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# MSU International Development Working Paper

## Emergency Needs Assessments and the Impact of Food Aid on Local Markets

by

Cynthia Donovan, Megan McGlinchy, John Staatz, and  
David Tschirley

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The views expressed herein can in no way be taken to reflect the official opinion of the European Union, the United States, nor Michigan State University.



## EXECUTIVE SUMMARY

In humanitarian emergencies, the highest priority is to save lives, but the decision on how to respond may have longer term consequences for households and for the markets where households derive income and purchase goods. This desk study is designed to assist WFP and other humanitarian agencies in understanding markets as they relate to emergencies, particularly the assessment of the impacts of emergencies and food aid deliveries on local commodity markets. In this work, we will focus on the impact of actual food commodity distribution on commodity markets, one of the most common emergency response alternatives. However, the report widens the debate to assist humanitarian agencies in seeing the link between actions taken by and with households and individuals during and after an emergency, the effects those actions have on markets, but also effects that market structure and performance may have in mitigating food insecurity. Understanding of market dynamics will help to build better emergency responses, such that the responses can actually strengthen markets' capacity to avoid food crises in the future, when alleviating food insecurity in the present.

The debate on the potential negative effects of food aid on local commodity markets, the “disincentive effects” of lower producer prices in recipient countries since the 1960s. Researchers have developed increasingly sophisticated quantitative methods to assess potential commodity market disincentives. This research indicates that large amounts of food aid delivered into markets or for free distribution without any targeting of households were the main sources of disincentive effects, particularly when the food aid commodity chosen was also produced locally and the delivery coincided with local harvests. Even where negative market effects were identified, however, longer term effects were often found to be beneficial. Thus the *ex-post* analysis suggests that targeting, particularly the timing of shipments into markets, has tended to be the problem, not necessarily a poorly done emergency needs assessment (ENA).

This report reviews current methods to conduct ENA with the aim of improving them. While using the WFP ENA as the main case to evaluate, the report seeks to be useful for other agencies in their assessments after an emergency. The market component in existing ENA frequently focuses on prices, price changes, and household purchasing power, ignoring the aspects related to market structure that would identify the potential of the market to meet needs. There is an underlying assumption that households without effective demand (purchasing power) will need to receive free food distributions to meet their needs. The report presents a brief summary of the fundamentals of demand and supply related to food aid distributions and their potential effects on the prices. The relationships between shocks, markets, and responses are then drawn.

### Questions to Ask in Each ENA

There are several major questions related to markets that each ENA should address which will later assist in selecting response alternatives for implementation:

- 1) What is the nature of the food insecurity, and are market failures (or weaknesses) part of the threat to food security in the affected areas?
- 2) Will markets respond to needs, if effective demand of households is increased?



- 3) Which response alternative or set of alternatives will best ensure food security in the short run while enhancing (or at least not damaging) the longer term role that markets play in food security?
- 4) When WFP and other humanitarian agencies have limited choices of response and second-best response alternatives are the only ones available, what are the consequences on markets of those choices?

### **Basic Components of a Framework**

To address the market questions, in an emergency, each ENA needs to assess: (a) the basic market structure, conduct, and performance prior to the shock, (b) the impact of the shock on the markets, and (c) the potential of the markets to provide supplies to households if the households had effective demand. This is done through several steps: (1) Market baseline studies in areas of recurrent crises; (2) Identifying market strategies of households; (3) Market visits and trader surveys that go beyond price analysis; (4) Use of market information services not only for price analysis, but all market reconnaissance, knowledge of structure, etc.; (5) Evaluation of regional and national trade and other policies that will affect markets; and (6) Market models, if feasible.

Quantitative assessment of the impact of food aid on markets using a market model can be completed in an ENA provided that the information is available and reliable, that the models have already been designed for the context, and that the analysts have the skills and local market expertise to use the models appropriately. Qualitative assessments are a critical input into that process. However, qualitative market assessments are much more than an input into quantitative evaluation. As demonstrated in Mali in 2004/2005, well-done qualitative assessments using a common sense approach can prevent the over-estimation of needs and the under-estimation of private-sector response that lead to excess food aid deliveries, the most common source of negative food aid effects. Very simple price analysis is combined with discussions with traders and households on the existing problems, and solutions are developed that combine responses to address lack of effective demand and potentially low market supplies.

### **Conclusions and Recommendations**

Changes in a handbook or checklists as suggested above will be inadequate to address the issues. There are three human resource dimensions to address. First, generalist staff members in humanitarian agencies need to have market orientation training, to see the links between emergencies and markets. Second, these agencies need to have a limited number of trained economists for more specialized analysis, as well as for training the generalists. Most importantly, local market information and early warning systems must be developed and enhanced. They can deal with traders, know marketing channels, and understand the dynamics of the local markets and the linkages with regional markets, both formal and informal. It is therefore in the interest of WFP and other agencies along with the donors to invest in local human resources, particularly in countries with recurrent problems. Related to this is the need for donors and agencies to inform market agents about their intentions for food aid and other activities with as much anticipation as possible, and to limit the duration of activities, so that the private sector can make investment decisions and respond correspondingly to market needs.

Once the market evaluation has been done, the staff members of humanitarian agencies, including WFP, with host country nationals will need to select the appropriate response option or set of options. The report begins to develop a framework to identify when certain response options are not a good choice from a markets' perspective. Due to resource constraints and donor requirements, humanitarian agencies may not have full flexibility in selection of emergency responses, or they may be unable to react when a response needs to be changed. The flexibility to use local purchasing of food or to give cash transfers is often necessary to avoid negative market impacts and potentially promote market development. The ENA can be valuable for highlighting market problems and opportunities, but the agencies will need flexibility to respond appropriately on a timely basis.

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## 1. INTRODUCTION

When emergencies occur and governments request the assistance of the World Food Programme (WFP) or other humanitarian agencies,<sup>1</sup> the agency involved conducts a needs assessment to evaluate how best to respond to meet the goals of saving lives, improving nutrition and quality of life of vulnerable populations, and helping to retain or build assets and promote self-reliance. There is a recognized tension between achieving the objectives, since immediate efforts to save lives with food deliveries, if not well designed, may undermine the longer term objectives. A key area of debate is the effect that food aid may have on markets. Emergency (Food Security) Needs Assessments (ENA) are a key activity developed by WFP, and there are similar efforts by other agencies. These assessments are to determine what responses are appropriate, yet there are clearly gaps in current ENA methods when it comes to market analysis (Watkins 2003b).

This desk study is designed to assist WFP and other humanitarian agencies in understanding markets, the impacts of emergencies and food aid deliveries on markets, particularly commodity markets. Incorporating market aspects fully into the design of responses to emergencies can help to ensure selection of appropriate responses that will avoid or mitigate negative market impacts, such as undermining local markets' capacity to respond to demand or reducing local production incentives through lowered prices. There may, however, also be ways to structure the assistance so that it actually helps strengthen the ability of the private sector (including farmers) to contribute to long-term food security. There are many alternative responses to an emergency; however, in this work, with a few exceptions, when looking at impacts, we will focus on the impact of actual food commodity distribution on commodity markets. In humanitarian emergencies, the highest priority is to save lives, but humanitarian agencies have various alternatives to distributing food commodities, all of which interact with markets and may affect them, positively or negatively. As Levine and Chastre (2004) indicate, not all response alternatives are the best to use in all occasions, and what humanitarian agencies need is better situation analysis.

In all emergencies, it is not only the donor and international community that evaluates and develops responses to ensure food security. National governments recognize the need to act, and develop responses. Those responses may entail import subsidies for private firms to import or other import enhancements, release of food reserve stocks, the purchase of private stocks (nationally or internationally) for food distributions, or other actions. While this study is not intended to directly influence those national decisions, the market research indicated here is generally appropriate for the national and regional governments to undertake. WFP and other international agencies cannot afford to ignore the other steps being undertaken in a country to address food security problems.

Equally important, private entrepreneurs also take actions in response to food crises, and their actions are strongly influenced by what actions international donors and national governments take. Thus, none of these decisions can be viewed in isolation, as one affects the other. A theme that recurs throughout this desk study is the need to look at the decisions

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<sup>1</sup> This report was initially designed to respond to WFP expressed needs, but it is evident that this work can be useful for a wider audience, so the report has been revised to address more than just WFP concerns and methods. Thus we use "humanitarian agency" as a more generic term for those agencies implementing emergency response in the field, including non-governmental organizations. Donors may directly implement such responses directly or through NGOs. We also use the term Emergency Needs Assessment (ENA) in a generic way to refer to the assessments conducted by such agencies prior to determining their interventions.

being made by all the actors in the crisis, public and private, and how they are interdependent. Only by recognizing this interdependence can we hope to design more effective humanitarian responses.

This desk study will present the logic of possible disincentive effects on producers, traders and commodity markets. The next two sections will go into the economic logic of market supply and demand and how food aid might affect prices and market functions. There are both negative and positive dimensions presented. In emergency situations, developing alternatives to improve market development may not be the highest priority, but understanding the dynamics may help justify a particular course of action, when a humanitarian agency such as WFP has flexibility in choices.

Based on these relationships, this work targets the information and analysis that can be done in an emergency context to determine *ex ante* the potential effects on markets. A key question is whether or not the existing markets will be able to respond adequately to emergency needs or whether intervention is needed to provide food or food delivery services. In the WFP case, the agency has not had the tools available in the past to make the link between its choices in an emergency and the potential consequences on markets and economic development. WFP and other agencies already have approaches to examine households' current and previous sources of food and how they have been affected by the emergency, so a microeconomic foundation has been laid. However, household reliance on markets and changes in market prices paid by a household are insufficient to evaluate how markets function and the role that they may play. Taking that vision beyond the household to market and macro-economic levels with simple diagnostic tools is needed next.

One approach would be to develop programmatic guidelines to help design food aid that is least likely to have negative impacts (and may even have positive impacts) on the markets and market development. Here, we will identify the information needed to assess whether the combination of shock, programmatic choice, and underlying conditions in the markets and within households are likely to lead to important negative impacts on markets. As a by-product, the work will highlight positive impacts on the markets as well, so that where there is choice among response alternatives, the positive market effects can weigh into the choice.

While we focus on food aid commodity distributions, there is also an operational decision on where and how to source the commodities for distribution. Local and regional purchases are an increasing proportion of food aid supplies, especially in Sub-Saharan Africa, and will most likely continue to increase as donors give more flexibility to WFP and other humanitarian agencies in their resources. Clearly the decision to purchase supplies either within an affected country or in the same region may have profound impacts on the markets and their development. This report will not focus on the potential market impacts of local and regional purchase, as this is the specific subject of research which WFP and donor agencies are undertaking. That said, the information on market structure, supplies, and other aspects needed to assess the impact of distributions on markets will also be useful in determining how local purchase might affect markets, so the basic economic logic will be addressed here. The procurement officers working on sourcing of commodities also have market knowledge to contribute to an ENA and to response option selection (Menage 2005).

In this paper we present the logic of the possible disincentive effects and identify the information and analysis that can be completed in an emergency context to evaluate and potentially avoid negative disincentive effects on the markets, based on previous experience.

Evaluating existing ENA tools from a markets perspective, we propose key elements of a framework that food aid practitioners can use in anticipating the likely impact of alternative food aid interventions on markets under various shock scenarios. Finally, we will highlight the market aspects to continually monitor as the emergency and intervention unfold, so that action can be taken as conditions change, provided that the implementing agencies and their field staff have flexibility and training.



## 2. WHY WORRY ABOUT MARKETS? FOOD SECURITY AND MARKET FUNDAMENTALS

If the purpose of food aid, particularly emergency food aid, is to save lives, why should anyone care about the impact of the aid on food markets? Are markets themselves on a par with lives? Why should they be protected or enhanced? After all, don't the vulnerable need aid precisely because markets have failed to assure them access to the food they need?

The answer is that markets **do not** deserve protection as *ends* in themselves. Food markets are, however, the principal *means* through which billions of people try to assure their food security. How well these markets function determines how well people eat and what resources they earn to meet the other needs of their households. Commodity markets affect the lives and livelihoods of the vulnerable through the following pathways:

- The price of food is a major determinant of the real income of the poor.
  - Most of the poor, including in rural areas, are net purchasers of staple foods. The price these consumers pay for food depends on the cost not only of producing it on the farm but also on the cost of bringing it to the consumer in a form s/he can use—e.g., marketing and processing costs.
  - The cost of food is also a major determinant of what employers in poor countries have to pay their workers. Lower food prices allow workers to get by on lower cash wages, which makes firms more competitive and expands employment.

Thus, efficient markets that drive down the per-unit cost of delivering food to the consumer are major anti-poverty tools, through their effects on the ability of households to earn cash incomes and on the amount of food that can be purchased with those cash incomes.

- Food prices are also incentives for those who produce goods and services for the market (including marketing services). Many of the poor produce food for the market, either on their own farms or as hired laborers, and many (especially women) work in the markets. To the extent that badly targeted food aid disrupts incentives to produce for the market or invest in cost-lowering production and marketing innovations, it undermines the incomes of these individuals and the capacity of markets to serve the poor at low cost.
- The volatility of market prices generates risk for those who rely on markets. Highly risky markets discourage specialization and the efficiencies it brings, as people diversify their production to mitigate risk. To the extent that food aid can be used to reduce market price volatility, it could have positive long-term effects on increasing incomes through encouraging greater specialization and trade. To the extent that the food aid *increases* market volatility, however, it has the opposite effect.

The tension between the first two pathways (accessible prices for poor consumers and attractive prices for farmers) is often referred to as the *food price dilemma*. Resolving this dilemma in a sustainable fashion requires productivity growth at the farm level, so farmers can earn profits at lower prices, and downstream in the marketing and transformation processes that bring food in its final form to consumers. Typically these downstream costs are greater than farm production costs, and productivity growth in these stages thus has an especially large impact reducing the food price dilemma. Perfectly targeted food aid avoids the dilemma by delivering food only to those without effective demand to purchase it. In the real world of imperfect targeting, food aid that disrupts incentives to invest in the marketing system will make the dilemma more intractable. Alternatively, if food aid can be used to

facilitate infrastructural investments while not depressing prices, it can contribute to partially resolving the dilemma. In the end, the details of how food aid is programmed and utilized will determine which of these effects obtains.

Markets only serve those who have *effective demand*—need backed up by purchasing power. Food aid is often intended for the destitute—those who have real needs but lack the purchasing power to make their needs felt in the market. If food aid is perfectly targeted to those without purchasing power, it should have little effect on the markets in the short run.<sup>2</sup> But more often, food aid depresses market prices. Sometimes, this is the *intended* effect, as prices are deemed to be too high to assure adequate access of the poor to food, and it is believed that reducing prices from “abnormal” levels would not substantially undermine future incentives to produce goods or invest in improved marketing. At other times, the price-depressing effect of food aid on markets is unintended or deemed a necessary evil to attain a greater good of saving lives and preventing immediate suffering.

The poor often consume a different type of staple than the better off, so how food aid affects different segments of a commodity market can have profound effects on the poor. For example, in many parts of southern Africa, the poor in urban and rural areas consume whole-grain maize meal (called mugaiwa in Zambia), typically produced by small hammer mills. Those with higher incomes prefer more refined (and more expensive) industrially produced maize meal. Often, in times of shortage, lower-income consumers cannot obtain maize grain to take to local hammer mills for grinding into whole-grain meal, and thus are forced to purchase the more expensive industrial meal. If food-aid maize is targeted to the industrial millers, it reinforces this process. If, in contrast, it is targeted directly to poor consumers or small-scale millers, it preserves the poor’s access to this cheaper source of calories and the competitiveness of the small-scale mills, which are also an important source of employment.

