Potential Food Security Impacts of Rising Commodity Prices in the Sahel: 2008-2009

A special report by the Famine Early Warning Systems Network (FEWS NET)

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ACRONYMS AND ABBREVIATIONS

CILSS	Comite permanent inter-états de lutte contre la secheresse au Sahel
CPI	Consumer price index
CRB	Commodity Research Bureau of the FAO
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization of the United Nations
FCFA	Franc de la communauté financière d'Afrique
FEWS NET	Famine Early Warning System Network
GDP	Gross domestic product
IFPRI	International Food Policy Research Institute
IHT	International Herald Tribune
MIS	Market information system
NAMIS/Nigeria	Nigeria's agricultural market information system
NYT	New York Times
SIMA/Niger	Niger's market information system (Système d'information du marché agricole)
UEMOA	West African Economic and Monetary Union (Union économique et monétaire de l'Afrique de l'ouest)
WFP	World Food Program of the United Nations

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EXECUTIVE SUMMARY

International cereal prices have experienced an unprecedented increase over the past five or six months. These increases have translated into higher food prices on many local markets in Africa, Asia and other parts of the world, causing concern that the numbers of food insecure will rapidly rise over the coming months while the cash resources made available to address hunger and food insecurity will translate into fewer tons of humanitarian assistance due to the rising costs of food commodities.

Rising food prices are always a concern due to their potential for diminishing the food security of the poor as well as their potential for creating political instability. With 45 percent of the Sahelian population living on less than $1/day and spending from 50-75 percent of their income on staple foods, analysts have expressed particular concern for the poor in countries that are highly dependent on the market for food, especially those dependent on the international market. Also adding to the concern are memories of the 2004/05 food security crisis in Niger and fears that a similar crisis will reappear this year.

What has many concerned is the evidence that this is a different kind of food security crisis than that typically faced in the Sahel—more driven by inflation and declining purchasing power than by crop failure. Also, as already demonstrated by civil unrest, the crisis could be potentially more urban than rural in nature. As a result, many are asking if the standard tools used by Sahelian famine early warning systems and humanitarian assistance agencies will be adequate for dealing with the evolving food security situation during the 2008/09 cropping season and beyond.

A whole suite of monitoring activities and analysis plans are being developed throughout the region in an effort to understand the evolution of supply and prices over this season as well as make some predictions and provide early warning. A parallel discussion involves the balance that needs to be struck in: (a) protecting consumers in the short-run and (b) using the present crisis to encourage investment in agriculture in the medium-term. In an effort to synthesize what is currently known and contribute to systematic analysis of appropriate responses to the evolving situation, this paper:

- Reviews the current thinking about key determinants of recent cereal price trends and what they imply for future trends;
- Provides a description of the policy and program options available for mitigating the negative food security impacts of rising prices;
- Describes various scenarios that might unfold in the Sahel during the 2008/09 cropping season;
- Reviews policies and programs for dealing with each scenario in the short-term (e.g., humanitarian measures); and
- Briefly discusses policy and program options for improving the likelihood that the short-term humanitarian efforts will stimulate medium-term investments to increase food supplies in a more permanent manner.

Concerning **trends in world prices**, there is general agreement on the following points:

- Current price increases are not typical of past increases
    - Food prices are rising at an unusually rapid rate;
    - Volatility is greater, particularly for oilseeds and cereals;
    - Duration of the price increases is likely to be longer;
    - Breadth of products affected is much greater—nearly all major food and feed prices are rising as well as fuel, transport, manufactured goods and fertilizers.
- Factors driving price increases include:
    - Unfavorable weather and production (particularly for wheat in Australia):
    - Declining cereal stocks around the world.
    - Rising fuel costs that increase production, processing and transport costs
    - Changing structure of demand (more meat and dairy, hence more grain demand for animal feed)
    - Increased demand (encouraged by subsidies) for biofuel feedstocks

- Expansion of derivative markets based on agricultural commodities, which is increasingly thought to be contributing to price rises and volatility
- Export restrictions imposed by major exporting countries such as China and India
- Some substitution in production of maize for soybeans, in response to biofuel feedstock demand
- Panic buying in the face of price increases, which, in the short run, drives prices even higher.

The key points to retain about **current drivers of higher cereal prices in the Sahel** include:

- West African regional coarse grain production is adequate to supply regional coarse grain needs in most years;
- Sahelian cereal markets are highly integrated among themselves and with coastal countries in West Africa;
- Nigeria is the giant in the region, with enormous influence on trade flows, aggregate demand, supply and prices in other countries of the region;
- Impediments to satisfying regional needs with regional production include:
  - Poor transport, communications, and market infrastructure
  - Government restrictions on markets when prices rise (export bans);
  - Taxes (official and unofficial) on both domestic and cross-border trade and burdensome regulations;
- World prices for rice and wheat are extremely important in import-dependent countries;
- World prices for rice and wheat are also important to urban consumers in countries that are not dependent on imports;
- The relation between domestic cereal prices and imported cereals is not well understood;
- Generalized increases in the overall cost of living are reducing purchasing power and are likely to increase the negative impact of rising food prices;
- Food consumption habits in West Africa are changing, with increased demand for meat, poultry, and dairy products putting pressure on coarse grain prices through increased demand for animal feeds;
- The CFA F/US$ exchange rate can soften or harden the blow from rising prices of rice and wheat, which are denominated in US dollars in international markets;
- The CFA F/Naira and CFA F/Cedi exchange rates influence regional trade flows with Nigeria and Ghana—appreciating values of non-CFA currencies will increase demand for cereals from UEMOA countries.

Four **potential scenarios for the 2008/09 cropping season** are identified based on different assumptions about international price trends (declining or high/increasing) and weather factors (good/bad). The scenarios and the policy instruments available for addressing each situation are summarized in matrix form (see next page). Given the general consensus that world market prices will remain high throughout 2008/09, the scenarios on the right side of the matrix are the most likely to come into play.

The **key challenges** facing West African governments and their development partners as they respond to the evolving crisis and try to implement some of the identified program and policy responses include:

- Dealing with a demand-driven rather than a supply-driven food security problem;
- Realizing the potential of regional trade to help deal with the problem;
- Stimulating supply while addressing the needs of consumers.

These are challenges that need to be addressed not only in making decisions about short-term emergency relief efforts but also when considering longer-term agricultural development strategies needed to stimulate the type of supply response that will reduce the region's food security vulnerability.

Dealing with the **demand-driven nature of the problem** requires rethinking the traditional cereal-balance-sheet approach to assessing food needs and the adequacy of food supply as well as improved techniques for identifying vulnerable populations in both urban and rural areas. These techniques need to take into account

not only the estimated consumption needs for cereals based on historical per-capita consumption norms but also the effective demand[1] based on purchasing power.

Given the complexities and politics involved in building **viable regional trade** zones (as illustrated by non-African examples such as the European Union which has been more than 50 years in the making), the short- to medium-term solution for West Africa appears to be a combination of bilateral agreements designed to address short-term food security issues and continued movement toward a regional trade zone that would eventually internalize and fully address both national and regional food security and economic development concerns.

Matrix of food security scenarios for 2008/09 and related interventions

		World Market Cereal Prices May-December 2008	
		Decline	Remain High or Increase
West African Cereal Harvest Predictions 2008	Good	• Reinstate taxes and tariffs to boost government revenue for rebuilding security stocks • Maintain prices of local production by rebuilding food security stocks through domestic/regional purchases in surplus zones if available, otherwise from imports • Lift export bans • Expand initiatives by farmer organizations to build group storage capacity • If financial resources not adequate for building stocks while prices are low, solicit assistance (budget support for governments, credit for farmers organizations and traders)	• Income support for vulnerable (food for work, inputs for work, cash for work) • If rains start early, facilitate access to fertilizers for cereal production • Targeted distribution of food aid obtained through local purchases (use local rather than imported cereals to encourage self-selection) • If prices of local cereals decline rapidly at harvest, reinstate taxes and tariffs on imports to encourage substitution, rebuild security stocks • Promote regional trade to even out local shortages (remove barriers, promote greater flows of information among national market information systems (MIS) in the region; strengthen existing monitoring structures rather than creating new ones)
	Bad	• Improve importers' access to foreign exchange and credit to facilitate imports and greater competition in the import trade • Reduce/remove import tariffs if prices of imports are not low enough to be affordable by the working poor • Targeted income support programs for poor (FFW, etc) • If production is uneven throughout the region, encourage neighboring countries to keep trade flows moving and provide support to traders (credit to increase competition) • Replenish government funds reserved for building food security stocks through international purchases • Promote off-season income generating activities: horticulture and off-season rice	• Remove all cereal taxes/tariffs on imports • If supplies exist in neighboring countries, implement policies to facilitate transport, customs clearance, etc (e g , crackdown on elicit taxes) • Totally deplete public food security reserves if necessary • Seek food aid imports as high prices are likely to limit commercial imports; may need to use the IMF food import facility • Critical to target available assistance to those most in need; requires excellent M&E of purchasing power situation in both urban and rural areas and food stocks in rural areas • Sales of government cereal stocks at below cost of acquisition will be required, as social tension will be at maximum • Careful assessment of livestock producer needs and appropriate response (assistance with feed, with marketing, etc) • Develop income support programs such as public works in urban centers to provide temporary relief while contributing to upgrading urban roads, repairing health and education facilities; in rural areas, roads, irrigation infrastructure improvement, and soil and water conservation investments would all contribute to longer term economic development while providing short-term incomes

[1] Effective demand is defined as "the desire to buy together with the ability pay for as good or service." Those who have a desire to buy but can not pay the price or cost are said to have limited or no effective demand.

The challenge of providing **price relief for consumers** while maintaining **incentives for producers** to increase supply is not a new issue in Africa; some analysts argue that Africa's tendency to protect the urban consumer at the expense of farmers is, in large part, responsible for Africa's failure to have experienced a Green Revolution. Governments will need to take a more holistic view of food security and agricultural development policies, analyzing their interactions and developing approaches whereby agricultural investments and policies (e.g., input subsidies, irrigation and soil and water conservation investments, measures to improve price transmission to producers) can be used to maintain production incentives in the face of short-term measures taken to reduce food prices or provide safety nets (e.g., food aid distribution or marketing at reduced prices). Similarly, when bumper harvests occur, it will be the food security agencies that will need to coordinate efforts with the agricultural sector to support prices (e.g., replenishment of national food security stocks, investments in storage infrastructure).

More attention will need to be given to analyzing the pros and cons (economic and political) of encouraging **production in remote zones**. Similarly, more attention will also need to be given to analyzing the pros and cons (economic and political) of **domestic production versus imports** from regional and international markets. The recent crisis has led to calls for a return to the cereals self-sufficiency goals of the pre-liberalization period. Given the small size of most of the Sahelian economies and the risky production environment, national self-sufficiency goals are unlikely to be attained. Increased cereal production and productivity throughout the zone, coupled with improved regional trade flows could, however, significantly reduce dependence on imports from outside the zone while improving rural incomes and generating multiplier effects throughout the rest of the economy.

CHAPTER 1: INTRODUCTION

1.1. CONTEXT AND OBJECTIVES OF THE PAPER

International cereal prices have experienced an unprecedented increase over the past five or six months. These increases have translated into higher food prices on many local markets in Africa, Asia and other parts of the world causing concern that the numbers of food insecure will rapidly rise over the coming months while the cash resources made available to address hunger and food insecurity will translate into fewer tons of humanitarian assistance due to the rising costs of food commodities. Of particular concern are those populations that are highly dependent on the market for food, especially those dependent on the international market. Also adding to the concern is the fact that the food security crisis in Niger in 2004/05 has not yet become a faint memory and the humanitarian community is particularly concerned that a similar price rise and food access crisis could occur in Niger again this season.

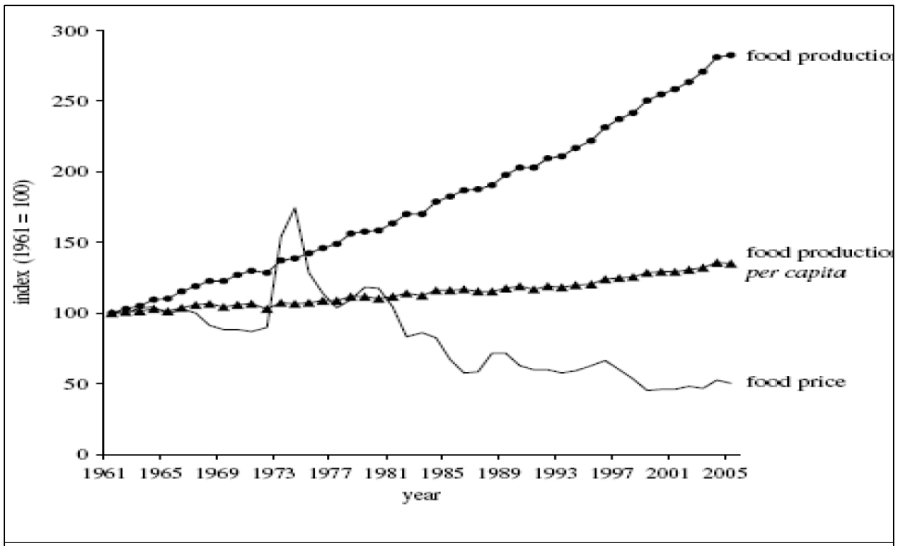
A whole suite of monitoring activities and analysis plans are being developed throughout the Sahel region in an effort to understand the evolution of supply and prices over the 2008/09 crop season as well as make some predictions and provide early warning. This paper is one of many activities being undertaken to address these concerns. This paper attempts to:

- Review and analyze existing literature on the rise of international cereal prices in order to provide the humanitarian assistance community a deeper understanding of the potential food security implications of these price increases for the Sahel;
- Identify and describe possible 2008/09 food security scenarios, taking into account different assumptions about crop forecasts, policies implemented in response to the rising prices, and government ability to implement these policies;
- Analyze the potential food security impacts and policy recommendations for the scenarios identified.

1.2. OVERVIEW OF THE CURRENT FOOD PRICE SITUATION

The world has experienced a secular trend of reductions in food prices that began in the mid 1800s. The downward trend hit a bump in the road in the 1970s (Figure 1), but then resumed its downward direction through the end of the 1990s. In 2000, it appears to have hit another bump in the road characterized by a gradual rise in prices.

FIGURE 1. FOOD PRICE INDEX AND PRODUCTION TRENDS: 1961-2006



Source: Maxwell et al., 2008 citing Hazell and Wood, 2008.

