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Mali's Food Security Challenges: An Overview by Duncan Boughton, John Staatz and Nango Dembéle¹

1. Introduction

Mali has a high incidence of malnutrition. The fourth Demographic and Health survey reports that in 2006 the incidence of wasting, stunting and underweight children under 5 years of age was 13.8%, 37.9% and 24.5% respectively in rural areas, and 12%, 24% and 25% respectively in urban areas. While malnutrition is found in all regions of Mali, the regions of Timbuktu and Sikasso have higher than average levels for all three indicators, while the region of Kidal has high levels of wasting. For a detailed analysis of food security indicators see Ward (2010).

In this overview paper we analyze the different dimensions of food insecurity in Mali today, examine the linkages between food insecurity and poverty, and look at dynamic factors that must be taken into account to ensure that food security is sustainable. We conclude by summarizing the implications for the design of strategies and programs to resolve Mali's food security challenges.

2. Key dimensions of food insecurity in the Malian context²

A broadly accepted definition of food security is the following: "Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (Staatz et al., 2009). Failure to achieve food security for an individual or a household can be either temporary or sustained in nature: the former situation is usually described as "transitory" food insecurity and the latter "chronic" food insecurity. To diagnose the causes of transitory and food insecurity in a given context it is helpful to look at the dimensions of availability, access and utilization. The US Government's "Feed The Future" Strategy Guide makes explicit a fourth dimension of stability. This framework is consistent with the CAADP Pillar 3 goals of increasing food supply (thereby improving availability), reducing poverty (thereby improving access), improving nutrition (utilization), and improved emergency preparedness and management (stability). Table 1 illustrates the correspondence between dimensions of food security and CAADP Pillars through illustrative types of intervention. Food *availability* is obviously a necessary condition for food security but it does not automatically guarantee access by all individuals. Food can be made available through national production, trade, food aid, or a combination of these sources. People clearly need to have physical access to food, and ensuring physical access can pose problems on a seasonal basis in remote zones, due to impassable roads for example, or during natural calamities.

¹ The authors thank USAID Mali for financial support through the PROMISAM II project ² For a more detailed discussion of the different dimensions of food security, and policies and programs to help improve food security, see Staatz et al., 2009.

Table 1 Food Security Dimensions, Interventions and CAADP Pillars

Food Security Dimension	Strategies/illustrative interventions	CAADP Pillars
Availability	Increased Adoption of Improved Agricultural Technologies Diversification of agricultural production • Among crops (grains, oilseeds, horticulture) • Integration of livestock and fish • Mitigating seasonality in availability of certain food groups • Strengthening linkages between livestock feed sector and farmer organizations Increased access to extension and inputs	Pillar 4 Pillar 4 and 2 Pillar 2 Pillar 4
Access	Increased efficiency of marketing systems Increased employment through value added processing Food or cash for work	Pillar 2 Pillar 2 Pillar 3
Utilization	Nutrition education Health linkages Water and Sanitation	Pillar 3 Pillar 3 Pillar 3
Stability <i>Production</i> <i>Price</i>	Irrigation infrastructure Land tenure to promote investments in conservation measures Food/cash/assets for work to help fund conservation measures Trade policy Coordination between private and public sectors in grain stock management	Pillar 1 Pillar 1 Pillar 3 Pillars 3 and 2 Pillars 3 and 2

Often more challenging than physical access to food, in the Malian context, is economic *access*. Since most Malian households do not produce all their own food all the time they need to be able to purchase food from neighbors or from the market. Market purchases are the main source of food staples for urban populations, but are also extremely important for rural populations in areas that are not suitable for crop production. Even in areas that are suitable for crop production the majority of households are often net cereal purchasers. In addition to food staples, market purchases of protein sources and fruits and vegetables are also important to achieve an adequate diversity of food types. Thus economic access, the ability to purchase food (referred to as *effective demand*), is a critical dimension of food security for rural and urban populations in Mali.

Household access to food does not necessarily guarantee access to all individuals in the family. Children and women have different nutritional needs at different stages of life than men. Nutrition during pregnancy and from birth to two years is critically important for long-term development. But children do not control access to food within the household and women often have partial control. Recent analysis of a sample of 750 Malian households found that different children *within the same household* have different nutritional outcomes, and that these outcomes are correlated with the expenditure patterns of mothers (Allen, 2010). This has important implications for targeting nutrition education and interventions.

In low-income countries, where food can often account for 70% of a household's income, the price of food is a critical determinant of real income. Hence seasonal increases in prices can often oblige households to cut down on non-food expenditures that compromise food security in the short or long-term, and when seasonal prices are particularly severe they may reduce the number of meals and/or the amount and quality of food consumed in each meal. Seasonal variation in prices depends critically on marketing and storage costs. Therefore, just as increases in productivity at the farm level are important for bringing down the cost of food, so too are increases in productivity in the off-farm components of the food system that make food physically accessible to consumers where they live on a year-round basis. Attempts to bring down the price of food to consumers through short-term measures which do not bring down the real costs of production and marketing (including storage), such as cereal export bans, often undermine incentives for the private sector and hence aggravate the problem in the medium and long term.