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<sup>2</sup> In the long run, by helping preserve lives and previous investments in health and education of people who would otherwise die or become less productive due to malnutrition, the food aid would be expected to foster faster growth and hence expand market demand in the future.

### 3. POTENTIAL IMPACTS OF FOOD AID ON COMMODITY MARKETS

The impact of food aid on local commodity markets can be assessed by analyzing its impact on supply, demand, and on expectations of market participants regarding future market stability. In a market where prices are determined by the interplay between supply and demand (as opposed, for example, to being set administratively by government), food prices synthesize information concerning both consumers' willingness to pay for a good and the costs of supplying the good to those consumers. We will therefore focus initially on the impact of the food aid on food prices. The analysis will assume:

- Food prices are determined through market processes, as opposed to being set administratively. In most low-income countries, even in situations where government sets official prices (e.g., subsidized prices to consumers and high support prices to farmers), budget constraints usually limit who gets access to these government-mandated prices. Except in countries that have strong administrative capacities to implement rationing systems (e.g., India), those who have access to the subsidized prices often are people who are better connected, either economically or politically. A parallel ("black" or "gray") market typically exists in these countries, serving those who cannot meet needs through the official pricing system. Since the vulnerable are often reliant on this parallel system that has market-determined prices, we initially focus on it.<sup>3</sup>
- The food aid is being supplied from sources far from the distribution point. The analysis is therefore limited to the impact of the distribution of new supplies in the area; it ignores the case of local purchases in adjacent areas that may bid up local prices.
- The food is being distributed for free. The analysis of subsidized sales on immediate supply and demand would be very similar, but one would also have to take into account the impact of the resources generated through the sales of the food aid. Often these resources are used to fund development activities that can expand production (supply) and incomes (demand) in subsequent periods.

Below we present a simplified supply-demand framework to analyze the short-run impact of food aid on local markets.

#### 3.1. Short-run Impacts on Supply and Demand

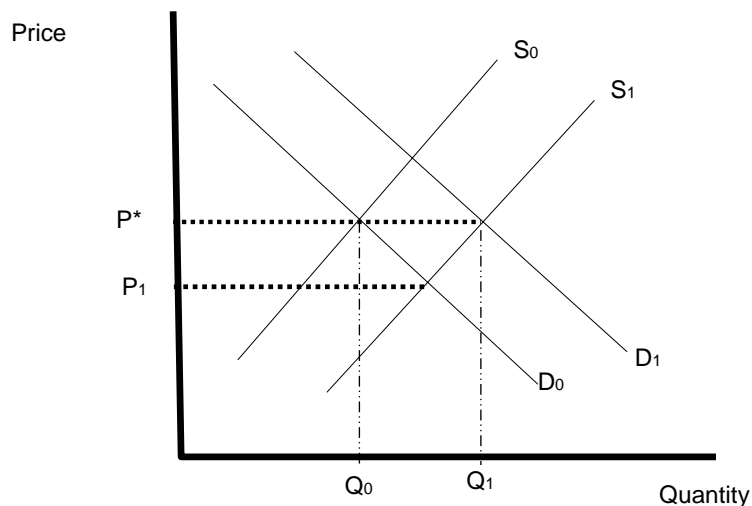
In the simplest case, imagine the delivery of a quantity of food aid (equal to  $Q_1 - Q_0$  in Figure 1) into an area where exactly the same commodity is sold—for example, maize into a maize growing area. Let's look just at the first-round (immediate) impacts. Consider two extreme cases:

Case 1: The food aid is distributed to recipients, who then sell it all on the local market. Alternatively, the food aid never reaches recipients but is diverted onto local markets. This would be the equivalent of monetizing the food aid rather than distributing it for free, with the exception that the resulting revenue would be in the hands of the food-aid recipients (or those who diverted it) rather than the food-aid agency.

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<sup>3</sup> del Ninno, Dorosh, and Subberao (2005) provide examples from India and Bangladesh where different interventions were used, including public ration shops for subsidized distribution. This valuable study compares the Asian food aid experiences with two African countries: Zambia and Ethiopia.

**Figure 1. Short-Run Impact Food Aid on Market Prices**



Case 2: The food aid is perfectly targeted to those having overwhelming need for the food but no effective demand.

In both cases, imagine that the original market price, before the arrival of the food aid, is determined by the intersection of demand curve  $D_0$  and supply curve  $S_0$ ; the resulting price is  $P^*$ . **In case 1**, the quantity  $Q_1 - Q_0$  of food aid is added to the market supply. In the figure, this is reflected in a shift of the supply curve from  $S_0$  to  $S_1$ , a horizontal distance equal to  $Q_1 - Q_0$ . Assuming no other changes, the market price falls to  $P_1$ . As discussed below, how much prices fall depends on (a) how large the food quantity of food aid is relative to the total volume handled by the market, and (b) how sensitive demand is to changes in the quantities supplied to the market (see discussion of “price elasticity of demand” below).

**In case 2**, the food is targeted perfectly to desperately hungry people, whose needs are not currently reflected in the market, as they have no purchasing power. If these people consume all the maize food aid they receive, the food aid transaction is “off-line” to the market, affecting neither market demand nor market supply, leading to no change in market prices. (Alternatively, one can say that the food aid they receive represents not only an increase in the supply available to them, but also an increase in their real income. In this case, the effective demand increases by just the same amount as the supply—the demand curve shifts from  $D_0$  to  $D_1$ —leading to no change in the market price.)

Reality typically lies somewhere between these extremes.

If the recipients of the food aid sell some of the aid they receive (for example, to pay for urgently needed medicine), then that resold food adds to market supply, reducing prices. Similarly, if some of the food aid goes to those who would have otherwise bought some of

their food needs through the market, less is purchased through the market, leading to a reduction in market demand and a fall in prices.<sup>4</sup>

In the following analysis, we discuss food aid being “injected” into local markets. This is a shorthand notation for saying that some of the free distribution gets resold onto the market by the recipients or those who divert it. Alternatively, one can take this as the case of the food aid being monetized on the local market by the food aid agency.

## 3.2. How Much Do Prices and Incentives Change?

### 3.2.1. Impact on Prices

How much prices change in response to an increase in local market supply due to food aid depends on (a) the amount of the supply increase, and (b) how sensitive prices are to changes in the amount of product that is supplied to the market. The sensitivity of prices to changes in the amount offered for sale is measured by the *price elasticity of demand* for the product, which is simply the percentage change in the quantity demanded of the product that results from a 1% change in the price.<sup>5</sup> Typically, for staple foods, the price elasticity of demand lies between -1 and 0 (“inelastic demand”), meaning that a price decrease induces people to purchase more of the good, but proportionately less than the price decrease. (For example, a 1% price decrease might lead to an increase in purchases of 0.5%. In this case, the value of the price elasticity of demand would be -0.5. The typical explanation for this limited increase in consumption as prices fall is that “the demand for food is limited by the capacity of the human stomach.”) For the very poor, the price-elasticity may be less than -1, for example -1.5 (“elastic demand”), as they are very hungry, so that if the price drops, they want (and now can afford) to purchase proportionately more food. But since the very poor typically constitute a small proportion of total market demand for a staple, overall demand is likely to remain inelastic.

Thus, injections of food aid into the market can lead to substantial price declines, particularly if the market is isolated (and hence the food aid does not flow into other areas). On the one hand, this makes food aid a powerful tool if the intent is to drive down market prices from “abnormal” peaks. On the other hand, it means that the unintended consequences of disrupting markets can be large if a large amount of the food aid ends up either adding to market supply (through “leakages”) or reducing market demand (because recipients of the aid now purchase less through the markets). Having at least some idea of the magnitude of the price elasticity of demand for the staple good in question (typically between -0.25 and -0.8 for staples in poor countries) is very helpful in anticipating the potential impact of the food aid on markets. The smaller (the absolute value of) the price elasticity, the more prices will decline from a given injection of food aid into the market. For example, a 1% increase in total market supply will decrease market prices by 2% if the price elasticity of demand is -0.5, but by 4% if the elasticity is -0.25.

Another key factor that influences how food aid affects local markets is how the demand for the commodity changes as people’s incomes rise. If, as people get richer, they consume less

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<sup>4</sup> For a more technical discussion, see Tapio-Biström (2001).

<sup>5</sup> Researchers estimate these elasticities with econometric models generally using household data. For example, in Bangladesh research, Goletti (1993) used Tobit regressions from household data while Dorosh and Haggblade (1997) used an Almost Ideal Demand Systems (AIDS) to estimate elasticities.

of the good (for example, they shift from eating cassava to another staple like rice), the good is said to have a *negative income-elasticity of demand*. In contrast, if people eat more of a good when their income increases, such a good has a positive income-elasticity of demand.

A good with a negative income-elasticity of demand may be *self-targeting* for the poor: increasing the supply of that good reduces its price, but it will be mainly the poor who will choose to consume more of it. For instance, in Mozambique, Dorosh and Bernier (1994) estimated the income elasticity of demand for yellow maize to be -1.545 for the urban non-poor, whereas for white maize, it was +0.394. The better-off will continue to eat the “preferred” staple, white maize in this example as their incomes rise, but will reduce their consumption of yellow maize. Thus, providing a self-targeting food as food aid tends to disrupt markets for related staples less than providing broadly consumed commodities, as those who have more purchasing power tend not to shift to the less-preferred staple as its price falls (except, possibly, to use it for livestock feed). Discovering what foods, if any, are self-targeting is an empirical question, which needs to be investigated on a locality-by-locality basis. In some places, people may be so poor that no food is self-targeting; in these situations, if incomes go up, people will eat more of everything. WFP staff can work with local researchers and market participants to try to identify which staples may be self-targeting.

The preceding discussion has assumed that the good being provided as aid is the same as that locally produced. Often, however, the food aid commodity is not exactly the same as that produced locally—for example, wheat may be provided in a maize-growing area. In this case, one needs to analyze how much the availability of the “new” commodity reduces the demand for the locally produced good. This depends on how willing consumers are to substitute one commodity for another. If consumers freely substitute the new commodity for the old, then the analysis is very similar to the previous case. To the extent that the two goods are not perfect substitutes, then increasing the supply of the new commodity will reduce the demand for (and hence the price of) the locally produced good, but by less than would occur if an equivalent amount of the locally produced commodity were provided as aid. Economists measure this substitution effect through the *cross-price elasticity of demand*, which measures the percentage change in the quantity demanded of one good (e.g., maize) given a 1% change in the price of a second good (e.g., wheat). For goods that are less than perfect substitutes, the cross-price elasticity of demand will be less (in absolute value) than the own-price elasticity of demand. In the case of Bangladesh in the late 1980s and early 1990s, the cross-price elasticity of demand for wheat with respect to a change in the price of rice is 3.67 for the urban poor, yet only 1.19 for the urban nonpoor, suggesting that the poor will shift consumption from rice to wheat as the price of rice goes up, whereas nonpoor are less responsive to prices in the tradeoff between rice and wheat.

### 3.2.2. Impacts on Incentives to Produce and Invest

Even if food aid reduces market prices for locally produced goods from levels they would otherwise attain, does this mean that incentives to produce in the future are decreased? Not necessarily. The answer depends on how low prices fall relative to the expected costs of producing the good for the market. This, in turn, depends on:

- When the food aid actually gets delivered. If the aid is distributed during the peak of the “hungry season” when supplies are short, food aid may be effective in capping what might otherwise be a very sharp spike in prices. On the other hand, if the

duration of food aid deliveries extends into the harvest season or delays in distribution mean that the food aid arrives at harvest time, prices may already be falling sharply, and the aid can plunge prices below what it costs farmers and traders to produce and distribute the good, discouraging them from producing in the future (unless traders can divert the new supplies into other markets—e.g., in neighboring regions—in which there is strong demand, or unless the food aid is well-targeted to those who have little or no effective demand, in which case the food aid has minimal effects on the market).

- Declines in prices reflect a reduction in incentives to produce in the future. But if prices go too high, they may also reduce the capacity of smaller farmers to produce in the future. Many of those farmers may be net purchasers of staples, and in order to purchase food during the high price period, they may have to sell their work animals or other work tools and go heavily into debt, reducing their future capacity to produce. Or their health may suffer, reducing their productive capacity.
- On the other hand, very high prices can lead larger farmers, who have surplus to sell, to gain additional income, which they may invest in improved production technology.
- What are farmers' and traders' alternative production and investment opportunities?
  - If farmers or traders have few alternative production activities, then changes in prices may have little effect on their future behavior. This is particularly true when prices are reaching historical highs. At very high prices, much of the return may represent a windfall gain (a *rent*, in the economist's jargon), and even if prices were lower, it would still pay the farmer or the trader to continue to produce the same goods and services. The one exception to this generalization is when the farmer's windfall gain is so large that it allows her/him to invest in new productive assets or technologies that allow greater production in the future. If food aid brings down prices from these high levels, then the farmer will not get this windfall gain.
  - If farmers and traders have a wide range of alternative activities they can undertake (different crops to grow, different goods to market), then changes in the price of a particular commodity can markedly affect what is produced. Thus, when the commercial system is reasonably well developed, food-aid-induced changes in market price are likely to have a larger impact on the *mix* of goods and services produced than on the overall level of production. In the marketing system, this can, for example, induce traders to invest more in infrastructure to handle imported goods than locally produced goods, which over the longer term can reduce demand for local production.

The amount by which farmers reduce their production in response to a change in the price of a good is measured by the *price elasticity of supply*, which simply quantifies the percentage change in output that results from a 1% change in price. The more sensitive output is to price changes, the bigger the elasticity. Similarly, a decline in the price of one commodity may induce farmers to shift into the production of another commodity. How sensitive the output one commodity is to the shift in price of another commodity is measured by the *cross-price elasticity of supply*.

Understanding the impact of these price changes on farmer and trader incentives requires knowledge of these actors' alternatives. Thus, food aid professionals need to build links to those (e.g., in market information systems and agricultural research institutes) who have

some feel for what these alternatives are and how the actors may choose among them as relative prices change.

### 3.3. Market Integration

Just as increases in the supply of one commodity can affect the demand for other (substitute) commodities, so too can changes in the supply or demand for a good in one market spill over onto other markets. The notion of *market integration* measures the degree to which changes in market conditions in one market affect those in other markets (separated by time or space). Market integration analysis may include simple evaluation of whether or not there is physical trade between markets, evaluation of whether the difference in prices between two markets is about equal to the cost of transporting goods between the markets, or whether the prices in the markets tend to move together over time, but analytical techniques have gone far beyond those simple analyses.<sup>6</sup> Harriss (1979) indicates the need to incorporate knowledge of market structure to any empirical analysis. Market integration typically is the result of traders moving product across markets when the price differential between those markets exceed the costs of moving the product. When traders behave in this way, markets are often said to be “functioning well.” The lack of movement of product between two areas, however, is not necessarily a sign of “market failure.” If the price differential between the two markets is lower than the cost of moving the product between the markets, it makes no economic sense to move the product. Indeed, if product were flowing between the two markets when the price differential was less than transport costs, it would be a sign that something was wrong with market signals, as traders would be losing money by moving the product. If markets are well integrated, injecting aid in one area can strongly affect market conditions in related areas that are well-integrated to the receiving area. This implies that (a) food aid practitioners need to have some notion of which markets are integrated in order to avoid unwanted spillover effects, and (b) to the extent that markets are integrated, the task of influencing market conditions in a given market may become easier. It may be enough to intervene in another market not directly affected by the shock (and which may be easier to deal with logistically) and then let the forces of market integration transmit those changes to the target market. It is important for food aid professionals to build links to analysts in market information systems and other research organizations who have studied how well integrated markets are in the target area in order to (a) avoid unintended adverse consequences; (b) take advantage of the potential of logistical advantages of working through integrated markets to achieve intended results; and (c) evaluate how integrated markets may reduce the impacts of food aid as the system of markets is larger than the single food aid destination market.