During 2007, the upward momentum increased significantly, with prices of basic staples (grains, vegetable oil) and higher value products (meat, eggs, dairy products) increasing at an astonishing pace: 37 percent overall, 80 percent for dairy, 50 percent for oils, and 42 percent for grains (FAO 2008). These price hikes have continued into 2008, and forecasters are not predicting any significant price declines for the next several years (FAO 2008, IFPRI 2007).

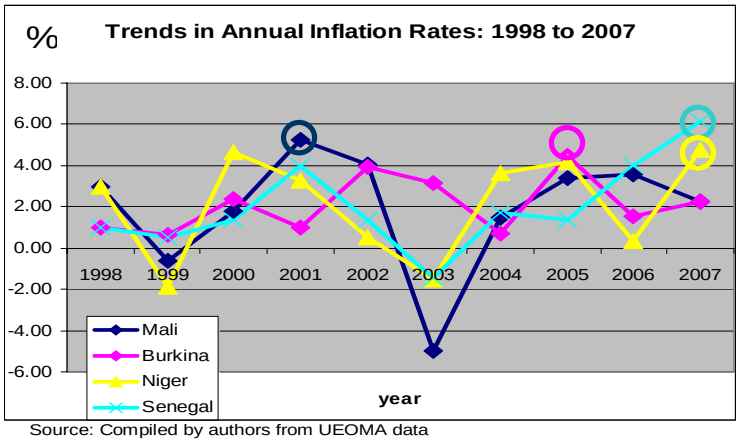
Food prices in Sahelian countries are exhibiting similar upward trends, although patterns differ by zone and level of dependence on world and regional markets. The 2007/2008 cereal production estimates for West Africa as a whole show production at about 98 percent of 2006/07 levels, but unequally distributed, with shortfalls in Senegal, Cape-Verde, the Gambia and the extreme north of Nigeria and Ghana. Because this mild decline in production came on the heels of two relatively good years that should have permitted governments and traders to reconstitute their stocks, the rapidly rising prices in some urban and rural markets are surprising, particularly in countries such as Mali and Burkina Faso that are not highly dependent on imports from international markets.

Rising food prices are always a concern due to their potential for diminishing the food security of the poor as well as their potential for creating political instability. With 45 percent[2] of the Sahelian population living in poverty on less than $1/day and spending from 50-75 percent of their income on staple foods, international news reports about rice and wheat price increases of up to 30 percent in Burkina Faso and Senegal from January to April 2008, coupled with vegetable oil increases in the 50 percent range for Burkina are particularly worrisome. Many are concerned that the price hikes are being transmitted to local cereals such as millet, maize, and sorghum, further exacerbating the situation.

Although the situation in the Sahel is worrisome, a list of "countries in crisis" due to rising food prices compiled by FAO (April 2008) lists 21 African countries, of which only three are in the Sahel: Mauritania (experiencing widespread lack of food access due to several years of drought), Chad (with localized food insecurity due to refugees and conflict) and Guinea-Bissau (localized political and food insecurity). The situation is changing rapidly, and there are indications that Burkina Faso and Senegal will soon be moved to the same category following recent street demonstrations about rising prices.

What has many concerned is the evidence that this is a different kind of food security crisis than that typically faced in the Sahel—more driven by inflation and declining purchasing power than by crop failure. In the recent past, most Sahelian countries have experienced moderate rates of inflation (1-3 percent annually). UEMOA reported an average annual inflation rate of 3.7 percent from January 2007 to January 2008; this included the 7.3 percent increase in food prices, which represent 37 percent of the index. UEMOA countries have experienced this overall rate of annual inflation in the recent past, but never extending beyond a single year. Figure 2 illustrates country-level examples of annual inflation trends from 1998-2007, with the circled data points illustrating that for 2007 Senegal and Niger were at or above all time highs but Mali and Burkina were below prior highs (2001 for Mali, and 2005 for Burkina).[3] The prospect of continued inflation at this rate is raising concern.

FIGURE 2. SAHELIAN INFLATION TRENDS: 1998-2007



Source: Compiled by authors from UEOMA data

Also, as already demonstrated by civil unrest, the crisis could be potentially more urban than rural. As a result, many are asking if the standard tools used by Sahelian famine early warning systems and humanitarian assistance agencies, which tend to focus on rural populations and production shocks, will be adequate for dealing with the evolving food security situation during the 2008/09 cropping season and beyond.

A parallel discussion involves the balance that needs to be struck in: (a) protecting consumers in the short run and (b) using

[2] UEMOA estimate from; individual country estimates range from 17 percent in Senegal to 60 percent in Niger (World Development Report, 2008).

[3] Recent data for Burkina shows an inflation rate of 2.7 percent for the first quarter of 2008, suggesting that it may soon join Senegal and Niger in the "all time high" category.

the present crisis to encourage investment in agriculture in the medium-term. This paper will focus mainly on (a), but try to look at options that don't undermine incentives for longer-term investment aimed at boosting domestic supply response. The paper begins with a short review of the current thinking about key determinants of recent cereal price trends and what they imply for future trends. Next is a description of the policy and program options available for mitigating the negative food security impacts of rising prices. This is followed by a section on various scenarios that might unfold in the Sahel during the 2008/09 cropping season and a review of policies and programs for dealing with each scenario in the short-term (e.g., emergency measures) and another shorter section on the need to link emergency responses to longer-term efforts to increase food supply through production response. The paper closes with a summary of key areas needing attention if food security monitoring and humanitarian assistance response are to adequately address the emerging needs.

CHAPTER 2: DETERMINANTS OF CURRENT PRICE TRENDS

Sahelian food prices are affected by what is happening in national, regional, and world markets; hence it is important to understand both the factors shaping world cereal prices (factors that are largely exogenous to the Sahel) and the local factors, some of which are exogenous (e.g., climate) and others that are influenced by consumer preferences and policies implemented by governments and regional trade organizations such as the West African Economic and Monetary Union (UEMOA) and Economic Community of West African States (ECOWAS).

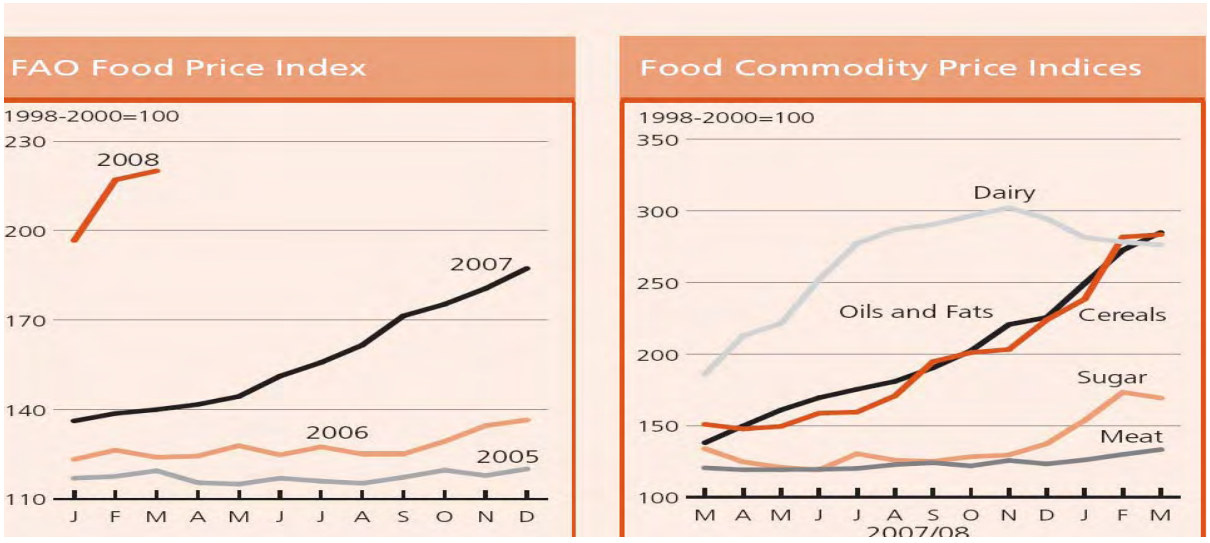
2.1 WORLD MARKET PERSPECTIVE

In June 2007, the FAO Food Outlook: Global Market Analysis report began with the headline "Food import bills reach a record high partly on soaring demand for biofuels."

Since June 2007, the trends have continued, prompting a number of analysts to monitor the situation and analyze the underlying causes (von Braun, December 2007 and February 2008; FAO, February 2008 and April 2008; World Bank, April 2008; Evans, 2008). There is general agreement among all these analysts on the following points:

- Current price increases are not typical of past increases
    - Food prices are rising at an unusually rapid rate: the FAO food price index rose on average 9 percent in 2006 and 23 percent in 2007 (Figure 3). In March 2008, the index was 80 points higher than in March 2007 (a 57 percent increase)

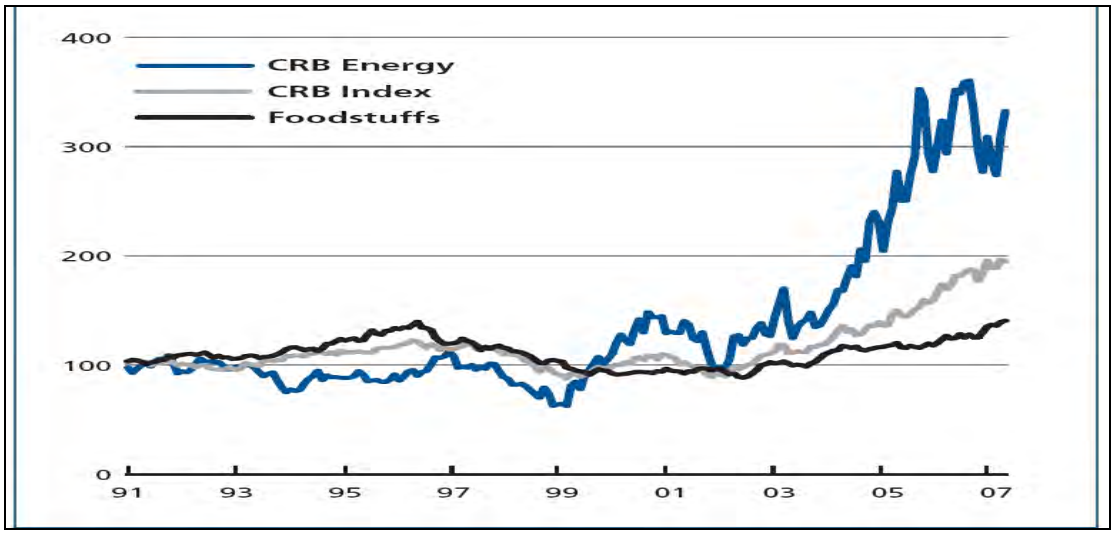
FIGURE 3. ANNUAL FAO FOOD PRICE INDEX BY YEAR AND COMMODITY



Source: FAO 2008.

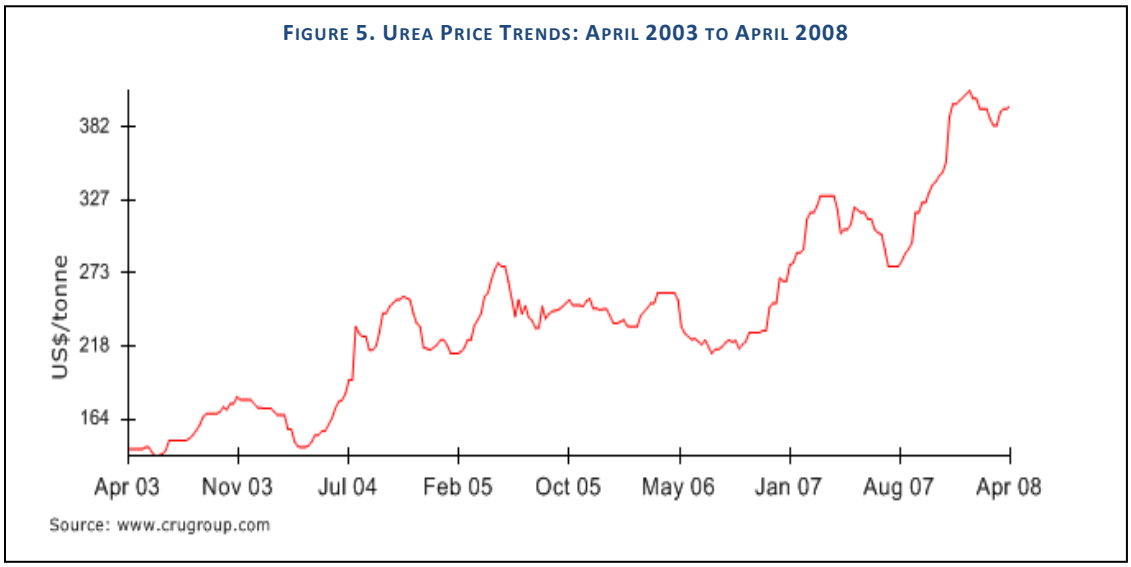
    - Volatility is greater, particularly for oilseeds and cereals; commodity board price swings during March 2008 exhibited 3 times more volatility than March 2007 for wheat and soybeans—the highest volatility since 1980; maize is about twice as volatile as in 2007 (Henriques, 2008)
    - Duration of the price increases is longer (usually low prices last for a long time, not high prices; annual increases of 1.3 percent began in 2000 and then accelerated in 2006, with an average annual increase of 10 percent during the past two years;
    - Breadth of products affected is much greater—nearly all major food and feed prices are rising as well as fuel, transport, manufactured goods and fertilizers (Figures 4 and 5).

FIGURE 4. FAO COMMODITY RESEARCH BUREAU INDICES



Source: FAO 2007.
Note: The CRB Index includes commodity prices for raw industrials such as burlap, copper scrap, cotton, hides, lead scrap, print cloth, rosin, rubber, steel scrap, tallow, tin, wool tops, and zinc. Foodstuffs include butter, cocoa beans, corn, cottonseed oil, hogs, lard, steers, sugar, and wheat.

FIGURE 5. UREA PRICE TRENDS: APRIL 2003 TO APRIL 2008



- Demand for biofuels is contributing to the price increases, but it is not the only factor
- Other factors include:
  - Unfavorable weather and production (particularly for wheat in Australia);
  - Declining cereal stocks around the world.
    - Cereal stock estimates for at the end of the 2008 market season are 405 million tons, a drop of 21 million tons or 5 percent from already low levels at the start of the season (lowest level in 25 years);
    - The stocks-to-utilization ratio is 18.8 percent, down 6 percent from the previous low in 2006/07;
  - Rising fuel costs that increase production, processing and transport costs (see Figure 4 above);
  - Changing structure of demand (more meat and dairy, hence more grain demand for animal feed);

- Expansion of derivative markets based on agricultural commodities, which is increasingly thought to be contributing to price rises and volatility (Henriques, NYT 4/22/2008; Pfaff, IHT 4/16/2008, Timmer);[4]
- Export restrictions imposed by major exporting countries such as China and India;
- Some substitution in production of maize for soybeans, in response to biofuel feedstock demand;
- In the face of price increases, some buyers increase their purchases to avoid anticipated future price increases, which, in the short run, drives prices even higher.

