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Niger Food Security and Safety Nets

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Abbreviations and Acronym

CCA	<i>Cellule de Crise Alimentaire</i>
CFA	<i>Franc de la Communauté Financière Africaine</i>
CFW	Cash-for-Work
CMC	National Consultation Committee/ <i>Commission Mixte de Concertation</i>
CILSS	<i>Comite Permanent Inter Etats de Lutte contre la Sécheresse dans le Sahel</i>
CRS	Catholic Relief Services
CV	Coefficient of Variation
DHS	Demographic and Health Survey
DNPGCA	<i>Dispositif National de Prévention et de Gestion des Crises Alimentaires</i>
DSBE	Survey on Satisfaction of Basic Needs
ECOWAS	Economic Community of West African States
ECVAM	<i>Enquête sur la Conjoncture et la Vulnérabilité Alimentaire des Ménages</i>
EPP2	Second Participatory Survey on Poverty
EWS	Early Warning System
FAO	Food and Agriculture Organization
FFW	Food for Work
GDP	Gross Domestic Product
GNI	Gross National Income
GoBF	Government of Burkina Faso
GoN	Government of Niger
HDI	Human Development Index
HKI	Helen Keller International
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
INS	National Statistical Office
MSF	<i>Médecins Sans Frontières</i>
NGOs	Non Governmental Organizations
OPVN	<i>Office des Produits Vivriers du Niger</i>
PAM	<i>Program Alimentaire Mondiale</i> (World Food Program –WFP)
PLHAs	Persons living with HIV and AIDS
PRSP2	Second Poverty Reduction Strategy
RDS	Rural Development Strategy
SAP	Structural Adjustment Program/ <i>Système d'Alerte Précoce</i>
SFSB	Soy-Fortified Bulgar Wheat
SIMA	<i>Système d'Informations sur le Marche Agricole</i>
SVFs	Seed Vouchers and Fairs

QUIBB	<i>Questionnaire sur les Indicateurs de Base et de Bien-être</i>
UEMOA	<i>Union Économique et Monétaire Ouest Africaine</i>
UNICEF	United Nations Children's Fund
UNDP	United Nations Development Program
USAID	United States Agency for International Development
FEWS NET	USAID- Famine Early Warning System Network
WAEMU	West African Economic and Monetary Union
WFD	World Food Program
WHO	World Health Organization

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Niger

Food Security and Safety Nets

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EXECUTIVE SUMMARY

Niger is a very poor country that faces serious problems of poverty and household food insecurity. With a per capita Gross National Income (GNI) of US\$240 and an estimated 62 percent of the population living below the poverty line, Niger is one of the lowest-ranked countries on the United Nations' Human Development index. The incidence of poverty has remained constant since the early 1990s (63% in 1993), mainly due to lack of resources, low agricultural productivity and high population growth. Currently approximately 85 percent of the population lives on less than US\$2 per day, with 65 percent living on less than US\$1 per day. Although the magnitude of poverty and food insecurity is most evident during years of drought, the problem is in fact a chronic one. Low levels of food availability, high population growth, limited economic access to food because of low incomes relative to market prices, and inadequate health care have resulted in poor nutritional status for much of the population, even in years of normal harvest.

Reducing vulnerability and ensuring food and nutrition security is an overarching priority for the Government. Maintaining food security at the national and household level is an important priority for developing countries in general, both for the welfare of the poor and for political stability. In order to ensure food security, governments have adopted various strategies, including efforts to increase staple food crop production (often with the explicit goal of food self-sufficiency), market interventions, and a variety of safety net programs, especially during emergencies. In Niger, where profound vulnerabilities combined with a high level of population growth (3.3 percent per year) have resulted in endemic food insecurity, the Government is faced with a serious challenge. Food aid has served as an important resource for the Government and is considered to be integral to the provision of safety net interventions, especially emergency response. In this framework, since 1998, Niger's government and major food aid donors have managed a *Dispositif National de Prévention et de Gestion des Crises Alimentaires* (DNP-GCA), a National Mechanism for the Prevention and Management of Food Crises in Niger mandated to (i) help the government to build cereal and financial reserves for food aid during crises; and (ii) implement support actions for populations during periods of food crisis. Moreover, in its Rural Development Strategy (RDS) as well as the second Poverty Reduction Strategy (PRSP2), the Government of Niger (GoN) has established the strategic vision, policies and institutional framework to address food security issues. Particularly the RDS, which is the national agriculture policy, has for objectives to: (i) secure the living conditions of the population through prevention of food crisis; (ii) improve the revenues of rural population through access to economic opportunities; (iii) strengthen capacities public institutions and agriculture professional organizations; and (iv) provide support to increase food production.

In this context, the purpose of this study is to contribute to the existing strategy and assist the Government in developing a holistic, multi-sectoral, and institutional approach to reducing the population's vulnerability to food insecurity. A comprehensive food security strategy needs to address ways to enhance food security through increases in agricultural productivity, as well as through policies related to education, health & nutrition and population growth that are crucial for diversifying and increasing household incomes (and thereby access to food). Since safety nets are also essential to respond to chronic food insecurity, the report discusses the food security strategy in the context of the social protection interventions, while complementing other existing and ongoing analytical works (i.e., on irrigation, agriculture,

population, health). From the perspective of social protection, this study is designed to synthesize considerable existing analysis, review food and nutrition security policies and programs in Niger, and provide an action plan for strengthening the existing system and developing an effective food security and safety net strategy, in the context of the Government's poverty reduction strategy. This report adds value to the ongoing policy discussions in two ways:

- First, it presents new empirical analysis of i) food insecurity and vulnerability of households during the period of food crises as well as during normal period, ii) the structure and integration of cereal markets within Niger and with markets in neighboring countries, and iii) causes of the 2005 food crisis, and lessons learned on implications of various levels of cross-border flows between Niger and Nigeria.
- Second, it provides concrete short- and medium-term recommendations for helping government to improve the performance of existing programs to increase food security, particularly related to preparedness for and responses to food crises, and to design efficient safety nets mechanisms for vulnerable population. The policy options provided in this report are aligned with the strategies proposed in the SDRP2 and RDS and complement the Government national contingency plan (le Plan National de Contingence sur la Sécurité Alimentaire) (November 2007). They are also aimed to help Government respond to the recent and future high food world prices, which may contribute to higher domestic prices and reduce availability of food aid to supplement Niger's domestic food supply.

What are main findings of the study? First, the data suggest that more than 50 percent of the population suffers from some form of food insecurity, with 22 percent of the population chronically extremely food insecure. Second, poor households are more exposed to shocks, the poorest regions are the most vulnerable to food insecurity, and coping mechanisms often increase the vulnerability of households to future food insecurity. Third, since two thirds of daily caloric consumption comes from cereals, cereal production, availability, and market performance are crucial determinants of food security. Fourth, evidence suggests that the targeting of food aid has been either non-existent or has focused on helping all those affected by drought rather than only poor households affected by drought. Fifth, although the need to support poor and food insecure households is substantial, safety net programs are small, receive limited government funding, and are designed for emergency food crises. Finally, faced with limited resources, a high prevalence of poverty and periodic severe droughts and other shocks, as mentioned in the RDS (program 9), an effective food security and social protection strategy is essential for Niger. This strategy needs to focus on: (i) improving the efficiency and scope of safety net programs; (ii) promoting effective medium-term strategies and investments to improve food availability, access and utilization; and (iii) improving emergency responses and the information system.

POVERTY AND FOOD INSECURITY

Niger is classified as one of the poorest countries in the world with substantial poverty variation at the regional level. According to 2005 household survey on basic indicators (QUIBB), about 62 percent of the population has an income that places them below the poverty line. Since the economy is mainly centered around subsistence crops and livestock, and given the high levels of population growth (3.3 percent p.a.) and modest growth in real GDP, the incidence of poverty has remained constant since 1993. As in many other countries in sub-Saharan Africa, poverty is more prevalent in rural areas (65.7 percent) than in urban areas (55.5 percent).

Regional variations of poverty follow this pattern as well: predominantly rural regions such as Maradi (79.7 percent), Tillaberi (68.9 percent) and Dosso (67.3 percent) have the highest incidences of poverty, while in the predominantly urban region of Niamey, the incidence of poverty is only 27.1 percent.

Since grains account for a high share of total household expenditures and almost all households are net purchasers of grains, fluctuations in grain production and prices have a major impact on household food security. Between 61-64 percent of total household expenditures are for basic foodstuffs, and grains represent about 50 percent of total household spending. Grains (millet and sorghum) are also the dominant sources of caloric consumption, accounting for over 75 percent of food consumption. Moreover, although the majority of households are engaged in agricultural activities, almost all are net purchasers of food and are thus negatively affected by increases in food prices.

More than 50 percent of Niger's population is estimated to be chronically food insecure, with 22 percent of the total population suffering from extreme chronic food insecurity (per capita caloric consumption of less than 1800 kcal/person/day). A variety of indicators demonstrate Niger's food insecurity, including low per capita food consumption, the limited dietary diversity of the population, the high prevalence of stunting in children under 5, and high levels of micronutrient deficiencies (primarily iodine, iron and Vitamin A). The causes of food security are complex, however, and result from the interaction between low food availability, poverty and limited economic access, the poor health and nutritional status of the population, and the country's high vulnerability to shocks. Although poverty rates lower in urban areas, available household data for 2006 suggest that the percentage of the population with inadequate caloric consumption (less than 2100 calories per day) is actually higher in urban areas (58 percent) in all regions, compared to the rural areas (51 percent), with the exception of Dosso. The 2007 survey also confirms these findings, showing that the 50 per cent of the population which are chronically food insecure are composed of 30 per cent suffering from extreme chronic food insecurity and 20 per cent at risk.

There were substantial variations in food insecurity across regions between 2005 and 2006. The high level of extreme chronic food insecurity has affected regions differently in Niger. In 2005, Maradi, Dosso and Niamey experienced the highest levels of extreme chronic and total food insecurity, with over 48 percent of the population in a state of extreme chronic food insecurity. In 2006, although extreme chronic food insecurity had been reduced, Agadez (with about 44 percent of the population vulnerable to chronic food insecurity) had taken Maradi's place as the region with the highest level of food insecurity in the country because the level of food insecurity fell in Maradi.

In addition to chronic food insecurity, much of Niger's population suffers from seasonal and transitory food insecurity. Nutritional data show that much of the rural population suffers from seasonal food insecurity, evidenced by the annual hungry season (*soudure*) between June and September. Both rural and urban populations also are vulnerable to transitory food insecurity, defined as temporarily reduced food consumption after a shock.

Households have fairly limited coping strategies to deal with shocks to their incomes and food access, and some coping mechanisms make affected households more vulnerable to future food insecurity. Qualitative surveys report that the most common strategies used by

Nigerien households to respond to natural shocks include migration, asset and livestock sales, and borrowing money. In a 2005 household survey, food aid was rated as the most common strategy used by households to mitigate the effects of shocks, including droughts and economic and health shocks. In the case of droughts, almost 1 in 4 households used food aid as the main coping strategy. Severe shocks leave households more vulnerable to future food insecurity: 60 percent of households were still in debt after 2005 food crises (Marinho and Gerard, 2008). In some cases, coping strategies exacerbated vulnerability.

The probability of receiving food aid is not correlated with poverty in rural areas. Among those affected by the drought in rural areas, only 72 percent of the poor received food aid as compared to almost 80 percent of the non poor. In urban areas, however, poor households affected by drought were more likely to receive food aid than non-poor households. These results suggest that the targeting of food aid has been either non existent or it has focused on helping all those affected by drought rather than only poor households affected by drought.

FOOD PRODUCTION AND MARKETS

In light of the importance of staple cereals (millet and sorghum) for producers' and consumers' welfare (over two thirds of daily caloric consumption comes from cereals), the structure, conduct and performance of food production and marketing has important implications for food security in the country.

Despite unfavorable agro-climatic conditions, agriculture and livestock-raising play a key role in the economy of Niger. Therefore, the prevalence and severity of the food security problem in Niger are directly related to the structure, conduct and performance of food production and marketing. Overall, agriculture employs more than 80 percent of the total population and contributes to approximately 40 percent of Gross Domestic Product (GDP). Agriculture accounts for about 52 percent of rural output, with livestock contributing another 30 percent.

Niger relies mainly on its own domestic production of grains (dominated by millet and sorghum) for its cereal supply. Agriculture is primarily characterized by subsistence farming and production of food crop is primarily based on rainfed agriculture. Over 80 percent of Niger's total cereal availability comes from domestic production, primarily millet and sorghum. Millet is by far the dominant staple food crop (accounting for 76 percent of cereal production), followed by sorghum (accounting for 22 percent of cereal production). These crops are major determinants of both national food availability and rural household incomes.

Given irregular rainfall, cereal production varies substantially and rural households are exposed to production shocks. Over the past two decades, the lowest cereal production years (1993, 1997, 2000 and 2004) coincided with natural shocks (drought). Although national cereal production increased by 48 percent between 1985 and 2004 (from 1.8 million tons in 1985 to 2.7 million tons), the increase was primarily due to the expansion of cultivated areas (from 4.3 million hectares to over 7 million hectares). Because rainfall is highly variable both across space and from year to year, there are substantial spatial and inter-annual variations in cereal production: the average coefficients of variation for national millet and sorghum production are .20 and .35, respectively. There is significant *spatial variation* in millet production as well: the regions of Maradi and Zinder (which account for approximately 40 percent of national millet

production) have the lowest coefficients of variation, while the regions of Tillaberi and Tahoua have the highest, suggesting that rural households in the latter regions are exposed to relatively higher production risk than households in other areas of the country. In addition, the magnitude of production shocks varies quite substantially across regions.

Given the strong intra-annual variation in staple food crop production, total food availability in Niger depends strongly on commercial imports (specifically supply and demand conditions in Nigeria), while food aid does not play an important role. Data on cereal imports and exports in Niger are highly unreliable, due in part to the large volume of informal trade that occurs between Niger and its neighbors (Benin, Burkina Faso, Chad, Mali and Nigeria), and unofficial net imports of sorghum and millet from Nigeria are likely much larger in most years than recorded official imports. Estimates of these imports vary widely by year, but analysis of annual supply, demand and prices suggests that millet imports may have been as high as 200 thousand tons in 2004, equivalent to about 10 percent of total net millet supply. Moreover, since production of millet, sorghum and maize are much larger in Nigeria than in Niger, the supply and demand conditions in Nigeria, especially in the northern regions, have a major influence on prices and availability in Niger. In comparison with unofficial imports, food aid inflows are small, accounting for less than 20 percent of total cereal imports and only about 1 percent of total net cereal availability.

The role of the Government of Niger in cereal production and marketing has been significantly reduced since the 1990s and food prices are now determined by market forces. These reforms have had important implications for the functioning of Niger's agro-food sector, particularly in terms of pricing, marketing, and agricultural development and investment. With the cereal market becoming liberalized, the role of the *Office des Produits Vivriers au Niger* (OPVN), established in 1984 to manage the purchase and sales of staple cereals (millet and sorghum), is now reduced to monitoring the food security situation within the country and to managing the country's strategic grain reserves. As a result, during 2000 and 2004, OPVN was responsible for distributing subsidized food to the population, including to vulnerable groups, and domestic cereal prices are influenced by a host of factors, such as domestic supply and demand, commercial imports, import taxes and tariffs, regional trade patterns and market structure. However, depending on domestic cereal production in a particular year, the GoN may regulate trade flows by limiting either exports or imports of specific commodities.