### 3.4. Longer-term Impacts

Over the longer term, food aid can have both positive and negative impacts on the vibrancy of markets. On the positive side:

- To the extent that emergency food aid saves lives and prevents farmers and traders from suffering major losses of their physical and human capital, it helps assure growth of both supply and demand for the market in subsequent periods. This is a critical contribution. Farmers who lose their equipment and cannot devote adequate labor to

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<sup>6</sup> There are a large number of statistical techniques used in the literature to measure market integration. For a review, see Barrett (1996) and Baulch (1997).



their fields will continue to produce very small amounts, leading to small marketable surpluses and high per-unit costs of marketing. Similarly, desperately poor people only enter the markets occasionally and for small amounts of product, leading to high-cost, low-volume markets.

- In situations where the poor consume a staple different from that of the rich (e.g., whole-grain maize meal as opposed to highly refined maize flour), food aid may be critical in assuring continued availability of the lower-priced good to the poor *if* the aid is targeted to the marketing channels used by the poor. Over the long-run, assuring year-round supplies of the staple to small-scale processors can be critical in maintaining the profitability of small-scale millers and hence the long-term availability of lower-cost staples to the poor.
- If food aid can be provided in a *reliable* way, where all actors know that it will be available under a clearly described set of circumstances, it can act as insurance, allowing all actors to undertake longer-term, more productive, but somewhat riskier investments than they would otherwise have done. Under current circumstances, most actors have to hold many of their assets in highly liquid forms (cash, grain stocks, etc.) rather than in more illiquid but more productive longer-term investments. The key here is *predictability*; if the food aid cannot be managed predictably, then exactly the opposite effect occurs: food aid becomes another random shock that discourages long-term investment (particularly in marketing infrastructure and commercial stocks).
- There is a large debate about the extent to which food aid affects long-term consumption habits, particularly towards commodities like wheat and rice that may not be produced locally. For West Africa, at least, the literature suggests that the growth of wheat and rice consumption is tied more to their ease of preparation and consumption in time-constrained urban settings rather than to their availability as food aid.<sup>7</sup>

On the negative side, if food aid is not well targeted, it can represent a major source of uncertainty in the market, discouraging both farmers and traders from making the long-term investments needed to increase food system productivity. As discussed in Section 3.2., increasing productivity in farm-level food production and in distribution is essential to overcome the food price dilemma.

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<sup>7</sup> See, for example, Dibley, Boughton, and Reardon (1995).

## 4. SHOCKS<sup>8</sup>

Section 3 discussed the importance of markets in household livelihoods and then how food aid interacts with markets. We now turn to how different types of shocks when overlaid on existing market and livelihood structures will condition how food aid interventions interact with and affect the markets. Not all shocks should elicit the same response, nor should a specific shock always be associated with a single response alternative.

Several basic kinds of shocks can be identified, and each type may affect markets in different ways. In addition, the effects of the shock may differ between regions, depending on the *ex ante* development of markets. Thus, in each case, it is the combination of type of shock, impact of the shock, and *ex ante* conditions which should condition the selection of a particular set of response alternatives to meet the objectives of WFP within the context of affected institutions and infrastructure.

WFP identifies three basic types of shocks and provides some examples (WFP 2005a):

- ◆ Slow onset
  - Drought
  - Economic crisis
  - Epidemic which spreads slowly (e.g., HIV/AIDS)
- ◆ Rapid/sudden onset
  - Earthquake
  - Landslide
  - Volcanic eruptions
  - Cyclone/typhoon/hurricane
  - Seasonal flood
  - Flash flood/tsunami
  - Epidemic which spreads rapidly (e.g., Ebola)
- ◆ Conflict/displacement
  - Conflict (civil war, ethnic violence)
  - Population displacement due to violence, lack of physical security

### 4.1. Slow Onset

It is valuable to take examples of each type of shock, and work through how the markets may be affected and how a response might be linked to the markets. In the WFP EFSA Handbook (2005a), the authors assess how the shocks may affect food availability and markets. In the case of drought, modern weather forecasting methods and early warning systems mean that a drought is a slow onset crisis, with several months of lag time between warnings and emergencies. Another aspect of this type of shock is that droughts can be recurrent; areas that are drought-prone remain at risk over time. Droughts may be widespread covering entire production regions and thus can have an impact over many households, both on own production of consumption goods and on income generating activities. The impact of drought will depend heavily on how well the households have developed risk-coping mechanisms to deal with lack of rainfall. Households with livestock may sell their livestock to purchase food; they may also sell them as the livestock health declines due to lack of feed.

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<sup>8</sup> This section makes use of ongoing research on shocks and alternative response options for USAID under the Food Security Research Cooperative Agreement of Michigan State University (Hoddinott et al. 2006).

With many households forced to use the same strategy, livestock market prices are depressed, further depressing incomes. A drought primarily reduces effective demand of consumers and results in the sales of assets to assure consumption, even at the risk of reducing future production and income. The literature on poverty traps talks about asset losses (Barrett and McPeak 2004), resulting in irreversibilities when households lose their assets in order to ensure survival today, thereby threatening their longer term survival.

With regard to markets, by reducing the effective demand of households as well as reducing their marketable surplus, droughts lessen market activities, lowering trader incomes along with farm incomes. If traders give credit, they may have much of their capital tied up in unpaid credit. This type of shock, however, does not affect market infrastructure or the overall ability of the market to respond. A tour of markets in an affected area may show limited availability of food commodities, but only market reconnaissance can identify the reason behind limited supplies in a market. It could be lack of food supplies available, lack of capital to replenish food stocks, or lack of effective demand for food. Where effective demand is limited, generally cash transfers can be effective in supporting livelihoods, avoiding irreversibilities, and ensuring future production. Responses with food aid will be more effective where markets are isolated or where the shortage of food supplies is widespread.

#### **4.2. Rapid/sudden Onset**

Sudden onset shocks may be associated with destruction of production, assets, and income of households, but also of basic infrastructure necessary to supply the markets and households. The recent earthquake in Pakistan (WFP/UNICEF 2005) is an example of this type of shock. In the affected areas, houses, shops, communications, and roads were all destroyed and it will take months or years to begin moving forward. The challenge for the staff of humanitarian agencies in these conditions is to assess not if, but how long, food aid supplies may be needed. To the extent that relief efforts are working with private sector transporters or vendors, the food aid can keep people working and sustain them in difficult times, just as it sustains the people who receive the food aid.

#### **4.3. Conflict**

Situations of conflict and civil strife are the most difficult shocks to assess a priori for they may be slow onset, as with Zimbabwe's economic crises, or quick onset as with Rwanda's genocide. Markets may be dramatically affected; yet in other cases may change and innovate to keep trading. In Zimbabwe, informal ("black") markets have developed to try to supply basic needs, due to lack of supplies in the formal sector for a variety of reasons. In Côte d'Ivoire (Stessens and Dao 2005), transport routes have been blocked due to conflict, and farmers who have something to sell must sell into the local market, such that local prices decline dramatically as they are no longer integrated to the national economy. Another aspect of conflict and civil strife is that the capacity of local and national governments to respond is often eliminated due to the conflict; donors are also limited in what can be done due to the conflict, as in the Democratic Republic of the Congo and Sudan, when aid workers and aid shipments may become targets.

Food aid may be needed in areas where the conflict prevented farmers from reaching their fields or where non-food cash cropping was the dominant agricultural activity, but in many cases it is the range of food supplies not produced locally that become scarce in the market, such as salt and edible oils. Conflict may also result in the lack of financial institutions, as in Côte d'Ivoire (Stessens and Dao 2005), such that whole regions begin to work with a barter economy, very ineffective if households tend to have the same thing to barter. The nature of food insecurity thus varies widely, may change quickly, and requires flexibility in programming, as well as constant market reconnaissance and household surveillance.

Levine and Chastre (2004) document various case studies in the Great Lakes region where conflict (and in one case natural disaster) had caused food insecurity. They demonstrate the variability of possible effects of conflict on household food security, and the need for varied responses. In their research, many of the same interventions were used in each place in spite of the different environments and needs. Using WFP criteria for food aid (as found in WFP 2005a), food distributions were the appropriate response in some areas, but not in others. In Kasese District of Uganda, there was insufficient information available to know appropriateness of the food distributions, as displaced persons were within local communities as well as in camps (Levine and Chastre 2004).

#### **4.4. Variability in Shock Effect and Responses**

The case of Pakistan currently demonstrates some of the difficulties in determining appropriate response and duration of that response. First, there was no market baseline and while there is market information for many places in Pakistan, Kashmir is relatively isolated from those systems (WFP/UNICEF 2005). Rapid assessments indicate that some areas were linked to other markets prior to the earthquake. However, many areas were difficult to reach prior to the earthquake and only imperfectly linked to other markets, with high transport and other transaction costs. With the earthquake, integrated markets may have been temporarily disconnected until roads, banks, and other infrastructure were repaired. The households in areas that were poorly integrated before the earthquake are now in more difficult circumstances, for they have no alternative to using their own resources for everything, from building new houses to feeding themselves. The *ex ante* market conditions may mean that a shorter duration response is appropriate in one area, but longer duration assistance is needed in other areas.

After a shock, agencies will need to assess whether or not there is food insecurity and if so, the source of that insecurity. In many slow onset crises, the constraint to food security is lack of effective demand, due to loss of assets and income. The most effective response may be an income transfer, not necessarily in the form of food aid. The next section will detail some of the evidence that food aid has had impacts on markets, highlighting the shocks, conditions, and responses that are associated with those impacts.

## 5. EX-POST STUDIES OF THE IMPACT OF FOOD AID ON MARKETS AND THEIR RELEVANCE

Emergency needs assessments do not have the luxury of time and extensive data analysis, but they can profit from *ex-post* studies that identify the likely scale and scope of disincentives, as well as the conditions and actions that might lessen or increase the likelihood of impacts. Here we focus on what the literature provides for people who want to do a better job with *ex-ante* assessments to mitigate the negative impacts of food aid on markets and potentially facilitate the positive impacts.<sup>9</sup>

While various economists, including Schultz (1960), have criticized food aid distributions since the early 1960s for potentially disrupting and undermining local production and markets in the recipient countries, researchers have struggled with how to quantify the relationships involved. The food system is a complex interplay of demand and supply considerations within a context of institutional environment and change. As Isenman and Singer (1977), Farzin (1991), and Maxwell (1986) all found in their work, to evaluate complex dynamics, there are high data demands that are often not met, and the technical skills required are beyond many analysts. The studies evaluated in Annex 1 include various analytical methods ranging from simple inferential price analysis and reduced-form price and quantity estimations to more complex structural econometric models with computable general equilibrium estimations. In many cases the authors cite limitations in the options for analysis due to the lack of information and baseline statistics (e.g., Stevens (1979) as cited in Tapio-Biström (2001)).

The body of empirical assessment of market impact, particularly of emergency food aid, is small relative to the attention focused on potential disincentive effects during debates on food aid. Overall, with a few exceptions, empirical studies have been inconclusive regarding the disincentive and other effects of food aid. In the case specifically of emergency food aid distributions, there is even less evidence of negative effects than for program aid, which tends to persist over longer time periods. When emergency aid is large relative to the market and households either sell the food aid commodity on the market or reduce market purchases due to receipt of food aid, emergency distributions can have the same impact as large scale monetization programs in lowering food prices on local markets. The most reasonable conclusion is that the balance of positive and negative effects depends critically on the details of how the food aid was programmed, delivered, and distributed within the country, and on the country's overall economic and agricultural sector policies (Barrett 2002; Tschirley and Howard 2003). On this basis, we suggest the following stylized facts regarding what market effects to expect from food aid.<sup>10</sup>

Food aid can have strong negative impacts on markets when:

- ◆ Food aid is distributed during a harvest, or after local production and marketing have recovered from shocks (usually associated with program food aid but not necessarily so);
- ◆ Very large quantities are released directly into markets which are functioning with locally produced goods;

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<sup>9</sup> Annex 1 presents a brief review of the relevant literature on the impacts of food aid on markets, and other relevant analyses for this work on market integration. While not comprehensive, the review identifies cases where effects were expected or did occur, for both emergency and program food aid, within and across markets.

<sup>10</sup> See Annex 1 for examples from the literature.

- ◆ Poor commodity targeting is implemented, such that the food aid commodity given to households is likely to be exchanged in markets, particularly when that commodity has a local substitute such that increased market supplies lower prices for the locally produced substitute;
- ◆ Corruption leads to food aid never reaching intended recipients but rather diverted directly on to markets; and
- ◆ Uncertainty in food aid programming (and national government planning) results in constantly changing estimates of food aid needs and government policy responses, such that traders face high risks and are reluctant to engage in trade (especially international trade).

In the following stylized cases, negative market impacts are of much less concern if:

- ◆ Food aid arrives for household distribution when local production and marketing have suffered strong shocks and cannot respond, and the duration of food aid programs is limited;
- ◆ Food aid is effectively targeted to those with no effective demand (for example, school feeding programs);
- ◆ Food aid deliveries are small relative to the local supplies and consumption; and
- ◆ Food aid commodities are self-targeting to the poor and with low cross-price elasticity of demand with local substitutes.

While not the focus of this work, a few of the potential positive impacts of food aid on markets may be found when:

- ◆ Food aid delivered to targeted families enables them to work and recover from the shock, to invest in production and other income generating activities, and to avoid selling key household production assets, which contribute to increasing their effective demand for consumption goods over the longer run;
- ◆ Food aid delivered in emergency areas where transport, communication and trade infrastructure were heavily damaged, enabling markets to begin (or continue) operating with at least some basic commodities, as well as meeting immediate food consumption needs; and
- ◆ Food aid used in combination with infrastructural and agricultural investments that enhanced market and other development activities.

One of the key lessons of the *ex-post* studies is that lack of flexibility in food aid programming can result in strong negative effects on local markets. The most glaring cases involve food aid arriving late and competing in markets with local production in the harvest period. This is not necessarily a case of faulty ENA but rather a case of lack of agency flexibility at the local level such that staff are unable to make the timely decisions needed to avoid the negative impact on markets. Where needs estimates have been faulty, usually market reactions have not been adequately predicted or local governments have taken additional unanticipated actions to increase supplies, resulting in potentially severe and long-lasting effects. Here, ENA staff can improve market assessments and work better to evaluate possible policy shifts by governments on trade and food interventions by evaluating the past and working with government staff and politicians.

## 6. EXISTING *EX-ANTE* ANALYSIS ON THE IMPACT OF FOOD AID ON MARKETS AND OTHER RELEVANT ASSESSMENTS

WFP and other donors have worked hard to develop food-aid assessment tools to guide targeting and foster better understanding of market systems. In this section, we identify the main challenges presented by WFP's current assessment tool, the Emergency Food Security Assessment Handbook (WFP 2005a), and highlight other existing tools that may be adapted or drawn from when developing emergency responses that meet the range of objectives of food aid, without undermining markets and the longer term objectives of food security. Readers interested in a more thorough critique of the EFSA Handbook are referred to Annex 2 of this report.