Whether these price increases represent a structural change from a 30-year secular trend of declining food prices since the 1970s (or the 160 year secular decline since the 1850s) to a similarly long period of rising prices remains to be seen; but most analysts are predicting continued high prices for several years. FAO is predicting a 2.6 percent increase in the 2008 harvest to a record of 2,164 million tons, with coarse grain production remaining stable while rice and wheat increase. If realized, the production increases will ease the situation a bit; but rising demand for meat, dairy, and biofuel feedstocks and low initial stocks are likely to keep pressure on prices. IFPRI has made projections of yearly percentage price changes for selected crops using 2005-2007 as the baseline and an underlying assumption that current biofuel production plans will be implemented. Results suggest annual price increases to 2017 of 8 percent for wheat, 26 percent for maize and 18 percent for oilseeds. The World Bank has estimated that demand for food products will increase by 50 percent by 2030 due to rising affluence and rising populations (Evans 2008).

2.2 SAHELIAN PERSPECTIVE ON RISING FOOD PRICES

Sahelian countries can be divided into two cereal groups—import-dependent countries relying on the world market for 50 percent or more of supply (Senegal, the Gambia, Mauritania, Guinea Bissau, and Cape Verde) and countries that regularly produce 70 percent or more of their cereal needs and export to neighbors (Mali, Burkina Faso, Chad, and Niger). In addition, Sahelian countries and their West African neighbors are frequently grouped into three cereal trading basins (see map in Appendix 1):

- A western zone comprising import-dependent countries: Senegal, Gambia, Mauritania, Guinea Bissau and Guinea
- A central basin including Togo, Burkina Faso, Ghana, Mali and Cote d'Ivoire
- An eastern basin centered on Niger, Nigeria, Benin with extension to Chad and Cameroon in Central Africa.

Analyses of similarities and differences in production patterns among West African countries show strong potential to stabilize domestic food markets through regional trade because of the variation in production across countries and the greater stability in production at the regional level than at the national level. In the discussion below, many examples of these complementarities in trade will be illustrated. Additional details are provided in Appendix 1 and 2, which draw on information from inter-agency[5] reconnaissance missions and FEWS NET country reports to describe the current situation (through March 2008) by product and by country with respect to prices, stocks, and regional trade flows for key food-security products.

While there are numerous illustrations of how regional markets are connected to each other (e.g., Aker 2006), the full potential for realizing the stabilization benefits mentioned above remains stifled by disharmonies and inconsistent regulatory and administrative regimes that hinder movement of products both nationally and regionally (Badiane and Resnick 2005). These regulatory disharmonies tend to increase when food supplies in the region become tight, influencing prices throughout the region. The next two sections focus on what is

[4] There has been a phenomenal increase in the volume of open futures contracts in agricultural commodities held by institutional investors in the past couple of years, probably a result of (a) some rules changes that allowed these investors to hold more commodity contracts, b) the big boost to commodity prices from ethanol, the subsidies to ethanol production that provided a floor price on how far the commodity prices (especially maize) would fall, and the turmoil in the market for equities and mortgage-backed securities, which caused institutional investors to move money into commodity contracts. All this factors increase prices of commodities like maize. (Personal communication, Dave Schweikhardt, Michigan State University).

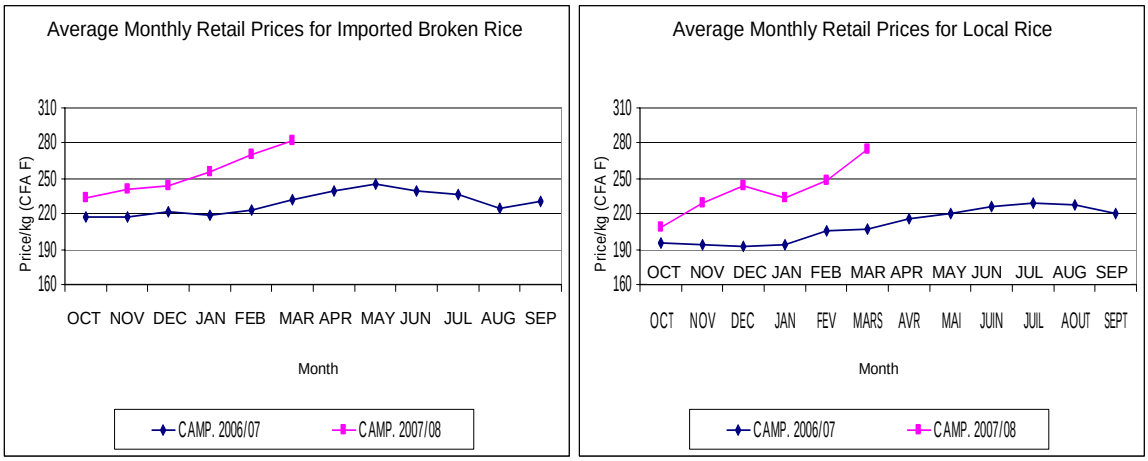
[5] Agencies participating in the reconnaissance missions included FEWS NET, CILSS, WFP, FAO, SIMA/Niger et NAMIS/Nigeria.

happening to cereal supplies and prices for the Sahelian import-dependent and potentially surplus countries; but also describe actions taken by coastal neighbors that are influencing Sahelian outcomes.

2.2.1 Import-dependent countries

Rice and wheat imported from the international market are major components of the consumption basket in the import-dependent countries (Senegal, Gambia, Mauritania, Guinea Bissau and Guinea: the entire western zone). The high dependence on international imports means all the factors mentioned above that are affecting world rice and wheat prices are affecting Sahelian rice and wheat prices (directly for imports and indirectly for West African production of these products). Figure 6 illustrates the relationship between international and domestic rice prices using an example from Senegal. From October 2006-September 2007 there was a fairly consistent margin between the price of imports and locally produced rice (about 20-25 CFA F/kg). From October 2007 to March 2008, the margin is narrowed (about 15 CFA F/kg) for several months and erratic in December and March, when imports and local rice were approximately the same price. We present these graphs to illustrate the need to understand better the linkages between domestic and international prices not only for the same product (rice in this case) but also the need to understand price transmission from imported products to local cereals.[6] For Senegal, trade data (see next paragraph) suggest that lower-than-usual imports may have pushed domestic prices up in December and March.

FIGURE 6. IMPORTED AND DOMESTIC RICE PRICE TRENDS



Source: Commissariat à la Sécurité Alimentaire, Conférence régionale sur la situation agricole et alimentaire et opportunités d'échanges dans le Sahel et en Afrique de l'ouest (Corpao), Cotonou : 21 – 25 Avril 2008.

Although white rice is the primary cereal consumed in urban areas of these countries, rural households tend to consume a mix of coarse grains and rice. Production statistics for the 2007/08 season (Table 1) show that most of these countries suffered production shortfalls this year, which would have reduced coarse grain availability. These shortfalls would have put additional pressure on rice prices in the early post-harvest period of November and December, as rural consumers tried to substitute rice for coarse grains that normally dominate consumption at that time of year. Extremely low imports during these months may also have exacerbated the situation. Senegal's rice imports, for example, fell from 50,000 tons in October to fewer than 2,000 tons in November, gradually increasing to about 10,000 tons in December, 38,000 in January, and 22,000 in February. In December, Mali banned cereal exports to Senegal and Mauritania, creating further pressure on prices, particularly in rural areas bordering Mali that had production shortfalls. Since December, 2007 coarse grain prices have been relatively low in Kayes, one of the transit points for exports to Senegal and Mauritania, attesting to the accumulation of stocks for export that were subsequently blocked.

[6] The International Food Policy Institute (IFPRI) is currently working on analyses of domestic and world market integration for rice and maize in Ghana and Benin, but we are not aware of any analyses being conducted for Sahelian countries.

TABLE 1. 2007/08 CEREAL PRODUCTION STATISTICS FOR IMPORT-DEPENDENT COUNTRIES

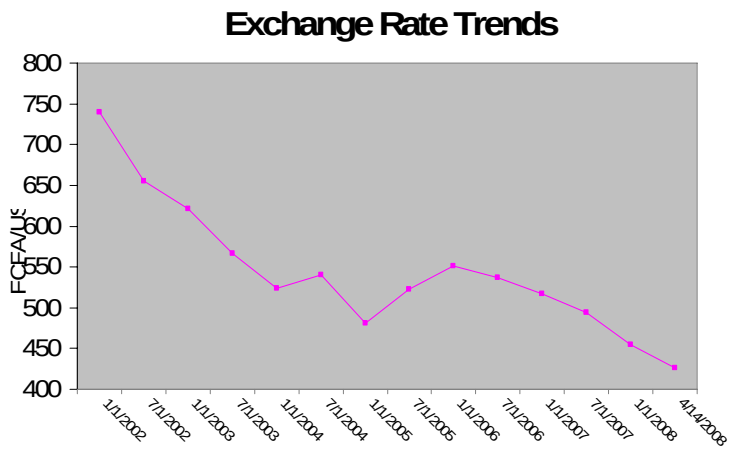
	Cereal Production		Percent Change	
Country	Updated Estimates 2007/08	Final 2006/07	From 2006/07 to 2007/08	From avg 2002-2006 to 2007/08
	('000 tons)			
Cap Vert	4.4	6.4	-31	-46
Gambia	161.6	206.7	-22	-18
Guinea Bissau	204.3	225.3	-9	16
Mauritania	171.2	137.5	24	14
Senegal	900.2	1035.4	-13	-24

Source: CILSS presentation at Cotonou Cereals Outlook conference, April 2008.

The production increase shown in Table 1 for Mauritania is puzzling at first glance, as Mauritania is one of the countries where there was civil unrest as early as last December due to rising food prices. This unrest illustrates the heavy reliance of Mauritania on cereal imports (generally 70 percent or more of consumption), which tends to overwhelm any production effect. Also, the domestic production was poorly distributed throughout the country, with shortfalls in three regions. The deficit zones in the central and southern parts of the country are integrated into Senegalese and Malian markets in normal years and typically acquire supplies from neighboring countries rather than global markets. Export bans have left these zones dependent on supplies from Nouakchott, which is more than 1200 km away and often cut off after July due to rains and the cresting of the Senegal River. The deficit zones in the north are better linked to supply lines in Nouakchott and in the Maghreb.

Even if coarse grain production had been good in these import-dependent countries, the extent to which urban consumers might have been willing to switch from imported rice to domestic cereals is questionable. The relatively low rate of substitution of coarse grains for rice in urban centers of the Sahel was well documented following the 1994 devaluation, which increased costs of all imports relative to domestic goods and generally reduced overall purchasing power of urban consumers (somewhat similar to the current situation).[7]

FIGURE 7. TRENDS IN CFA FRANCS PER US DOLLAR



Source: Compiled by authors from data on www.Oanda.com

Another important factor that affects domestic cereal prices in import-dependent countries is the US dollar – CFA F exchange rate. It is difficult to determine what the net impact of the dollar is on imported rice prices. To some extent, the declining dollar is responsible for pushing rice prices that are denominated in dollars higher. On the other hand, the CFA F zone countries will be able to moderate the impact of rising prices to some extent because their currency is tied to the appreciating Euro. Recent trends in the dollar-CFA exchange rate are shown in Figure 7.

[7] In Senegal, consumers in Kaolack and Tambacounda (urban centers in the heart of agricultural zones) reduced their rice intake by a relatively small amount (from 110 to 100 kg/adult equivalent/year or about 9 percent) following the 1994 devaluation.

2.2.2 Countries where domestic coarse grains predominate

In Mali, Burkina Faso, Niger and Chad (a portion of the countries from the central and eastern zone), where more than 70 percent of cereal needs are generally met through domestic production (predominantly coarse grains but also some rice grown under irrigation), the most common cause of rising food prices has been production shortfalls due to drought, locusts, and floods. Generally, these production shortfalls are localized and can be addressed through a combination of domestic and regional trade and increased imports of Asian rice, though the latter approach is problematic given current world rice prices, which may exceed local purchasing power. As noted above, some of these countries often serve as suppliers of coarse grains to others in the region (e.g., Mali to Senegal and Mauritania; Burkina to Niger—and occasionally indirectly to Nigerians buying in Niger markets).

Data in Table 2 reveal that 2007/08 production for each of these countries is well above average levels since 2002 and only in two cases (Niger and Chad) below last year's relatively good production levels. Why then are prices of coarse grains not following the typical good-harvest pattern of decline in each country during the post-harvest season? Some analysts have questioned the production estimates. In general, crop estimates have a ±5 percent margin of error if the sampling and measurement protocols are followed properly (which is not always the case); this range may actually have been greater for the 2007/08 harvest because the negative weather events occurred late in the cropping season affecting production levels and may not have been captured in the survey data (personal communication, Laouali Ibrahim, FEWS NET). Although uncertainty exists about the estimates, most analysts agree that the pressure for higher prices comes partially from production shortfalls in neighboring countries (Tables 1 and 3).The pressure also comes partially from growing regional demand for products that use coarse grains as inputs (beer, poultry, livestock raised for meat; and a resurgent dairy industry, as dairy export subsidies from Europe have fallen, making local production more competitive). This demand is particularly strong in Nigeria, where the largest production shortfalls occurred.

Table 3 shows that although Nigerian production was down only 7 percent compared to 2006/07, the total amount of the shortfall (1967.6 thousand tons[8]) is more than the total production of any of the other countries listed in Table 3; it is also more than the average annual cereal production of the import-dependent countries listed in Table 1. In other words, Nigeria is the West African giant, accounting for 57 percent of total grain production in West Africa; thus, what happens in Nigeria has a major impact on what happens with cereal and cereal-linked markets throughout West Africa. In addition to the climatic factors that reduced cereal production in northern Nigeria, maize production was down in 2007 due to reduced planting (low demand in 2005 and 2006 by the poultry industry as it dealt with avian flu discouraged producers when planting for 2006/07) and reduced fertilizer use (less available because of cuts in the cotton production program, which previously had provided inputs that were used on cereals). Other neighbors of the Sahelian countries, such as Benin, Togo, Côte d'Ivoire, and Ghana can also be important trading partners, with maize generally flowing into the Sahel from the coast and livestock going from the Sahel to the coast.