For access to food at the individual level to result in adequate nourishment the food must be effectively utilized by the body. *Utilization* depends in part on knowledge to select a balanced diet appropriate to the age of the person, in part on the method of preparation, access to clean drinking water, and also on the health of the individual. The lack of a balanced diet, for example, inhibits the absorption of certain key vitamins, and lack of key vitamins prevents the body from effectively utilizing other nutrients. Children during the weaning phase, children recovering from malaria, and women during and after pregnancy, are especially vulnerable to poor nutrition. Lack of access to clean water or appropriate conservation methods frequently results in diarrhea, compromising the efficient utilization of available food. Lack of effective utilization is one of the main reasons why increased incomes among cotton farmers in Sikasso are not statistically associated with improved nutrition outcomes (Tefft et al., 2003). Another reason is that women's incomes in the cotton zone are low compared to women in other areas (McGlinchy 2006). Education and sensitization are critical investments for improved utilization of food by all members of society.

3. Food Insecurity and Poverty Linkages

The incidence and severity of poverty is a major factor hindering *access* to available food. The incidence of poverty measured in terms of the cost of access to a daily norm of 2450 kcal/day fell slightly for the urban population between 2001 and 2006, but for the rural population remained stubbornly high at almost 80%. In other words, for four out of five rural Malians, their income as

estimated through consumption expenditure (or value for consumption of own-produced food) was inadequate to assure access to a normal calorie intake year round. Rural poverty levels this high do not map directly into malnutrition statistics in part because people may sacrifice non-food expenses first (Camara, 2006), and because the consequences may manifest themselves as disease rather than nutrition problems.

Although the incidence of urban poverty was slightly lower than rural poverty, almost two out of every three urban dwellers did not have sufficient income to access a normal calorie intake. This level of urban poverty has two practical implications for food security strategies. First, because food is such a high proportion of urban household budgets, it puts enormous political pressure on the government to keep food prices from rising beyond an acceptable level. Second, the majority of urban dwellers lack effective demand to pay for value added food products that could create employment opportunities in the agro-processing sector, or even grain prices high enough to induce intensification at farm level. The lack of diversification and value-added food consumption in urban food consumption baskets in turn renders cereal prices more volatile in response to supply shocks due to lack of substitution options.

In addition to not having income to purchase adequate food in under normal circumstances, the rural and urban poor are the most vulnerable to food price shocks such as the global commodity price spikes of 2008. With food accounting for two thirds or more of their income, poor households have no margin to manage food price shocks by reducing consumption of non-food items. The available tools for government to assist poor consumers are also fraught with difficulty. For example, using trade bans and similar untargeted approaches to keep domestic food prices low end up depressing producer and trader incentives and hence undermine the supply side. Another alternative is to target vulnerable households, but this is fiscally challenging when much of the population is poor. And socially it is hard to exclude some from receiving subsidies. This is one argument for trying to find self-targeting mechanisms (e.g., cash- or food-for work at low wages or self-targeting foods). The latter is not easy when you have a lot of people who are calorie deficient, as for many people there are few foods that are perceived as undesirable.

It goes without saying that households who cannot afford to meet their normal calorie intake will have little to invest to raise their stock of productive assets, including human capital, in order to escape poverty. Thus, stimulating rural economic growth to raise incomes (and hence effective demand for food) is critical to the overall success of any food security strategy.

4. Food Security for the Long Haul

In developing investments to improve food security it is important to address not only current problems but also to take account of long-term challenges (and opportunities) arising from demographic, climatic, or political processes. Rapid population growth clearly increases the challenge of food security because growth occurs most rapidly in the most nutritionally vulnerable age group - children under the age of 5 – who are also unable to provide additional labor to increase food availability. The fact that urban population growth is significantly faster than the overall population growth rate will accentuate the political challenges discussed earlier, especially if growth occurs primarily through migration of people with low literacy and educational levels who have no alternative but to seek employment in the already saturated informal service sector.

While rapid population growth increases the requirement for food, the degradation of natural resources threatens to undermine the supply of it. The degradation of natural resources is in turn closely related to climate change. The progressive reduction in rainfall levels, for example, has undermined productivity in the central and northern parts of the CMDT cotton zone, encouraging rapid migration to the southern areas bordering Guinea-Conakry and Ivory Coast. Political

instability in those countries as accelerated the influx still further, with rapid land clearing and conflicts between recent migrants and original settlers, and between cattle owners and cultivators. Similar interactions between climate change and natural resource degradation are affecting the transhumant pastoral system. The expansion of cropping in the Delta region is reducing the availability of summer grazing for transhumant herds at the same time as increased rainfall variability is leading to increased demand for that grazing. The net result is accelerated natural resource degradation and higher frequency of social conflict, in turn undermining necessary investments to prevent degradation.

5. Implications of Mali's food security challenges for development strategies

A summary of the main implications of Mali's current food security challenges, and demographic and climate trends, for development strategies to improve food security would include the following:

- Access, utilization, and price stability are key dimensions of food security that need to be emphasized in the near term to bring down acute levels of malnutrition;
- Rural economic growth to raise rural incomes is important to increase access to food and reduce the rate of rural outmigration and allow time for human capital accumulation and hence off-farm employment opportunities;
- The already large urban population, and high proportion of net food staple buyers in rural areas, calls for increases in productivity in both the farm and off-farm components of the food system to make food more affordable;
- Strategies to reduce natural degradation through improved soil and water conservation methods, as well as incentives to invest in natural resource management through land tenure, are an essential component of food security strategies to ensure availability in the longer-term;
- Open and expanded regional trade is an important component of ensuring price stability in the short and long term, although it is sometimes perceived as a threat by policymakers;
- The multi-dimensional nature of food security (health, nutrition education, agriculture, trade policy) implies the need for strong coordination among different sectoral ministries and between different levels of government.

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