Although grain markets in Niger are well integrated in general, this varies both temporally and spatially. Staple food crop markets in Niger are somewhat integrated, with an average correlation coefficient of .55 for all markets between 1996 and 2006. Nevertheless, the degree of domestic market integration varies both over time and across space, with higher levels of integration during low-production years. The degree of integration between markets in Niger and those in border countries (Benin, Burkina Faso, Chad and Nigeria) follow the same pattern as the domestic markets. Market price integration between Chad and Niger is minor, however, as is the degree of integration between Burkina Faso and Niger. The highest degree of integration occurs between Niger, Benin and Nigeria, with correlation coefficient of grain prices averaging 0.65. There is also evidence of strong market integration between three-quarters of the major markets in southern Niger and markets just across the border in Malanville (Benin) and Jibia, Illela and Mai-Adua (Nigeria).

THE 2005 FOOD CRISIS

The food crisis in Niger in 2005 provided important lessons to national policy-makers and the international community. Estimates of national food production in late 2004 suggested only a modest decline relative to medium-term trends gave little cause for concern. In one sense, the major cause of the crisis was the extremely low level of household income, which leaves many households on the brink of serious malnutrition even in years of normal harvests and prices. The additional shocks in 2005 that tipped the balance from risk to reality of a food crisis were:

- losses in food production and incomes for those farmers whose late 2004 harvests were affected by drought and locusts; and
- a sharp rise in food prices (related to even more dramatic price increases in some of Nigeria's markets beginning in mid-2004) that reduced household access to food for all net purchasers. Market analysis suggests that Nigeria's production shortfall and high prices likely led to a decline in net imports of millet that significantly worsened the effects of Niger's production shortfall.

The Government response to the 2005 food crisis included various mechanisms to support households affected by income losses and production shocks. The government response, with support from non-governmental agencies and international organizations, consisted mainly of a range of emergency schemes: (i) food aid for direct emergency distribution and "Food For Work" (FFW) programs; (ii) sale of approximately 40 thousand tons of cereals at subsidized prices; and (iii) provision of "Cash-for-Work" (CFW) programs to raise the purchasing power of affected households. These programs relied upon both imported and local food aid, with some local purchases occurring within Niger (Niamey and Maradi) and in northern Nigeria. In spite of these efforts, the gross mortality rate reached 1.5 deaths per 10,000 per day in some of the worst-affected regions, with child mortality rates of 4.1 deaths per 10,000 per day, levels well above international thresholds for humanitarian crises.

Since criteria for targeting vulnerable regions for the implementation of emergency programs were unclear, a list identifying the most severely affected regions during the 2005 food crisis is still not available. Due to the lack of explicit and transparent criteria (or thresholds) for determining a food crisis and identifying vulnerable regions, the areas most affected by the crisis may not have been reached in 2005. A list of vulnerable villages was first produced in May 2005, however the list was not aligned with qualitative and quantitative evidence observed by international and non-governmental organizations.

To improve the functioning of its emergency response interventions, the GoN has developed a national contingency plan for food security and nutrition with the participation of a variety of governmental and non-governmental actors. Developed in 2007, the document outlines the strategies priorities (including early warning indicators, i.e., cereal deficit, food prices and severe malnutrition) for the Government and development partners in preventing and managing food crises in the country. The overall objective of the plan is to minimize the impact of food crises by ensuring households' access to staple foods and protecting their assets, mainly via the national security stock and emergency cash resources (i.e., general food distribution, Food for Work (FFW), Cash for Work (CFW), subsidized sales, seeds distributions). However, there is still lack of agreement regarding the relative effectiveness of safety net interventions in

Niger. The list of response interventions outlined by the national contingency plan includes most of the same instruments that have been used in the past few years, with an increased emphasis on CFW rather than FFW and cereal banks. However there is no good evidence regarding which interventions have been most effective. The data on cereal banks from the 1990s shows that these have not been sustainable. CFW programs, which are usually preferred to FFW, are fairly new interventions that have not been fully evaluated in Niger.

POLICY OPTIONS TO RESPOND TO FOOD INSECURITY

International experience has shown that social safety net programs play a very important role in reducing and attenuating chronic poverty and in helping the poorest people after natural catastrophes. In this study, social safety nets (safety nets for short) are non-contributory transfer programs targeted to the poor and to individuals vulnerable to poverty and to shocks. These programs have the simultaneous goals of (i) providing assistance to households in poverty, thus contributing to a reduction in the impact of poverty and to helping them get out of poverty, and also to help households face the impact of shocks; and (ii) reducing the effects of globalization, macroeconomic shocks, and structural changes, and thus contributing to more sustainable growth¹. These are programs such as:

- Cash transfers or food coupons, by category or subject to resource conditions, such as family allowances or social pensions.
- In-kind transfers, school meal programs or supplements designed for mothers and children are the most widespread, but they also include distribution of meals ready to eat, school supplies, uniforms, etc.
- General price subsidies, often for food or energy, targeted to households.
- Employment through labor-intensive public works programs, sometimes called "workfare" (conditional transfers).
- Cash or in-kind transfers to poor households, subject to meeting specific educational or health conditions.
- Exemption from duties for basic services, health services, education, public services, or transportation.

Given its limited resources, high poverty incidence and periodic climatic shocks, an effective food security and social protection strategy is essential for Niger. Such a strategy should include three key components: (i) improving the efficiency and scope of safety net programs; (ii) promoting effective medium-term strategies and investments to improve food availability, access and utilization; and (iii) strengthening emergency response and the information system. Avoiding future food crises will also require greater recognition of the major importance of regional markets (particularly with Nigeria) in influencing market prices, food imports (and exports), and ultimately household food consumption in Niger. Finally, any social protection strategy, including the safety nets, will need to be consistent with the country's overall strategy for growth and poverty reduction, which represent the ultimate solutions for food insecurity and the poor

¹ See Grosh et al. (2008) for a complete description of social safety nets.

health and nutritional outcomes associated with both poverty and household food insecurity. An action plan has been developed with close collaboration of the GoN and development partners proposing policy measures that need to be implemented in short and medium terms (see the policy matrix).

Safety nets to protect poor and vulnerable people: Currently, social safety net programs receive only a small portion of the government's total budget, representing between 1 and 5 percent of total expenditures between 2001 and 2006. During this period, almost 70 percent of the safety net expenditures focused on food crises, with the Food Crisis Cell (CCA) largely responsible for coordination of these programs and Niger's Food Production Office (OPVN) and a variety of NGOs serving as the main implementing agencies.

Safety nets are needed even in years of normal harvests, however, to prevent vulnerable and poor people from falling deeper into poverty and debt. The main challenge is to design an effective safety net system and provide adequate funding to ensure its sustainability. The development of an effective safety net program could include the following steps:

- *Development of a comprehensive safety nets system.* The mechanisms for prevention and response to food crises as currently implemented by the National Mechanism for the Prevention and Management of Food Crises in Niger (DNP-GCA) constitute only a part and one stage in the implementation of a safety net system. Consequently, to develop a general safety net system for households suffering from chronic and seasonal and transitory food insecurity, it is necessary to (i) formulate a safety net program aligned with the PRSP2 and RDS; and (ii) ensure coordination between the State and the technical and financial partners (TFPs). This in turn will require the inclusion of safety net programs in the government budget and a long-term financial commitment from the TFPs.
- *Improvement of the effectiveness of current safety nets systems.* This would require (i) an assessment of the effectiveness of existing programs (HIMO [labor-intensive public works programs] such as "Food for Work" (FFW) and "Cash for Work" (CFW); free distribution of foodstuffs; subsidized food sales; cereal banks; school feeding programs; etc); (ii) a review of the existing targeting system to determine the challenges of addressing the needs of chronically poor people; and (iii) an improvement in the program monitoring system. Within this framework, to ensure that the safety net system is effective (in crisis and normal periods) it must be possible (i) to guarantee that the "Food for Work" (FFW) and "Cash for Work" (CFW) programs are well organized and give productive results; (ii) to limit the amount of free distribution of food as well as subsidized sales, and pay specific attention to synchronization and localization of sales; (iii) to ensure that the purchase of local foodstuffs is well planned; and (iv) that targeting of programs follows transparent and efficient procedures for the selection of the regions and households to benefit from the program.
- *Introduction of new safety nets programs.* Once the vulnerable groups are identified and evaluation of the existing programs is completed, it will be necessary to identify pilot programs that could be tested based on transparent eligibility criteria, coverage and cost. Among these new programs to pilot are cash payments and conditional cash transfers (i.e., linked to school attendance and health service utilization for children).

Medium term policies and investments to improve food availability, access and utilization: Medium and long term policies are also needed to reduce vulnerability to production shocks, raise incomes of the poor, and enhance market efficiency. These targeted actions are already integrated in the Government programs such as under axis no.1 of RDS as well as in the Accelerated Development Strategy and the Poverty Reduction Strategy (PRSP2). In this context, policies could focus on the following:

- *Increase availability of staple food products.* This could be achieved through improving agricultural productivity and efficiency of agriculture markets, as well as reducing production risks for farmers. *Promoting efficient domestic agriculture production could be achieved through* investments in agricultural research and extension, investments in road construction and maintenance, increasing market infrastructure (e.g. storage facilities), and improving access to water for agriculture through investments in irrigation and water retention.
- *Ensure that commercial policies promote the development of cereals markets.* In this context it is necessary to (i) *reduce price risk for farm products to increase incentives for production;* and (ii) *reduce variability of rural incomes* through promotion of farmers' groups. In addition it is crucial to improve market information systems on prices and volumes of production and market supplies. To ensure that commercial policies do not impede the development of cereals markets, it will be necessary to promote market efficiency and transparent policies on food aid flows, imports and releases of food stocks.
- *Expand access to food for the poor (in rural and urban areas).* In this context it is important to support various household income-generating activities (such as micro-credit through local NGOs, investment in education and skills development to raise labor productivity).
- *Improve utilization of food.* This will require focus on the overall health and sanitation environment, particularly among the poorest households.

Strengthen emergency response and information system. Despite recent progress, further steps are needed to improve the functioning of the early warning systems and emergency response as well the existing information system. This could include:

- *Revise and implement the Government National Contingency Plan for Food Security and set up a comprehensive monitoring system for food procurement, distribution and stocks.*
- *Improve the information system and the emergency program by* (i) monitoring international price movements, particularly in Nigeria. Particularly it is critical to recognize that, depending on the price incentives for trade between major markets in Niger and northern Nigeria, net imports of millet could vary by about 200 thousand tons (about 10 percent of millet availability in a normal year); and (ii) improve information dissemination of the early warning system to decision makers and other actors; and (iii) strengthen the analytical capacities of the key government institutions (CCA, SAP, SIMA, CIC).

- *Use current and new safety nets programs for emergency response.* Particularly it is necessary to strengthen efficient safety nets programs and to define specific targeting mechanisms for emergencies.

NIGER: POLICY ACTION PLAN FOR AN EFFECTIVE FOOD SECURITY AND SOCIAL PROTECTION STRATEGY

Social Safety net system for the protection of poor and vulnerable groups

Policy Recommendations	Actions and Time Frame		Actors	Monitoring indicators
	2008/2009	2009/2011		
<p><i>Establish a general safety net system for households suffering from food insecurity (chronic as well as seasonal and transitory). (Cf. PRSP, RDS)</i></p>	<ul style="list-style-type: none"> Develop a comprehensive safety nets program aligned with the PRSP2 and RDS Ensure coordination between the state and the technical and financial partners (TFPs) 	<ul style="list-style-type: none"> Identify sources of sustainable financing (before May 2009) 	<ul style="list-style-type: none"> Steering committee (CCA, INS, SAP, SIMA, Etc.) Expanded National mechanism (Presidency, Prime Ministry [Primature], RDS, Education, Health, INS, MEF, TFPs, Civil Society) 	<ul style="list-style-type: none"> Program Document Committee Creation Decrees
<p><i>Strengthen the effectiveness of current safety nets</i></p> <ul style="list-style-type: none"> HIMO (Food for Work (FFW) and CFW) Free distribution of food Subsidized food sales on a limited scale Cereal bank School feeding Etc. 	<ul style="list-style-type: none"> Assess the effectiveness of current programs (during normal and crisis situations) - Quick survey and targeted household surveys Develop a targeting system for populations with chronic food insecurity Improve stocks monitoring and information systems 	<ul style="list-style-type: none"> Establish programs to retain Adjust implementation mechanisms for the retained programs (targeting, distribution, etc.) Revise the execution structure for the programs (Creation of a rural works agency) Implement a program monitoring system (resources and beneficiaries) 	<ul style="list-style-type: none"> Steering committee to prepare the TOR for program assessment (CCA, INS, SAP, SIMA, Etc.) Monitoring (CCA, OPVN, Technical Ministries) Technical ministries for execution (Rural Works Agency) 	<ul style="list-style-type: none"> Assessment Reports Criteria for Targeting Monitoring indicators
<p><i>Identify new safety net programs</i></p> <ul style="list-style-type: none"> Cash transfers (conditional and non-conditional) 	<p>Develop pilot programs (refine criteria for targeting, period, coverage, cost, etc.)</p>	<ul style="list-style-type: none"> Test pilot programs and monitor and assess them 	<ul style="list-style-type: none"> Technical ministries 	<ul style="list-style-type: none"> Implementation of pilot programs.