[8] This is the amount of the shortfall reported by the Nigerian market information system in the recent West African Cereals Market Outlook Conference in Cotonou, April 2008.

TABLE 2. 2007/08 CEREAL PRODUCTION STATISTICS FOR PRODUCTION-DEPENDENT COUNTRIES

	Cereal Production		Percent Change	
Country	Updated Estimates 2007/08	Final 2006/07	From 2006/07 to 2007/08	From avg 2002-2006 to 2007/08
	('000 tons)			
Burkina Faso	3736.7	3680.7	2	8
Mali	3885.1	3693.3	5	22
Niger	3856.9	4056.0	-5	11
Chad	1972.0	1991.1	-1	25
Totals	13450.7	13421.1	0	

Source: CILSS presentation at Cotonou Cereals Outlook conference, April 2008.
Note: In addition to a good harvest, Chad is also receiving substantial international food aid to help with refugees from Darfur and civil unrest following an attempted overthrow of the government.

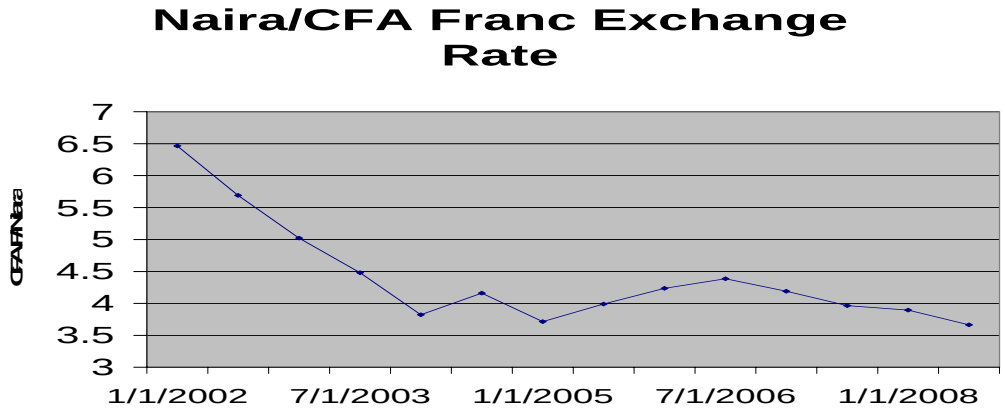
TABLE 3. 2007/08 PRODUCTION IN WEST AFRICAN COASTAL COUNTRIES

	Cereal Production		%Change
Country	Updated Estimates 2007/08	Final 2006/07	From 2006/07 to 2007/08
	('000 tons)		
Benin	1007.5	1096.9	-8
Côte d'Ivoire	1326.7	1438.3	-8
Ghana	1672.8	1918.8	-13
Nigeria	26903.4	28871.0	-7
Togo	913.5	889.0	3
Sierra Leone	638.0	527.0	21
Totals	32461.9	34741.0	-7

Source: CILSS presentation at Cotonou Cereals Outlook conference, April 2008

Trade between Nigeria and Ghana and the Sahelian countries in the CFA F zone goes in both directions, depending not only on the quality of the harvest but also on the CFA F/Naira and CFA F/Cedi exchange rates. This was a particularly important factor in 2004/05, when the Naira was appreciating against the CFA F and Nigerians were buying up Niger's limited supply of coarse grains (Figure 8). This year, the Naira is not appreciating, but demand for coarse grains is so strong that Nigerians were avidly purchasing cereals in Niger until the borders were officially closed in October by the Governor of the Zinder region.

FIGURE 8. CFA F PER NIGERIAN NIARA: EXCHANGE RATE TRENDS



Source: Compiled by authors from data on www.Oanda.com

Overall, there has been a small decline in Sahelian cereal production this year (1 percent) compared with the excellent 2006/07 season, but an aggregate production increase of 17 percent over the average levels for 2002-2006. When the coastal countries are taken into account, the decline from last year's production increases to 5 percent and represents a supply reduction of 2,419 thousand tons within the region compared to 2006/07.

In Sahelian countries that depend on their own production for most of their cereal needs, world prices for rice and wheat are still important. Urbanization and the shifting of urban consumption patterns from traditional cereals to rice and bread have made these products a growing share of national consumption during the past 30 years. While urban consumers' willingness to substitute coarse grains for rice is still not well understood, studies following the 1994 devaluation (Reardon et al., 1998) showed urban consumers in Burkina Faso (Ouagadougou, Bobo Dioulasso, and Ouahigouya) reduced their rice consumption more than other Sahelians. Unfortunately, it appears to have been not through substitution of lower priced cereals but through a reduction in overall cereal intake, while maintaining rice's cash share in the food budget. This was interpreted by the authors as a sign of impoverishment rather than a change in preferences and does not bode well for maintaining adequate levels of food security in the current situation of rapidly rising rice prices.

In Mali, Bamako consumers increased their share of imported rice after the devaluation by 12 kg/adult equivalent/year. This increase was observed primarily in poor households because the imported rice (with a larger percent of brokens) was lower quality compared to domestic rice and also made more attractive by the government's decision to reduce import tariffs when supplies of domestic rice were low. A more recent study conducted in Bamako in 2000/2001 (Camara 2004) looked at seasonal variability in consumption patterns and implications for the nutritional quality of the diet. This study found that food expenditures remain fairly constant regardless of the seasonal price trends, but the quality of the diet changes, with strong negative impacts on consumption of protein and micro-nutrients when the prices of basic staples increase.

2.2.3 Summary of key drivers

Several studies analyzing the correlation in annual production levels across the region have confirmed the potential of West Africa as a whole to meet its food security needs through regional trade (Badiane and Resnick 2005). Regional organizations such as UEMOA and ECOWAS have been pursuing the goal of regional integration through the establishment of common tariffs and harmonization of other trade, travel, labor, and monetary policies.

Despite these efforts, governments of grain-exporting countries in the region frequently respond to rising food prices using policy options that restrain trade in order to hold down domestic prices. The result is that prices often rise further in deficit zones. In addition, export bans depress prices on assembly markets (limiting farmers' incentives and funding to invest in the next production season) and often contribute to disturbances in normal trade flows and cereal transport within a country.

Making the situation more complex in West Africa are very large differences in purchasing power from country to country. Civil servant salaries in Mali, for example, are considerably lower than those in Senegal and Côte d'Ivoire, so the capacity of Senegal and Côte d'Ivoire to buy up cereals in Mali is much greater than the capacity of Mali's own citizens. This unequal playing field provides some of the rationale for closing borders. In reality, however, border closures do not entirely stop exports. They do, however, create opportunities to bribes border officials, thereby raising the cost of crossing borders, increasing the prices faced by consumers in the importing countries and depressing the prices farmers receive for their crops. In 2004/2005 when both Niger and Nigeria had production shortfalls, borders were formally or informally closed. Nigeria closed its borders not only to exports of cereals but also to imports of crops that Nigeriens depended on for cash incomes.

This happened, however, after Nigerians had already had an opportunity to purchase substantial stocks from markets in Niger, contributing to Niger's supply shortage. In addition, Nigeria pushed prices higher by purchasing cereals to replenish security stocks and by restricting grain imports from overseas to protect

domestic grain producers. Burkina also banned exports in 2004/05, blocking another potential source of grain for Niger. These same types of behaviors are again apparent this year, but the rising international prices for cereal imports (rice and wheat in particular) seem to have prompted earlier and more generalized government interventions. Mali and Burkina Faso, for example, implemented preventive measures ("social" sales of cereals from security stocks and export bans) before there was a rise in prices of domestic coarse grains beyond season averages for the recent past. Urban demonstrations against rising food prices were a contributing factor to early implementation of these measures. The slowing of coarse grain price increases in Mali and Burkina after the measures were implemented, suggests that they may have stabilized the situation for these two countries. On the other hand, the consequences of the export bans are particularly negative for deficit countries that would normally be trading with Mali and Burkina Faso (Senegal, Mauritania, Niger). Dealing with these border closing issues is not just a matter of trade and economic policy; the politics underlying the different decisions being taken must be understood and addressed before trade will be liberalized across these countries during crisis periods.

The key points to retain about current drivers of higher cereal prices in the Sahel include:

- In most years, West African regional coarse grain production is adequate to supply regional coarse grain needs;
- Sahelian cereal markets are highly integrated among themselves and with coastal countries in West Africa; hence, prices in any individual Sahelian country are influenced by production results, changes in demand, and changes in prices throughout West Africa; this is particularly true for coarse grains as they are rarely imported into the region;[9]
- Nigeria is the giant in the region, with enormous influence on trade flows, aggregate demand, supply and prices in other countries of the region;
- Impediments to satisfying regional needs with regional production include:
  - Poor transport, communications, and market infrastructure that raise costs of moving cereals from surplus to deficit zones; these are exacerbated by rapidly rising fuel prices;
  - Government interference with markets when prices rise (export bans);
  - Taxes (official and unofficial) on both domestic and cross-border trade and burdensome regulations;
- World prices for rice and wheat are extremely important in import-dependant countries, where substitution of local cereals for imports is limited by both supply and preferences, particularly those of urban consumers;
- World prices for rice and wheat are also important to urban consumers in countries that are not dependent on imports; there is little evidence of a high elasticity of substitution between coarse grains and imported cereals for urban consumers in these countries, suggesting that most consumers do not rapidly reduce rice and wheat consumption in the face of rising prices but economize on other expenditures;
- The relation between domestic cereal prices and imported cereals is not well understood; this is more of an issue for dissimilar products (rice and wheat compared to coarse grains) than for similar ones (imported and local rice);
- Generalized increases in the overall cost of living are reducing purchasing power and are likely to increase the negative impact of rising food prices;

[9] Some preliminary results of analyses looking at the relationship between world prices and local prices of maize in Benin being conducted by the International Food Policy Institute (IFPRI) suggest that there is little connection between international and domestic maize prices (domestic prices being way over the Gulf port FOB price), except possibly in 2006-07 when both were trending upward. This is what one would expect in a situation where the country doesn't import, and probably is much more driven by the Nigerian market than the international market. A similar situation seems to apply with rice in Ghana (presentation, Nick Minot, IFPRI).

- Economic growth in the West Africa region is changing food consumption habits, with increased demand for meat, poultry, and dairy products; this puts pressure on coarse grain prices through increased demand for animal feeds.
- The CFA F/US$ exchange rate can soften or harden the blow from rising prices of rice and wheat, which are denominated in US dollars
- The CFA F/Naira and CFA F/Cedi exchange rates influence regional trade flows with Nigeria and Ghana—appreciating values of non-CFA currencies will increase demand for cereals from UEMOA countries.

CHAPTER 3: POLICY OPTIONS TO ADDRESS RISING FOOD PRICES

3.1 OVERVIEW OF OPTIONS AVAILABLE

Table 4, from a recent paper by the World Bank (April 2008), lists four options for safety net programs and another six that can be used to reduce food prices. Our review of other literature on the topic consistently came up with similar lists of options.

In Table 4, each policy option is broadly evaluated in terms of how well it targets vulnerable groups and preserves incentives for beneficiaries to work or produce more cereals as well as in terms of costs and ease of implementation and management (criteria listed in the last column). It is noteworthy that producer price controls get no check marks, and export restrictions get only one (first column). At the other extreme, we see that reducing tariffs and taxes receives four of five possible checks. This table provides a useful starting point for a discussion of various policy options, but the effectiveness assessments cannot be taken for granted, as the effectiveness of these policies tends to be context-specific.

TABLE 4. POLICY EFFECTIVENESS SUMMARY

Price Reducing Tools (relevant criteria numbers from column three in parentheses)	Safety-net Tools (relevant criteria numbers from column three in parentheses)	Effectiveness Criteria
• Tariffs/VAT (2, 3, 4, 5) • Subsidies/rations – Generalized (3, 4) – Targeted (1, 2, 3) • Release stocks (2, 4) • Export restrictions (4) • Prod. price controls (0)	• Targeted cash transfers (1, 2, 3, 5) • Food for work (1, 2, 3) • Food aid (1, 3, 4) • Feeding/nutrition program (2, 3)	1. Targets vulnerable 2. Preserves incentives 3. Costs contained 4. Easy to implement 5. Limited management and governance concerns
Source: Adapted from World Bank, April 2008 ** Numbers in first two columns correspond to criteria as numbered in last column.		

For example, the favorable governance ranking for the tax/tariff reductions depends on whether the reduction is granted to everyone or to just a few (e.g., the larger importers) and on the market structure. If, for example, the import trade is a small oligopoly, which is common in West Africa, there is no guarantee the cost reductions will be passed on to consumers. Section 4 below provides a number of other examples of how a particular context may influence the effectiveness of different policy options.

3.2 OPTIONS USED RECENTLY IN WEST AFRICA

Policy instruments used to date by Sahelian countries fall primarily in the category of those in Table 4 that are "easy to implement or introduce," although perhaps difficult to enforce (a criteria not listed in Table 4). They include **export bans** that have been imposed by Mali, Burkina Faso, and Niger—all countries whose production this year has matched historical norms. There is a growing consensus that the bans have seriously interrupted normal trade flows and have exacerbated the situation in importing countries by blocking supplies in Mali and Burkina that could be used to reduce problems in Senegal, Mauritania, and Niger (where Nigeria was buying up supplies). An illustration of the impact is a report of large commercial stocks available in Kayes, Mali (an assembly point for export to Senegal and Mauritania), where retail millet prices since January have been lower than average prices for the 2002-2006 period. On the other hand, prices seem to have stabilized in countries that have imposed bans.

Another popular measure implemented by Niger, Burkina Faso, Mali, Senegal, Cameroon, and, more recently (May 2008 for rice only), Nigeria has been the **temporary suspension of import tariffs and other taxes** for

key food items (an option responding to 4 of the 5 criteria in Table 4). One disadvantage with this measure is that unless it is implemented well in advance of a crisis situation, it is unlikely to have the desired impact because traders are usually unwilling to reduce prices of currently held stocks for which the taxes have already been paid and costs already incurred. A recent news item (IRIN 29 April) reported that prices of rice, flour, and fish are still at their previous levels or higher almost two months after the government of Cameroon lifted import taxes. The government received agreement from wholesalers that they would pass on the 5 percent reduction in price to buyers, but the impact does not appear to have filtered down through retailers.[10] Slow response at the retail level, such as that observed in Cameroon, is a common critique of this policy instrument; response tends to be slowest when import and wholesale markets are dominated by a few large players—a situation that is common in the region. Under consideration now in Cameroon is reinstating the tax and using the revenues to subsidize local production. A second drawback of the tax holiday on imports is that it reduces government revenues that could be used to support measures to expand domestic production.[11] This is highlighted by the situation in Mali, where the government has just announced a major new rice production program, yet national budget resources to support the program are limited because of the reduced cereal and fuel import tax revenues.

