crops. 	<ul style="list-style-type: none"> - Directly related to project interventions 	<ul style="list-style-type: none"> - Requires very strong and unlikely assumptions to be an accurate access indicator - Need to collect cost information as well 	<ul style="list-style-type: none"> - Not an appropriate access indicator 	
Net Cash Income per Hectare*	<ul style="list-style-type: none"> - No change in area planted to basic food crops grown 	<ul style="list-style-type: none"> - Used to compliment indicators of increased yield for basic food crops - Able to quantify the cash cost and revenue associated with cultivated land. - Fairly easy for farmers to remember and report on cash obtained from crop sales. 	<ul style="list-style-type: none"> - Need to collect cost information as well 	<ul style="list-style-type: none"> - If the assumption does not change, then it may be an appropriate indicator. 	<ul style="list-style-type: none"> - This indicator needs to be tested in multiple contexts.
Harvest Crop Yields Per Hectare*	<ul style="list-style-type: none"> - No change in area planted to crops grown - No changes in production costs associated with increased yield 	<ul style="list-style-type: none"> - Directly related to project interventions 	<ul style="list-style-type: none"> - Heavily affected by external factors, such as weather, price of inputs, pest infestations. 	<ul style="list-style-type: none"> - Should be used in conjunction with other measurements of consumption. 	

<p>Percent of Crop Losses During Storage*</p>	<p>- Farmers can accurately determine the proportion of crops lost during storage</p>	<p>-Easy to obtain information and directly related to project interventions.</p>	<p>- If relying upon farmer perception, could be misreported. - If it requires actual measuring volume or weight could be difficult</p>	<p>-Good indicator when the intervention is aimed at improving storage capacity in areas where storage losses are high.</p>	
---	---	---	---	---	--

B. Indirect Indicators of Income					
<p>Statistically based proxies of household income (e.g. econometric measures such as INCPROX)</p>	<ul style="list-style-type: none"> - Household income can be accurately predicted on the basis of a relatively small number of exogenous variables which can be easily measured. - The structural relationships between household income and the proxy variables remain constant over the life of the DAP 	<p>Data collection requirements are reduced</p>	<ul style="list-style-type: none"> - Model cannot measure “structural” changes in income patterns, and do not accurately account for impacts of variables not included in the model. - Model may not be representative of all beneficiary households - Changes in predicted income may be difficult to attribute to project interventions. - Requires time, resources and skills not normally found among PVOs. 	<ul style="list-style-type: none"> - In fact, the number of variables that need to be collected is not much smaller than to estimate income directly. 	<ul style="list-style-type: none"> - Models need to be calibrated in each country and even subregion. - Review the frequency with which models need to be recalibrated.
<p>Total Household Expenditures</p>	<ul style="list-style-type: none"> - PVOs have necessary resources to collect information. 	<ul style="list-style-type: none"> - Can capture a range of alternative indicators for food security 	<ul style="list-style-type: none"> - Difficult and costly to collect the information. 	<ul style="list-style-type: none"> - Not an appropriate procedure for PVOs to carry out. - PVOs should use this information if a research organization has collected this information. 	
<p>Household expenditures on specific items (luxury food items, health services, kerosene, etc.)*</p>	<ul style="list-style-type: none"> - Expenditures on these items are highly correlated with household income. 	<ul style="list-style-type: none"> - Easy to obtain the information. 	<ul style="list-style-type: none"> - Very specific to local conditions. Need to establish appropriate consumption indicator prior to baseline. 	<ul style="list-style-type: none"> - Potentially useful and inexpensive proxy indicators for access. - Particularly useful as annual tracking indicator 	<ul style="list-style-type: none"> - Identify appropriate expenditure items to track in different contexts.

<p>Diversity of Household Income / Agricultural Income*</p>	<ul style="list-style-type: none"> - Increases in income diversity will reduce variability over time. - Increased income diversity is associated with higher average levels. 	<ul style="list-style-type: none"> - Often directly related to project interventions - Quite easy information to obtain 	<ul style="list-style-type: none"> - Possibly strong assumption that increased diversity is associated with less income variability - In some contexts, too many sources of non-formal sector income is associated with high vulnerability 	<ul style="list-style-type: none"> - Appropriate indicator for projects that have objective of increasing income diversification 	<ul style="list-style-type: none"> - Need for more empirical support of negative association between income diversity and variability - Determine whether it is an appropriate indicator in different regions (e.g. Asia and Africa).
<p>Household assets* (liquid, productive and household assets)</p>	<ul style="list-style-type: none"> - Ownership of assets highly correlated with household income - An asset index can be established by wealth groups. 	<ul style="list-style-type: none"> - Easy to obtain the information. 	<ul style="list-style-type: none"> - Very specific to local conditions. Need to establish appropriate consumption indicator prior to baseline. 	<ul style="list-style-type: none"> - Potentially useful and inexpensive proxy indicators for access, and directly related to food security. 	<ul style="list-style-type: none"> - Identify appropriate assets to track in different contexts
<p>Food provisions (no. of months of requirements available)</p>	<ul style="list-style-type: none"> - Households store food crops for consumption rather than sell - Household is primarily subsistence-based. 	<ul style="list-style-type: none"> - Conceptually easy to understand - May be easy for households to estimate 	<ul style="list-style-type: none"> - Most households are connected to markets and very few are primarily subsistence based 	<ul style="list-style-type: none"> - Only appropriate in contexts where there are not active markets for food crops. 	<ul style="list-style-type: none"> - Information about food crop marketing conditions storage practices