Medium-term programs and investments to improve availability, access to, and utilization of food 1/

Policy Recommendations	Actions and Time Frame		Actors	Monitoring indicators
	2008/2009	2009/2011		
<p>Increase availability of staple food products</p> <ul style="list-style-type: none"> • Increase production and agricultural productivity • Improve efficiency of domestic agricultural markets • Reduce production risks for farmers 	<ul style="list-style-type: none"> • Support agricultural production (especially farming) and improve productivity (Seeds, fertilizers) • Study the possibility for expanding warrantage operations • Study the possibility of agricultural insurance • Improve information systems on pricing and production volumes, and market supplies • Develop and adopt a strategy for cereal banks. 	<ul style="list-style-type: none"> • Invest in agricultural research and its expansion • Implement an advisory support mechanism integrated into rural development • Invest in irrigation and water retention (for example, verify dams, if necessary) • Promote access to agricultural credits • Provide support for agricultural equipment • Provide support for processing • Provide regular access for producers to quality inputs at a competitive cost • Improve market infrastructure through investment in storage facilities in major markets and through road construction and maintenance. • Promote the development of farmer associations and the private sector in agricultural industries for storage and marketing 	<ul style="list-style-type: none"> • RDS, TFPPs • Technical ministries 	<ul style="list-style-type: none"> • Implementation of agricultural and commercial policies that have been passed • Study on warrantage and insurance • Policy considered by the RDS

<p><i>Ensure that commercial policies promote the development of the cereals market</i></p>	<ul style="list-style-type: none"> • Ensure that the cereal market regulatory mechanism is applied • Evaluate local purchasing programs and purchase locally where production and market conditions allow 	<ul style="list-style-type: none"> • Promote transparent consultations and information exchanges between the state and private sector merchants 	<ul style="list-style-type: none"> • Ministry of Commerce (application of ECOWAS and WAEMU texts) • RDS 	<ul style="list-style-type: none"> • Implementation of commercial policies • Consultation with private actors
<p><i>Expand access to food for the poor in rural and urban areas (Cf. PRSP2, RDS)</i></p>		<ul style="list-style-type: none"> • Increase household income • Expand micro credit programs • Invest in human capital • Promote access to agricultural credits for households. 	<ul style="list-style-type: none"> • PRSP2, TFPs 	<ul style="list-style-type: none"> • Volume of loans granted to poor people
<p><i>Improve the utilization of food by emphasizing health and sanitation (Cf. PRSP2)</i></p>	<ul style="list-style-type: none"> • Improve food distribution programs and expand them to pregnant and nursing women, and infants, especially in poor households 	<ul style="list-style-type: none"> • Continue to invest and promote general health and sanitation programs 	<ul style="list-style-type: none"> • Ministry of Health, Ministry of Water, TFPs 	<ul style="list-style-type: none"> • Implementation of a national nutrition and health protocol; • Improvement of health and sanitation services

1/ Medium term actions proposed do not constitute a new program but represent a series of targeted actions integrated into government development efforts in progress. They complement those that the Government and its partners have already agreed to, under axis no. 1 of the RDS as well as in the Accelerated Development Strategy and the Poverty Reduction Strategy (PRSP2). They must also be articulated with the activities planned by the *Comité National sur la Hausse des prix* (National Committee on Price Increases), for which an interagency support mission led by the FAO was conducted in October 2008.

Strengthen emergency response and improve information

Policy Recommendations	Actions and Time Frame		Actors	Monitoring indicators
	2008/2009	2009/2011		
<i>Revise and update the Government's National Contingency Plan</i>	<ul style="list-style-type: none"> Improve information and monitoring of emergency programs Improve monitoring and information on food supply 	<ul style="list-style-type: none"> Improve the crisis activation indicators defined in the national emergency plan 	<ul style="list-style-type: none"> SAP and PPTF CCA OPVN 	<ul style="list-style-type: none"> Revised Plan
<i>Improve the information and early warning system</i>	<ul style="list-style-type: none"> Take into consideration monitoring indicators for trans-border markets (cereal prices, Naira exchange rate, information parity index, volume, flow, etc.) Improve dissemination of early warning information to decision makers and other actors Distribute consensus information and lobby through the CIC 	<ul style="list-style-type: none"> Strengthen analysis capacity of key government institutions (CCA, SAP, SIMA, CIC) 	<ul style="list-style-type: none"> SAP, SIMA, SIMa, SIMAb CCA TFPs Technical ministries CIC 	<ul style="list-style-type: none"> Periodic bulletin Survey reports
<i>Use current and new complementary safety net programs for emergency response</i>	<ul style="list-style-type: none"> Define effective Safety Nets to be strengthened (expanded in terms of space and coverage for emergencies) and finance them. Define specific targeting mechanisms for emergencies 	<ul style="list-style-type: none"> Operationalize intervention mechanisms 	<ul style="list-style-type: none"> DNPGCA Technical ministries Rural Works Agency 	<ul style="list-style-type: none"> Report identifying intervention mechanisms Funds allocated for permanent and transitory programs

CHAPTER 1: INTRODUCTION

BACKGROUND AND MOTIVATION

1. ***Niger is a very poor country with a limited natural and human resource base and high population growth.*** Gross National Income (GNI) per capita was around US\$240 in 2005. And according to the United Nations Development Program (UNDP) Human Development Index 2005, the country was ranked 174th out of 177 countries. Poverty remains widespread and social indicators compare poorly to Sub-Saharan African averages as presented in table 1 below. The share of the population living in poverty, estimated at 62 percent in 2005, has been constant since the early 1990s (63% in 1993), mainly due to lack of resources, low agricultural productivity and high population growth. In addition, Niger is frequently hit by adverse shocks such as droughts, insect pests that damage crops, and surges in prices of imported food.

Table 1: Socio Economic indicators, 2005

	Sub-Saharan African Countries	Niger
GNI per capita, Atlas method (current US\$)	746	240
Population growth (annual %)	2.3	3.3
Life expectancy at birth, total (years)	47	45
Fertility rate (births per woman)	5.3	7.7
Infant mortality rate (per 1,000 live births)	96	150
Access to improved water source (% of total pop.)	56	46
Access to improved sanitation (% of total pop.)	53	43
Gross primary enrollment, total (% of age group)	92	47
Adult literacy, total (% of ages 15 and older)	61	29

Source: The little data Book 2007, The World Bank

2. ***Niger's vulnerability to several exogenous factors, as well as its low level of socio-economic development, result in chronic food insecurity.*** Past experience shows that Niger's economy has been affected by high variability of rainfall, terms of trade shocks, and volatility of aid flows. Evidence shows that these shocks result in lower growth performance, severely affect human development, and cause chronic food security in Niger. Food insecurity is aggravated by high incidences of rural poverty, which translate at the household level into low purchasing power, lack of access to food by vulnerable groups, rampant malnutrition, and poor access to health facilities. Droughts often result in increases in the prices of millet, sorghum and other staple foods of the population, and dramatic decreases in prices of livestock ("savings account" of agro-pastoralists and pastoralists).² Since there is no safety net scheme in place, the rural population often migrates out of the most vulnerable zones during these difficult times.

3. ***Reducing vulnerability and ensuring food and nutrition security is an overarching priority for the Government.*** Food aid has served as an important resource for the Government and is considered to be integral to the provision of safety net interventions, especially emergency response. In this framework, since 1998, Niger's government and major food aid donors have managed a *Dispositif National de Prévention et de Gestion des Crises Alimentaires* (DNP-GCA), a National Mechanism for the Prevention and Management of Food Crises in Niger mandated to (i) help the government to build cereal and financial reserves for food aid during crises; and (ii) implement support actions for populations during periods of food crisis. Moreover, the

² The more recent drought in 2005 led to food shortages for millions of Nigeriens.

government's Rural Development Strategy (RDS) ³action plan has set the strategic vision, policies, and institutional framework to address food security issues. More specifically, this strategy suggests that the Government (i) pursue the ongoing efforts to increase the performance of the existing national system for crisis prevention and mitigation; and (ii) adopt a multisectoral approach to focus on both increasing agricultural production and reducing the country's vulnerability to food crises. In this context, the existing national system for crisis prevention and mitigation, created in 1989, has been improved over time to better target vulnerable zones and households. Moreover, in light of lessons learned from the 2005 crisis, the Government is pursuing efforts to increase the performance of the system by: (i) focusing the alert approach on accessibility (monitoring of purchasing power and anticipation of market behavior and household strategies); (ii) integrating the nutrition and health dimensions of food insecurity into the vulnerability analysis; (iii) improving the targeting of beneficiaries and the estimation of their needs; (iv) strengthening the role of the communes in food crisis management; and (v) developing a communication strategy with the media. Moreover, with donors' collaboration, an evaluation study on the national system for food crisis management and prevention, along with an action plan have been prepared and validated by the Government. This action plan aims to establish a better emergency response mechanism to food crisis in Niger, but it is not expected to address the structural issues to prevent food crisis.

STRUCTURE OF THE REPORT

4. Aligned with Government thinking, and taking stock of the existing information as well as new analysis on vulnerability, the purpose of this report is to provide an analysis of the food security situation in the country, draw lessons from the experience of the 2005 food crisis, and discuss policy options for improving food security. More specifically, this report:

- Presents a detailed analysis of households food security in Niger, including main sources of risks, household vulnerability to food insecurity and coping mechanisms;
- Provides an overview of agriculture production, food availability and access to grain markets, highlighting the role of private unofficial trade with neighboring countries;
- Reviews the experience of the food and nutrition crisis in 2005 and an overview of the existing national food security system and safety nets for crisis prevention and mitigation;
- Suggests policy options, aligned with the Government Development Strategy and the Poverty Reduction Strategy (PRSP2) and the Rural Development Strategy (RDS), for: (i) introducing a safety net to protect the poor and vulnerable groups; (ii) improving the efficiency of medium term policies and investments to improve food availability and accessibility; and (iii) strengthening the existing emergency response.

³ RDS - Program 9 is focused on "Réduction de la vulnérabilité des ménages"

5. ***Given the multi sectoral aspects of the food security, the report addresses both enhancement of food security and prevention of reductions in food security.*** A comprehensive food security strategy needs to address ways to enhance food security through increases in agricultural productivity, as well as through policies related to education, health & nutrition and population growth that are crucial for diversifying and increasing household incomes (and thereby their access to food). Since safety nets are essential to respond to chronic food insecurity, the report is discussing the food security strategy in the context of the social protection interventions, while complementing other existing and ongoing analytical works (i.e., on irrigation, agriculture, population, health).

6. ***This report relies on several primary and secondary sources of information, including studies on risks, shocks and vulnerability to food insecurity in Niger, conducted between 2004 and 2008.*** Primary sources include surveys of governmental and non-governmental interventions during and after the food crisis, prepared by the National Statistical Office (INS), as well as a cereal market survey conducted by four non-governmental organizations in Niger (CRS, CARE, HKI and World Vision International). The INS has completed several consumption and expenditures surveys: (i) in May 2005 an extended national survey (*Questionnaire sur les Indicateurs de Base et de Bien-etre*, or QUIBB) and (ii) in November 2006 a survey on food security of the Households (*Enquête sur la Conjoncture et la Vulnérabilité Alimentaire des Ménages*, or ECVAM). These two surveys have been collected at different point in time: one during the crises of 2004-5 and the other after a good harvest in November 2006. They provided the basis for the analysis of poverty, conducted by the INS in collaboration with the World Bank, and the household food insecurity.⁴ Secondary sources of information include the series of poverty and vulnerability reports prepared by various international partners (including WFP, the World Bank, etc.) and various consultants between 2006 and 2008. These studies provide detailed information on the food security situation in Niger, poverty and consumption, cereal production and marketing, health and nutrition and the types of shocks that affect the country.

7. The rest of this study is organized as follows: Chapter 2 presents a profile of the poverty and food security situation in Niger, including the sources of risk and vulnerability to food crises. Chapter 3 provides an overview of the agricultural production and marketing system in the country, including information on trade flows and food aid. Chapter 4 summarizes the 2005 food crisis, its causes and the responses of the Government of Niger, non-governmental and international organizations prior to, during and after the food crisis. Chapter 5 outlines policy recommendations to provide protection to households who are food insecure and respond to future food crises.

⁴ Note that the comparison between the two surveys is further complicated by the difference in the structure of the consumption modules between the two surveys. However they do represent an illustration of the consumption pattern between the period of crises in 2005 and after a good harvest in fall 2006.

CHAPTER 2: POVERTY AND FOOD INSECURITY

According to the available information, more than 50 percent of Niger's population suffers from some form of food insecurity, including chronic, seasonal and transitory food insecurity (defined as reduced access to food after a shock). This is due to the complex interaction between low food availability, limited economic access, the poor health and nutritional status of the population, and the country's high susceptibility to shocks. According to available household surveys, over two thirds of people's daily caloric consumption comes from cereals, with regional variations in consumption levels mirroring the spatial distribution of poverty. Nutritional outcomes are consistent with the prevalence of seasonal and transitory food security. Coping strategies to the various risks and shocks affecting urban and rural households include the use of food aid, reduction in number of meals per day, migration, and asset and livestock sales. Overall, poor households are more exposed to shocks, the poorest regions are the most vulnerable to food insecurity and coping mechanisms make households more vulnerable to future food insecurity.

8. *More than 50 percent of Niger's population is estimated to suffer from some form of food insecurity.* Regardless of the indicators used, survey-based evidence consistently shows that much of Niger's population suffers from widespread **chronic, seasonal and transitory food insecurity**. This is due to the complex interaction between low food availability, poverty and limited economic access, the poor health and nutritional status of the population, and the country's high vulnerability to shocks due to its economic dependency on subsistence crops and livestock. Per capita food consumption levels are low for about half of the households in Niger; there is limited dietary diversity for much of the population; prevalence of stunting in children under 5 is high; and micronutrient deficiencies are widespread (see Box 1).

Box 1: How to Measure Food Security?

International Organizations (UN, FAO, WFP and the World Bank - 1986) define food security as "access by all people at all times to sufficient food for an active, healthy life". Food insecurity is therefore defined as the absence of one or all of the conditions required, and can be classified into one of three categories: chronic food insecurity, defined as insufficient access to sufficient food on a continuous basis; seasonal food insecurity, or insufficient access to food on a cyclical basis; and transitory food insecurity, whereby households do not have access to sufficient food following a shock, such as a man-made or natural disaster.

Although most definitions of food security used by governmental, non-governmental and international organizations are closely related to the World Bank's definition, measurability remains problematic. Maxwell and Frankenberger (1992) highlighted the diversity of the points of view regarding food security, and concluded that there is not a "gold standard" for measuring food security (Maxwell 1999). The most common approaches used include analysis of poverty, consumption patterns, such as daily caloric intake, and nutritional status of children under 5 (stunting, wasting, under-nutrition) and micronutrient deficiencies. Another approach, presented later in this chapter, uses a risk and vulnerability analysis to relate the main sources of risk and vulnerability to household level food security indicators, distinguishing between chronic food insecurity and vulnerability to food insecurity.

CHRONIC AND SEASONAL FOOD INSECURITY

Links between food Insecurity and Poverty⁵

9. *All methods used for measuring poverty – including the monetary approach, the living conditions approach and the subjective approach – show that the incidence of poverty remains high in Niger.*⁶ With an average GDP per capita of US\$ 240 (2005), Niger is classified as the fourth poorest country in the world, and is the lowest-ranked on the UN's Human Development Index (HDI).⁷ According to the *Survey on Satisfaction of Basic Needs* (DSBE) in 2004,

Table 2: Poverty Status in Niger by Geographic Area

Region	Incidence	Depth	Severity
Agadez	45.9	16.1	8.8
Dosso	67.3	28.8	15.3
Maradi	79.7	35.1	19.0
Tahoua	45.9	14.5	6.2
Tillaberi	68.9	26.8	13.9
Zinder-Diffa	63.1	23.0	23.0
Niamey	27.1	7.2	7.2
National	62.1	24.1	12.3

Source: INS *QUIBB* 2005

70 percent of households in Niger do not meet their basic needs, including food, income, employment, farm equipment, land, education, health, and drinking water. These results are further confirmed by the monetary evaluation of poverty (*QUIBB* 2005), which shows that the prevalence of the population living below the poverty line was 62.1 percent in 2005⁸ (see Table 2). In fact, the prevalence of poverty in Niger has remained essentially constant since 1993 (in 1993 the incidence of poverty was 64 percent as compared to 62 percent in 2005). Furthermore, according to a participatory poverty survey (2006/07), approximately 66 percent of households in Niger consider themselves to be poor, and 20 percent consider themselves to be extremely poor. Updated estimates and further

⁵ Three poverty surveys have been conducted in Niger since 2000: The Survey on Combined Questionnaire of Basic Welfare Indicators (*QUIBB*) in 2005; the Survey on Satisfaction of Basic Needs (*DSBE*) in 2004; and the second participatory survey on poverty (*EPP2*) in 2005.