### 6.1. WFP Assessments

#### 6.1.1. EFSA Handbook

A comprehensive market analysis relating to food aid should have two objectives: (1) to determine the effects of shocks on market prices and functions, particularly the private-sector response to the shock and consumer demand, and (2) to anticipate the effects of food aid on local markets. The recently revised EFSA Handbook addresses the first objective by considering the behavior and functioning of markets before and after a shock. Less attention is paid to objective 2, and there is little recognition of the relationships among private-sector responses to shocks, their expectations regarding food aid and other policy responses, and the impact of food aid on markets. Although the handbook includes many references to markets and prices, it fails to provide the guidance needed at the field level to assess the potential impact of food aid on markets and the relationship of markets and response alternatives. Specific areas where the approach could be improved include better analysis of (1) the incentives for and ability of traders to move food to the deficit area, (2) market integration, (3) cross-border flows, (4) macro-policies in the targeted and neighboring countries, and (5) market structure/degree of competition amongst traders.

Overall, field staff will have difficulties completing an ENA in the absence of regular and reliable price data or information on market structure and dynamics. Furthermore, given time constraints and logistics, it is unlikely that all of the necessary information can be collected in an emergency situation. This underscores the importance of baseline data and developing ongoing relations with local market information systems and analysts. Where there are no functioning price collection systems, guidance on how to collect price data should be provided, and alternatives to price data analysis should be discussed.

While the current ENA approach of WFP addresses the possibility of depressed food prices and disincentive effects resulting from food distributions, it lacks the analytical tools necessary to predict—*ex ante*—the severity of these impacts. Even though the handbook instructs the reader to question how prices will behave following an intervention, guidance to make the determination of potential price and market changes based on different interventions (responses) is not provided. Analysis will necessitate understanding how prices fluctuate in the face of changes to supply and demand. Determination of market impacts will also depend on the quantity of food aid relative to the size of the market, whether the aid will replace locally produced food or imports, the duration of the intervention and the effectiveness of the targeting strategy.

Finally, the current ENA approach does not sufficiently assess the response alternatives and what happens when the resources are unavailable to select the ideal option. There is recognition among WFP staff and other humanitarian agencies working on ENA that certain responses (market interventions, cash and non-food transfers) may not be available. However they do not have the tools to assess the danger of choosing a non-optimal response. The potential impacts of addressing, for example, a demand-side problem (access) with a supply-side response (food aid) should be made clear, as this may affect implementation. Market analysis should include the potential impacts of implementing aid at different times of the year, taking into account possible delays in delivery. Highlighting the critical times of harvest and marketing will be useful also when considering the duration of an intervention.

### *6.1.2. Vulnerability Assessment and Mapping (VAM)*

The VAM is a key part of program design and implementation for WFP and similar work is done by many humanitarian agencies. As stated on the website, “VAM provides up-to-date information about who the hungry poor are, why they are vulnerable, and where food aid should be targeted” (WFP 2005b). Relying primarily on household data collection and analysis, it only addresses markets in a peripheral fashion. While the VAM instruments vary from country to country, many of the VAM include information on the sources of food for the household, whether markets or own production, basic income estimates and effects of shock on incomes, and aspects related to dietary diversity and changes in diet (e.g., WFP-Niger 2005).

Since the VAM are often a key input into ENA, many of the weaknesses indicated above reflect weaknesses with the VAM. For example, the VAM are focused specifically on areas thought to be severely affected, and thus cannot help identify potential linkages in the economy that condition the response of households and markets to shocks. Market prices, while valuable, are usually the only market indicators used, yet prices can convey limited information and must be complemented with other trader and commodity market information. Where there are no functioning market information systems, it is critical that the VAM collect not only prices, but also the additional information on costs related to marketing margins.

## **6.2. Other Donor and NGO Assessment Tools**

### *6.2.1. Coping Strategies Index (WFP and CARE)*

The stated objectives of the Coping Strategies Index (CSI) are to assess household food security, monitor the short-term impact of food aid, appropriately target food-aid interventions and estimate food-aid requirements. Initially developed by WFP and CARE for use by NGOs, the approach is still under development (Maxwell et al. 2003). As with the VAM above, the CSI does not directly consider the market in its analysis (pre- or post-intervention). Indirectly, the CSI could be used to lessen negative market impacts from food aid through better targeting. As indicated in the literature, well-targeted interventions will have minimal impacts on markets.



### *6.2.2. Household Economy Approach/Analysis (Save the Children and FEG)*

The purpose of these tools is to assess household access to food, to determine whether households face food deficits as a result of a hazard, and to identify appropriate food and non-food responses (Seaman et al. 2000; Lawrence and King 2004). As such, they are valuable for targeting communities and/or households in need of aid. Similar to the CSI, the unit of analysis for these two tools is the household. However, the household economy is put into the context of the market. Both tools detail how different wealth groups/livelihoods depend on markets for household food consumption. Save the Children's HEA gives a brief overview of the market, touching on market use, prices, supply and demand, market integration, and fluctuations in price. This section on markets is well-presented, although it is not integrated well into the rest of the analysis. Neither of the tools is designed to consider the ability of the market to supply food following a shock or the impact of food aid on markets.

### *6.2.3. Bellmon Analysis: USAID Missions*

Information pertaining to the Bellmon Analysis, required for monetization of U.S. food aid, is found in the Monetization Field Manual: P.L. 480 Title II Programs (USAID 1998) and in the Guidelines for West Africa (USAID 2002). The purpose of a Bellmon Analysis is to show that (1) a commodity is suitable for monetization or distribution, (2) there are adequate storage facilities in the recipient country, and (3) the commodity distribution or monetization will not act as a substantial disincentive or interfere with domestic production or commercial marketing of the commodity. The Bellmon Analysis differs from the WFP approach found in the EFSA Handbook in several ways. First, it is designed to illustrate the impact of food aid on the market through monetization. It is employed after an opportunity for monetization is identified, due to the availability of a commodity or due to funding or other needs. It is not used to determine if the market itself is capable of meeting food demands after a shock (although it could be used in this way). Second, the Bellmon Analysis is designed primarily to analyze the impacts of monetization programs. It pays less attention to the impacts of free food distribution. Third, it is not designed for emergency situations.

The Monetization Manual offers a good overview of market analysis (USAID 1998). The overview focuses on seven points: (1) possible effects of intervention on marketing agents as well as producers, (2) effect on food prices, (3) intervention quantities as percentage of total market, (4) timing of food flows through local markets, (5) impact on incentives for traders to engage in intra-annual storage or on farmers' planting decisions [disincentive effects], (6) possible cross-price effects on substitute commodities, and (7) the aggregate effects of multiple interventions in a particular country. Added to this qualitative overview are some market analysis procedures including understanding the traditional food market channels and market structure, a comparison of price margins to costs, understanding the foreign exchange market and the size of the market.

The Bellmon Analysis Guidelines for West Africa (USAID 2002) are an attempt to produce a practical tool for USAID and partner practitioners. They are organized into a review of government macro-economic and agricultural policies affecting the food sector, investigation of the marketing system (market structure, formal and informal marketing channels, regional trade), the role of food aid (types and quantities, percent of food aid as part of consumption and total imports), and a disincentive analysis for specific commodities (production, consumption, impact on local production and trade and optimal timing of food arrivals). Like

the EFSA Handbook, the Bellmon Analysis Guidelines are at times unclear how to obtain the above information, how to proceed when market information is not available, and how to use the information to determine the degree of disincentives.

### **6.3. Supply Assessments and Market Models**

#### *6.3.1. Food Balance Sheets*

Food Balance Sheets (FBS) were first used in the 1930s and are still used by many governments and organizations to help determine the amount of food aid required in a crisis. FBS look at production estimates of basic staples, stocks, non-food uses of the staples (e.g., for seed), estimated commercial imports and exports, and estimated consumption needs. The difference between estimated consumption requirement and estimated supply is then the estimated need for food aid. FAO has published guidelines for constructing these balance sheets (FAO 2002), and many countries complete them at a national level. Table 1 is the 2005 Zambia National Food Balance sheet, which we have modified, taking away all of the detailed notes and putting in comments to highlight more general points, not necessarily specific to Zambia. In some countries where data are available, sub-national balance sheets are also estimated, as for the three main agro-ecological zones of Mozambique. This regional disaggregation increases the value of the FBS by allowing the analysis to be focused on specific areas affected by shock, as well as areas of potential surplus production. As noted at the WFP February 2004 Board meetings (WFP 2004a), where there are disasters due to human activity (such a civil strife), FBS may not be useful at all until the main crisis is over. Tschirley and his co-authors (2004) discuss the weaknesses of using FBS for food aid estimates in general, and Watkins (2003a) notes the estimates of emergency needs for WFP should not be linked to the FBS; however, both sets of authors recognize that the FBS will continue to be used.

FBS are not used by WFP and other humanitarian agencies to estimate food aid needs; instead they base estimates on the number of vulnerable people and households and the quantities of food aid needed to meet their needs. However, there are reasons why WFP staff and other agencies working with emergency relief need to understand the development of the FBS and participate in developing as accurate an FBS as possible. National governments use the FBS to establish their own overall estimate of needs and then pressure donors to provide food aid based on those assessed needs. The needs assessed from a supply analysis usually do not coincide with the needs based approach by humanitarian donors. National governments will use the FBS estimate of a gap to indicate what they as a government should do, and how much food is needed. They may decide to provide subsidized food through reserves, through government imports and distributions, or through subsidies to private sector importers. In Zambia, the government, private sector, and the donors have had extensive debates on the results of the 2005 FBS and the need for subsidized imports, or reduced duty imports due to large predicted shortages. The debate continued through the season, restraining commercial imports to meet demand until the government determined its policy, a process that repeats what happened in 2002/2003 (Mwanaumo et al. 2005).

Another reason why WFP and others need to understand and contribute to FBS is due to the desire to assess food aid response alternatives, including the issues related to procurement and adequacy of response. Local procurement is one of the options increasingly used, and the first step is to determine the presence of surpluses, not just at the national level but within

regions in the country, which can be identified with regional FBS. The possibility of local sourcing and rapid response may make it possible to avoid the negative impacts of bringing in imported supplies that compete with other supplies in the country or region. In the Zambia FBS in Table 1, national estimates are unable to identify possible regions of production surpluses. Since there is an overall estimated deficit, external supplies are needed, but this FBS cannot indicate possibilities for local trade.

A key source of possible problems with balance sheets relates to consumption estimates and the substitutability of commodities, and the lack of linkage with market mechanisms, as discussed earlier in this document. In many places the FBS are estimated with only food grains, ignoring consumption substitution between grains and roots and tubers. In a recent review of the Zambian FBS methodology, the authors found it valuable that cassava was included, but indicated problems estimating available quantities (FEWSNET, MACO, and ZNFU 2004). As relative prices shift, one commodity may become more expensive than another, such as maize in relation to rice or cassava in southern Africa. Consumers may thus demand more of the lower priced good. However, the FBS is estimated ignoring relative prices and shifts in them (Farnsworth 1961; Jacobs and Sumner 2002). In addition, if these goods are not all on the FBS, a consumption gap would be over-estimated, as the substitute consumption good is excluded. If the substitute can easily be imported or purchased from production zones, a food crisis might be averted without additional food aid supplies. However, using a national FBS where there are strong regional differences in production and consumption, and where markets are not well-integrated, the needs estimates may be inaccurate as surplus in one region may not be available to meet demands in another, in spite of an overall balance between production and consumption.

Another important source of problems is how commercial trade is estimated. In the Zambia example given in Table 1, the FBS does not include any private trade estimate, preferring to leave a general “import need” identified. In most cases, private trade estimates are based on recorded formal sector imports and exports in previous years and projected imports by large-scale processors and distributors. These estimates of imports and exports may have serious gaps. From 1999 through 2002, the Malawian government failed to take into account the substantial informal maize imports from Mozambique and over-estimated needs, resulting in excess supplies and falling prices for maize producers. It is with this in mind that FEWSNET, WFP, and others have partnered in undertaking studies of informal border trade in southern Africa. The information provided in these studies reduces the amount of unaccounted trade, leading to better estimates of potential deficits and overall food aid needs. In addition, the studies contribute to regional market information systems and baseline data and track the impact of macroeconomic policies on informal trade. A WFP market study in Niger (Beekhuis 2005) during the recent crisis pointed out that such border studies are needed, particularly where borders are porous and informal trade can be significant. While these studies still need methodological improvements, they do give an idea of the scale and scope of this sector which is often disregarded entirely.

**Table 1. Example of a Food Balance Sheet: Zambia 2005 with Annotations**

	Maize	Paddy rice	Wheat	Sorghum/ millet	Potatoes	Cassava flour	Total (Maize mealie meal equivalent)	Comments
A. Availability:								When was the FBS constructed and when were components estimated? How does that compare to harvest periods?
(i) Opening stocks (May 2003) (sic)	190,702	103	156	2,445	0	380	174,305	How are the stocks determined? How is cassava treated? Household and commercial stocks need to be taken into account.
(ii) Total production (2004/05)	866,187	13,338	136,833	48,297	82,489	1,056,000	1,932,498	How is production estimated? Are both small-scale and commercial farm production included and how are they estimated? Do local experts (e.g., millers, NGO staff, researchers, others) agree with the estimates? In particular, how is cassava production estimated?
Total availability	1,056,889	13,441	136,989	50,742	82,489	1,056,380	2,106,803	How important are the regional differences in production?
B. Requirements:								
(i) Staple food requirements:								Are all the key staple foods included?
Human consumption	1,024,080	24,673	131,658	46,327	78,364	709,926	1,754,712	How are the amounts determined between the commodities? What price relationships existed when those estimates were made? How important are regional differences in consumption? What is the comparison between amounts estimated using average consumption per person and numbers of people vs. methods based on processing throughput and derived demand, especially for urban areas
Food Reserve Stocks (net)	0	100	0	1,000	0	500	1,406	Official government stocks should be reliably known, although quality may be an issue.
(ii) Industrial requirements:								

**Table 1. Example of a Food Balance Sheet: Zambia 2005 with Annotations**

	Maize	Paddy rice	Wheat	Sorghum/ millet	Potatoes	Cassava flour	Total (Maize mealie meal equivalent)	Comments
Stockfeed	52,000	0	0	0	0	0	46,800	For this, are only commercial operations included? How much of the feeding is based on imported feeds in a normal year?
Breweries	15,000	0	0	0	0	0	13,500	Does this include use in home brewing?
Seed	7,500	0	1,500	1,000	0	0	8,733	Does this include retained seed at household level or just commercially produced seed?
(iii) Losses	43,309	667	6,842	2,415	4,124	21,120	67,241	How are losses estimated? Adequately accounting for poor quality of storage?
Total requirements	1,141,889	25,440	140,000	50,742	82,488	731,546	1,892,392	
C. Surplus/deficit (A-B)	-85,000	-11,999	-3,011	0	0	324,834	214,411	Do all the numbers add up? What adjustments were made to get grain equivalents? How does the FBS treat commercial imports? Informal and formal imports both included before estimates of food aid made? What about possible exports? An official export ban may be in place but unofficial exports may occur, and so need to be taken into account. What are government policy instruments with regard to trade and are they likely to change?
D. Commercial import requirements								
E. Food aid requirements								What are government's plans for food security interventions? Other donors, NGOs?

Source: MACO/CSO, as found in the Zambia 2005 Vulnerability and Needs Assessment Report, Zambia Vulnerability Assessment Committee (ZVAC 2005).

Note: This FBS came along with a note sheet which answers some of the questions posed. See report for details, and for other comments. For example, the report suggests that the total maize import demand was under-estimated, due to lack of consideration of informal exports, under-estimate of brewery demand, and possible over-estimate of role of cassava in consumption. In this case, the millers and traders had estimated a higher overall import demand need.

Also, in 2004, the methodology of the Food Balance Sheets in Zambia was evaluated and changes were recommended to improve the quality (see FEWSNET, MACO, and ZNFU 2004).