There has been some **government purchasing of food security stocks**, which seems to have pushed prices higher and contributed to speculation when the announcement of the intentions was not followed by rapid implementation. Such a situation encourages traders to accumulate stocks and hold them in anticipation of rising prices when the government does finally enter the market. Such behavior was observed in Nigeria this year when the national government announced intentions to purchase but did not follow through; a few state governments did, however, make small, local purchases (FEWS NET March 2008).

Formal and informal **price control measures** have been used. Burkina, for example, imposed a 5 percent reduction in prevailing prices of basic food products in March/April. In the 15 provinces with production shortfalls, the Burkina Government has asked traders to keep domestic cereal prices in the 11,000-11,500 CFA F/100 kg range for 3 months. Burkina also asked producers to lower their prices to enable traders to reconstitute their stocks (not necessarily a good measure for encouraging supply response during the coming season). Senegal has asked traders to keep rice prices in the 270-280 CFA F/kg range and is monitoring markets. Some monitoring of how effective these "informal" government-trader and government-producer "agreements" are in stabilizing prices would be useful as well as some analysis of the impact on producer and trader production, import, and investment decisions.

Several governments are **drawing on national reserves** to supply deficit zones by **selling at "social" prices**. In Burkina, for example, the "social" price was 9,000 CFA F/100 kg for millet and sorghum compared to the market price that was generally above 11,000 CFA F. **Price subsidies** have been introduced in Senegal (40 percent subsidy on imported wheat) and some reports mention Mali also in discussions of subsidies for basic needs (cereals, oil, etc.). The subsidy approach is easy to implement on imported products (not on domestic ones), but costly in that it does not target the neediest groups and is likely to become unsustainable if world prices remain high for several years as predicted.

Input subsidies have been mentioned for several countries. Most frequently, these are proposed in the form of free distribution of improved seed for zones that had poor production last year, but Senegal, Burkina and Mali are also discussing fertilizer subsidies (the planned rice initiative for Mali calls for a 60 percent subsidy on fertilizer on irrigated rice in 2008/09). Untargeted input subsidies will face the same problems as food subsidies if prices remain high for a prolonged period of time (see Morris et al. 2007 for a discussion of "smart" fertilizer subsidies). Assessments of seed distribution programs in Africa also raise questions about

[10] It is possible that the import prices have continued to rise during this period, thus a before-and-after comparison showing no price decline might be misleading, but it is the observed retail price that matters to consumers, and they are not seeing the results.

[11] We have not found any data permitting us to analyze the extent to which government receipts from tariffs on food products are invested in the agricultural sector, but the general issue is that there is a trade-off between government revenues and budget capacity and tax holiday programs.

the sourcing of the seed (international vs. local), the methods of distribution (direct vs. seed fairs) and the long-run implications for agricultural development (Kelly et al. 2003; Remington 2002).

Information on **safety net programs** is more difficult to assemble, but most countries have some food aid (e.g., school feeding) or food-for-work programs in place. The difficulty of getting a comprehensive picture of safety net measures being implemented by the variety of actors in each country represents a challenge for those monitoring the situation and for government planning. As noted in Table 4, safety net programs tend to be more difficult to implement than the range of price reduction policies available, but if the latter do not bring about rapid results it will be important to increase safety net efforts.

In most cases it is still early to assess the impact of these various initiatives. Burkina's recent report at the Regional Agricultural Outlook Conference was relatively upbeat, suggesting that measures taken have resulted in a moderation of price increases; yet some Burkina Faso traders have expressed concern about the low level of commercial stocks currently in the marketing chain.

CHAPTER 4: ANTICIPATING DIFFERENT SCENARIOS 2008/09

Although the situation is complex and there are diverse factors influencing Sahelians' cost of living in general and cereal prices in particular, there are three exogenous factors that are likely to be most influential in shaping the food security situation in the Sahel during the next 6 to 12 months:

- Weather and other exogenous factors (e.g., crop pest and disease problems) that will affect crop forecasts and harvests;
- Trends in actual and predicted world prices for imported cereals (rice, wheat);
- Trends in actual and predicted world prices for energy.

In addition to these exogenous factors, which we will use to develop alternative scenarios, there are also some important Sahelian consumption characteristics that will influence demand for different types of cereals and their prices. We have already noted that some countries are more heavily dependent on imports from the international markets than others. For these countries (the western zone), the elasticity of substitution in consumption between coarse grains and imported stable foods is considered to be weaker than in other countries; this means that in the face of large increases in prices of imported staples, a household's willingness to adjust its consumption basket from rice and bread to coarse grains is not high. Unfortunately, good estimates of the elasticity of substitution are not available for Sahelian countries (both the import dependent and others), but we have reviewed some of the literature on the topic below in an effort to make rough approximations of anticipated responses.

Taking into account observations in section 2.1, we assume that international commodity prices for energy and cereals will continue to be positively linked, with increases in rice and wheat prices reflecting, in part, rising oil prices because of the stimulus that the rising oil prices provide for the production of biofuel feed stocks, and the impact of higher energy costs on cost of fertilizers used in cereal production and on transportation costs. Hence, our discussion below focuses on cereal price movements, assuming that in scenarios with high or rising world market cereal prices, energy prices (and related fertilizer transport costs) are also high or rising. This implies a need to look not only at the rising world market cereal prices but also at the impact that rising energy prices will have on prices of both imported and domestic cereals through transport and fertilizer cost increases.[12]

Table 5 presents a matrix describing anticipated net cereal price impacts, opportunities, and potential dangers for four scenarios covering different combinations of:

- good/bad crop outcomes and
- declining/rising world market cereal prices.

The matrix is presented from a national perspective, so the assumptions about harvest outcomes should be interpreted as those in a single country rather than for the entire region.

[12] Of course, major civil disruption, particularly in a coastal country with one of the main ports through which Sahelian countries import (e.g., Abidjan, Dakar), could also have a large disruptive effect on imported cereals supplies in the short run, as happened in 2002 when transit between Mali and Burkina Faso and the Côte d'Ivoire was disrupted due to civil unrest in the Côte d'Ivoire. In this analysis, we are assuming such disruption does not occur.

TABLE 5. FOUR POSSIBLE CROP FORECAST-WORLD PRICE SCENARIOS FOR 2008

		World Market Cereal Prices May-December 2008	
		Decline	Remain High or Increase
West African Cereal Harvest Predictions 2008	Good	**Net price impact**: Declining if energy prices are also declining or stable If oil prices remain high, the delivered prices of cereals (production plus transport) may remain stable or decline at a lesser rate than the world market prices **Opportunities**: Food more accessible to vulnerable **Dangers**: domestic rice and coarse grain prices decline too much, limiting market outlets and farm incomes and discouraging future production This is unlikely if private and public sectors have the financial liquidity needed to rebuild their stocks, thus increasing demand at harvest time	**Net price impact**: A bumper harvest would reduce pressure on coarse grain prices; but when combined with rising prices for rice and wheat imports, it might stimulate more substitution in consumption toward coarse grains that would moderate the downward price pressure on domestic cereals A good, but less than bumper harvest would probably stabilize prices of coarse grains but not necessarily lead to price declines, as more consumers substitute coarse grains for imported cereals Rising energy prices will increase transport costs of both imported and domestic cereals, reducing the amount of price reduction possible from a good harvest Domestic rice prices are likely to track prices of imports **Opportunities**: Provides stimulus to producers to increase both coarse grain and rice production; may provide stimulus to increase supply of processed coarse grains as substitutes to rice/wheat for urban consumers; may provide impetus for better outcomes on Doha trade negotiations **Dangers**: Urban consumers who have limited desire or ability to substitute local for imported cereals will have diminished purchasing power due not only to rising cereal prices but also to knock-on effects of rising energy prices
	Bad	**Net price impact**: Declining prices for imports (rice, wheat) if adequate stocks are brought into the country in a timely manner, but rising prices for local coarse grains; same caveats as above concerning energy prices **Opportunities:** Can import from world market to reduce price pressure on local cereals **Dangers:** Delays in imports keep prices high and/or imports not sufficient to dampen price pressure, resulting in more households becoming vulnerable; more likely to affect rural households Limited foreign exchange availability may constrain access to lower world prices Limited competition among importers may result in price reductions not being passed on to consumers	**Net price impact**: Rising prices of all foods **Opportunities**: Provides stimulus to producers to increase food production but rising input prices and transport costs from rising energy prices may dampen production price incentives **Dangers:** Increase in number of net buyers in rural areas as production falls; little scope for commercial imports to dampen prices Could trigger explosion in rural-urban migration, pursuit of environmentally damaging income generation activities (increased charcoal/firewood production), and severe cuts in health and education expenditures at household level

The following discussion looks at each of the four scenarios described in Table 5 and the implications for policy and program design, assuming each is a potential scenario. However, current thinking on world cereal price trends and forecasts reported above suggest that the most probable scenarios are the two on the right side of the table that assume world prices remain high or increase.[13] Predicting harvest outcomes is more difficult. There is little concrete information available at present on how upcoming weather may affect the next harvest, although there have already been reports of late rains in southern Nigerian maize production zones. Although it is too soon to draw firm conclusions, farmers and traders tend to make decisions at this time of year based on expectations—if they are good, it is likely that cereal stocks currently held by both traders and farmers will start coming on the market; if they are poor, supplies will remain tight and prices continue to rise.

The amount of fertilizer made available and/or purchased by farmers in cereal production zones (Mali's *Office du Niger* rice zone, the Malian and Burkinabé cotton zones that produce, with northern Côte d'Ivoire, much of the Sahelian maize supply) could, however, serve as an indicator of how good the harvest might be if rains are adequate. Conventional wisdom suggests that rising costs of fertilizer will decrease use and have negative impacts on yields regardless of the rainfall. This negative impact could be diminished if governments (e.g., Senegal, Burkina Faso, Mali) and donors (FAO) that have announced fertilizer support programs are able to implement them rapidly.

[13] Note that if energy prices were to decline sharply in the future, the effect would be similar to the reduction in world commodity prices shown on the left-hand side of the table, as the energy price decline would decrease the delivered cost of imported grain to the Sahel, even if world grain prices remained unchanged.

The descriptions of net price impacts in Table 5 must be taken as indicative and subject to modification depending on the elasticity of substitution between imported and domestic cereals[14] and transport costs in each country. The ability of a good harvest to reduce overall cereal costs will depend on how willing consumers are to shift from imports to domestic cereals. Unfortunately, this is a parameter that is poorly understood at present, making it difficult to predict consumer response to different price scenarios. Countries with a low propensity to substitute among cereals (Senegal, Mauritania) are likely to observe higher prices overall (and consequently more prolonged food security problems) than countries with more flexibility in consumer cereal choices (Mali, Burkina Faso, Niger).

The net price impact may also be shaped by changes in transportation costs. If costs of overland transport rise at a faster rate than ocean freight, this might raise costs of domestic cereals relative to imports and reduce the potential for substitution. It can also hinder trade within and among West African countries by making it more costly to move domestic cereals from surplus to deficit zones. As noted above, harvest outcomes may also be affected by access to fertilizer. The opportunity mentioned for the Doha negations is of less immediate importance, as negotiations are unlikely to affect 2008/09 production and marketing decisions; it is based on the observation that subsidizing countries are rarely willing to remove subsidies when prices are low because the subsidies are put in place to protect against low prices. Some believe that if prices continue to rise, this will no longer be a valid argument and may facilitate progress (Hebebrand, February 2008).

4.1 THE FIRST STEP: MONITORING AND ANALYSIS

The first step in making good policy and program decisions is having a food-security monitoring and analysis system to rapidly situate each country in the appropriate box of the matrix and to identify the groups at risk. Accurate and early forecasting of the 2008 crop will be needed to avoid implementing policies that over-react to the current situation or underestimate the need for food-security interventions during 2008 and beyond. Suggestions for improved monitoring and analysis are summarized in the paragraphs below.

Crop estimates. The literature reviewed for this paper suggested that there have been some questions raised about the accuracy of crop estimates in the past (e.g., in the *Office du Niger* in Mali). This is not a year to reduce personnel and funding for crop forecasting. All necessary resources should be made available for obtaining accurate and timely production estimates, with a careful analysis of aggregate impacts on both national and regional supply if there are isolated cases of droughts, floods, or pest problems.

Market price and flow monitoring. Services monitoring market prices and, in some instances, flows[15] may need to increase their staff to ensure timely and frequent collection of market price and flow data, with above-average efforts (e.g., timeliness, more information than usual on stocks and flows) in affected zones of countries already identified as having localized problems (Niger, Senegal, Mauritania, Nigeria, and Burkina Faso). This monitoring should include some analysis of margins, using the wholesale/retail price ratios to assess the extent to which they are increasing and, if so, what is driving the increases (transport, unofficial taxes due to border closures, failure to pass on tariff reductions, etc.). To track possible impacts on households dependent on livestock sales to maintain food security, the goat-to-millet price ratio (showing how many kilograms of millet one can purchase with receipts from the sale of a goat) has proven to be a good indicator in the past. FEWS NET has been tracking this indicator for a number of years, and results through the first trimester of 2008 show that the purchasing power for those dependent on livestock for livelihoods was being maintained in Niger (ratios comparable to the same period in 2007) but not in Mauritania. Declining pasture and rising feed costs could result in a rapidly deteriorating situation, so close monitoring is needed.