⁶ **The incidence of poverty** measures the percentage of individuals or households whose consumer spending is below the monetary poverty line. The poverty line corresponds to a minimum annual consumer spending for an individual or household; **the depth of poverty** measures the average gap in percentage between the level of well-being of the poor households and the poverty line. It is used in estimating the minimum amount of additional resources to be transferred to poor households to place them on the monetary poverty line; and **the severity of poverty** measures the average gap between consumption by the poor and the poverty line. It gives relative proportion of poorer people in a given group.

⁷ While there is no single and universal definition of poverty, poverty is often defined as "a state of individual or collective *destitution which places man in a situation of shortage or lack of essential needs*" This definition (WB 2000) reflects the lack of adequate income to satisfy basic needs in feeding, health, education, drinking water, decent housing and results in lack of opportunities to participate in social and economic life, an in greater vulnerability of the populations concerned to shocks of various types.

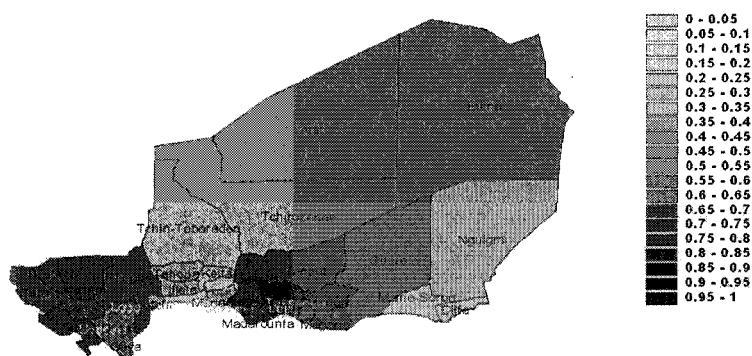
⁸ See "Niger Millennium Development Goals: Diagnostic and Tools"; WB, June 2005; Q. Wodon. Based on this study, the poverty thresholds for Niger in 2005 were 144,750 FCFA (equivalent to about \$USD 175) per capita and per year for urban areas and 105,827 FCFA (equivalent to about 110 USD) for rural areas.

analysis of poverty trends are expected after the completion of the ongoing Household Budget Survey (2007/08). Moreover, besides its lower level of consumption, food expenditure accounts for a significant amount of total household expenditures leading to high levels of food insecurity.

10. **Poverty incidence varies by region, though is on average higher in rural areas than in urban areas.** The prevalence of poverty and extreme poverty are relatively higher in rural areas, with 65.7 percent of the population in rural areas living below the poverty line, compared to 55.5 percent in urban areas. Regional variations in poverty are also significant as presented in table 2. The incidence of poverty is highest in the Maradi (79.7 percent), Tillaberi (68.9 percent) and Dosso (67.3 percent) regions; but it reaches 27.1% in the capital Niamey. Likewise, the depth of poverty that indicates whether families are living in abject poverty or just below the poverty line, also confirm higher levels of poverty in the same three regions: Maradi, Tillaberi and Dosso.

11. **Variations in poverty rates are even greater at the department level (see Figure 1).**⁹ Poverty is most widespread in Mayahi (Maradi) department, where almost 90 percent of the population is living below the poverty line; departments located in the regions of Maradi, Tillaberi, Dosso and Zinder also have very high incidences of poverty, with more than 50 percent of the population living below the poverty line. Other regions (Tahoua and Agadez) have localized pockets of poverty, but on average poverty rates range from 35 to 50 percent.

Figure 1: Poverty Rates in Niger by Department, 2005



12. **As in other countries, poverty in Niger is strongly correlated with a variety of household characteristics, such as household size, the gender of the household head, educational level and the economic status of the head of the households.** According to the 2005 QUIBB survey, larger households are relatively poorer, as are households with more children. All else being equal, female-headed households are relatively poorer, as are households in which the household head did not complete primary education. The

⁹ See WB 2006; INS and Q. Wodon.

household's source of income also has a major impact on per capita consumption and the household's probability of being poor. In general, households in Niger rely on a limited number of income-generating activities: according to the 2006 *ECVAM* survey, 20 percent of households generate income from a single activity (agriculture, trade or livestock).¹⁰ Moreover, approximately 65 percent of households whose head is self-employed are classified as poor, followed by those headed by unpaid apprentices (61.3 percent) and domestic servants (54.3%) (INS *QUIBB* 2005). By contrast, household heads whose main source of income is a formal public sector salary job have a higher standard of living.

Consumption patterns

13. **Food accounts for over 60 percent of total household expenditures.** According to the 2005 and 2006 household budget surveys, between 61-64 percent of total household expenditures were for basic foodstuffs. Among these expenditures, cereals (including millet, sorghum and other cereals) represented approximately 50 percent of all spending

14. ***Though the majority of households engage in some farming, almost all households are net purchasers of food.*** Over 60 percent of households rely in part on their own production to meet their consumption needs. Nevertheless, over 60 percent of households were net purchasers of millet in 2005. This implies that households do not produce sufficient quantities to meet their consumption needs (see Table 3).

¹⁰ More recent information confirms that 40 percent of the population generates 80 percent of their income from one activity (see Marinho and Gerard, 2008).

Table 3: Sources and level of household food consumption in 2005 and 2006

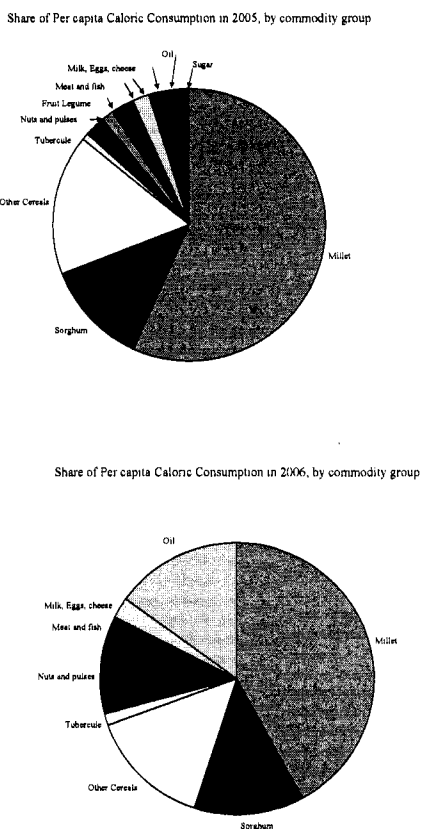
Commodity groups	Consuming households (%)	Source of consumption		Quantity consumed per capita per day Grams	Expenditure budget shares (%)	Calorie shares (%)
		Own Production (%)	Net market Purchase (%)			
2005						
Millet	86.7	60.4	62.5	385.4	48.2	56.5
Sorghum	42.5	31.7	21.5	75.9	9.5	12.6
Other Cereals	79.2	10.2	77.0	209.3	21.3	16.7
Roots and Tubers	36.2	4.0	33.3	13.6	1.2	0.6
Nuts and pulses	56.3	23.2	40.0	21.5	2.7	2.7
Fruit Legume	83.7	18.9	79.9	101.2	.	1.4
Meat and fish	54.1	22.2	41.1	11.8	5.2	2.7
Milk, Eggs, cheese	65.1	19.0	53.2	51.0	6.2	2.0
Oil	36.0	0.0	36.0	3.8	2.4	3.3
Sugar	65.2	0.0	65.2	9.6	3.3	1.3
2006						
Millet	81.8	57.8	26.3	346.7	46.1	42.0
Sorghum	39.2	27.1	13.3	107.5	8.0	13.0
Other Cereals	76.7	7.8	74.7	130.2	26.8	14.3
Roots and Tubers	14.3	0.1	14.3	12.2	1.9	1.4
Nuts and pulses	65.2	34.8	33.3	67.9	6.4	9.0
Fruit Legume				.	.	.
Meat and fish	52.1	4.5	50.3	53.8	4.9	2.7
Milk, Eggs, cheese	21.7	7.9	15.0	58.0	3.8	2.6
Oil	7.8	0.7	7.2	48.3	2.1	14.9
Sugar	32.5	0.3	32.2	1.0	0.1	0.1

Source: INS QUIBB 2005 and ECVAM 2006

15. *Cereals are the dominant source of calories and dietary diversity is limited especially after a crisis*. According to the QUIBB and ECVAM surveys, over 80 percent of daily caloric consumption came from cereals (millet, sorghum and other cereals) in 2005 and 70 percent in 2006. Less than 5 percent of daily caloric consumption is derived from meat and fish, dairy products, and fruits and vegetables, which are important sources of micronutrients, such as iron, iodine, vitamin A and calcium (Figure 2).¹¹

¹¹ Calculations of per capita daily caloric consumption are based on different number of commodities and methodology in 2005 and 2006 expenditure surveys. However, the ordering of the commodities remains roughly the same.

Figure 2: Share of Per Capita Caloric Consumption by Commodity Group (2005-2006)



Source: INS QUIBB 2005; ECVAM 2006.

16. ***The majority of Niger's population consumes fewer than 2100 calories per day.*** In 2005, 59 percent of the population consumed less than the minimum caloric requirement for adults population - 2100 calories per day - as defined by the World Health Organization¹², while in 2006, about 52 percent of the population consumed less than this minimum requirement. Table 4 also shows important geographical variation among regions. Although poverty rates are lower in urban areas, the percentage of the population with inadequate caloric consumption is actually higher in urban areas in all regions with the exception of Dosso. This difference between patterns of poverty as measured by the value of expenditures and estimated calorie consumption reflects differences in food and non-food consumption patterns, as well as variations in prices between rural and urban areas, confirming the multi-dimensions of food security. For example, urban households tend to eat more rice, a higher per calorie cost staple; rural households tend to consume more millet, a staple with a lower per calorie cost. Moreover, a shortage of food affect urban areas through prices of products while rural areas by the unavailability to cover own needs from own production. Hence, better indicators of

¹² Daily caloric requirements for specific populations should be calculated based upon age, height, gender and the individual's activity level (mild, moderate and intense). In the absence of such information, the standard threshold of 2100/kocalories per adult per day is used.

food insecurity in rural areas can be correlated to the fact they are more likely to receive exterior assistance in case of urgency or of threat of famine given its dependence on subsistence crops.

Table 4. Prevalence of Chronic Food Insecurity in Niger
(% of the Population Consuming less than 2100 calories per day)

Region	2005 (%)			2006 (%)		
	Rural	Urban	Total	Rural	Urban	Total
Agadez	41.4	64.4	53.3	66.0	64.6	65.2
Diffa	35.2	43.4	36.4	44.5	54.1	45.7
Dosso	68.7	59.1	67.9	58.5	51.6	57.7
Maradi	74.8	72.9	74.6	44.5	52.8	45.2
Tahoua	37.5	39.8	37.7	52.8	55.7	53.0
Tillabéri	55.7	55.5	55.7	55.4	58.9	55.7
Zinder	58.5	73.4	60.3	46.5	68.0	49.6
Niamey		67.3	67.3		50.7	50.7
Total	58.2	64.1	59.2	51.0	58.1	51.9

Source: INS QUIBB 2005 and 2006 Consumption Survey

The nutritional dimension

Table 5. Prevalence of Undernutrition in Children under 5 in Niger, 2006

Region	Children 0-59 months	
	Wasting	Stunting
Zinder	10.6	58.7
Maradi	11.6	62.2
Diffa	12.7	46.6
Dosso	10.3	46.6
Tahoua	10.3	46.7
Tillabéri	8.7	46.7
Agadez	10.5	38.8
Niamey	6.7	21.3

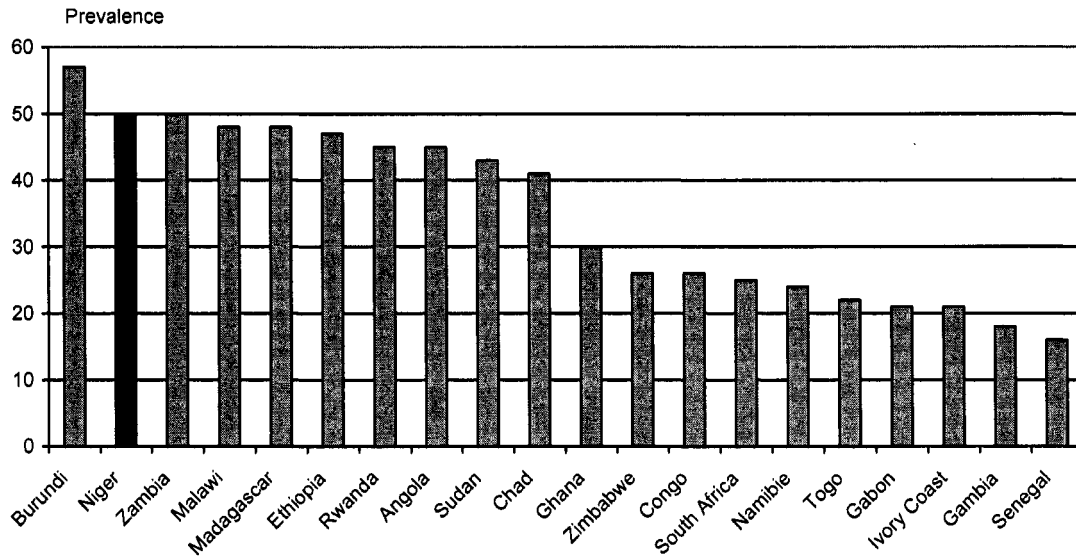
Source : DHS/MICS (2006)

17. *Nutrition-based indicators of food insecurity confirm the high level of chronic food insecurity in Niger.* According to the 2006 Demographic and Health Survey (DHS), the prevalence of stunting (low height-for-age) in Niger is estimated at 50 percent. The situation varies across regions, with Maradi and Zinder having the highest prevalence of stunting (Table 5). Niger's stunting rate makes it the second worst-affected country in Sub-Saharan Africa (Figure 3). The

correlation between under-nutrition and child mortality is high, with under-nutrition associated with 56 percent of all deaths of children under five (DHS/MICS 2006).¹³

¹³ Multiple rounds of DHS surveys conducted in Niger since 1992 suggest that chronic food insecurity, as measured by stunting, has increased from 40 percent (1992-2000) to 50 percent (2006).