Finally, FBS are usually completed on an annual basis, without periodic adjustments based on supply and demand shifts. The disincentives literature demonstrates the adverse effects of bringing in food aid when a deficit estimated in the FBS does not develop as predicted. The use of the static, annual FBS to measure highly seasonal food production and trade is problematic. Overall, FBS should be carefully considered before being used on a dynamic problem such as food supplies and food aid. One alternative would be the use of market models, as discussed below.

### *6.3.2. Market Models*

We have placed this section after the section on Food Balance Sheets, as the information in the FBS is critical for a market model. Indeed, a market model can be conceived as a food balance sheet that incorporates market behavior. Market models, including multi-market models with more than one commodity, use the classic supply and demand theory presented in Section 3 to develop systems of equations that reflect the supply curves, the demand curves and the relationships between them, and the factors that will affect each of them.

These models are able to look at markets for goods that are substitutes in consumption or in production, as well as across markets to understand what might occur if supplies or prices of one commodity are changed; they can also examine the impact of a change in prices of factors of production on production or marketing of the commodities. Factors of production include land, labor, and chemical inputs. These models thus try to deal with the basic shortcoming of FBS—namely the lack of a link between estimated supplies and market prices—by making supply and consumption a function of market prices. Gotsch (2001) provides a primer on these models.

Table 2 provides a list of some of the basic parameters, data, and estimates used in a simple model. Parameters reflect relationships between variables, such as the price elasticity of demand for a commodity. They are assumed not to change from year to year, and are typically found in previous studies. Data are numerical descriptions of past or anticipated events, such as the current year's production, anticipated imports, and "typical" consumption by households. Analysts may need to take observed data and extrapolate to estimate current or future values, where actual observation is not possible. Ideally, market baseline reports can be designed to capture the information needed, so that analysts can implement a simple model quickly. The recent Madagascar baseline study contained much of this information (Goossens and Ralison 2005).

del Ninno, Dorosh, and Subberao (2005) used these models in Bangladesh to measure the impact of changes in food policies on prices and production, and Dorosh (2003) uses that research in his contribution to the WFP/SENAC Technical Report to demonstrate the use of multi-market models in measuring price impacts of food aid in Bangladesh. Market models come in various degrees of detail and complexity. Ideally, local market parameters would be included for highly localized analysis across various markets and commodities, but the simplest market model might be for a single commodity at a national level.

**Table 2. Example of Information Needed for Market Models**

**PARAMETERS and DATA**

Supply elasticity for key commodities  
Supply cross elasticity between key commodities  
Price elasticity of demand for key commodities  
Cross-price elasticity of demand between key commodities  
Income elasticity of demand for key commodities  
Initial Domestic Production ('000 mt) for key commodities  
Initial Domestic Consumption ('000 mt) for key commodities  
Initial net imports ('000 mt) for key commodities  
World price (\$US/mt) for key commodities  
Exchange rate (P/\$US)  
Foreign exchange premium (%)  
Equilibrium price of exchange  
Unloading costs (\$US/mt)  
Observed price--market rate (P/mt) for key commodities  
Border price—equilibrium rate (P/mt) for key commodities  
Direct Production Taxes/Subsidies (%)  
Direct Consumer Taxes/Subsidies (%)  
Producer Price for key commodities  
Consumer price for key commodities  
Propensity to consumer from own production for key commodities  
All of the elements in transaction costs from port of entry to consumption points

Note: Key commodities may include food staples as well as key income commodities, such as livestock.

Source: Author drawing on Gotsch (2001) and Dorosh (2003) in WFP (2003).

### 6.3.3. Market Information Systems (MIS)

Most people think of market information systems as collecting and disseminating prices. That is a valuable function, and can provide the baseline price data needed to look at current market prices and evaluate how far they vary from previous experience. MIS have systems in place for dealing with nonstandard prices in markets, and so should be consulted before designing price collection data sheets. In many developing markets, tin cans, old plastic oil containers, local baskets, and other units are used to sell products, but for comparison purposes over time a standard unit is needed, such as a kilogram or a liter. However, MIS staff members often have much more to offer than simply prices, conversion units, and basic price trend analysis. They are in the markets regularly and can provide information on how the supply chain for a given commodity is organized, for example, or can identify changes in the market dynamics over time, and other key market information.

Recent experience in Mali demonstrates the power of simple analysis and solid knowledge of market structure and market responsiveness in helping to avoid major errors in food aid with excessive food aid commodities when the private sector can respond (PROMISAM 2005). As detailed in Box 1, in 2004/2005, there were fears of upcoming famine in Mali, and the MIS with the Food Security Commission were able to look at price movements and talk to traders within trading networks to understand the dynamics of the problem. This approach did not rely on sophisticated econometric analysis, but market reconnaissance based on investments over time in market information systems for both public and private sector activities. Simple price graphs showing trends were developed; traders were engaged in discussions of what was happening and the potential to increase trade and thus food supplies on the markets, and then solutions were developed, including food aid distributions to those with no effective demand and special duty-free import authorizations for maize and rice by the private-sector, to lower food prices in markets. Skilled MIS staff members were key in identifying the market mechanisms that might work in Mali during this potential; crisis.<sup>11</sup>

In many places there are no functioning MIS, or the MIS operates in very limited number of markets and not in the rural zones where a disaster has occurred. In rapid onset crises, such as the Pakistan earthquake, the damage to transport and market infrastructure already suggests that markets will not be functioning in the near future and so food aid commodities are needed in the short run. However, as the crisis develops over time, market analysis must be conducted to ensure that food aid commodities and their delivery do not undermine the ability of traders and other market agents to begin operating again. It may be that part of the response is to assist an MIS in becoming operational in the key areas.

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<sup>11</sup> While not the focus of this document, WFP, donors, and other agencies clearly have a stake in promoting MIS development that goes beyond direct private sector market needs, and includes the public goods aspects of the MIS. As development funds are dedicated to systems that are strictly private in focus, the needs of the public sector will not be met and, in a crisis, only limited information will be available. See Weber et al. (2005) for more information.



## Box 1. Case Study: Mali and the Crisis of 2004/2005



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Website: <http://www.oma.gov.ml>  
E-mail : [oma@datatech.net.ml](mailto:oma@datatech.net.ml)

### Potential Crisis

In 2004/2005, there were impending food crises in Mali, Niger and many other parts of the Sahel due to locusts, drought, energy shock of rising oil prices, and a low-level civil war in neighboring Côte d'Ivoire. In contrast to Niger, the Malian government had the information systems in place and the people to analyze that information to understand the dimensions of the problem, address food security needs of the population, and yet avoid the imports of large amounts of food aid. During the 2004/05 crisis, the Malian government distributed 26,695 tons of free food aid (mainly millet and sorghum from the National Security Stock) and sold an additional 17,107 tons of coarse grains and rice at subsidized prices through the government grain board as part of the relief effort. The ultimate impact was that Mali weathered a very severe crisis with much less human suffering than otherwise could have occurred, as in Niger where the government followed a much more "closed" approach to addressing the crisis.

### Dealing with the Crisis

Key approaches of the government to deal with the crisis:

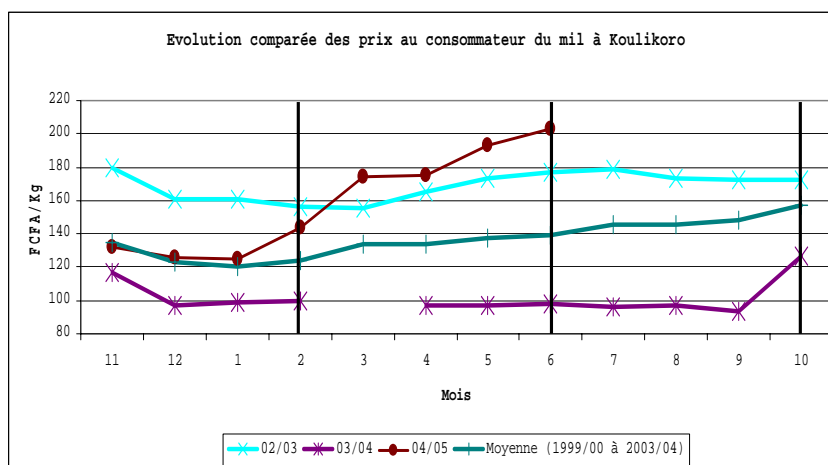
- (1) Collaboration between the market information system (*Observatoire du marché agricole*, or OMA), the early warning system (*Système d'alerte précoce*, or SAP), and the Food Security Commission (*Commissariat à la sécurité alimentaire*, or CSA) in the Office of the President to assess the determinants of food insecurity, geographical areas with populations at risk, and options for addressing the risk;
- (2) working with OMA to make information on the evolving market situation widely available to all actors (farmers, consumers, private sector, government, NGOs, donors) in order to avoid market panic;
- (3) working through the mechanisms established for the Cereals Market Reform Program (PRMC), which is a joint Malian-donor effort chaired by WFP, to mobilize and monitor emergency food aid assistance; and
- (4) taking actions to promote private-sector imports of grain from regional and international markets to help hold down price increases.

### Investments Needed to be Able to Avoid Crisis

Since the mid-1980s, the Malian government, with donor support, has invested in the development of both a market information system and an early warning system. The market information system, OMA, has become a key part of improving the efficiency of cereals markets, thanks to its ability to generate reliable information and its strong links to both the public and private sector. The system, based in the Malian Chambers of Agriculture (a farmers' organization), but with strong links to the Food Security Commission in the Office of the President, provides a range of services, including market news reports (broadcast on radio and TV) and policy analysis. OMA staff know the markets and traders, and regularly exchange information with MIS in neighboring countries, thus providing a broader view of market dynamics throughout West Africa.

## Case Study: Mali, cont.

The SAP is a system to assess local-level food security in order to identify areas in need of emergency assistance. It draws on information from local-level committees that inform the government when drought, pests, or other problems threaten the populations in selected areas. While not identifying specific vulnerable households, the local Food Security Committees are able to qualitatively assess localized risks, and general sources of food insecurity.



### Example of price analysis presented by the OMA.

Common sense and basic information guided the process, rather than modeling. Basic price graphs, comparing prices trends over the years, were combined with analysis of market performance and information gathered from traders on availability of regional grain supplies and the barriers (such as informal taxes) hindering regional imports to demonstrate that, with some help, traders could assist in reducing food prices for the general population. This was combined with the SAP's identification of localities in need of free or subsidized food distribution.

In both OMA and SAP, the Malian government has the people with training to respond in a crisis. The recently established Food Security Commission is reinforcing this network and continuing to invest in local human resource capacity, as well as helping local communities build their own food security plans that aim at preventing crises before they happen.

For more information, see the website of the Food Security Commission at <http://www.csa-mali.org/situationalimentaire.htm> as well as the websites for OMA and SAP

## **7. TOWARDS AN IMPROVED FRAMEWORK FOR ANTICIPATING AND REDUCING FOOD AID IMPACTS ON MARKETS**

Regardless of the shock and the intervention, introducing food aid supplies or other interventions for support of livelihoods will almost always have some consequences for commodity markets, whether positive or negative. For WFP and other agencies, the key is to identify what questions should be asked and the information needed to answer them in an *ex ante* analysis, so that when response alternatives are selected, market aspects are adequately considered. As indicated earlier, markets do not deserve protection as ends in themselves. However, given the key role that markets play in food security, each ENA needs to evaluate how markets have been affected by a shock, what role they may be able to play to improve food security in the emergency, and how the possible response alternatives will affect the markets. A common sense approach to market analysis is the first step, and then quantitative estimates of potential price and production impacts of selected responses may follow where possible.

### **7.1. ENA and Markets: Broader Questions**

There are several major questions related to markets that each ENA should address which will later assist in selecting response alternatives for implementation:

- 1) What is the nature of the food insecurity, and are market failures (or weaknesses) part of the threat to food security in the affected areas?
- 2) Will markets respond to needs, if effective demand of households is increased?
- 3) Which response alternative or set of alternatives will best ensure food security in the short run while enhancing (or at least not damaging) the longer term role that markets play in food security?
- 4) When WFP and other humanitarian agencies have limited choices of response and second-best response alternatives are the only ones available, what are the consequences on markets of those choices?

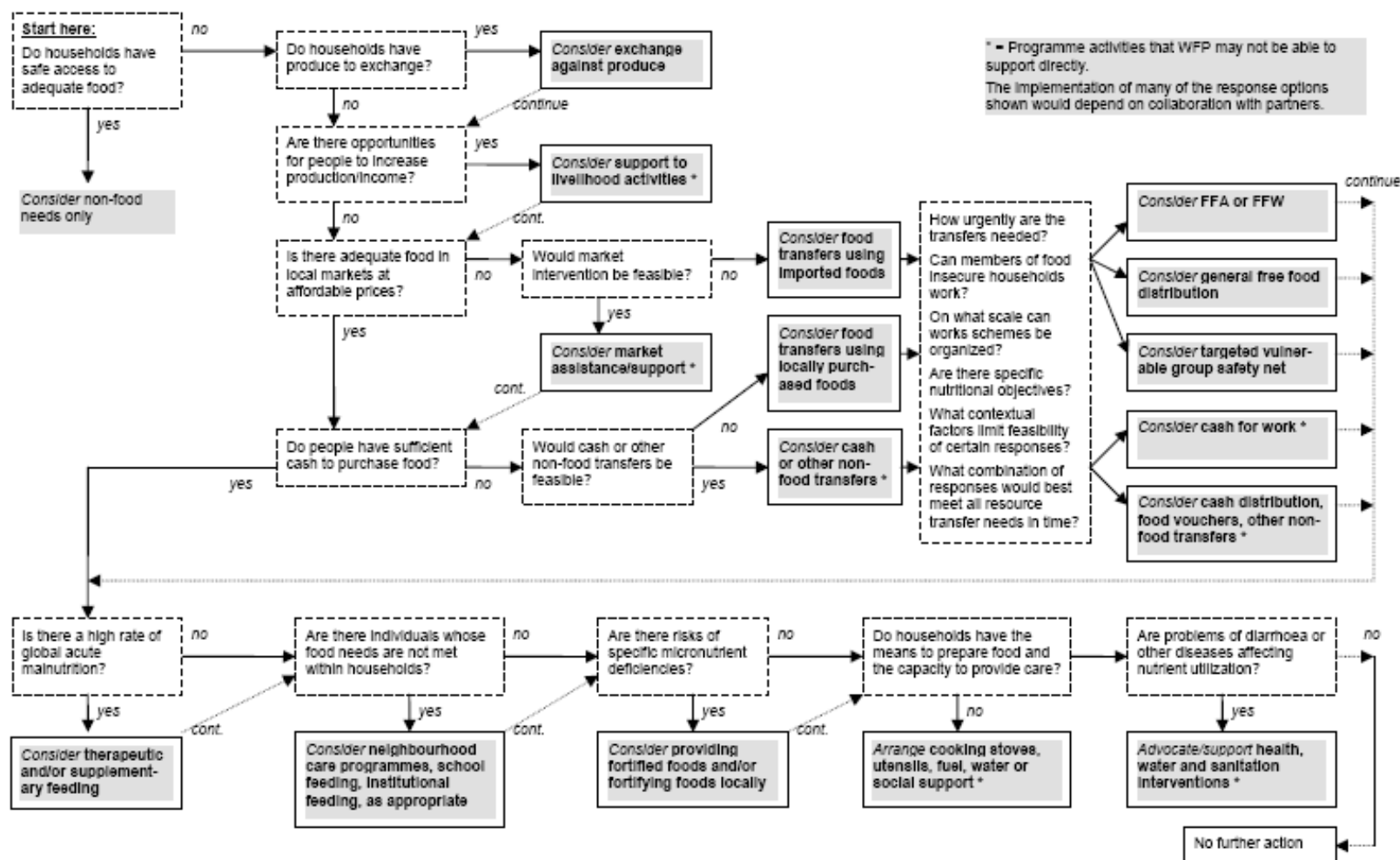
To answer these questions, every ENA will need to address the following areas:

- Household market participation prior to and during a crisis;
- Market integration prior to the shock and how the shock may affect the capacity of markets to respond in short and long run;
- National and regional (extra-national) policies and actions that affect the commercial sector's ability, costs, and risks to supply the markets;
- Emergency response alternatives and their potential effects on the markets in the short run and the longer run, based on existing conditions and past experience.