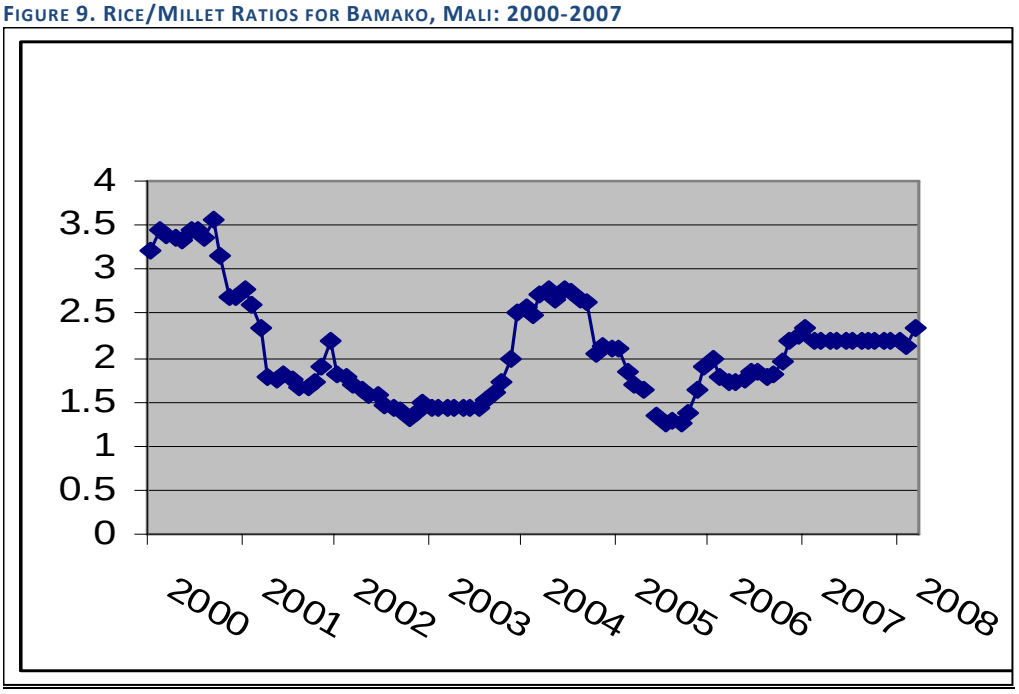
[14] Although rice is produced domestically in the Sahel, quantities of rice imported exceed local production in most countries. Analyses to date suggest that prices of domestic rice tend to track those of imported rice (Figure 6). Consequently, in the discussion that follows, the term "domestic cereals" refers to coarse grains unless otherwise noted, and we assume domestic rice prices follow international trends.

[15] There is not a lot of product flow monitoring being done on a regular basis, but we mention it here as an important element of what is needed to fully understand the implications of changing prices.

Stock data. It would facilitate food aid planning and improve policy design if the market information systems were able to get more accurate estimates of stocks that are publicly and privately held at the national level and for major assembly zones within each country. All the FEWS NET reports and anecdotal information received from traders suggests that coarse grain (CG) stocks are substantial in the region (particularly Mali and Burkina Faso) but poorly distributed and not being made available to food insecure zones in Senegal, Mauritania, Niger, and Nigeria. Better information about the size and location of these stocks could contribute to a better analysis of the likely impacts of governments easing export bans and other impediments to regional trade. It should also be remembered that in the Sahel, the bulk of the CG stocks are held at the farm-level, so developing better methods to estimate farm-level stocks would also contribute to more informed policy decisions. Farm-level work is beyond what a typical market information system is capable of doing; but it could be addressed by those doing the annual agricultural surveys to estimate crop production also collecting stock information two or three times per year (e.g., when they do a census of planting intentions and when they do crop cuts).

Patterns of substitution in consumption. Understanding the likelihood that consumers will substitute local cereals or other staples for imports will be important in planning both short-run safety net measures and longer-run measures to stimulate cereal production. Reliable estimates of the elasticity of substitution are generally not available, but information reported in Section 2.2.1 based on post-devaluation studies suggests that the general pattern will be to maintain current cereal consumption preferences while reducing expenditures on other food items. This has implications for the types of safety-net interventions used (e.g., increased importance of nutrition supplements such as vitamins and micro-nutrients). Even with a relatively low propensity for substitution, monitoring the ratio of rice prices to millet and/or sorghum prices and comparing them to ratios associated with price rises in the past (e.g., 1994 devaluation, 2004/05) will provide some indication of how difficult the situation is compared to historical precedents. Data available for Mali through the end of 2007 shows that the ratio has not yet reached the more extreme levels between 2005 and 2006 when millet and rice prices were very close (Figure 9). If the ratio becomes a great deal more unfavorable for imported cereals, there may eventually be a greater substitution response than seen in the past. This is likely to happen only in cases where there are abundant supplies of local coarse grains (i.e., not in the chronically import-dependent countries).

FIGURE 9. RICE/MILLET RATIOS FOR BAMAKO, MALI: 2000-2007



Source: Dembele et al. 2008.

Exchange rates. Trade flows within the region are likely to change if there are important changes in the CFA F/Naira or the CFA F/Cedi rate; an appreciation of the Naira or Cedi could put additional pressure on Sahelian cereal stocks and prices as was the case in 2004/2005, also making it more difficult to source supplies in Nigeria and Ghana if production there is good. A depreciation of the CFA F vis a vis the US dollar would put additional pressure on prices of imported cereals.

Government budgets, foreign reserve positions, and bank credit. Past experience has shown that in countries where the cereal sector has only a few actors who have access to the amounts of credit needed to import, it may be necessary for the government to intervene in the market to stimulate competition and lower prices. In 2004/05, the Government of Mali decided intervention was needed but lacked the financial resources. It was after the government borrowed money from the Islamic Bank and had the national cereals board (OPAM) import rice through a different set of traders that price started to decline. A better option would be to provide access to bank credit directly to a wider range of importers, perhaps backed by a government guarantee to encourage private banks to make the loans.

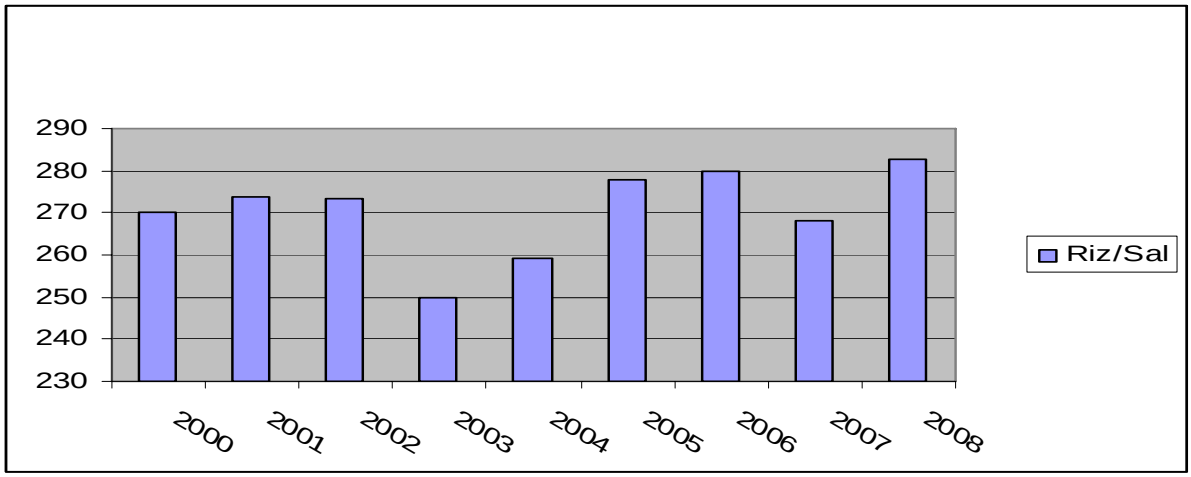
Identifying vulnerable groups. The greatest challenge will be identifying vulnerable groups so that policies and programs can be targeted toward them rather than toward the most vocal constituencies, which may not be the neediest. Such assessments should be done quickly in an effort to identify preventive actions that could be taken immediately rather than waiting to see if the situation deteriorates (particularly important in the import-dependent countries such as Senegal and Mauritania that have also had poor harvests). One of the challenges in the current situation is that it is difficult to assess the relative vulnerability of urban versus rural groups. Because the price hikes to date are greatest on imported cereals consumed more by urban than rural populations, there is a tendency to think of this more as an urban problem. To the extent that these higher prices are transmitted to domestic cereals and rural markets, or supplies of domestic cereals become tight, the vulnerability may be as great or greater in rural areas. Due to export bans in Mali, rural zones of Mauritania are now dependent on supplies of imported cereals from Nouakchott; prices will be significantly greater than in the capital due to transport costs. Another concern is that many rural households in the Sahel are net purchasers of cereals because they do not produce enough grain to cover annual consumption needs; to the extent that the net cereal purchasers are poor (likely, because poverty is higher in rural areas of the Sahel than in urban areas), they will be as likely to be vulnerable to rising food prices as their urban counterparts—a point often missed in discussions of poverty and food security in the Sahel.

For urban areas, comparing trends over time for food price/wage ratios for both minimum wage jobs and civil service positions can provide an indicator of what is happening to purchasing power and signal problems that may not be evident from tracking nominal changes in cereal prices over time. Figure 10, for example, illustrates that the "real" cost of rice for a Malian civil servant, even taking into account recent salary increases, is currently at its highest level since 2000. In addition, interviews with retailers in markets serving poor neighborhoods might provide valuable information on how their sales have been changing with respect to quantities being purchased and substitution among products. Focus-group discussions with consumers in poor neighborhoods might also be useful. For rural areas, a ratio of staple prices to the agricultural wage rate would represent a comparable indicator of purchasing power for land-poor farmers who rely on wages for much of their income. For farmers who derive most of their income from their own farm, tracking trends in crop/fertilizer price ratios is a very rough indicator of what might be happening to net farm income in zones where fertilizer is used (e.g., irrigated rice and cotton zones).

A better indicator would be partial crop budgets that show trends in gross margins (the value of crops produced minus costs of purchased inputs) in real terms (deflated by an appropriate price index). This type of analysis is particularly important in cotton production zones, where purchasing power may be lower than usual due to reductions in nominal 2007/08 producer cotton prices and inflation. Table 6 shows that in real terms, the 2007/08 producer price was only 62 percent of its 2004/05 level in Burkina and 76 percent in Mali. Area planted declined significantly in both countries, so the net income impact for 2007/08 will depend on the extent to which farmers were able to increase incomes from other activities (e.g., livestock and specialty crops like sesame, hibiscus, shea nuts). Partial budget analysis will also be important in irrigated rice zones,

where the impacts of rising rice and fertilizer prices needs to be examined to determine net impacts on farm income for 2007/08 and into the future.

FIGURE 10. TRENDS IN THE RATIO OF RICE PRICES TO THE BAMAKO CIVIL SERVICE SALARY INDEX



Source: Dembele et al. 2008.

Both Senegal and Mali have announced major rice production promotion programs in response to rising prices, but it is not clear that updated profitability analyses have been used in designing the programs. While the latter type of analysis may go beyond what early warning systems can do, it should not be difficult for most national agricultural research services (NARS) to monitor these trends and make forecasts of likely changes in margins for the upcoming season. This information can then be shared with early warning systems. For farmers relying on crops that use few purchased inputs, looking at trends in the real value of producer prices for that crop may provide a rough indicator of purchasing power; although the choice of deflator in this case is not always obvious (see Dembele et al. 2008).

Other useful approaches to monitoring vulnerability would include tracking levels of rural migration to urban areas and tracking factors that might affect employment opportunities in cities. Rising cement prices, for example, have significantly reduced employment opportunities in construction in Bamako—a sector that employed many temporary rural migrants as well as urban residents.

TABLE 6. TRENDS IN NOMINAL AND REAL PRODUCER PRICES OF COTTON: 2004/05 TO PRESENT

Nominal and Real Producer Prices of Cotton: Burkina Faso and Mali

	Burkina		Mali	
Season	Nominal	Real*	Nominal	Real*
		(CFA F/kg of seed cotton)		
2004/05	210	210	210	210
2005/06	175	165	160	153
2006/07	165	158	165	154
2007/08	145	130	160	144
2008/09	165	not avail.	200	not avail.

* Base = 2005; using CPI for January of marketing year as deflator.

Source: Official cotton prices and UEMOA CPI data.

Most of the monitoring and analyses described above would be relevant regardless of the scenario that evolves during the 2008 season, but the relative emphasis may vary by country and by scenario. Understanding the extent to which rising rice prices are due to domestic supply shortages (unusually low commercial stocks of rice have been reported) rather than simply the run up in world prices would clarify to some extent how to respond (support to importers or government intervention to increase supplies versus

support to consumers to dampen the price impacts). The civil unrest in urban areas of Senegal, Mauritania, and Burkina Faso suggests that special attention should be given to analysis of trends in food price/wage ratios and employment opportunities.

One needs to ask if the current economic situation is more unfavorable than past instances of price hikes, or if the current civil unrest is motivated by politics as much as economics. If the 2008 production season starts to falter, monitoring rural/urban migration will be important as well as employment opportunities. Finally, a strong urban bias for imported rice should not lead analysts to ignore the opportunities for regional trade in coarse grains to supply rural areas that continue to consume millet and sorghum; bringing in regional supplies of coarse grains to satisfy rural demand could take some pressure off urban rice prices. Using typical food security assessment measures in rural areas could help identify geographic areas that might benefit from such coarse grain supplies; this could be followed by expanded monitoring that would attempt to identify the most vulnerable households in these zones.

4.2 SELECTING APPROPRIATE POLICIES AND PROGRAMS

While Table 4 provided some general guidance on policy effectiveness, there was no effort to discuss the relative effectiveness of different options when the causes or the magnitude of the potential food-security problems differ. We address these concerns in this section, looking first at the range of short-term, emergency interventions. This is followed by a discussion about linking the short-term with longer-term strategies and agricultural sector development efforts.

4.2.1 Short-term emergency options

Table 7 is a first cut at trying to align particular short-term policy and program options with the four scenarios introduced in Table 5. The table should be viewed as a guide to thinking about options to pursue rather than a rigid framework. The choice of a particular set of policies or types of interventions will need to be made taking into account the particularities of each country, including implementation capacity, evolving employment and income situation in both urban and rural areas, expectations for substitution among cereals, and integration of domestic markets within the country and with neighboring countries.

Best possible scenario – declining world market prices and a good harvest forecast

Should the best possible scenario develop, governments and donors will still need to be strategic in responding. Most pertinent policy options include production stimulus, removing export bans, rebuilding national food security stocks, and reinstating suspended taxes on cereal imports. Continued attention will also be needed for targeted safety net programs.

Production stimulus. If the early rains and forecasts for the rest of the season are favorable, it will be particularly important to provide stimulus for local production and marketing. This could include a final push to promote fertilizer top dressing in cereal production zones by ensuring supplies are in place, credit is available, and inputs for work programs or subsidies make fertilizer affordable. One might consider reversing the timing for inputs for work, giving fertilizer "on credit" during the cropping season with recipients agreeing to provide a specified number of days of work following harvest. Production stimulus programs will only work if they are implemented at the appropriate time. For countries that do not already have seed and fertilizer supplies ordered or in country (by June 2008), other types of programs need to be used. Investing time and money in seed and fertilizer that arrives too late to be used effectively will be worse than doing nothing.