Figure 3: Stunting in Sub-Saharan Africa

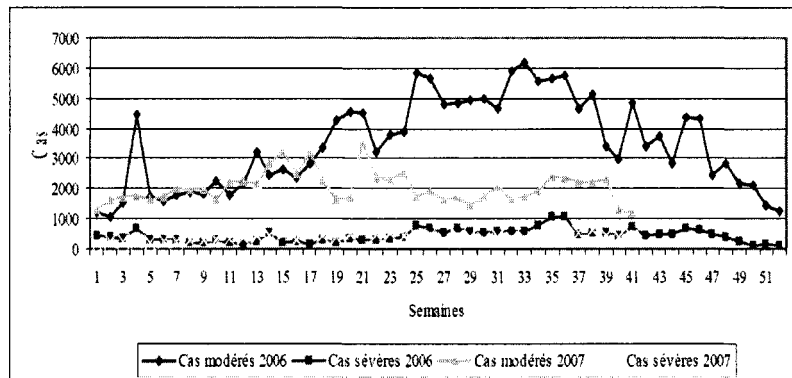


Source : State of the World's children, UNICEF, 2007

18. **Micronutrient deficiencies in the country provide further evidence of chronic food insecurity.** The main micronutrient deficiencies are iodine, iron and vitamin A, which are crucial for vital bodily functions. It is estimated that 20 percent of the population suffers from goiter (iodine deficiency), with higher rates in the Dosso and Tahoua regions. Furthermore, an estimated 42 percent of children under six suffer from sub-clinical vitamin A deficiency, with 7 percent of their mothers reported to have suffered from night blindness during pregnancy. In terms of iron deficiencies, 84 percent of all children, and 46 percent of women aged 15-49, are anemic (DHS/MICS 2006).

19. **Nutrition outcomes also provide evidence that Niger's rural population suffers from seasonal food insecurity.** There is qualitative evidence that during the hungry season (*soudure*), between June and September, household food consumption is lower (both in terms of quality and quantity). This is supported by the prevalence of wasting in Niger (10 percent), classified as "high" according to the World Health Organization's (WHO) thresholds for public health problems.

Figure 4: Number of Cases of Reported Wasting (by Week), 2006 and 2007



Source : SNZS/NISP/Niger

Figure 4 shows the number of reported cases of moderate and acute malnutrition by week for 2006 and 2007. While the data are subject to potential selection

bias (as a higher number of nutritional rehabilitation centers opened during this period), a general pattern of seasonal food insecurity emerges. In 2006, there was a marked increase in reported cases of moderate malnutrition between April (week 16) to October (week 39), coinciding with the pre-harvest period and hungry season. The same pattern, albeit not so strong, was also observable in 2007.

RISK, VULNERABILITY, AND HOUSEHOLD FOOD SECURITY

20. *Niger's populations are also vulnerable to transitory food insecurity, defined as reduced access to food after a shock.* Shocks, such as droughts, floods, pest attacks, health epidemics and economic shocks,¹⁴ not only have an immediate impact on households' food security, but can also have longer-term consequences and leave households in debt or without the necessary assets to guarantee a minimum level of production.¹⁵ As vulnerability is an ex-ante measure of well-being, an ideal vulnerability analysis would follow the approach outlined in Box 2. While the data available will not permit covering all the steps outlined in the box, the section first summarizes the results of other reports and attempts to using some of the available data surveys (i.e., QUIBB 2005 and ECVAM 2006).

Box 2 : Steps for Identifying the Most Vulnerable in Niger

- **Identify potential shocks or hazards that could affect communities or individuals**
- **Determine the level of risk** (probability of being affected by this shock) of the affected populations
- **Note the negative impacts of these shocks on individual, household and community-level food security and how households cope with these shocks.** This can or should include a percentage reduction in the production of staple food crops, or an increase in staple food crop prices (or a reduction in livestock prices).
- **Determine the level of households food insecurity and the characteristics of individuals, households, communities who are the most vulnerable to shocks** (ie, they are the most at risk and the most affected by the negative impacts)
- **Determine whether vulnerable households will have "unacceptable" levels of food insecurity as a result of the shocks.** For example, do household reduce the number of meals. dietary diversity? Is there an increase in malnutrition?

Source: See Tesliuc, E. and Kathy Lindert (2004); Hoddinott, J. and Agnes Quisumbing (2003); Hoogeveen, J., E. Tesliuc, R. Vakis, with S. Dercon (2004); del Ninno, C. and A. Marini (2005).

Risks and Shocks

21. *Although rural and urban households in Niger are susceptible to a variety of risks and shocks, not all of these shocks result in food insecurity or food crises.* Whether or not food insecurity occurs depends on households' assets, risks and risk

¹⁴ UNDP (2007) notes two main types of risk factors in Niger: conflicts (farmer-herder and farmer-farmer) and natural shocks, such as droughts and production shocks.

¹⁵ See "Carter and Barrett paper"

management strategies. This section focuses on national and regional covariant shocks¹⁶ that are highly correlated with the production of and access to food; namely, droughts, harvest failures, and rising grain prices (Holzmann and Jorgensen, 2000).¹⁷

22. ***Over the past 12 years, Niger has experienced three severe droughts, two of which were associated with food crises.*** During the last 12 years, the country experienced droughts in 1996, 2000 and 2004.¹⁸ These weather related shocks coincided with lower cereal production, higher cereal prices, and lower incomes for the rural poor. Among these drought years, 1996/1997 and 2004/2005 were identified as severe food crisis years.¹⁹ In 2005, an estimated 2.4 million *Nigeriens* were affected by severe food shortages, with more than 800,000 of these classified as critically food insecure (USAID FEWSNET 2005).²⁰ Although the 2004/05 food crisis was not of the scale of the 1968-74 or 1983-84 famines, the gross mortality rate reached 1.5 deaths per 10,000 per day in certain regions, and the child mortality rate reached 4.1 deaths per 10,000 per day (Médecins sans Frontières 2005).

23. ***While droughts consistently cause production to decline, the severity of the impact has varied sharply across sub-regions within Niger and also over time.*** In spite of the fact that 2000/01 drought had affected per capita production decrease - of more than 50 percent – in about 15% of departments, the 2004/05 drought affected over 25 percent of departments. Comparatively, during non-drought years (e.g., 2001/2002 and 2005/2006), less than 3 percent of all departments experienced a per capita drop at the same level of more than 50 percent.

¹⁶ Shocks that affect all the households in an area or group are called covariant shocks, as opposed to idiosyncratic shocks that affect only some households.

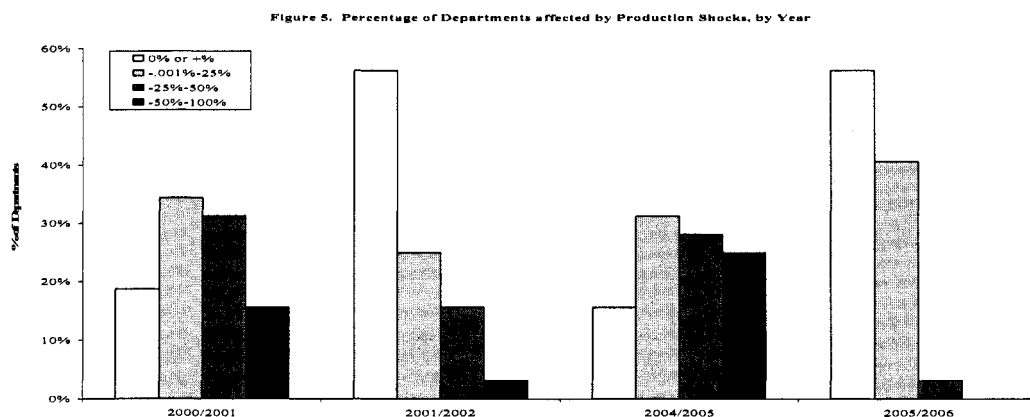
¹⁷ This paper adopts the definitions proposed by the World Bank (2001) for the concepts of risks, shocks, poverty and vulnerability. Poverty is defined as an ex-post measure of well-being, whereas vulnerability is an ex-ante measure of well-being (or expected outcome). Central to the concept of vulnerability is risk, which is a probability distribution of events. Examples of risks include natural risks, health risks, economic risks, life-cycle risks, social risks, political risks or environmental risks. Whether a risk materializes, it is known as a shock.

¹⁸ Annual rainfall was lower than one standard deviation from the mean. See Nicholson et al 2000.

¹⁹ Since the 1960s, Niger has experienced drought-related transitory food insecurity in 1966/67 (Bandabari), 1973/74 (Dakoussou), 1984/85 (El Bohari), 1990/91, 1993/94, 1996/97 (Matche mai), 2000/01 and 2004/05 (Wazaka gaya ma). Of these years, only 1973/94, 1984/85, 1990/91, 1996/97 and 2004/2005 were classified as severe food crises. (Government of Niger/DNPGCA 2007).

²⁰ As the definitions of a food crisis vary, identifying clear thresholds for food crises is problematic. While a number of households were affected by food insecurity in 1997/1998 and 2000/2001, data on the number of households affected are not readily available. Nevertheless, it is commonly agreed that the magnitude of the 2004/2005 food crisis is the most severe, both in terms of number of persons affected and the severity of the problem.

Figure 5: Percentage of Departments Affected by Production Shocks by Year, 2000-2006



Source: Aker 2007

24. *These marked differences in regional climate fluctuations are also reflected in higher dispersion of grain production in drought-prone departments around the observed production mean in Niger.* These fluctuations measured by the coefficient of variation, CVs²¹, ranges from .11 in the Magaria department (Zinder) to .75 in the Tillaberi department. Overall, the regions of Maradi and Zinder (which account approximately 40 percent of national millet production) have the lowest coefficients of variation (.22 and .27, respectively), whereas the deficit regions of Tillaberi and Tahoua have the highest coefficients of variation. This suggests that rural households living in drought-prone areas (Tahoua and Tillaberi) are more likely to be affected a higher degree of output risk.

Table 6. Percentage of Households' Exposed to Shocks by Poverty Level and Quintile

	Production		Illness (severe or chronic)			Land	
	Drought	Shock	Death	Flood	Job Loss	loss	
All HH	47.62	16.59	11.22	10.55	1.99	1.48	0.90
Poor	49.03	19.16	10.91	10.84	2.09	0.63	1.59
Non-poor	46.04	13.68	11.57	10.22	1.88	1.21	1.36
Quintile1	47.57	21.87	10.28	10.9	2.28	0.56	1.94
Quintile2	46.76	14.73	10.82	10.5	1.97	1.15	0.8
Quintile3	45.60	16.34	10.52	10.56	2.01	0.86	1.39
Quintile4	47.85	13.98	10.99	10.20	1.65	0.61	1.10
Quintile5	50.50	15.59	13.99	10.51	2.01	1.37	2.15

Source: INS QUIBB 2005

²¹ The coefficient of variation is the standard deviation of per capita grain production in a particular department over the entire period, divided by mean per capita grain production.

25. *Vulnerability to drought is associated with low level of household's assets and human capital.* Poor households are not more exposed to shocks. Table 6 shows the relative importance of different types of shocks in Niger by poverty levels and quintiles. According to available information, drought is the most prevalent type of shock experienced by households in Niger, followed by production shocks. On average, poor households appear to be more likely to be exposed to natural and health shocks (drought, flood, production losses and illnesses). When stratifying the results by income quintile, however, the correlation between poverty and risk is less clear. Econometric analysis by Ouedraogo (2008) shows that households whose head is unemployed, or work in informal sector; or is female; or does have low levels of education; or does not have livestock; or does have high dependency ratio are more likely to suffer from drought. In terms of location, the households in Tahoua have the highest combination of people residing and reported having been exposed to drought and production shocks the most frequently, followed by those in Maradi, Tillabery and Diffa (see Table 7).

Table 7. Distribution of households Exposed to Drought across Regions of Residence (%)

Region	Residing	Affected	Incidence
Agadez	3.2	2.4	0.74
Diffa	3.7	5.9	1.59
Dosso	9.7	5.1	0.53
Maradi	19.7	20.8	1.06
Tahoua	20.8	32.5	1.56
Tillabery	15.9	16.5	1.04
Zinder	20.2	16.7	0.83
Niamey	6.6	0.2	0.03
Total	100	100	1

Source: QUIBB 2005

26. *According to the information from 2005 QUIBB (INS), households have fairly limited coping strategies to deal with covariate and individual shocks.* Based on this survey, food aid was rated as the most common strategy used by households to mitigate the effects of shocks, including natural, economic and health shocks (see Table 8). For drought alone, almost 1 in 4 households stated that they had used food aid as a coping strategy. Following food aid, households cited requesting assistance and the sale of agricultural products as the most common strategies, followed by the sale of household assets, borrowing, and assistance from NGOs.

27. *The probability of receiving food aid is not correlated with poverty in rural areas.* Among those affected by the drought in rural areas, only 72 percent of the poor received food aid as compared to almost 80 percent of the non poor. In urban areas, instead, poor households affected by drought were more likely to receive food aid than non-poor households. These results suggest that the targeting of food aid has been either non-existent or it has focused on helping all those affected by drought rather than only poor households affected by drought (see Tables 8 and 9).

Table 8. Households Coping Strategies after Exposure to Drought (%)

<i>Strategies</i>	<i>Drought</i>
Food aid	74.8
Sell agricultural products	15.3
sell agricultural materials	3.0
Sell HH assets	8.0
Get help from Other households	40.0
Assistance from NGOs	8.1
International assistance	6.2
Borrowing	7.3
Others	1.2

Source: INS QUIBB 2005

Table 9: Percentage of drought affected households receiving food aid in 2005 by poverty category and location

	Urban	Rural	All
Poor	73.0	72.2	72.3
Non Poor	52.4	79.3	78.1

Source: INS QUIBB 2005

28. *Qualitative studies conducted by numerous NGOs and WFP paint a notably different picture of household coping strategies.* WFP's *Emergency Food Security Assessment* (2005) noted that the most common strategies used by households to respond to natural shocks include a reduction in the number of meals per day, collecting wild foods, borrowing money or food from other households, migration, asset sales, land sales and livestock sales. While the study did not focus on the prevalence of these strategies (overall or by region) or their relative importance, migration, the sale of household assets, livestock sales and borrowing were highlighted as the most common strategies used by *Nigerien* households.

29. *Some coping mechanisms make households more vulnerable to future food insecurity.* Existing information confirms that although borrowing and selling strategies may enable households to cope with shocks in the short-term and help them to smooth income, they effectively decapitalize the household of its productive assets (natural capital, human capital and financial capital), thereby making it more vulnerable to future food insecurity. For example, Marinho and Gerard (2008) estimate that 47 percent of households had sold livestock, and as a consequence, 60 percent of households in the national poverty survey were still in debt after the 2005 food crisis, with the average debt equivalent to 427 kg of cereals.

30. *Livestock ownership affects coping mechanisms.* In rural areas food aid is the most common form of coping mechanisms, especially for those that do not have any livestock. In Urban areas, instead, households without any livestock are more likely to receive help from other households (70 percent).

Table 10. Coping mechanisms after drought by ownership of livestock in rural and urban areas (%)

Coping mechanisms	RURAL			URBAN		
	No livestock	Livestock value below median	Livestock value above median	No livestock	Livestock value below median	Livestock value above median
Food aid	80.7	74.7	72.7	55.8	72.7	76.1
Sell agricultural products	10.7	14.7	18.6	18.6	6.3	33.0
Sell agricultural equipments	3.6	2.5	2.8	1.5	7.4	5.9
Sales of HH assets	8.0	8.3	8.2	1.3	11.3	3.5
Get help from other HH	42.8	33.8	40.5	70.0	48.4	61.3
Assistance from NGO's	7.6	7.5	10.1	4.0	1.0	2.0
International assistance	6.0	4.4	8.3	11.4	1.0	0.0
Borrowing	9.4	5.6	7.0	20.5	8.0	5.4
Others	2.2	1.1	1.5	0.0	0.0	2.0

Source: QUIBB 2005.