As Figure 2 (from WFP 2005a) illustrates, current ENA analysis is based on individual and household level factors. There are two points for which greater market analysis is needed. The first point is for the box that asks "Is there adequate food in local markets at affordable prices?" This is related to questions 1-3 above. Secondly, the interaction between markets and the set of response alternatives shown on the far right side of Figure 2, related to question 4 above. For example, the figure asks if there is adequate food in local markets at affordable prices. If not, the reader is directed to think about possible market

Figure 2. WFP EFSA Handbook Figure on Identifying Appropriate Responses

Figure 13b Guide for identifying responses that *might* be appropriate



Source: WFP 2005a

**Table 3. Relationship between Response Alternatives and Markets: Key Examples**

<b>Response Options</b>	<b>When is this a good idea from a markets perspective? (“When may it be appropriate?”)</b>	<b>When is this a bad idea from a markets perspective?</b>	<b>Repercussions and severity of potential impact on markets if option chosen in spite of “bad idea” conditions</b>	<b>Information required to establish appropriateness of response option</b>
Free (general or targeted) food distribution	(from EFSA Handbook Annex B5, p.p.310-311) “In a situation of acute/transitory food insecurity where: all, or a significant proportion, of households lack access to food; <i>and</i> there is a lack of food available; <i>and</i> alternative ways of assisting people access food would either take too long, when the situation is urgent and/or might not be practical or reliable; <i>and</i> food distributions may be appropriate over a short-term period, rapid intervention of food aid (e.g., one to two weeks) where there is reason to fear possible hunger without knowing whether the above conditions have been met.”	In a situation of acute/transitory food insecurity where: 1) food insecurity is primarily due to household lack of access to resources to obtain food; and 2) markets and transport infrastructure have not been heavily damaged by the crisis; and 3) where markets were integrated and trade flowed before the crisis; and 4) traders would be physically able to supply markets with commodities if the demand side issues are resolved 5) Trade between markets is possible and there is potential profitability in trade 6) When traders are unable to predict how much food aid is to arrive in a market and how distributions will be managed (targeting aspects) and thus cannot supply markets without high risk; 7) when the food aid commodity is a substitute in consumption for a local good and may be sold into	Most severe impacts in short term occur when food aid delivered into markets that already have stocks of the commodity, particularly when the harvest period for local commodity has begun.  Bringing in food aid supplies may have short run, severe price effects in local market if food aid commodity is not well targeted and households sell commodity after receiving.  In cases of recurrent crises, such as the southern Africa droughts, market uncertainty as to food aid actions can lead to high price spikes, lack of trader investment in markets and storage, and undermine long-term development, when food aid is response to each	1) Market integration prior to crisis; 2) HH market participation prior to crisis; 3) Effects of crisis on markets (physical damage, demand for commodities, access to commodities, etc.) 4) Potential profitability of trade between markets (marketing margins, risks) 5) Seasonal calendars and time line for delivery of food aid supplies (avoiding delivery during harvest period)

Response Options	When is this a good idea from a markets perspective? (“When may it be appropriate?”)	When is this a bad idea from a markets perspective?	Repercussions and severity of potential impact on markets if option chosen in spite of “bad idea” conditions	Information required to establish appropriateness of response option
		markets by households receiving the commodity (targeting issues)	crisis, rather than direct income supports and development investments.	
FFW	<p>(EFSA Handbook Annex B5, p.310)</p> <p>“In a situation where: households lack access to food; <i>and</i> food availability in the area is limited in quantity and/or variety, and there is no indication that this will change; <i>and</i> food insecure households include able-bodied persons who are unemployed or under-employed (i.e. there is surplus labour in target households); <i>and</i> public works projects are required; <i>and</i> the necessary non-food inputs (materials, equipment and technical supervision) can be assured; and the assets created will be properly managed and maintained after completion of the project; <i>or</i> Following a sudden disaster when:</p> <ul style="list-style-type: none"> <li>• there is need for debris removal and general clean-up operations, labour-intensive repair of rural roads, small embankments or other</li> </ul>	<p>If the payments made under FFW are not well designed and draw in populations that otherwise would be engaged in productive labor activities and buying food on the local market</p> <p>If type of commodity distributed is not well chosen, it may be sold by participants to get other goods or to pay cash, depressing the prices of similar (substitute) local commodities</p>	<p>FFW may displace labor efforts in other productive activities, including food production, thus undermining recuperation</p> <p>Commodity sales of FFW goods may depress local prices for good or its substitutes produced locally</p>	<p>Prevailing wage rates, labor availability in targeted households</p> <p>Relationship in consumption between demand for FFW commodity and local commodity. If participants sell the food aid commodity to purchase a locally produced commodity, there may be positive effects on prices for the local commodity, a positive effect</p>

Response Options	When is this a good idea from a markets perspective? (“When may it be appropriate?”)	When is this a bad idea from a markets perspective?	Repercussions and severity of potential impact on markets if option chosen in spite of “bad idea” conditions	Information required to establish appropriateness of response option
	<p>public infrastructure; <i>and</i></p> <ul style="list-style-type: none"> <li>the population has the capacity to undertake the required work without outside technical supervision.”</li> </ul>			
Cash transfers	<p>(see EFSA Handbook Annex B5, p. 315) “In a situation where:</p> <ul style="list-style-type: none"> <li>food is available in local markets but households lack means to purchase without depleting essential assets; <i>or</i> the costs of procuring and transporting food to affected area are high, but traders would respond to market demand; <i>or</i> mobilising food aid would take a long time; <i>or</i> the aim is to support economic recovery as well as survival; <i>and</i> the risk of inflation due to an injection of cash is low; <i>and</i> capacity is available to manage the programme; <i>and</i> donors are willing to support a cash distribution programme.”</li> </ul>	<p>If food insecurity is due to a production shortfall and market infrastructure has been badly damaged or markets in the location of the crisis have not previously been integrated with other markets, cash transfers may be inflationary</p> <p>Also if the market in a location is controlled by a single or very limited number of traders</p>	<p>Cash transfers given in areas with the specific characteristics mentioned (concentration of market power, lack of integration of markets, damaged market infrastructure) will result in increased demand for a limited supply of food, such that prices increase without new supplies coming in</p>	<p>Same as for Free Distribution, especially market integration (did people buy from the market before crisis and where did those supplies come from)</p>
<p>See EFSA Handbook Pages 308-328 (WFP 2005a) for other response alternatives and “When is it appropriate?” for each, including Cash for Work, School Feeding programs and Therapeutic Feeding with take-home packages.</p>				

interventions. But to determine what interventions are appropriate, one needs to know the source of “inadequate supplies at affordable prices,” whether due to supply disruptions in the marketing system or to a collapse in effective demand due to a fall in incomes of the vulnerable. If inadequate effective demand is the problem, can the markets supply the needed foods if purchasing power of the vulnerable is increased? As conducted by WFP, an ENA does not address these issues. Another area in which an ENA can assist in the decision-making process is to link the response alternatives to their possible impacts on markets. Table 3 demonstrates those links, using information from WFP documents (Chapter 13 and Annex B5 of the 2005 EFSA Handbook (WFP 2005a)) and common sense from the supply and demand dynamics indicated earlier in this paper.

The first question is “What is the nature of food insecurity in the affected areas?” Current ENA methods answer this question from the household side, by identifying how the shock has affected household production and incomes, identifying changes in how households obtain food. This requires identification of the shock and its effects on household demand and supply in the short run and longer run, as well as the relationship between households and markets.<sup>12</sup> Needs assessment would determine if food supplies in the markets are (or will be) one of the main problems generating food insecurity.

## **7.2. Household Analyses: CFSAM, VAM, and the Use of Information**

As indicated in the previous section, the household modules are useful for answering key questions regarding effective demand and household participation in markets, as well as the effect of shocks on the household strategies for meeting food needs. This household level unmet demand for food does not directly translate into food aid commodity import needs, since food needs may be met with cash transfers or vouchers to obtain food through local markets, or with actual food delivery (e.g., FFW, free distribution). There are basic questions to ask before coming to a programmatic decision, and the answers to those questions help indicate possible impact on markets.

- 1) If the shock affected the income or consumption sources of the household directly, will they be able to purchase food if it is available in the market? If they will not be able to do so, they have no effective demand and food aid targeted to them is less likely to disrupt markets than non-targeted food aid; improving their effective demand with a cash transfer is an alternative to in kind transfers using food aid.
- 2) If households do not have effective demand, how many households in a community are in this situation? Targeting of households within a community may be possible only through very limited distribution systems (e.g., school feeding programs, distribution to widow-headed households). Often, however, often, community leaders may decide that distributions must involve all households, such that selecting communities to target and limiting per-household quantities may be used to ensure that households with the resources to work in the market do so, so that markets and traders still function, and food aid does not crowd out local trade.
- 3) To what extent did households depend on markets prior to the crisis? High levels of market participation (buying and selling on markets) would indicate that markets were active. Unless major infrastructure damage has occurred, analysts should assume that

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<sup>12</sup> EFSA Handbook Annex Table A1 starts to develop these ideas under the “Food availability and markets” aspects.



the markets will be fairly active after a crisis, unless demand is severely constrained. Cash transfers and other forms of aid provide income that may keep an economy dynamic, and even food aid can be a part of that dynamic in markets.

With the household-level analysis, the key points related to markets that should be evaluated are: 1) market participation prior to crisis; 2) current limitations on participation in market; and 3) current and previous consumption of the food aid commodity to be distributed. Based on the household analysis, analysts for the ENA should turn to evaluating the markets and their potential.

### 7.3. Trader Surveys

ENAs should start with as much *a priori* information on markets as available. The market baselines, where completed, will provide a solid information base and should indicate where analysts can follow up and obtain current information. Rapid rural appraisals of markets are frequently done by local market information systems, as in Mozambique (SIMA 2005), Mali (PROMISAM 2005), and by FEWSNET and WFP (2005) and other agencies. In Mozambique, the public sector MIS is active with both formal and informal markets, and a survey has been developed by the MIS with FEWSNET and other partners to work with local traders that is useful in highlighting the importance of markets under existing conditions.

Market trader surveys in local markets are critical to assess local aspects. There are often local groups completing trader surveys, such as an MIS or a local FEWSNET office, but such a survey in the immediate post-emergency or pre-emergency period would include elements of the following:

1. Pre-shock trading operations: quantities, commodities, transaction costs, financial operations and capital investments, seasonality
2. Effect of shock on the trading of key merchants:
  - a. Stocks
  - b. Assets/capital
  - c. Costs (marketing margins as indicated above)
  - d. Clients/market demand
  - e. Perceived threats/barriers to returning to “normal” operations
    - i. Risks from government and donor response
    - ii. Other risks
3. Capacity to respond in short-term, medium-term
4. Perceived policy threats/barriers/limitations/
  - a. Public sector signaling to markets
  - b. Donor/NGO signaling to markets

Table 4 provides a draft guideline of market trader survey questions that can be used in local markets in the affected region, and with some modifications, in the markets that usually supply the local markets.

## **Table 4. Market Trader Survey Questions<sup>1</sup>**

### **Basic characteristics:**

- How long have you been engaged in the trade that you are doing now?
- Do you have your own transport facilities? If yes, what?
- Do you have your own storage facilities? If yes, how large?
- Do you belong to a trader or farmer group or association?
- What communication technology is most important for your trading?
- Do you have other sources of income than trading?

### **Discuss what they are doing now:**

- Which commodities are you currently trading?
- Which commodities did you trade last month?
- Who are currently your main customers?
- How are you currently transporting your goods to market?

### **Discuss what their operations are like in a normal year:**

- Which commodities did you trade one year ago?
- For each commodity, what is the month of highest sales in a “normal year”?
- For each commodity, what is the month of lowest sales in a “normal year”?
- How do you get the goods to sell in a normal year?
- What volume do you handle per week at this time of year in a normal year?
- Do you borrow money to buy goods to sell at this time of year in a normal year?
- Do you extend credit to your customers in a normal year?
- Who are your main customers at this time of year in a normal year?
- Does the demand for your produce fluctuate over time?
- Which commodities do you think will have a good future demand?
- Which are the most lucrative markets (type, location) for the different commodities?
- How do you transport your goods to the market in a normal year at this time?
- How much competition do you face from other traders during the buying process?
- How do you get market information?
- What information do you get?

### **Comparison between this year and a “normal year”**

- How does your volume of sales this week compare to the same period one year ago?
- What are the main constraints you are facing as a trader?
- How are you currently getting the goods to sell?
- Where do you purchase the goods? What volume do you get when you purchase?
- Marketing margins:
  - How much does it cost to transport the goods to this market?
  - Do you have to pay taxes on the purchase? Road taxes or other charges along the way?
  - If you have to cross a border, are there formalities there?
- What do you consider to be the most risky part of your business?

### **How is this year different from a normal year:**

- Transport access
- Transport costs
- Border or product transport costs or taxes

#### **Table 4. Market Trader Survey Questions<sup>1</sup>**

Storage access  
Storage costs  
Goods to sell  
Customers to buy  
Cost of goods for sales  
Availability of goods for sales  
Sales prices  
Credit availability

**If current sales are less than “normal sales” for this time of year, why?**

**If current sales are more than “normal sales” for this time of year, why?**

<sup>1</sup> This assumes that there is some crisis or change that makes this year not a “normal” one and for that reason there is an ENA. Reference point can be “one year ago” if it was a year without crisis, or it can be a “normal year,” a vague concept, but potentially valuable. A market baseline study may be able to provide pre-crisis information, such that this survey can be faster, more efficient. Where markets have collapsed, especially due to physical damage to roads and marketplaces, such as after an earthquake, these surveys may only be useful later, as the physical infrastructure begins to be repaired.

Source: This table is adapted from recent work in Mozambique by FEWSNET, WFP, and the local market information system, SIMA. See Bata et al. (2005).

Seasonality is often a key component in market activities. Basic cropping and activity calendars can identify times of labor demand, harvest periods, with an overlay on seasons for migration, off farm income activities, animal sales, road accessibility, or other key aspects that shift with the seasons and may affect either markets or household income sources. The revised EFSA for Uganda demonstrates how such calendars might be done (WFP-Uganda 2005), so this is an area that the ENA are already taking into consideration, both with agricultural cropping calendars and with income/employment components.

#### **7.4. Market Analysis Tools (Spreadsheet Based) and MIS**

There are some analyses that can be conducted with a simple spreadsheet tool, if the data are available (Tschirley 1995). Public market information systems often have the basic price information, although not for all commodities and locations. Famine early warning systems, national grain reserve agencies, or national financial banks may also have time series data. Because MIS and these other institutions may lack price and supply information for some remote areas of special interest in emergency response, their data may need to be collected in ENAs. When this is done, the use of nonstandard units must be evaluated.<sup>13</sup> Unless standard units are used in markets (this is rare), prices will need to be collected per nonstandard unit and converted to kilos or other standard unit. A local MIS can often provide conversion factors for the most common units. Getting current local price information can be valuable in comparison to long term price series for the larger markets, if the data on current transaction

<sup>13</sup> Price tables found in ENA, such as those in the WFP Uganda EFSA (WFP-Uganda 2005), try to address this issue but fall short, for in this case, since the prices are requested in “per kilo” rather than in a common unit with that unit identified. The sheet does address nonstandard units, requesting conversion factors, which is valuable if the enumerators have access to scales. The Niger Village Survey from the CFSVA provides an example of more consistent recording of prices and local units (WFP-Niger 2005).

costs between the markets is also collected. Consistency in data collection methods is important.