Export bans. Countries like Mali, which put in place an export ban more as protection against a 2008/09 shortfall than in response to current needs, should be encouraged to begin exporting again as soon as there is a forecast of good rains and production for the 2008/09 harvest. The current supply situation in Burkina is less well understood, but if more cereals come on the market during the next few months, Burkina also should consider discontinuing its export ban. An early end to the export bans will encourage the more severely deficit countries (Senegal, Mauritania, Nigeria) to start rebuilding national stocks with regional supplies rather than international imports.

TABLE 7. SHORT-TERM POLICY AND PROGRAM OPTIONS BY SCENARIO

West African Cereal Harvest Predictions 2008	World Market Cereal Prices May-December 2008		
		Decline	Remain High or Increase
	Good	• Reinstate taxes and tariffs to boost government revenue for rebuilding security stocks • Maintain prices of local production by rebuilding food security stocks through domestic/regional purchases in surplus zones if available, otherwise from imports • Lift export bans • Expand initiatives by farmer organizations to build group storage capacity • If financial resources not adequate for building stocks while prices are low, solicit assistance (budget support for governments, credit for farmers organizations and traders)	• Income support for vulnerable (food for work, inputs for work, cash for work) • If rains start early, facilitate access to fertilizers for cereal production • Targeted distribution of food aid obtained through local purchases (use local rather than imported cereals to encourage self-selection) • If prices of local cereals decline rapidly at harvest, reinstate taxes and tariffs on imports to encourage substitution, rebuild security stocks • Promote regional trade to even out local shortages (remove barriers, promote greater flows of information among national market information systems (MIS) in the region; strengthen existing monitoring structures rather than creating new ones)
	Bad	• Improve importers' access to foreign exchange and credit to facilitate imports and greater competition in the import trade • Reduce/remove import tariffs if prices of imports are not low enough to be affordable by the working poor • Targeted income support programs for poor (FFW, etc) • If production is uneven throughout the region, encourage neighboring countries to keep trade flows moving and provide support to traders (credit to increase competition) • Replenish government funds reserved for building food security stocks through international purchases • Promote off-season income generating activities: horticulture and off-season rice	• Remove all cereal taxes/tariffs on imports • If supplies exist in neighboring countries, implement policies to facilitate transport, customs clearance, etc (e g , crackdown on elicit taxes) • Totally deplete public food security reserves if necessary • Seek food aid imports as high prices are likely to limit commercial imports; may need to use the IMF food import facility • Critical to target available assistance to those most in need; requires excellent M&E of purchasing power situation in both urban and rural areas and food stocks in rural areas • Sales of government cereal stocks at below cost of acquisition will be required, as social tension will be at maximum • Careful assessment of livestock producer needs and appropriate response (assistance with feed, with marketing, etc) • Develop income support programs such as public works in urban centers to provide temporary relief while contributing to upgrading urban roads, repairing health and education facilities; in rural areas, roads, irrigation infrastructure improvement, and soil and water conservation investments would all contribute to longer term economic development while providing short-term incomes

Rebuilding national stocks. Most countries will need to rebuild national security stocks. Lower world and domestic prices will reduce the costs of replenishing stocks. Countries with a particularly good harvest should favor purchases of domestic cereals to prevent prices from declining so much that production incentives for 2008/09 are inadequate. In addition to rebuilding national security stocks, programs to improve grain storage at the farm and rural community level should be encouraged.

Taxes. Reinstating the import tariffs and other taxes that were suspended will raise revenue for rebuilding stocks. Import tariffs should be reinstated soon enough to avoid a situation where there is a price incentive for consumers to favor imports over the new harvest of domestic production. When tariffs were suspended, there was a several month lag before the price reduction reached consumers. There is the possibility that when taxes are reinstated, the price response at the retail level will be implemented more quickly (applied to existing stocks purchased under the tax suspension) rather than to new stocks only; a review of past experience in each country with tariff reductions should provide some guidance on the timing issue.

Safety net measures. If cereal prices decline but other key prices do not (energy, transport, building materials) or there are disruptions in employment markets that reduce incomes, it will be important to continue income support or targeted food aid/food subsidy programs for the very poor. Following a good harvest, this will be more an urban than a rural problem, but rural zones with a large share of net cereal

buyers and those relying heavily on income from temporary urban migration during the dry season will also be affected.

Second best scenario – a good harvest forecast, but continued high prices for imported cereals

Cereal producing countries in the center (Mali, Burkina Faso, Niger, and Chad) are likely to benefit more from this scenario than import-dependent countries such as Senegal and Mauritania. Key policy concerns under this scenario include the same general issues outlined for the best scenario, but with greater emphasis on getting regional trade flows moving again and a more targeted focus toward urban consumers of imported cereals for the safety net programs. Specific considerations are summarized below.

Production stimulus. Same as for best scenario, but perhaps with increased vigor if prospects for more reasonably priced imports are not good.

Safety nets. Prior to harvest in cereal-deficit zones, implement safety-net programs to ensure that households have adequate caloric intake during the agricultural season (school is out of session most of the production season, so school feeding is not an option; subsidized food to mothers and infants might take pressure off household food supplies for others; continuation of sales at "social prices" in specific zones may help. For countries that have closed borders (Mali, Burkina, Niger), domestic supplies should be used for food-aid programs.

Export bans. For countries such as Senegal and Mauritania that had significant production shortfalls in 2007/08, some negotiations with the Malian government for export of specified amounts of coarse grains from existing commercial stocks (e.g., drawing down on what appears to be excess stocks in the Kayes region) might be feasible early in the season if the rains start on time (i.e., Mali will be less concerned about need to keep high levels of stocks). This type of government agreement would provide an alternative to completely opening the borders to commercial trade if Mali is not yet comfortable doing this. Experience with bi-lateral food supply agreements being negotiated by Asian countries should be examined. It may be possible for African governments to negotiate directly with Asian governments (China, India, Pakistan) to get limited exemption from the export bans there and improve supply of imported rice; with rising international prices, however, the better option would be finding a regional source of supply to cover the rainy season. Any data and analyses of stock levels and flows that market information systems could provide to assess the potential impact of such exchanges would be useful.

Taxes: The approach will vary here depending on how import-dependent the country is. For Mali, Burkina Faso, and Niger, plans should be in place for taxes to be reinstated on imports as soon as the new harvest becomes available (even somewhat earlier to avoid people trying to stockpile imports at the lower prices). For import-dependent countries (Senegal, Mauritania, Guinea Bissau, the Gambia, Guinea and Cape Verde) food security concerns may make it prudent to continue the tax holiday a bit longer until harvests in the surplus zones are into the marketing systems and able to move across borders. An alternative, however, is to reinstate the taxes sooner but accompany this with targeted safety-net programs to help the most vulnerable; the advantage here is that the government would be collecting revenues through the taxes that could be used to support the safety-net programs.

Rebuilding security stocks. This would not be a good time to rebuild security stocks from imported cereals. As domestic cereals start coming on the market and prices decline, it would be appropriate for the government to be rebuilding national security stocks. If the upward pressure from international markets keeps domestic prices high, governments and food aid agencies need to be careful not to push prices beyond a reasonable level in the stock rebuilding efforts. Good monitoring of prices and stocks will be important in guiding these decisions. In the case of a truly bumper harvest, prices for coarse grains like millet and sorghum that are not widely traded internationally are likely to go down regardless of world prices of other cereals. In this case, Government would benefit from the lower prices and their purchases would keep producer prices from declining to a point that would stifle incentives for increased cereal production in 2008/09.

Third best scenario – poor forecast for upcoming harvest accompanied by declining world market prices

The third best scenario is not a good one, but declining world prices will facilitate the implementation of remedial measures to compensate for the harvest shortfalls.

Production incentives. These should focus on stimulating cereal production during the off-season (recessional and irrigated rice production, irrigated maize production) to increase supplies as well as on the production of high valued crops (onions, tomatoes, other vegetables) to increase incomes. Making sure input supplies and credit are available will be important. Programs to assist with variety selection for high valued crops so that production is spread out over time and the market is not flooded will be important. Access to fertilizer for cereal production will ensure better yields.

If fertilizer suppliers are left holding large stocks because of a poor rainy season, some support programs may be needed to help them recapitalize and store the fertilizer until they are able to sell it (third-party warehousing, for example).

Support to the livestock sector will also be needed to avoid a glut of ruminants on the market due to shortages of animal fodder and feed. Subsidized animal feed was used by Mali in 2007/08; an assessment of its effectiveness could assist in determining if the same program should be repeated in 2008/09. Support to the poultry sector needs to be considered carefully. Existing egg production enterprises will need help with feed to continue. Raising poultry from chicks in an intensive manner that requires large amounts of feed when coarse grain prices are rising and livestock prices may be falling could be problematic from both a supply and demand perspective, suggesting a need for some profitability and market analysis in this area before developing support programs.

Export bans. Realistically, poor harvests will make it difficult for Mali, Burkina, and Niger to lift their export bans. To the extent that the poor harvest forecasts are country or zone specific, those countries with shortfalls should try to develop agreements that permit commercial trade to continue with surplus countries, or, at a minimum, that permit some level of government or donor arranged flows from surplus to deficit countries. There seem to be unexploited opportunities among West African countries to develop more mutually beneficial cereal trade and production agreements. Mali, for example, has been seeking outside capital for further development of irrigation infrastructure in the *Office du Niger*. Senegal has expressed interest. Perhaps there is a way of developing a win-win arrangement whereby investment by Senegal was conditional on maintaining open borders or making joint decisions on any changes in cereal trade policies between the two countries.

Other international trade facilitation. To facilitate imports of rice and wheat, it will be important to improve importers' access to foreign exchange and credit. In most countries, international imports are currently in the hands of a small group of traders. This leads to prices being set through open or tacit collusion rather than through competition. To reduce this problem, credit needs to be made available to a larger number of traders.

Domestic and regional trade facilitation. If the production is bad but there are surplus zones, it will be important to facilitate transport from surplus to deficit zones. This would include road repair (using local labor and programs delivering food, inputs, or cash in exchange for labor) and concerted efforts by governments and trader and transporter professional organizations to crack down on illicit road taxes. Continued support to market information systems (MIS) will also be important so that the MIS can signal where price differentials are large enough to induce traders to move grain from surplus to deficit areas.

Taxes. What is done with tariffs and taxes will depend on how much of a price decline there is for imported rice and wheat. The longer the tax holiday is in place, the more revenue the government is foregoing that could be used for other more targeted programs. If prices are low enough that the "working poor" can afford an adequate diet, then reinstituting the tariffs and using the money for targeted food aid to poor households

could be more effective; governments may want to select a higher bar than affordability for the "working poor" (e.g., the "urban middle class"), depending on financial resources and the need to keep civil unrest in check. Given the poor harvest, these targeted programs will need to address both urban and rural households.

Food security cash reserves. Some countries (e.g., Mali and Niger) have funds that are allocated for food security reserves but kept in cash until needed. As regional supplies of cereals are likely to be tight and international prices unlikely to decline substantially, this would be a good time for governments to rebuild food security funds through budget allocations, but to hold off on purchasing until absolutely essential or until prices drop significantly.

Safety net. Part of the safety-net measures can come through promotion of off-season crop production and marketing activities described above. It will be important to identify rural zones with forecasted deficits and make sure that food supplies are available through commercial channels, sales from food security stocks, or food aid programs. Zones that were deficit in 2007/08 and appear to be heading toward deficits in 2008/09 should be given priority. To the extent that commercial supplies can be made available but prices are high, some type of income generation programs will be needed. In zones that have the capacity to generate income from off-season crop production or livestock, food aid may be needed until these incomes start coming in. For zones with few opportunities for off-season agricultural incomes or supplementary income from migration and off-farm activities, the assistance may need to continue through to the end of the next main cropping season.

Worst scenario – poor forecast for upcoming harvest accompanied by rising world market prices

By the time we get to the worst-case scenario we have pretty much described the full range of domestic and regional policies available. Should a bad harvest occur in only one or two countries that are not among West Africa's "bread basket" producers, then a regional solution could still be possible through increased regional trade from the surplus to deficit countries. The types of bi-lateral trade resolutions described for the second- and third-best scenarios above could be pursued. Should the shortfall occur in the major cereal production zones of the Sahel, then assistance with imports from international markets will most likely be needed. Should the shortfall occur in Nigeria but not the Sahelian cereal producing countries, then closing borders to Nigerian traders could help protect the Sahel (though it is not likely to eliminate all trade). This would force Nigeria to go to international markets for their cereal supply, but given the size and diversity of its economy, this is a more feasible option for Nigeria than for the Sahelian states, comprised of numerous countries that would have difficulty responding in a unified manner.

A policy dilemma in the worse-case scenario is that imports will be needed and rising world market prices will push governments to bring them in tax free so that consumers can afford them. Accessing the imports may require these countries availing themselves of the IMF food import facility. The tax suspensions will reduce government revenues and make it more difficult to implement income support and other safety-net programs and programs aimed at boosting production in the coming crop year. Reduced resources and increased needs will make it particularly important to target the poorest.
A maximum effort will need to be put into stimulating income growth during the off-season through crop and livestock production and sales (see production incentives for the third-best scenario) and through other types of employment promotion programs. Employment promotion in rural areas should be targeted toward improving roads to facilitate moving food to deficit zones and investing in small-scale, rapid improvements in irrigation infrastructure (leveling, clearing canals) and soil and water conservation investments that improve yields for zones where irrigation is not possible. In urban areas, upgrading roads, markets, health, and education facilities should be given priority.

4.2.2 Medium-term developmental options

Fear of the impending food-security crisis in countries where a large portion of the population is living in poverty has resulted in renewed interest in the role that agricultural development can play in poverty

reduction and food security. Although there is much discussion in the press these days about how slow Africa has been to realize a Green Revolution, recent analysis of production and productivity trends suggests that several countries in West Africa have been performing well during the past 10 years compared to earlier periods (Wiggins 2008).