Vulnerability to Food Insecurity

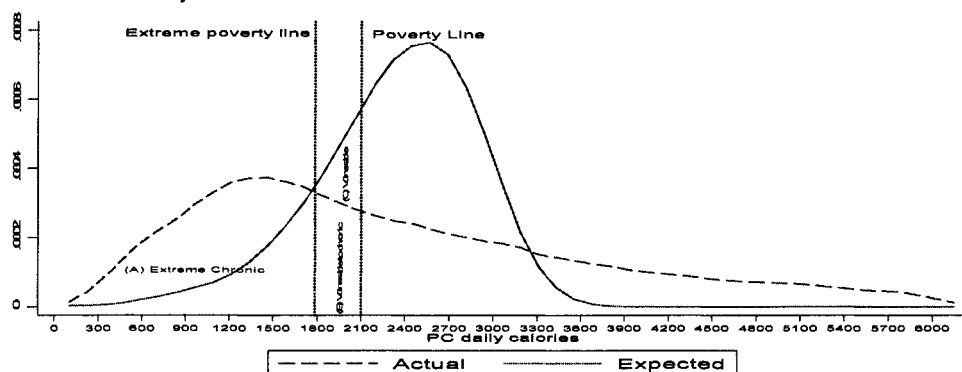
31. *Despite the wealth of data collected on household food security subject, it is not possible to use a common classification of the most vulnerable households within the country and over time.* There have been numerous expenditure, consumption and vulnerability surveys conducted by the Government of Niger (GoN), WFP and various NGOs between 2004 and 2007²². Each study relies upon a different set of variable for the definition of food security and vulnerability, in addition to different approaches and methodologies to data collection. For example only the QUIBB 2005 and ECVAM 2006 contain information on expenditure and consumption. Therefore it is difficult to have a consistent definition and sources of information for estimating household food insecurity (see Box 3).

²² Vulnerability surveys include: *Enquete Conjointe sur la Vulnerabilité a l'Insecurité Alimentaire des Ménages au Niger* (INS and SAP, November 2006); *Enquete sur la Vulnerabilité a l'Insecurité Alimentaire des Ménages au Niger* (INS, WFP, FAO, UNICEF, FEWS NET, CILSS, December 2007); *Enquete sur la Securité Alimentaire en Situation d'Urgence au Niger* (WFP, October 2005).

Box 3 : Methodologies to estimate household food insecurity

Besides the simple caloric consumption analysis presented in the first section of this chapter, there are several methodologies that can be used to calculate household food insecurity as:

- The first measure estimates the expected level of caloric consumption, based on household human and physical assets and capabilities, and compares it with the observed level of caloric consumption. below 2100 calories per capita per day into 3 categories of risk:
 - Extreme chronic level (A) of food insecurity level reflects both observed and expected levels of consumption below the minimum level of caloric consumption;
 - Vulnerability to chronic level (B) food insecurity summarizes the share of households with observed consumption levels below minimum level of caloric consumption, but have the human and physical assets that would allow them to consume adequate level of calories, but they do not because of particular circumstances like drought.
 - Vulnerability to food insecurity level (C) that summarizes the share of households exposed to risk and uncertainty, which had affected their levels of consumption. They are those who are expected to consume less than 2100 calories per capita a day in response to a shock, but manage to consume more.
 - The overall level of food insecurity is measured by the sum of chronic (A) and transient food insecurity.



- The second measure calculates the food variety index named **Dietary diversity**. This index is a simple, or weighted, count of foods or food groups over a given reference period. It emphasizes the importance of consuming a wide variety of food so as to enhance dietary quality. The main disadvantage of this method is that it does not take into account quantity nor control diets regarding caloric composition. However, developing countries review confirms positive correlation of dietary diversity and nutrient adequacy.
- The third measure uses the **principal component** analysis to reduce multidimensional data sets to lower dimensions for analysis of different outcomes. The method provides a way of identifying patterns in multidimensional data, expressing it in way to highlight similarities and differences by reducing the number of dimensions, without much loss of information.
- The last one uses a **spatial econometric model** for determination of local household food insecurity on the basis of the ECVAM 2006 and GIS data. This model follows a theoretical methodology to spatially predict food vulnerability using all available source of information at a given geographical level controlling for their geographical correlations.

Source: See Coates, Webb and Houser (2003); Hoddinott, J., and Y. Yohannes (2002); Migotto et al. (2006); del Ninno, Vecchi and Hussain (2006)

32. *In Niger at least 22 percent of the households are classified as extreme chronic food insecure, despite a small reduction of its level of food insecurity in 2006 compared to 2005.* According to the first measure of food insecurity presented above in Box 3, the overall food insecurity (extreme chronic and vulnerable to chronic) measured here is by definition similar of those presented in table 4. The reduction of 7.3 percentage point in

food insecurity between 2005 and 2006 was the result of the improvement in the consumption levels of Niger population after the food crisis that has affected calorie consumption of population. In particular the reduction in the level of extreme chronic food insecurity was very large, going from 37 to 22 percent. However, the reduction in chronic food insecurity was accompanied by smaller increase of vulnerable to chronic levels of food insecurity of about 8 percent (see Table 11).

Table 11: Household food insecurity levels

	2005	2006
Food insecurity		
Extreme Chronic ¹	37.4	22.0
Vulnerable to Chronic ²	21.9	29.9
	59.3	51.9
Vulnerable to food insecurity ³	9.7	5.3

Source: QUIBB 2005 and ECVAM

Notes: 1: Actual and expected consumption below minimum, 2: Actual consumption below minimum, but expected to have higher levels of consumption; 3: Higher expected consumption levels but still in between extreme poverty line and poverty line

33. ***There are substantial variations in food insecurity across regions between 2005 and 2006.*** The high level of extreme chronic food insecurity has affected regions differently in Niger. In 2005, Maradi, Dosso and Niamey were the region with the highest levels of extreme chronic and total food insecurity. In 2006, Agadez had taken Maradi's place as the region with the highest level of food insecurity in the country because the level of food insecurity fell in Maradi (see Table 12).

34. ***Given the incomparability of products list consumed in 2005 and 2006 surveys, the proposed dietary diversity index should not be directly compared over time.*** Comparing ranks of dietary diversity with previous results, Maradi and Dosso are the only two regions misclassified compared to table 4. In 2005, Dosso had the lowest level of insecurity among regions while Maradi has medium level of insecurity, compared to their higher levels of chronic food insecurity presented in table 2. However, the dietary diversity index of Dosso and Niamey can be explained by the fact that while rural/poor regions as Dosso had received a lot of assistance to deal with the famine²³ while urban households as those from Niamey reduce their diet as result of price increase. Measured by this index, consistently with food insecurity from above, Niamey and Zinder had higher levels of food insecurity in 2005; Tahoua and Diffa had increased levels of food insecurity between 2005 and 2006 while Tillaberi improved a little its levels of insecurity; and Dosso and Agadez had higher levels of food insecurity in 2006 (see Table 13).

²³ For example, as immediate response to the famine, the CAD/UEEPN (Union of Evangelical Protestant Churches of Niger) had provided food supplies to 600 families in three rural communes in the Niger, Dosso Province

Table 12: Chronic, transient and vulnerable levels of food insecurity

	2005			2006		
	Extreme Chronic ¹	Vulnerable to Chronic ²	Vulnerable ³	Extreme Chronic ¹	Vulnerable to Chronic ²	Vulnerable ³
Agadez	33.2	20.1	9.5	21.5	43.9	2.9
Diffa	23.6	12.8	17.3	14.4	31.3	4.5
Dosso	49.4	18.5	9.7	31.5	26.0	5.4
Maradi	48.1	26.5	9.4	18.2	26.6	5.8
Niamey	50.9	16.4	15.3	25.3	25.4	5.9
Tahoua	19.1	18.6	8.0	21.7	31.3	5.8
Tillaberi	31.6	24.1	7.6	25.2	30.4	5.1
Zinder	36.2	24.2	10.0	16.5	32.9	4.9
Urban	42.9	21.1	14.0	25.1	33.0	5.7
Rural	36.2	22.0	8.8	21.3	29.4	5.2
Niger	37.4	21.9	9.7	22.0	29.9	5.3

Source: 2005 QUIBB 2005 and ECVAM 2006

Table 13: Dietary diversification index

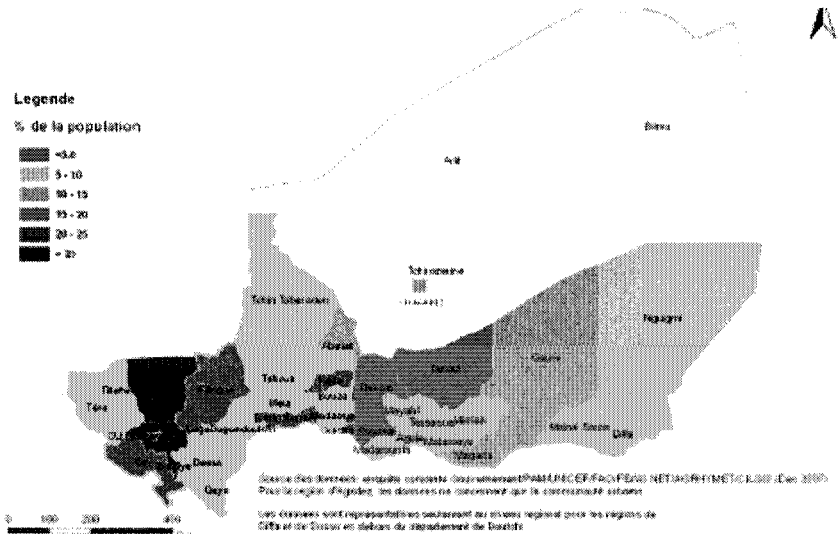
	2005	2006
Agadez	14.0	15.9
Diffa	18.1	18.6
Dosso	20.5	18.3
Maradi	18.0	21.5
Niamey	13.6	23.2
Tahoua	18.2	19.0
Tillaberi	16.6	20.8
Zinder	15.5	19.5
Urban	12.7	19.6
Rural	18.2	19.9
Niger	17.2	19.8

Source: 2005 QUIBB 2005 and ECVAM 2006

35. *According to the principal component index the poorest regions measured by household per capita expenditure are also the most vulnerable to food insecurity.* Based on this 2007 survey, the regions of Tillaberi, Dosso and Maradi were the most vulnerable to food insecurity, with approximately 17, 13 and 11 percent of the population affected, respectively. This is consistent with the results of 2005 poverty survey, which identified Maradi, Dosso, Tillaberi and Zinder as the poorest regions. Overall, the survey data confirms that vulnerability is more heavily concentrated in the rural regions of

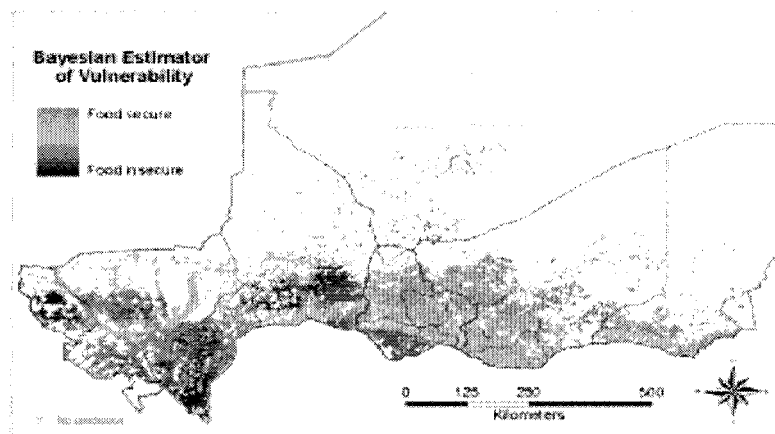
Niger, with 12 percent of the population vulnerable to food insecurity, as compared with 6 percent in urban regions. Figure 6 shows the percentage of the population vulnerable to food insecurity, based upon geographic region (INS et al, 2007). Although interesting results, they are not comparable with previous two index of food insecurity.

Figure 6: Percentage of the Population Vulnerable to Food Insecurity, 2007



36. *Based on 2006 data and using a spatial framework for vulnerability, it can be shown that proximity to paved roads and access to water are key determinants of vulnerability to food insecurity.* Figure 7 present results from Marinho and Gerard (2008) which had estimated that most vulnerable households in Niger are located in the south but not the extreme south of Tahoua, the middle and the south of Dosso and the west of Tillabéri. According to this work, the strongest determinants of food insecurity in Niger are proximity to a paved road, access to water sources, agro-climatic zone, rainfall or normalized difference vegetation index, NDVI, and recent shocks or food crises. While the identification of Dosso and Tillabéri as vulnerable regions is consistent with the INS 2007 survey and previous findings as from table 2 or table 9, Maradi, as for dietary diversification, is not classified as vulnerable to food insecurity.

Figure 7 : Predictions of Areas Vulnerable to Food Insecurity in Niger, 2006



CHAPTER 3: FOOD AVAILABILITY AND ACCESS

Niger relies mainly on domestic production of grains (primarily millet and sorghum) for its cereal supply. As production varies substantially on an inter-annual basis due to extreme rainfall, imports (consisting mainly of wheat, maize and rice) are required to meet local consumption needs. However, food aid and commercial imports typically account for a small percentage of total cereal supply on an annual basis, averaging 7 percent of total cereal availability between 2000 and 2005. Trade data in Niger are unreliable and underreported: unofficial imports of grains from Nigeria may account for as much as 200 thousand tons of total supply. Survey evidence and analysis of prices indicate that Niger's wholesale cereal markets are generally well integrated; however, lack of production data in Nigeria prevents detailed analysis of market links between the two countries. Nonetheless, simulation analysis suggests that a reduction in net imports from Nigeria in 2005 was a major factor in the sharp rise in market prices during the 2005 food security crisis.

FOOD AVAILABILITY: PRODUCTION, IMPORTS AND FOOD AID

Agricultural Production

37. *Despite unfavorable agro-climatic conditions and recurrent natural disasters, agriculture and livestock-raising play a key role in Niger's economy.* The agro-food sector accounts for approximately 40 percent of Niger's Gross Domestic Product (GDP), and is the major source of employment for more than 80 percent of the total population, most of who live below the poverty line. In addition to agriculture, which accounts for about 52 percent of rural output, livestock-raising is an important source of income for pastoral and agro-pastoral households, with an estimated 7 million animal head (WFP 2005). Agro-pastoral products account for about 85 percent of export revenues for Niger (excluding uranium), with the livestock sector alone accounting for 56 percent (mostly live exports).