II. FOOD CONSUMPTION IMPACT MEASURES (SECOND LEVEL FOOD SECURITY IMPACT – FOOD CONSUMPTION)

A. Quantitative Measures of Food Access					
Dietary diversity ^{4*}	<ul style="list-style-type: none"> - Availability of a wide range of foods within project areas at economically attractive prices 	<ul style="list-style-type: none"> - Strong empirical evidence to support this measure - Easy to obtain the information - Dietary diversity is strongly positively correlated with income and adequate caloric and protein intake 	<ul style="list-style-type: none"> - It is difficult to set targets for changes in diet diversity because this varies by context⁵. - Determining the minimum intake value of a food item before it counts. - Comparison across households in different localities is problematic. 	<ul style="list-style-type: none"> - Potentially very useful and inexpensive proxy indicators for access, and directly related to food security. - Particularly useful as an annual tracking indicator 	<ul style="list-style-type: none"> - Whether it should be the number of foods consumed or the number of food groups consumed. - It is not clear if diet diversity is a good indicator for individual nutritional adequacy.
Number of Eating Occasions per Day*	<ul style="list-style-type: none"> - Cultural factors do not impact this indicator - If there is adequate access to food people will eat more than one time per day. 	<ul style="list-style-type: none"> - Data is relatively easy and inexpensive to collect - It does not require determining the size of meals or composition of foods consumed. - Most useful in capturing transitory food insecurity. 	<ul style="list-style-type: none"> - Not sensitive to chronic food insecurity or deficiencies in the diet. - Cultural factors influence this indicator. - The term 'meal' has different meanings in different locations. 	<ul style="list-style-type: none"> - Potentially useful proxy indicator for access 	

⁴ Diet diversity can also be an indirect indicator of income.

⁵ One way to develop targets for program monitoring is to use average diet diversity values from the top 25 percent of the households in the program area (FANTA 2002).

<p>Increased percentage of households consuming minimum daily caloric requirements**</p>	<ul style="list-style-type: none"> - Agreement on what the minimal daily caloric requirements are for adults and children. - Agreement on the activity level 	<ul style="list-style-type: none"> - Potentially most accurate measure of individual caloric intake. - Data can be collected on an individual basis to determine the food security status of each member of the household. 	<ul style="list-style-type: none"> - Measures of intake need to be made repeatedly to account household day-to-day variation in intake. - Requires time, resources and skills not normally found among NGOs. 	<ul style="list-style-type: none"> - Unlikely to be an indicator that is feasibly collected as part of most DAP projects. 	
<p>Percent of total expenditure on food^{6**}</p>	<ul style="list-style-type: none"> - Data would be available on all household expenditures. 	<ul style="list-style-type: none"> - Captures vulnerability to food access. 	<ul style="list-style-type: none"> - Requires time, resources and skills not normally found among NGOs. 	<ul style="list-style-type: none"> - Unlikely to be an indicator that is feasibly collected as part of most DAP projects. 	
<p>Indices of Household Coping Strategies*</p>	<ul style="list-style-type: none"> - Coping strategies found in a particular area and associated with a given livelihood system are well understood. 	<ul style="list-style-type: none"> - Captures notions of both adequacy and vulnerability - Quicker, simpler and less expensive to collect than actual household food consumption. - Captures the way households actually cope with food shortages - Easy to implement by the enumerator and easily understood by respondents - Time required both analysis is low - Data collection costs are low. 	<ul style="list-style-type: none"> - Comparisons across households in different localities is problematic. - Poorer households tend to feel food secure on smaller quantities of food as compared to richer households. - Households may inflate the range of coping strategies they are using if they perceive they will receive more assistance as a result. - May underreport the number of severely food insecure households 	<ul style="list-style-type: none"> - Useful indicator to use, particularly in capturing household vulnerability to food insecurity - It is more appropriate for transitory food insecurity than chronic food insecurity. 	<ul style="list-style-type: none"> - Determine whether an analysis of coping strategies over time can be a useful approach to monitoring long term trends in food security.

⁶ Households that spend more than 70 percent of their income on meeting household food needs are considered to be very vulnerable (Smith 2002).

B. Qualitative Perceptions of Hunger - Food Access					
Measures of perceived food security conditions of households, communities (e.g. Africare's Food Security Index measure)*	- Community participatory techniques can elicit accurate and unbiased information.	- Index can incorporate all important dimensions of food security, as perceived by community. - Includes dimensions of sufficiency, quality and vulnerability. - Reveals the human side of food insecurity.	- Possibilities for bias in results due to susceptibility in misreporting. - Difficulty to confirm results independently - Cross-country comparisons are difficult to make due to the inherent need to adapt surveys to local circumstances.	- Most useful at baseline and end of project - Results need to be collaborated with independently collected quantitative information	- Further work to develop techniques to provide robust information - Field testing of techniques in different contexts
Number of months of adequate household food provisions*	- Community participatory techniques can elicit accurate and unbiased information.	- Captures information on production, storage and purchasing power. - When used with yield information indicator, can indicate when improved yield is not corresponding to improved food consumption	- Possibilities for bias in results due to susceptibility in misreporting. - Difficulty to confirm results independently - Cross-country comparisons are difficult to make due to the inherent need to adapt surveys to local circumstances.	- Most useful at baseline and end of project - Results should be compared with independently collected quantitative information to check on accuracy	- Further work to develop techniques to provide robust information - Field testing of techniques in different contexts

* Indicators that may be useful for capturing a dimension of food access

** Indicators not currently used by PVOs