In response to the rising prices, the World Bank has increased funding for African agriculture (World Bank 2008), Senegal has announced that it is initiating a program to be self sufficient in rice by 2015, and Mali is also developing a program to significantly increase rice production. There is a need to develop these longer-term strategies in a manner that does not over-react to the present crisis by returning to national food self-sufficiency objectives of the past and ignoring the tremendous, unfulfilled potential for regional trade in West Africa. There is also a need to coordinate as much as possible short-run emergency measures with longer term strategies (Maxwell et al., 2008). Some analysts have argued that Africa's tendency to protect the urban consumers through the use of emergency relief measures has been at the expense of farmers and is, in large part, responsible for Africa's failure to have experienced a Green Revolution thus far (e.g., Sanders and Ahmed, 1998). Most of the frequently mentioned medium-term options for dealing with rising food prices in Africa are designed to redress what many consider years of neglect of agricultural investment on the continent. Recommendations include:

- Promotion of efficient use of improved inputs
  - Better extension to improve farmers' knowledge of and skills in using known technologies (e.g., appropriate combinations of cereal varieties and fertilizer doses given prices, integrated soil fertility management practices, micro-dosing of fertilizer to improve efficiency, etc.)
  - More research investment (e.g., development of biotechnologies and regulatory frameworks needed for their use)
- Improve access to credit for inputs at the farm level and along the supply chain
- Investments in irrigation and or soil and water conservation practices
- Promotion of marketing and processing services for local cereals to make them more appealing to urban consumers looking to reduce preparation time and costs and to supply growing demand for animal feeds.
- Improve access to credit for processors
- Development of production risk mitigation instruments (rainfall insurance, commodity exchanges)
- Promotion of trade with neighboring countries that have a comparative advantage in cereals production.

Some missteps to avoid during emergency response are ones that would weaken the capacity of farmers and actors in both input and output markets to respond after the crisis (unreasonable price controls that cause losses for traders; direct government sales of inputs at reduced costs without allowing the private sector to benefit from the same subsidies; over-reaction to urban needs at the expense of rural needs, etc.).
In discussing emergency options, we have tended to divide the Sahel into import-dependent and surplus producer categories when considering policy options. When it comes to developmental options, it will be much more important to consider the diversity of agricultural production environments within each country and the types of programs that are likely to promote increases in aggregate national food security in an economically rational and socially equitable manner. This will mean balancing very expensive investments in fully controlled irrigated perimeters with soil and water conservation investments in zones where irrigation is not an option but significant yield improvements can be obtained with better resource management. It also means diversifying incomes in zones with high climatic risk while pursuing trade and investment policies that bring UEMOA and ECOWAS stated objectives of regional trade integration closer to reality. For farmers to be comfortable diversifying production, they need to be confident that they can purchase cereals; export bans do not build this confidence.

There will also be a need to address urban jobs and purchasing power, particularly in import-dependent countries. Past experience has shown that agricultural development promotes strong economic growth linkages throughout the economy. Research on agricultural growth-linkages reported in Delgado et al. (1998, page xii) estimated that:

> … adding US$1.00 of new farm income potentially increases total income in the local economy—beyond the initial $1.00—by $1.88 in Burkina Faso, $1.24 to $1.48 in two locations in Senegal, and $0.96 in Niger.

Comparable multipliers for other regions of the world tend to be lower. These estimates are maximum potential increases, and all three of these economies have become more open and diverse since this study was conducted, so the strength of the multipliers may have diminished if rural producers are now spending a larger share of their income on imported goods. On the other hand, the current pattern of rising international prices may have the opposite effect and stimulate greater consumption of local products. If this is the case, then agricultural multipliers will still be strong and contribute to job growth throughout the economy as the agricultural sector grows. This would provide a win-win situation by significantly reducing the need for targeted job creation programs in urban areas.

A recent review of humanitarian assistance (Maxwell et al., 2008) has stressed the importance of designing emergency efforts to meet the needs of populations in crisis (noting that food distribution is not always the most appropriate remedy) and linking the emergency responses to overall development needs. While this probably seems like a tall order to emergency relief personnel in the field and under fire to produce rapid results, it is advice that may be feasible to take into account in many parts of the Sahel this year where food supplies are not dangerously low (Mali, Niger, Burkina, Chad). Attention given to promoting better regional trade flows and interventions to stimulate production in 2008/09 and beyond could provide some protection for the entire region should international food prices continue to rise. Also, it is important to note that relief agencies alone are unlikely to accomplish the type of emergency-development linkages required without significant support and collaboration from governments and donors.

Last, but not least, are investments needed to strengthen and expand monitoring and analysis of food marketing from the farm level all the way the chain to the consumer. As noted earlier, information on stocks and flows is limited or non-existent in most Sahelian countries; the number of points from which price data are collected are few and not always placed strategically; there is not an adequate regional system of shared data permitting regional analysis of production, trade, and food security issues, and the human resources to analyze and report on markets for policy prescription, commercial operations and humanitarian response are not yet adequate.

CHAPTER 5: CONCLUSIONS

We find that although we have tried to separate the short-term from the longer-term, the biggest short-term challenges are also the biggest longer-term challenges. They can be summarized in three points:

- Dealing with a demand-driven rather than a supply-driven food security problem;
- Realizing the potential of regional trade;
- Stimulating supply while addressing needs of consumers.

Changing demand. In dealing with what appears to be more of a demand- than a supply-driven problem, analysts are confronted with the question of whether the traditional cereal balance sheets that estimate needs based on a relatively static view of human cereal consumption continue to be relevant. Increases in the intermediate demand for coarse grains in the production of animal feed and growing diversification of consumer diets (e.g., increased consumption of roots, tubers and vegetables that reduces cereal consumption per capita) raise questions about the per-capita estimates of minimum cereal needs, which have remained fairly constant over time for each country in the Sahel. For example, the poultry and egg producers association in Bamako, Mali estimates coarse grain feed needs (primarily yellow maize) at about 42,000 tons per year; this level of demand was not there just a few years ago and it is growing annually. Some thought needs to go into redefining assumptions about demand, taking into account both urbanization (which tends to promote substitution of rice for coarse grains), intermediate demand for animal feed (which increases pressure on coarse grains, particularly yellow maize), and the potential impacts of demand and supply in the region as a whole given the integrated nature of the markets.

The other side of the demand question is differentiating between theoretical demand based on historical consumption norms and effective demand based on a household's ability to access cereals and other food products in the market. Addressing the needs of households that do not have the purchasing power to satisfy their demand requires improved methods for identifying vulnerable households in both urban and rural areas and developing safety-net measures to assist the vulnerable in a manner that helps to move them out of poverty.

Regional trade. As illustrated by the many export bans imposed by West African governments since late 2007, realizing the potential of regional trade to stabilize the food security situation throughout the region will not be easy. To date, most efforts to promote regional trade fall into the category of common tariffs and regulatory frameworks for visas and work permits within UEMOA and ECOWAS. The political will to abide by these agreements when food security is threatened in an individual country has not been strong, particularly for countries whose consumers have lower purchasing power. In many cases, these border closings push food prices higher for deficit rural areas that are remote from their own capital cities and ports but close to surplus zones in neighboring countries; these negative impacts are likely to be exacerbated as fuel and transport costs rise. Given the economic complexities and politics involved in building viable regional trade zones (as illustrated by non-African examples such as the European Union, which has been more than 50 years in the making), the short- to medium-term solution for West Africa appears to be a combination of bilateral agreements designed to address short-term food security issues and continued movement toward a regional trade zone that would eventually internalize and fully address both national and regional food security and economic development concerns.

Stimulating supply. The challenge of providing price relief for consumers while maintaining incentives for producers to increase supply is not a new issue in Africa. Balancing consumer and producer needs is a difficult issue to address given the large share of both urban and rural household expenditure by the poor going to basic food (often 50-75 percent). In such a situation, small consumer price increases have a strong negative impact on the quality and quantity of food consumed. Governments will need to take a more holistic view of food security and agricultural development policies, analyzing their interactions and developing approaches whereby agricultural investments and policies (e.g., input subsidies, irrigation and soil and water

conservation investments, measures to improve price transmission to producers) can be used to maintain production incentives in the face of short-term measures taken to reduce food prices or provide safety nets (e.g., food aid distribution or marketing at reduced prices, distribution of free seeds). Similarly, when bumper harvests occur, it will be the food security agencies that will need to coordinate efforts with the agricultural sector to support prices (e.g., replenishment of national food security stocks, investments in storage infrastructure).

More attention will also need to be given to analyzing the pros and cons (economic and political) of encouraging production in remote zones. Rising transportation costs for moving domestic production from surplus to deficit zones increase the importance of looking at this issue. Use of pan-territorial pricing policies given rising transport costs will become an increasingly costly means of supporting remote regions; targeted investments in irrigation infrastructure or input subsidies in remote regions may improve local production and be less expensive that moving food supplies from surplus zones.

Similarly, more attention will also need to be given to analyzing the pros and cons (economic and political) of domestic production versus imports from regional and international markets. The recent crisis has led to calls for a return to the cereals self-sufficiency goals of the pre-liberalization period. Given the small size of most of the Sahelian economies and the risky production environment, national self-sufficiency goals are unlikely to be attained and efforts to move in this direction may result in missed opportunities for the development of more remunerative sectors. Increased cereal production and productivity throughout the zone, coupled with improved regional trade flows could, however, significantly reduce dependence on imports from outside the zone while improving rural incomes and generating multiplier effects throughout the rest of the economy. Countries like Mali, Burkina Faso, Chad and Niger with unrealized cereal production potential could become the "cereal baskets" of the region if transport infrastructure were improved, regional trade were encouraged through a reduction in "unofficial" taxes and export bans, and investment in the agricultural sector were increased (e.g., irrigation, input credit, price incentives to use improved technologies, research and extension—the standard set of investments that has been on the agenda for the past two decades).

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APPENDIX 1: MAP OF WEST AFRICAN MARKET BASINS

Source: FEWS NET, L. Ibrahim and S. Sow. Food Security and Market Trend in West Africa, presented at the CILSS Market and Trade Opportunity meeting, Cotonou, April 2008.

Notes: Eastern zone: Niger, Nigeria, Benin with extension to Chad and Cameroon in Central Africa. Central Zone: Togo, Burkina Faso, Ghana, Mali and Cote d'Ivoire. Western zone: Senegal, Gambia, Mauritania, Guinea Bissau and Guinea.

APPENDIX 2: HIGHLIGHTS OF PRICE, STOCK, AND TRADE FLOW SITUATION BY PRODUCT

Rice and wheat prices are following world market patterns and are a particular concern for countries that depend on imports of these products to meet 50 percent or more of their staple cereal needs (e.g., Senegal and Mauritania).

Maize production was poor throughout the region (Nigeria, Benin, Ghana) during 2007/08. Prices are up 19 to 165 percent, depending on the market; particularly high in Nigeria. Demand is strong and being driven largely by Nigerian processors (beer, poultry feed). Unusually high prices in world markets (1/3 higher than last year) put additional pressure on prices. Nigeria's maize stocks are 50 percent lower than last year. Burkina is importing some maize from Ghana and Côte d'Ivoire. Senegal is also importing from Cote d'Ivoire, and some Malian maize is going to Senegal labeled as Ivoirian maize to avoid export restrictions. In the coming months, maize supply is expected from the south of Nigeria in June-July and from the south of Benin in April-May. Quantities of sorghum are also expected in April-May from the big valleys (*fadamas*) of Nigeria. But overall these supplies are not expected to significantly increase supply and lower prices.

Millet and sorghum supplies are about average overall. Most stakeholders of the markets believe that prices will not be as high as in 2005 due to level of private sector stocks. In the east (Niger, Nigeria) millet prices are up from 9-121 percent over last year, depending on the market and the effects of export bans.

Cowpeas: Prices lower than last year and stocks good. Trade flow normal from Niger towards the other countries in West Africa, between Burkina Faso and Mali and towards the other countries in West Africa

Livestock: Supply of small ruminants is on the rise in the markets of Niger and Mauritania, driven by difficulties of access to feed and fodder. Prices are maintained for large ruminants, but the demand is irregular, with the saturation of the markets of south Nigeria. Trade flows are normal from Niger towards the other countries in West Africa, between Burkina Faso and Mali and towards the other countries in West Africa.

Source: Compiled from FEWS NET documents

APPENDIX 3: HIGHLIGHTS OF PRICE, STOCK, AND TRADE FLOWS BY COUNTRY

Niger: Overall level of cereal stocks is low; January buying by Nigerian traders contributed to some decline in initial supplies. Normal inflows from Nigeria not occurring due to high prices; flows from Burkina and Mali stopped by export bans. Large stocks of cowpeas. Normal trade flows with Benin according to availabilities. Roots and tubers (sweet potato and cassava flour) are flowing normally and in large quantities from Nigeria and Benin. March consumer prices in CFA F/kg for Niamey were the following, with prices a year earlier shown in parentheses: maize 180 (110), millet 170 (140); sorghum 160 (120), and imported rice 360 (300).

Mauritania: Parts of southern Mauritania have experienced four years of below-normal production. Trade flows to these zones from Mali and Senegal have slowed due to export bans. The price of sorghum in the capital Nouachatt was actually lower in March 2008 than in March 2007, while imported and local rice prices are trending above levels for the 2004/05 season and the average prices for 2002/03-2006/07.

Senegal: Trade flows slowed from Mali following a formal and written ban of cereal exports by the Malian authorities and the border authorities. Retail prices of both imported and local rice were approximately 280 CFA F/kg in March, up from March 2007 prices of about 210 CFA F for local and 225 CFA F for imported. Government has been exerting substantial pressure on the commercial sector to keep retail prices in the 270-280 CFA F range.

Chad: Production is generally adequate but prices remain high in some markets due primarily to civil insecurity.

Nigeria: Stocks of maize are 50 percent lower than last year; millet stocks are average, cowpea and cassava flour stocks are high. February 2008 prices in CFA F/kg for the Damassak market along the Niger/Nigeria border were the following, with prices a year earlier shown in parentheses: maize 190 (157), millet 182 (140); sorghum 160 (118), and local rice 174 (126). Millet prices are above the 2002/03-2006/07 average and approximate the unusually high 2004/05 price.

Benin, Burkina Faso and Mali: Better off than Niger and Nigeria but have lower coarse grain stocks than last year. Coarse grain stocks kept by the big producers, wholesale and intermediary traders are not known; they appear to be large in Mali and adequate in Burkina but not moving because of trade bans. Farmers, of course, are likely to be holding the largest share of total cereal stocks; if and when a portion of these stocks will come on the market is difficult to predict. There are no clear price patterns across markets, some having lower prices than last year. March consumer prices (in CFA F/kg) in Bamako for cereals were the following, with prices a year ago shown in parentheses: maize: 115 (110); millet: 120 (125); sorghum: 115 (125); imported rice: 310 (265); and local rice: 290 (275). In Ouagadougou, comparable consumer prices in March 2008 were: maize: 115 (80); millet: 125 (115); sorghum: 115 (100) and imported rice: 290 (240).

Côte d'Ivoire: Poor maize production in the north; low farm incomes due to problems in the cotton and cashew sectors.

Sahel in general: There is no uniformity in evolution of prices across the region except for maize and rice, bo which are increasingly influenced by international markets.

Source: Compiled from FEWS NET and Afrique Verte reports.

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