38. *While there are a variety of livelihood zones within the country, agriculture is primarily characterized by subsistence farming, and production of staple food crops is based upon rain-fed agriculture.* Niger is a large country located within the Saharan, Sahelo-Saharan and Sahelian agro-ecological bands of Africa, with rainfall ranging from 250-800 mm per year. Niger is characterized by three distinct agro-ecological areas: the pastoral zone, the agro-pastoral zone, and the agricultural zone (Figure 8)^{24,25} (USAID

²⁴ In its 2005 Livelihood Profile for Niger, USAID/FEWS NET identified eight livelihood zones for the country: the desert, the Bilma oasis sub-zone, Air mountain cultivation, pastoral, agro-pastoral, rainfed agriculture, sub agriculture zones with high out-migration, irrigated cash cropping, Lake Chad region and irrigated rice. USAID/FEWSNET, 2005

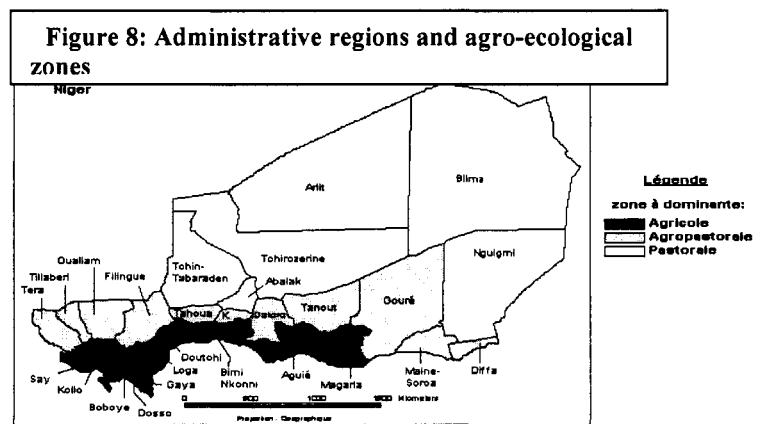
²⁵ Niger is divided into eight (8) administrative regions: Agadez, Diffa, Dosso, Maradi, Niamey, Tahoua, Tillaberi and Zinder. Each region has several *départements*.

FEWSNET 2005). In the pastoral zone, which is located in the northern part of the country, immense spaces are exploited using a pastoral and trans-human system. Though natural conditions make this very good pasture land, demographics have brought about a development of agriculture along the southern belt of this area, and a reduction of pasture space. The agro-pastoral and agricultural zones are located in the southern regions, which involves various sub-systems: a dune system, the Eastern plains and the Western plateaux. The dune system primarily produces millet, characterized by low yields and deficit household production. The Eastern plains system includes the Maradi and Zinder regions, where staple food crops (millet and cowpea) are produced using semi-intensive agricultural techniques, intercropping and the use of small livestock. The Western Plateaux system (Tillabéri and Dosso) also cultivates staple food crops, with localized wetlands used for market garden production. Production of staple food crops in the agro-pastoral and agricultural zones are primarily based upon rain-fed agriculture, with irrigated agriculture practiced in localized areas (Niger River basin, the Goulbis in Maradi and Zinder, the Maggia and Tarka, Lake Chad and Dallols (Dosso region). Agriculture is characterized by a family approach, on plots averaging five hectares (WFP 2005). Overall subsistence farming and animal husbandry are cultivated using traditional techniques. With increasing population density in the most productive zones – the population growth rate in Niger averages 2.9 percent per annum -- the sustainable management of productive natural resources, particularly land and water, has become essential to Niger’s agricultural growth and rural poverty reduction.

39. *Millet and sorghum are the main staple food crops in Niger.*

The main grains cultivated are millet, sorghum, rice, *fonio* and maize, with cash crops including cowpea, peanuts, cotton, sesame, *vouandzou*, and *souchet*.²⁶ Millet is by far the dominant staple food crop in Niger and is grown in almost every agro-ecological zone, accounting for 76 percent of total cereal production and 72 percent of net availability between 2000-2005. Sorghum,

which is less drought-resistant than millet, is grown primarily in the southern regions of Niger; it, accounted for 22 percent of cereal production and 20 percent of net availability during the same period. Rice production accounted for only 2 percent of total net availability of cereals, and is grown primarily in the Niger River basin. The regions of Maradi and Zinder are considered to be the “bread baskets” of Niger, accounting for approximately 40 percent of national millet production.



²⁶ *Vouandzou* is a legume (also known as Bambara groundnut) that requires 500 mm of rainfall, and is therefore well-suited to the southern Sahelian and northern Sudanian zones of West and Central Africa. *Souchet* is a type of tuber known as *Cyperus esculentus*, or Chufa Sedge,

40. ***Per capita increases in production are the result of an expansion in cultivated land, rather than higher yields.***²⁷ Although national cereal production increased by 48 percent between 1985 and 2004 (from 1.8 million MT in 1985 to 2.7 million MT), the increase was primarily extensive in nature; cultivated areas increased by more than 84 percent over the same period, from 4.3 million hectares to over 7 million hectares (Table 12). Cereal yields remained fairly stable over this period, averaging 372 kg/ha. 2.5 times less as compared to other West African with comparable conditions. These relatively low cereal yields are related to low rates of technological adoption, the use of rainfed agriculture and the frequency of natural shocks. These, in turn, are affected by limited agricultural research and extension projects.

41. ***The onion and cowpea sub-sectors offer the best growth potential for exports.*** The World Bank's Agro-Pastoral Export Promotion Project identified five priority sub-sectors in agriculture: onions, cowpeas, sesame, souchet, and gum arabic. Onions are produced around the vast periodic watercourses (broad dry river beds) that cross much of south-central Niger, and account for 50 percent of the value of the exports of these five sub-sectors. Niger is also a major producer of cowpeas, which has replaced groundnuts as a cash crop for rural households. As is the case with staple food crops, the increase in cowpea production over the past two decades has occurred largely through an expansion of the cultivated area. As per capita cowpea consumption is fairly modest (6 kg/capita), 50-75 percent of Niger's cowpea production is exported to Nigeria, mostly on an informal basis. The potential for higher yields and exports for these crops is constrained by storage facilities and practices, marketing channels (especially access to market information) and improved agricultural techniques.

42. ***Niger's livestock herd and exports are some of the largest in West Africa*** Despite an austere natural environment characterized by low rainfall; Niger's agro-pastoral space is vast and diversified. Niger's livestock herd, estimated at 28 million head in 2006 (7.3 million heads of cattle, 9.2 million sheep, and 11.2 million goats), is the largest in West Africa. Livestock exports to Nigeria account for more than 90 percent of overall livestock exports, although little meat is exported from Niger. Major constraints to increasing herd sizes and improving productivity include limited veterinary and other inputs, a feed balance deficit and low availability of agricultural and industrial by-products. However, there are substantial opportunities for increasing the value of livestock exports and meat exports to coastal countries, primarily Nigeria, Ghana and Ivory Coast.

²⁷ Production shocks are defined as years when per capita cereal production in a department declined by more than 25 percent as compared to the six-year average.

Table 14: Millet and Sorghum Production in Niger, 1985-2004

Year	Population	Cultivated Areas (ha)	Production (MT)	Area per Capita	Production per capita
1985	6 565 000	4 310 931	1 774 113	0,7	270
1986	6 783 000	4 348 597	1 743 559	0,6	257
1987	7 008 000	4 359 029	1 362 777	0,6	194
1988	7 240 000	4 995 768	2 326 505	0,7	321
1989	7 480 000	5 094 042	1 754 605	0,7	235
Average (85-89)		4 621 673	1 792 312	0,7	256
1990	7 728 000	6 942 899	2 045 960	0,9	265
1991	7 967 568	6 456 771	2 314 991	0,8	291
1992	8 214 563	7 519 314	2 171 693	0,9	264
1993	8 469 214	6 099 128	1 714 310	0,7	202
1994	8 731 760	6 950 251	2 368 538	0,8	271
Average (90-94)		6 793 673	2 123 098	0,8	259
1995	9 002 444	7 164 356	2 034 983	0,8	226
1996	9 286 395	7 138 358	2 172 213	0,8	234
1997	9 574 274	6 386 922	1 641 530	0,7	171
1998	9 871 071	7 607 398	2 894 013	0,8	293
1999	10 177 080	7 449 871	2 772 346	0,7	272
Average (95-99)		7 149 381	2 303 017	0,7	239
2000	10 492 569	7 306 951	2 049 890	0,7	195
2001	11 060 291	7 835 456	3 022 350	0,7	273
2002	11 403 160	7 816 590	3 236 927	0,7	284
2003	11 756 658	8 041 222	3 502 464	0,7	298
2004	12 121 114	7 823 260	2 637 242	0,6	218
Average (00-04)		7 764 696	2 889 775	0,7	254
Average (80-04)		6 085 875	2 128 794	0,72	253

Source: Production statistics from the Ministry of Agriculture, various years; WFP 2005.

43. **Over the past 22 years, climatic shocks – primarily drought -- have resulted in high inter- annual and spatial fluctuations in staple food crop production.** Between 1990-2004, the years of lowest cereal production were 1993, 1997, 2000 and 2004, coinciding with natural shocks (drought). The high degree of *inter-annual variation* in cereal production is evident when looking at the coefficient of variation (CV).²⁸ The average coefficient of variation for national millet and sorghum production is .20 and .35, respectively, with an inter-crop correlation coefficient of .91.²⁹ In general, sorghum production is more variable than millet production, as the most common varieties of sorghum are of longer duration and less drought tolerant than millet. Beyond the national-level variation, there is also significant *spatial variation* in millet production, as

²⁸ The CV is calculated as the ratio of the standard deviation of cereal production to the mean of cereal production over the time period.

²⁹ The CVs for millet and sorghum in Nigeria, which has a higher annual average rainfall than Niger, are only 0.16 and 0.10, respectively. Production between Niger and Nigeria are correlated to a limited extent, with correlation coefficients of .43 for millet and .51 for sorghum, respectively (Dorosh 2008).

is evident when assessing the CVs by department. CVs range from .11 in the Magaria department (Zinder) to .75 in the Tillaberi department. Overall, the regions of Maradi and Zinder have the lowest CVs, whereas the regions of Tillaberi and Tahoua have the highest CVs. This suggests that rural households in Tillaberi and Tahoua are exposed to relatively higher production risk.

44. ***Departmental variation in staple food crop production – as opposed to national-level production variations – plays an important role in grain market performance and hence food prices, which affects households’ access to food.*** The spatial distribution of drought and production shocks varies substantially across drought and non-drought years. In 2000, a severe drought resulted in lower cereal production, with national production 21 percent lower than the ten-year average. During this year, only 15 percent of the departments experienced a per capita decrease of more than 50 percent. In 2004, a drought also contributed to a serious reduction in its staple food crop production; with cereal production 12 percent lower than the ten-year average. Although national cereal production was higher in 2004, 25 percent of departments experienced a per capita decrease of more than 50 percent. During years of adequate rainfall, however, less than 3 percent of all departments experience a per capita drop in production by more than 50 percent. This suggests that the spatial distribution of drought is important for grain market performance and prices.

Table 15. Official Cereal Imports for Niger, 1998-2004

Commodity	1998	1999	2000	2001	2002	2003	2004	Average	Percentage
Millet	27,731	4,056	84,004	81,657	4,530	6,699	29,811	34,070	0.20
Sorghum	13,363	1,469	15,872	19,923	950	715	7,470	8,537	0.05
Maize	88,262	56,103	85,116	80,727	12,184	19,232	48,803	55,775	0.34
Rice	91,497	79,035	62,904	70,041	74,884	37,430	59,399	67,884	0.41
Total	220,853	140,663	247,897	252,349	92,548	64,076	145,484	166,267	

Source: DPP and Ministry of Agriculture, various years; WFP (2005).

45. ***Levels of governmental support for the agriculture sector are some of the lowest in West Africa.*** In 2004, the Government of Niger’s total expenditures on agriculture were USD 16 million, which represented 1 percent of total governmental spending for that year and .5 percent of agricultural GDP. Only Guinea Bissau had a lower percentage of spending on agriculture (.5 percent) for that year.

Imports and Food Aid

46. ***In light of the strong inter-annual variation in staple food crop production in Niger, total food availability depends strongly on commercial imports, imported food aid and public stocks.***³⁰ Overall, the country’s agricultural trade balance remains heavily

³⁰ National-level data on private stocks are unavailable. However, according to the cereal marketing survey conducted by UC-Berkeley and four NGOs (CARE, CRS, HKI and World Vision), the duration and magnitude of private stocks of millet and sorghum are fairly limited for both farmers and traders. Traders store an average of 30 days, ranging from 7 days until 60 days. In addition, a small percentage of traders store inter-annually. The average duration of storage for farmers is longer, with an average of 6 months. However, a small percentage of farmers store cereal crops inter-annually.

in deficit, and imports of foodstuffs represent a third of the country's import bill. However, data on cereal imports and exports in Niger are highly unreliable, due in part to the informal trade that occurs between Niger and its neighbors (Benin, Burkina Faso, Chad, Mali and Nigeria (Table 13). Nevertheless, existing data indicates strong inter-annual fluctuation in cereal imports.³¹ Official cereal imports averaged 166,000 MT between 1998 and 2004, with rice and maize representing the highest percentage of total cereal imports. Official millet imports averaged 34,000 MT between 2000 and 2005, representing approximately 1 percent of total millet availability (Table 14). Millet and sorghum imports through official channels increased dramatically in 1997/1998, 2000/2001 and 2001/2002, coinciding with drought years. Nevertheless, official import data suggest that cereal imports were relatively lower during the first half of the 2004/2005 marketing season.

³¹ These figures are provided by calendar year, rather than marketing year, which are the most relevant for the analysis of cereal availability.

Table 16: Niger: Cereal Production and Availability, 1990-2005

	Average Quantity (thousand tons)				Coefficient of variation
	1990-1994	1995-1999	2000-2005	1990-2005	1990-2005
Production	2,238	2,363	3,075	2,591	0.23
Millet	1,803	1,914	2,339	2,038	0.20
Sorghum	363	388	661	482	0.40
Maize	1	3	4	3	0.64
Rice	72	57	71	67	0.14
Imports	247	173	181	199	0.21
Millet	47	31	15	30	0.56
Sorghum	15	5	2	7	1.17
Maize	76	56	51	60	0.31
Rice	41	37	42	40	0.26
Wheat	69	44	71	62	0.25
Net Supply	2,149	2,181	2,794	2,401	0.20
Millet	1,579	1,657	2,003	1,762	0.19
Sorghum	323	335	563	417	0.39
Maize	77	59	55	63	0.30
Rice	101	86	102	97	0.15
Wheat	69	44	71	62	0.25
Net Supply/capita (kgs)	263	224	237	241	0.14
Millet	193	170	170	177	0.14
Sorghum	40	34	47	41	0.26
Maize	9	6	5	7	0.40
Rice	12	9	9	10	0.23
Wheat	8	4	6	6	0.30
Net Imports/Supply	11.5%	8.1%	6.7%	8.7%	0.30
Millet	3.0%	1.9%	0.8%	1.8%	0.60
Sorghum	4.5%	1.6%	0.3%	2.0%	1.09
Maize	98.5%	94.6%	93.7%	95.5%	0.03
Rice	40.1%	42.5%	40.0%	40.8%	0.17
Wheat	100.0%	100.0%	100.0%	100.0%	0.00

Notes: Net supply calculated as production less assumed 15% losses plus net imports.

Source: Calculated from FAO data.