Assuming that standardized price data are available over at least two years prior to crisis, the basic spreadsheet tools would estimate the following:

1. Compare price levels and ratios for key commodities in consumption and income, market by market;
2. Calculate spatial price differences for each key commodity between key markets;
3. Calculate price movements and seasonal prices for each key commodity.

If the market has been well researched in the past, there should be the following information as well:

1. Demand substitutability among principal commodities;
2. Supply response for principal commodities;
3. Identification of number of competitors and relative volumes prior to the shock for wholesale and retail commodity markets;
4. Trade analysis
  - a. Marketing margins between key markets and local markets concerned, and between different levels of processing of a commodity (e.g., wholesale grain to retail flour)
  - b. Import parity prices for logical trading routes in the region (internationally)

Where there is no MIS, price data will have to be collected within an ENA, and combined with the information from the trader surveys. This analysis would not only be in the affected areas but also information would be needed from key markets which in normal times supply the affected areas. At a minimum, ENA price analysis should include computing the price ratios between main consumption and income goods (e.g., between grain staple and livestock, in pastoral areas), and marketing margins across key markets.

## **7.5. Food Balance Sheets (FBS)**

As indicated in the earlier section, given the importance of the estimates contained on the FBS, WFP staff during an ENA need to be able to judge the contents of the FBS and adjust calculations. The annotated FBS for Zambia presented in Table, suggests questions to ask when looking at an FBS. Another short analysis that can be conducted on an FBS is a sensitivity analysis. Such an analysis might be done by varying key variables (e.g., national production, estimated exports) by 10% up or down, or by limiting the substitution between commodities, such that a surplus in cassava is only partially a substitute for maize in consumption.<sup>14</sup> Analysts may disaggregate the FBS into relevant sub-national units, and see how that affects the results, particularly where transport costs are high and markets are not well-linked.

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<sup>14</sup> FBS calculate net calorie and protein availability per capita, regardless of source. Thus, the FBS implicitly assumes that one source of calories is a perfect substitute for another.

## 7.6. Market Models

When large food-aid shipments are expected over a longer period of time, it pays for WFP and the other humanitarian agencies to invest in more sophisticated analysis and tools. It is also in these cases where the distinction between emergency response and development aid may be blurred, so continued partnership between emergency and development staff is needed, and tools which integrate components of the economy may be useful. Market models may provide an input that is valuable in this case, provided that the analyst is familiar with demand and supply structures in the country. Conducting such an analysis without a baseline projection would be difficult and the information which can be obtained once an emergency has occurred may be inaccurate when based on recall. Thus, it is recommended that the market model should be carried out in countries where periodic crises are likely to occur. Since technical experts are needed to design and use these analyses, the models should be focused on areas where the risks of significant market impacts are high, i.e., where the emergency is widespread and large populations are affected, with potential interventions of a large scale. The slow onset shocks of drought in southern Africa are a case in point.

With a developed market model, as long as sufficient data are available, the analysis can be estimated as a crisis proceeds. As with the FBS, estimating the models for regions within a country would be valuable, disaggregating the effects to highlight key areas. As indicated by the team from Tufts University working in non-food responses to emergencies (Tufts 2005), an approach that uses multistage assessments may be appropriate, with a rapid initial assessment and more detailed assessment to follow. This approach assumes WFP programmatic flexibility to adjust to new information and analysis as an emergency develops. Market models can provide that more detailed assessment, but if the analysis takes too long to develop, the results will come too late for use in implementation.

## 7.7. Emergency Needs Assessments and Policy Analysis

One of the areas in which the current ENA methods need improvements regards macro-economic policy, both within the country and in other countries within the region. This relates to the question of whether or not markets can and will respond to crises, if effective demand problems are addressed. Understanding policy will contribute to analysis of the effectiveness of response alternatives without negative market impacts.

Thus, in an ENA the following macro-economic policy aspects which should be evaluated:

- ◆ Currency regulations: Adequate liquidity and availability of funds to finance trade; overvalued and undervalued currencies and their effects;
- ◆ Trade regulations, including trade bans/restrictions for key commodities: export and import bans are common in times of stress; phyto-sanitary and other requirements can limit or delay shipment, both commercial and food aid; trade unions and regional trade pacts can facilitate intra regional trade but block other international trade, licensing requirements, which may restrict competition among importers and lead to higher market prices; and
- ◆ Fiscal regime and ability to enforce law: deficits may mean lack of control over local authorities on levies and transport fees raise costs of doing business; lack of security may limit commercial activities or put high cost on them.

There are many examples of policies that have enhanced markets or created problems for households and markets in previous emergencies (Tschirley 2005). On currency issues, an over-valued exchange rate may make imports much more expensive than otherwise, while limiting exports from the country. This may play a role in decisions on local purchase, since an overvalued exchange rate means that more dollars or euros will be needed for each ton of food purchased locally.

Import and export regulations are clearly important. In Zambia, in 2005, for instance, there has been a major debate on government import taxes and the need to remove those taxes and some phyto-sanitary certifications during the crisis (Millers' Association of Zambia 2005; Mwanauo et al. 2005). Earlier in 2005, the Zambian government addressed problems with domestic commodity movement levies that increased the costs of doing business (Mwiinga et al. 2005). Nigerian policy decisions on taxation and exports have affected food prices and market responses in Niger (Beekhuis 2005). Linked to this is the added risk involved when WFP, other donors, and national governments are not clear on their intentions and transparent in their operations.<sup>15</sup> The ex-post studies indicated that a government's decision on imports may add risk that additional food aid supplies will negatively affect markets, even if careful geographical or other targeting is attempted. The market assessment thus needs to include intentions or likely responses of government, donors, NGOs and others. Knowledge of local politics and of past government experience is valuable here, as are discussions with key informants.

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<sup>15</sup> With local purchases, there is some justification for more strategic release of information. No savvy trader would announce a big purchase with a long period of anticipation. However, when releasing requests for tenders, the more those tenders themselves are clear and transaction modalities are transparent, the better the market will be able to respond, and the less the biggest traders will be able to corner the market for specific commodities.

## 8. CLOSING REMARKS AND RECOMMENDATIONS

Field staff of WFP and other agencies use ENA to identify household food security needs to assist in identifying response alternatives. The purpose of this paper is to help the staff evaluate the potential effects on markets of different choices under identified conditions, taking into consideration the shock involved. The ultimate goal is to use the resources of donors to meet the goals. However, we recognize that donors and agencies including WFP are constrained, in the types and amounts of resources, the timing of activities, procedures for implementing options, and the information available. As a result, targeting designed to avoid the identified potential negative market impacts may be undermined, as when supplies arrive late and depress harvest prices for local commodities. The duration of food aid interventions should also be estimated from the beginning, to give market signals, although if unexpected events are detected during the implementation, there must be a willingness and ability to re-assess and adjust the duration.

It should be recognized, however, that when important market negative impacts of food aid on markets have been found, the problem was not always in the ENA, but rather in the execution and the lack of flexibility once the programming was done. Timing of local harvests may have been identified in the ENA and yet deliveries occurred in this period due to delays in funding, restrictions on sourcing food aid, and delays in shipments. Flexibility to use local purchasing of food or to give cash transfers is necessary to avoid these impacts and it is the donors who have an influence here. ENA are valuable for highlighting these potential problems, such that agency staff can interact with donors on the threat of potential damage to markets when there is little flexibility in response alternatives. Such damage can be reduced if donors and agencies: (a) inform market agents about their intentions for food aid distribution and other activities with as much anticipation as possible, and (b) limit the duration of activities, so that the market agents can make appropriate commercial and investment decisions to respond to market needs. Releasing the ENA reports with full documentation is part of this process (WFP 2004b).

**Market baseline studies** can contribute valuable information that is difficult to collect rapidly in response to an emergency. Conducted by market specialists, it is the baseline studies, rather than the ENA, that contain economic analysis of prices, market relationships, policy issues, and potential market responses. Staff conducting the ENA can then build on the information in the baseline studies and compute fairly simple price and market indicators and develop basic scenarios to compare with the baseline estimates. We do not recommend that detailed market integration or other comprehensive economic analysis be conducted with ENA, given the staffing requirements and time frame. However, if the market baseline work in major food-aid countries incorporated simple market models, there may be a role for updating specific parameters within an ENA to generate new results based on the shocks that gave rise to the emergency. The baseline studies should also indicate the information available in country, citing previous work and experts.<sup>16</sup>

**Continued monitoring of markets** is critical, for just as food aid programming and implementation is dynamic, markets and policies change. In Niger and other recent emergencies, WFP has worked with FAO, FEWSNET, and others to continue market monitoring as food aid is delivered. We encourage such efforts, along with identification of key macro-economic policies that can influence markets. The indicators above identify the

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<sup>16</sup> WFP under SENAC will evaluate the recent experience with market baseline reporting.

key aspects to monitor: 1) trade policy in the affected country and in countries with which it might or does trade; 2) price relationships between basic food commodities and basic income commodities; and 3) price differences for basic goods in key markets.

**Staffing at WFP and other humanitarian agencies** is generally insufficient to address the markets components. In the medium to longer run, if market development and impact are important, humanitarian agencies, including WFP, will need to ensure that they have access to market analytical capacity. WFP has made some progress in this regard, but more is needed. As indicated in recent Executive Board meetings (WFP 2004a), establishing an economics unit with responsibilities in programming is important. Such a unit would be more effective with regional specialists strongly tied to the field work of market baselines and assessments. Under the SENAC project, WFP has contracted five regional economists, at least for one year. Employing long term staff members for economic analysis at the regional level in key areas, appears to us to be highly desirable, so that these WFP staff members can help supervise or develop the needed baselines surveys, participate in developing and/or implementing market models where appropriate.

**Basic “markets and food security” training** for all ENA staff is recommended. The economic analysts indicated above can provide this needed service within the agency and its partners. This will ensure that there is a more general understanding among field staff of the links between markets and much of the work being done in emergency relief.. In the case of WFP, most ENA staff are capable of using simple spreadsheets (WFP 2002), but the logic needed goes beyond spreadsheets and checklists. Emergency staff will need this to understand the implications of information in the market baselines and market models, even though they would not be implementing those baselines and models. In other agencies, economic analysis and market analysis may be conducted primarily by staff on the development side of the agency, rather than the emergency side, such that market expertise is not available in an emergency. Greater efforts are needed to make such in-house expertise more easily accessible to the emergency side of the agency during crises, as well as continued dialogue with slow onset and/or recurrent crises.

**Support for local MIS** involves developing local human resources to respond in an emergency. The recent document by Tiba and Devereaux (2005) on factors that trigger an ENA emphasizes that market information systems must exist for reliable determination of needs and overall decisions on food security policies. Where these systems are lacking, market analysis within an ENA will be limited to anecdotal evidence on price changes, rather than systematic data. More importantly, knowledge of market conduct and performance over time will be lacking. Ideally, the MIS offer a source of market reconnaissance and knowledge as in the Mali case (PROMISAM 2005). Trained MIS staff deal with traders, know marketing channels, and understand the dynamics of the local markets and their linkages with regional markets, both formal and informal. It is therefore in the interest of donors and humanitarian agencies to encourage and facilitate the development of such systems in countries in which they frequently work. Recent experience in Mali demonstrates how such systems operating over time can provide critical information, analysis, and recommendations (PROMISAM 2005).<sup>17</sup>

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<sup>17</sup> In Mali, the MIS and the Famine Early Warning System (SAP) have been supported over 20 years through a multi-donor consortium (PRMC—Programme de restructuration du marché céréalier) chaired by the WFP.



**Qualitative and quantitative assessments in ENA** both can play a role in decision-making, WFP and other agencies strive to improve the use of resources to meet two main objectives: (1) short-term food security, and (2) longer-term development. This report seeks to ensure that key aspects of markets and the potential impacts of food aid on them are taken into account. Qualitative assessments are a critical input into decision-making and are the only option when the quantitative assessments are not possible. As demonstrated in Mali, well-done qualitative assessments, using the common sense approach of Isenman and Singer (1977), can prevent the over-estimation of needs and the under-estimation of private sector response that lead to excess food aid deliveries, the most common source of negative food aid effects. Quantitative assessment of the impact of food aid on markets can be completed in an ENA only when that the information is available and reliable, that the models have already been designed for the context, and that the analysts have the skills and local market expertise to use the models appropriately.

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## **Annex 1. *Ex-post* Studies of the Impact of Food Aid on Markets and Their Relevance**

Emergency needs assessments do not have the luxury of time and extensive data analysis, but they can profit from *ex-post* studies that help identify the likely scale and scope of disincentives, as well as the conditions and actions that might lessen or increase the likelihood of impacts. In this annex, we do not seek a full review of the impacts literature, but rather focus on what that literature provides for people who want to do a better job with *ex-ante* assessments to mitigate the negative impacts of food aid on markets and potentially facilitate the positive impacts.

While various economists, including Schultz (1960), have criticized food aid distributions since the early 1960s for potentially disrupting and undermining local production and markets in the recipient countries, researchers have struggled with how to quantify the relationships involved. The food system is a complex interplay of demand and supply considerations within a context of institutional environment and change. As Isenman and Singer (1977), Farzin (1991), and Maxwell (1986) all found in their work to evaluate complex dynamics, there are high data demands that are often not met, and the technical skills required are beyond many analysts. The studies evaluated for this work include various analytical methods ranging from simple inferential price analysis and reduced-form price and quantity estimations to more complex structural econometric models with computable general equilibrium estimations. In many cases the authors cite limitations in the options for analysis due to the lack of information and baseline statistics (e.g., Stevens (1979) as cited in Tapio-Biström (2001)). The actual body of empirical assessment of market impact, particularly of emergency food aid, is small relative to the attention focused on potential disincentive effects during debates on food aid.

### **A. Reviews of the Literature**

Various authors have brought together the research on disincentives. Maxwell and Singer (1979), Clay and Stokke (1991), Lentz (2004), and Tapio-Biström (2001) provided various examples, and most recently, Abdulai (2005) looked at the evidence on what he called the four “Ds:” disincentives, distortions, displacement, and dependency. In this desk study, we are looking mainly at commodity price effects that reduce producer prices, the “disincentive effect.” We also consider the affect on consumer prices, which may reduce private-sector market participation, as stocks lose value with depressed food prices, and traders’ incentive to bring in more supplies is reduced, a kind of trade “displacement effect.” The endurance of producer and trade disincentives depends on the quantities involved relative to demand, as well as the time period over which food aid is distributed. Many of the studies that have found disincentive effects have focused on program food aid that was monetized, rather than emergency aid with targeted distribution to specific communities or households, whether free or through food-for-work schemes. As Jackson (1982) notes, while program food aid with market distribution tends to be the most likely candidate for producing disincentives, project aid may have strong local effects, depending on various factors, especially the extent of market sales by recipients. The results reported here will indicate the type of food aid involved in the research, in recognition of the possible difference.



## **B. Targeting Issues and Disincentives**

As found in the range of *ex-post* impact studies, it is the combination of the type of shock, type of response, and overall market conditions that determine the impact of food aid on markets. Overall, when researchers have identified impacts, whether positive or negative, there are important food-aid design considerations involved, as indicated by Barrett (2002). In the case of negative impacts on the markets, Donovan (1996) and Farzin (1991) found that local prices did appear to be depressed by the arrival of program food aid distributions when local production was available, while Barrett and Maxwell (2005) cite the case of program and project food aid delivered in one country affecting markets in a neighbor. In that latter case, Ethiopian sorghum food aid depressed sorghum prices in Somali markets. The combination of significant quantities into a market and timing at harvest fulfills the predictions of those who stress the disincentive effect.

Dorosh, del Ninno, and Sahn (1995) in Mozambique estimate price effects based on multi-market models and demonstrate how that modeling might be used *ex ante* to predict price effects of food aid distributions. They linked household data on consumption and demand to the market supplies. They analyzed the distribution of a commodity that was self-targeting for low-income consumers (yellow maize), which had a relatively low cross-price elasticity of demand for the locally produced substitute, white maize. A low cross-price elasticity of demand for white maize means that the yellow maize prices can decline substantially without affecting the overall consumption demand for white maize. Thus, the producer price disincentive effects of food aid yellow maize on locally produced white maize were found to be small. Research by Tschirley, Donovan, and Weber (1996) suggest that the impacts of yellow maize arrivals may have been substantial as local production of white maize improved in the post-war period, suggesting that the cross-price elasticity of demand may have been under-estimated in the 1995 modeling. These models are thus sensitive to the demand and supply parameters used. The multi-market models will be discussed further in the next section of this document.

With food aid programs extending over many years, the case of Bangladesh demonstrates why evaluating the relationship between consumption and market participation over time is important. As Dorosh and Haggblade (1997) discuss, wheat was a self-targeting commodity in the 1970s with only small quantities of wheat produced locally, and consumption mainly by the rural poor as food aid, when rice prices went high. In recent years, both the supply and demand aspects have changed, such that consumers in urban areas substitute between rice and wheat, and food aid wheat now affects the markets for substantial local wheat production.

## **C. Disincentives Related to Factors Other Than Targeting**

While targeting issues are important, there are other issues as well. There have been cases where disincentive effects were found when the informal sector trading was ignored in planning, and supplies were brought in regardless of informal market capacity to respond (e.g., Tschirley et al. 2004). The informal sector traders lost market share, while needs were over-estimated, and production incentives in neighboring Mozambique were undermined. Lack of information and government policy planning, weaknesses in execution of plans, and lack of transparency in operations add risk to commercial operations. As happened in Malawi in 2002/2003, the government may decide to bring in commercial imports in addition to local supplies and food aid, thus resulting in excess food supplies and reduced producer prices that were not predicted (Tschirley et al. 2004).

del Ninno, Dorosh, and Subberao (2005) demonstrate how national policies and actions also play into the effects and must be included in analysis. In Bangladesh and India, through Food for Work, food aid was used to facilitate investments in the agricultural sector and in infrastructure, thus promoting income growth in rural areas. Bangladesh also used policy levers to encourage the shift from food aid to commercial imports. Evaluating four case studies, they found that “the Asian and SSA experiences suggest that food aid that supports building of production and market enhancing infrastructure, is timed to avoid adverse price effects on producers, and is targeted to food insecure households can play a positive role in enhancing food security.” Jayne et al. (1994) also demonstrate how the local policies for food aid distribution condition market development. This shows the importance of analyzing not only the short-term effects of food aid (through supply and demand changes) on local markets but also the investments made with resources created by food aid (infrastructure built through food for work, investments made with monetization resources) and the policy reforms leveraged by program food aid.

#### **D. Positive Effects of Food Aid**

Researchers have also found positive effects of food aid on markets (Lavy 1990; Abdulai, Barrett, and Hoddinott 2005; del Ninno, Dorosh, and Subberao 2005). del Ninno, Dorosh, and Subberao (2005) compare food aid experiences in four countries (India, Bangladesh, Ethiopia, and Zambia), and find that in Bangladesh, in particular, large amounts of food aid were gradually replaced by domestic production and commercial imports to meet food needs without continued reliance on high-cost government interventions in stocking and subsidies. Watkins (2003a) uses Kenya to demonstrate a case where market development was supported by shifting from imported program food aid to local donations and purchase.

In Mozambique in the early post-war period, with drought limiting domestic maize supplies, program food aid maize supplies provided commodities for the development of a vibrant informal private sector (Tschirley, Donovan, and Weber 1996). Lavy (1990) and Abdulai, Barrett, and Hoddinott (2005) identified positive local supply responses to combined program and project food aid over the longer run across Sub-Saharan Africa. Bezuneh, Deaton, and Zuhair (2003) combine all sources of food aid in Tunisia and found that “food aid provided incentives to promote growth through its income and policy effects.” These studies reflect the challenges to sorting out the effects of food aid and other policy and potential production changes, for it is difficult to know what the results would have been in the absence of food aid. Tapio-Biström (2001) analyzes the Tanzania case, finding that program food aid assisted the government in maintaining a two-tiered marketing system (publicly operated and parallel private system), and did not negatively affect local production markets due to poorly integrated markets and other government policies.

## **E. Other Relevant *Ex-post* Studies on Risk, Market Integration**

There are other types of studies that are relevant for those wanting to assess the impact of food aid on markets, such as studies to evaluate risk in markets and those to assess market integration and performance. Myers (2005) recently evaluated the literature on commodity price risk and instability, citing literature on sources of commodity price risk and instability, including food aid. The main sources of risk tended to be domestic production variability and world trade supply and price variability. The work by Tschirley et al. (2004) demonstrates how Mozambique's policy to keep borders open contributes to lower price instability for maize, the major consumption staple, even in the face of production zones separated from consumption zones by large distances and high transport costs. Right next door, Zambia has higher price instability for maize, reflecting, among other things, uncertain macroeconomic policies, particularly in times of production stress (Nijhoff et al. 2003; del Ninno, Dorosh, and Subberao 2005)

Market integration was briefly addressed in the framework section, but the *ex-post* studies demonstrate the analytical challenges to assessing market integration. As Harriss (1979) indicates, analysis of prices can only be done with knowledge of the underlying demand and supply dynamics, how the markets function and what is influencing them. Donovan (1996) and others have used market integration analysis to track the effect of shocks in one market on other markets in the same country. A "food-aid shock" may lower prices in one market where the food aid arrives, but integrated markets would mean that the shock may have effects in many markets. Recent work in Madagascar (Moser, Barrett, and Minten 2005) indicates that within a country, some markets may be linked with price arbitrage occurring, while other markets are more isolated and will not feel shocks or communicate shocks to other villages or market. Where markets do not appear to be integrated, relying on the markets may be more problematic, food aid more have strong local impact in the short run, but may be critical for food security until local production revives or changes are made to facilitate market integration.

## **Annex 2. Specific Comments on WFP EFSA Handbook**

This section expands on Chapter 6 by providing a detailed critique of the strengths and weaknesses of the Emergency Food Security Assessment Handbook (WFP 2005a). It is primarily intended for WFP staff, and aims to improve future editions of the handbook.

A comprehensive market analysis relating to food aid should have two objectives: (1) to determine the effects of shocks on market prices and functions, particularly the private-sector response to the shock and consumer demand, and (2) to anticipate the effects of food aid on local markets. The recently revised EFSA Handbook addresses the first objective by considering the behavior and functioning of markets before and after a shock. Less attention is paid to objective 2, and there is little recognition of the relationships among private sector responses to shocks, the expectations of the private trade regarding food aid and other policy responses, and the impact of food aid on markets. Although the handbook includes many references to markets and prices, it fails to provide the guidance needed at the field level to assess the potential impact of food aid on markets and the relationship of markets and response alternatives.

Consideration of market issues is dispersed throughout the handbook: Chapter 4 is dedicated to “Analysing Food Availability and Markets;” however, this chapter cannot be used independently to analyze markets. The interactions between food availability and access and the relationship between targeting and market impacts, for example, are dealt with in Chapters 7 and 13, respectively. Guidelines on how to collect market data are found in Chapter 11.

### **A. EFSA Handbook and Assessment of the Capacity of Market to Respond to Shocks**

Chapter 4, “Analysing Food Availability and Markets,” is dedicated to the explanation of market issues and providing tools for market analyses. It is designed to determine (1) the existence and magnitude of a crisis-induced food availability problem, (2) whether there are problems of food availability that can be addressed by better functioning markets, and (3) if local purchases are appropriate.

The handbook indicates the major issues that must be investigated to reach these conclusions, but it does not identify the quantitative analyses and indicators of potential market impacts upon which to base decisions. Specific areas where the handbook falls short are discussed below. These include insufficient analysis of incentives for and ability of traders to move food to the deficit area, market integration, cross-border flows, macro-economic policies in the targeted and neighboring countries, and market structure/degree of competition amongst traders.

The incentive for traders to move food to the deficit area is a function of the potential profits to be made from the transaction. The former can be determined by analyzing price differentials between surplus and deficit markets and deducting marketing costs (including transport and storage). The handbook offers guidance on plotting food price movements (WFP 2005a), but does not focus on marketing margins and the need to assess the profit levels at which traders are willing to import food. Tied to this is the issue of risk, which is given insufficient attention in the chapter, although it is included in the checklist on pages 63-65 (WFP 2005a). According to Dorosh (2003), trader risks include informal tolls and danger of theft from bandits, uncertainty over possible changes in government policy, and the

potential of sudden large inflows of food aid to saturate markets. Interviews with traders are necessary to identify these risks and other barriers to trade. Finally, food availability and access should not be presented as distinct issues, as they are in the handbook, but rather assessed jointly to determine their effects on demand and trader incentives.

Chapter 4 presents a qualitative overview of market integration; however, there is less guidance on how to measure it quantitatively. The implication of the degree of market integration on commodity flows should be made more explicit. As indicated earlier, understanding the level of integration will indicate how severely prices will be affected by a localized shock, and help define the geographical bounds of the analysis. Specifically, the handbook should give more attention to transport and marketing costs between markets. The book should ask its users how these costs might be affected by the shock and if market integration is disrupted as a result. This information is alluded to in Handbook Annex A1, but not referred to in the chapter.

Chapter 4 appropriately calls for the inclusion of cross-border flows in the market analysis, although the market structure diagram found on pg. 62 (WFP 2005a) does not include quantities and proportions of food from each marketing channel. The chapter should highlight the difficulties in capturing cross-border informal trade, and offer suggestions on how to make estimations in the absence of these data. Underestimation of private sector response to shocks with subsequent over-estimation of food aid needs presents one of the principal causes of negative market impacts. As such, the balance sheet presented in Table 1) is insufficient to determine food aid needs. In general, the handbook largely takes a national perspective. In crisis areas that are well integrated with regional markets, it will be important to analyze food prices and supplies in neighboring countries so as to understand how the situation in these other countries will affect movement of food into the targeted country. This was exemplified in the 2005 food crisis in Niger, which was strongly affected by market conditions in Nigeria.

The check-list for market-related data to collect (WFP 2005a) presents a list of macro-economic and policy aspects that should be considered. Again, the list focuses on the country under investigation, and does not consider the effects that policies adopted in neighboring countries might have on the movement of food to the affected country. The text does not assist the reader to understand why some of these economic indicators are important to the analysis (e.g., exchange rates and reserves). The relationship of these indicators to food supply and markets should be made explicit. Likewise, users of the handbook are asked to identify the effects of government policies, especially any recent changes in policy, on food production and trade. It would be helpful to the reader to provide a list of relevant policies (e.g., price policies, import tariffs, export commitments), an explanation of their purpose, and their likely effects on food supply and market activities.<sup>18</sup>

The analysis of market structure presented in Chapter 4 illustrates the actors involved in various marketing channels. However, it does not capture where market power lies and how this might affect food flows and prices. It is unclear in the text how the degree of competition in the market is measured. The chapter does not address how the different levels of the supply chain are integrated and how this might affect food prices and commodity flows. It would be helpful to expand the discussion on bottlenecks to include those associated with different types of shocks and other issues. The EFSA Handbook mentions “hoarding,” (WFP 2005a) and it would be valuable to distinguish between opportunism and opportunism with guile.

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<sup>18</sup> See Tschirley (2005) for examples of such policies in Southern Africa, related to the drought crises.

Opportunistic behavior by traders, i.e. traders looking for opportunities, provides a necessary market function and drives market adjustments. When opportunism is combined with guile, there are problems of asymmetric information and power that can lead to anti-social outcomes, such as hoarding - retaining stocks in order to drive up local prices. The difference between hoarding and effective arbitrage should be explained, with a discussion of when and under what structures we might see hoarding. Finally, this information needs to be tied into the objectives of Chapter 4. What does this information tell us about the ability of the market to move food into affected areas at affordable prices?

Overall, field staff will have difficulties using the handbook in the absence of regular and reliable price data or information on market structure and dynamics. Furthermore, given time constraints and logistics, it is unlikely that some of the above information can be collected in an emergency situation. This underscores the importance of baseline data and developing ongoing relations with local market information systems and analysts. Where there are no functioning price collection systems, guidance on how to collect price data should be provided. Where this is not possible, alternatives to price data analysis should be discussed.

## **B. EFSA Handbook and Assessment of the Impacts of Food Aid on Markets**

There is little information in the handbook regarding the potential impacts of food aid on markets. A caveat is given about the possibility of depressed food prices and disincentive effects resulting from food distributions in Chapter 13 (WFP 2005a), but the analytical tools necessary to predict—*ex ante*—the severity of these impacts are not provided. There is no connection made between the market information collected in Chapter 4 (WFP 2005a) and the likelihood that producer and trader disincentives will be realized. Even though the handbook instructs the reader to question how prices will behave following an intervention, guidance to make the determination of potential price and market changes based on different interventions (responses) is not provided. Analysis will necessitate understanding how prices fluctuate in the face of changes to supply and demand. Determination of market impacts will also depend on the quantity of food aid relative to the size of the market, whether the aid will replace locally produced food or imports, and how responsive the market is to changes in supply.

The impact of food aid on markets is clearly related to issues of targeting. The better targeted the aid is to those who do not currently have any effective demand in the market, the less the impact on markets will be. It would, therefore, be useful to identify the potential impacts associated with each targeting strategy. The risks resulting from errors of inclusion and exclusion for each strategy could be added to EFSA Handbook Annex B6. Similarly, different response alternatives (cash transfers vs. food aid, FFW, etc.) will potentially affect markets differently. These associations should be made explicit in the text of Chapter 13 or added to EFSA Handbook Annex B5.

The handbook does not discuss the impact of food aid interventions on substitute commodities or the effects of leakages of food-aid commodities into markets. WFP recognized that there may be leakages, with two basic cases: 1) food-insecure households receive food aid but either can sell and purchase more of a cheaper food or have other urgent needs for cash; and 2) errors of inclusion such that non-poor receive food and sell it. Choice of commodity and quantity of that commodity will influence sales by the food insecure; better targeting will control for the second source of leakage. While WFP may not be able to predict the leakage, watching markets through time will assist in identifying when leakages

surpass small quantities and begin to affect the market. This may have as much to do with the duration of the intervention as with the food commodity itself.

Finally, WFP is often limited in its response to the resources it has available. The handbook recognizes that certain responses (market interventions, cash and non-food transfers) may not be available. However, the danger of choosing a non-optimal response is not developed. The potential impacts of addressing, for example, a demand-side problem (access) with a supply-side response (food aid) should be made clear, as this may affect implementation. As noted above, choice of commodity affects potential market impacts. The handbook does not address market impacts that arise when logistical problems delay the delivery of food (e.g., late arrival of food at ports, and disruption from rains). Market analysis must include the potential impacts of implementing aid at different times of the year, and will be useful when considering the duration of an intervention.

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