47. *Supply and demand conditions in Nigeria, especially the northern regions, have a major influence on prices and availability of staple food crops in Niger.* Covering an area of 923,000 km² and with a population of over 100 million, Nigeria produces significantly larger quantities of millet, sorghum and maize as compared with Niger. This is primarily due to the diversity of Nigeria's agro-ecological zones: annual rainfall averages from 500 mm in the northern regions to 4000 mm in the southeast. As is shown in Table 15, Niger's average millet production in 2003 and 2004 accounted for 30 percent of total millet production in the two countries. Similarly, Niger's sorghum production

represented only 9 percent of total sorghum production in the countries. Almost all of the maize produced is cultivated in Nigeria. Thus, Nigeria dominates the sub-regional supply of these cereals, and fluctuations in cereal supply and demand in Nigeria have important impacts on cereal supply and prices in Niger. While unofficial imports of sorghum and millet from Nigeria are relatively low, analyses of millet supply, demand and prices suggest that millet imports from Nigeria may have reached 200,000 MT in 2004, equivalent to about 10 percent of total net millet supply in Niger (Dorosh, 2007).

Table 17: Cereal Production in Niger and Nigeria, Average 2003-2004

	Millet	Sorghum	Other	Total
Niger	2.7	0.8	0.1	3.6
Nigeria	6.3	8.0	7.2	21.5
Total	9.0	8.8	7.3	25.1
Niger share	30.4%	8.6%	1.1%	14.3%

Source: Calculated from FAO data.

48. ***Unlike other countries in Sub-Saharan Africa, imported food aid has not played an important role in Niger's total food availability since the mid-1990s.*** Between 1997 and 2007, Niger programmed both imported food aid and food aid from local or triangular purchases. According to WFP (2005), approximately 29,000 MT of food aid are imported annually, comprised of rice (11,000 MT), wheat (4,000 MT), cereals (14,000 MT) and other commodities, such as vegetable oil and soy-fortified bulgur wheat (SFSB). Using official import data, this suggests that food aid represents less than 20 percent of total cereal imports and 1 percent of total cereal net availability. Overall, emergency and development food aid programs are managed and executed by a variety of governmental, non-governmental and international organizations. Food aid programs between 2000-2007 were implemented by NGOs, including *Action Contre la Faim* (ACF), Africare, CARE, Catholic Relief Services (CRS), Helen Keller International (HKI), Concern Worldwide, Medecins sans Frontières, and Plan-Niger; international organizations, including UNICEF and the World Food Program (WFP); and the GoN, including the Cellule de Crise Alimentaire (CCA), the Dispositif National de Prévention et de Gestion des Crises Alimentaires (DNP-GCA) and the *Office des Produits Vivriers au Niger* (OPVN).

49. ***Food aid in Niger is used for both direct distribution programs and for monetization.***³² Since the mid-1990s, food aid for distribution has been used in three types of programs in Niger: emergency response, safety net and Food for Work (FFW).³³

³² Monetization is defined as "imported food aid sold commercially to local buyers in order to generate proceeds for longer-term development programs." Between 2000-2007, the primary monetization programs were financed by USAID Title II and the U.S. Department of Agriculture (USDA). During this period, four NGOs (including Africare, CARE, CRS and HKI) imported rice and wheat for sale to local buyers, using the proceeds to implement multi-year agriculture and health programs in Agadez, Dosso, Tahoua, Tillabéri and Zinder. These imports have averaged 3,000 MT (rice) and 5,000 MT of wheat on an annual basis.

³³ There has also been a relatively small school feeding program in Niger for nomadic populations since 2000/2001. However, the geographic coverage has been limited to 250 schools (2001) to 500 schools (2005).

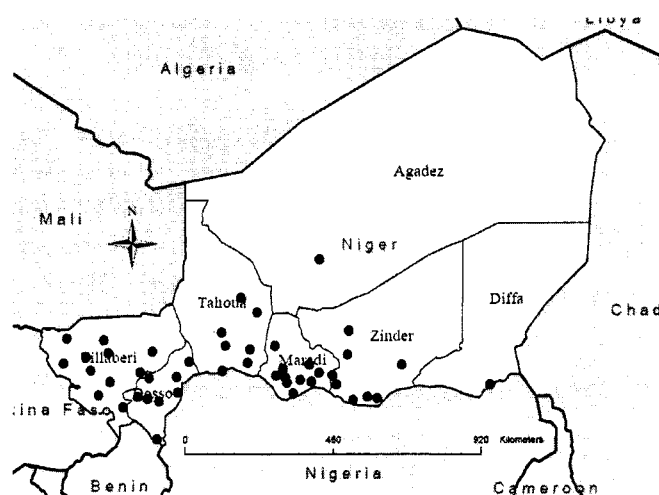
Emergency response programs have typically been of short-duration (ie, during the year of shock or localized food crisis) and include general distribution, nutritional rehabilitation of children under 5 and the subsidized sales of cereals. Safety net programs have typically provided food aid to extremely vulnerable persons, such as the elderly, persons living with HIV and AIDS (PLHAs), and orphans. Finally, FFW programs have provided food aid to communities during the hungry season in return for work on a community-based infrastructure project, such as health centers, *demi-lunes* in community pastures or farm-to-market roads. FFW projects have typically been multi-year projects as part of larger sectoral programs, although they have also been used as part of emergency response efforts during drought years.³⁴ In limited cases, safety net programs and nutrition recuperation programs also exist on a multi-year basis. The sale of staple cereals at subsidized prices has been primarily executed by the Government of Niger (via the *Office des Produits Vivriers au Niger* (OPVN) and the *Cellule de Crise Alimentaire* (CCA)) using locally purchased commodities (see Chapter 4).

AGRO-FOOD MARKETS AND PRICES

Market Structure

50. ***Performance of agro-food markets affect households' economic access to food products.*** In light of the importance of staple cereals (millet and sorghum) for producers' and consumers' welfare, the structure, conduct and performance of food production and marketing has important implications for food security in the country. Staple food crops (millet, sorghum), cowpea, and rice are traded through an extensive system of traditional markets, which run the length of the country.³⁵ Figure 9 shows the location of key grain markets in the country. Cereal markets in Niger are classified into four categories, depending upon their primary role and geographic location: collection; consumer; wholesale; and cross-border. The average distance between these markets is 350 km, but distances between the markets in which trade takes place ranges from 10-900 km. While the density of grain markets varies considerably by department, market density appears to be evenly distributed throughout the country, although there are very few markets in the northern pastoral zones (Agadez, northern Tahoua and Diffa).

Figure 9: Key Grain Markets in Niger



³⁴ During previous drought years, some NGOs also implemented emergency FFW projects in targeted villages. In these cases, food aid was provided during the hungry season for one year only to households who constructed a community-based infrastructure, such as a road or a well.

³⁵ According to a census of grain markets conducted in 2006 and 2007, there are over 2,000 grain markets in the country. The number of traders per market ranges from 38 traders to over 350 traders (Aker 2007).

51. *A variety of market actors are involved in moving cereals from producers to consumers.* Market actors involved in the exchange of cereals include: (i) *farmers*, who produce, sell and buy millet, sorghum and cowpea; (ii) *traders*, including retailers, intermediaries, semi-wholesalers and wholesalers; (iii) *transporters*, who are responsible for moving goods via truck, car or boat; (iv) *rural and urban consumers*, who purchase the final good in rural or urban markets; and (v) *state structures*, such as OPVN and the CCA. Cereals are first produced by farmers, who sell their production directly to intermediaries located in the village or in the market. Intermediaries in turn sell directly to semi-wholesalers and wholesalers in local retail or wholesale markets. These wholesalers sell to other traders, such as wholesalers located in other markets or retailers located in the same market. Wholesalers can also sell to consumers directly, although usually do not sell in small quantities (i.e., less than 100-kg bags). Retailers in turn sell directly to both urban and rural consumers. Retailers represent the highest percentage of all traders (57 percent) in the market, followed by wholesalers (16 percent), semi-wholesalers (15 percent) and intermediaries (10 percent) (Aker 2007).

Government Agro-Food Policies

52. *The role of the Government of Niger in cereal production and marketing has been significantly reduced since the 1990s.* In the two decades following independence (1960), the Government of Niger (GoN) was involved in all aspects of cereal production and marketing. During this time, OPVN was established in order to manage the purchase and sales of staple cereals (millet and sorghum), functioning as a state-owned monopoly until 1984. With the implementation of the government's Structural Adjustment Program (SAP) in the 1990s, however, the *Nigerien* cereal market became increasingly liberalized. By the mid-1990s, OPVN's role was reduced to monitoring the food security situation within the country and managing the country's strategic grain reserves. These reforms had important implications for the functioning of Niger's agro-food sector, particularly in terms of pricing, marketing, and agricultural development and investment (Terpend 2005). During 2000 and 2004, OPVN was responsible for distributing subsidized food to the population, including vulnerable groups.

53. *In contrast to the pricing support policies of the 1960s and 1970s, food prices in Niger are now determined by market forces.* Domestic cereal prices are influenced by a host of factors, such as domestic supply and demand, commercial imports, import taxes and tariffs, regional trade patterns and market structure. Traders are free to import cereals and export cowpeas and livestock, provided that they are registered and respect all trading and tax procedures. However, depending upon domestic cereal production in a particular year, the GoN may regulate trade flows by limiting either exports or imports of specific commodities.³⁶

³⁶ While the free exchange of goods and services is permitted within and among West African countries (including between Niger and Nigeria), the GoN may attempt to control cereal exports or imports in particular markets during low production years. Most traders interviewed during the 2005-2007 market survey believe that the exportation of millet and sorghum is prohibited.

54. *Trade tax regulations in Niger are officially aligned with UEMOA rules.* The free exchange of goods and services is permitted within and among West African countries. Within the Economic Community of West African States (ECOWAS), there are no official export taxes for local products traded among the West African Economic and Monetary Union (WAEMU) countries. Nevertheless, import and export tax regulations in Niger are integrated into the rules of UEMOA. Customs duties still exist for imports of cereals originating from outside of the WAEMU area, namely Nigeria and Ghana.³⁷

Table 18. Average Grain Prices in Niger, Nigeria and Chad, 1996-2006 (CFA/kg)

Variable	Obs	10-year mean	Std. Dev.
Average Prices (CFA/kg)	120	145.98	40
Niger (Region)			
Diffa	120	167.51	47.88
Dosso	120	151.58	40.33
Maradi	120	124.20	38.50
Niamey	120	143.36	30.90
Tahoua	120	155.99	42.39
Tillaberi	120	158.10	41.62
Zinder	120	129.02	41.82
1997/1998 Prices	12	173.25	33.35
2000/2001 Prices	12	160.76	36.89
2004/2005 Prices	12	194.10	53.40
Benin			
(Malanville)	81	127.17	39.07
Burkina Faso			
(Kantchari)	47	125.95	32.17
Chad	120	156.18	44.06
Nigeria	81	137.03	40.49

Notes: Prices are deflated by the consumer price index.
Source: SIMA/Niger

Grain Prices and Market Integration

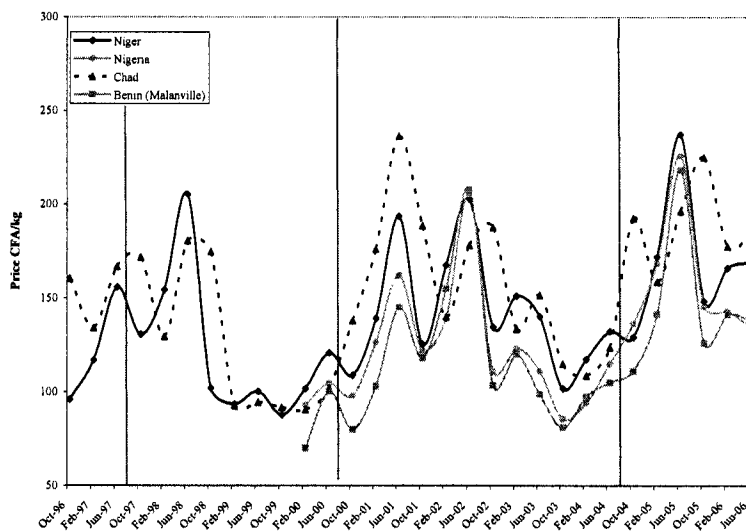
55. *Millet and sorghum prices in Niger are subject to a high degree of inter- and intra-annual variation.* Table 16 shows average grain prices in Niger by region, and Figure 10 shows average monthly grain prices in Niger and in the sub-region (Benin, Chad and Nigeria) between 1996 and 2006. High-production years in Niger are followed by relatively lower prices (1998/1999, 1999/2000, 2003/2004), and low-production years are followed by relatively higher prices (1997/1998, 2000/2001, 2004/2005). Grain price

³⁷ During the trader surveys in cross-border markets, specifically those in Nigeria, traders cited excessive official and unofficial import taxes on millet and sorghum as a constraint to marketing among the two countries.

levels in Niger closely follow those in Benin and northern Nigeria (Illela, Jibia and Mai Adua), but not those in Burkina Faso and Chad. In addition, the seasonal variation of millet prices is also important. Millet prices range from 20-89 percent higher in August (the hungry season) as compared to October (the harvest period), with an average intra-seasonal price difference of 44 percent. Millet prices increased by 89 percent between October 2004 and August 2005, and by 75 percent between October 2000 and August 2001.³⁸ Markets are therefore subject to relatively high price instability, which suggests that households and traders are subject to high to inter- and intra-annual price risk.

56. *Although grain markets in Niger are relatively integrated, this varies by geographic region and by year.* Staple food crop markets in Niger are somewhat integrated, with an average correlation coefficient of .55 for all markets between 1996 and 2006. This is well below the price correlation coefficients computed for other agricultural products in the developing world (Timmer 1974). Nevertheless, the degree of market integration varies on an inter-annual basis, with higher levels of integration during low-production years. The degree of integration between markets in Niger and those in border countries (Benin, Burkina Faso, Chad and Nigeria) follow the same pattern. On average, the degree of market integration between Chad and Niger is small, averaging .25. Similarly, the degree of integration between Burkina Faso and Niger is also quite limited, averaging .47 between 1999 and 2006. The highest degree of integration occurs between Niger, Benin and Nigeria, with correlation coefficients averaging .65. On average, grain markets in Niger are more integrated with Benin and Nigeria during drought years, with the highest degree of integration occurring during the year of the 2005 food crisis.

Figure 10: Grain Prices in Niger and Key Regional Markets, 1996-2006 (CFA/kg)



Source: Aker 2007.

³⁸ During non-drought years, prices increase by 10-20 percent between the harvest and hungry periods.

57. ***Grain prices in Niger respond to supply shocks, and price movements in surplus regions within Niger and regional markets are useful in predicting grain price changes in Niger*** (Granger causality forecasting tests). Grain prices in Niger follow well-defined paths: they start in production centers (ie, Maradi and Zinder) and then spread across the country. This means that grain prices in Niger respond to supply shocks (such as droughts or locusts), rather than demand shocks Figure 11 shows the percentage of times that a market is useful for predicting price changes in other markets in Niger. The map shows that markets located in surplus regions (the southern and eastern parts of the country, such as Maradi, Zinder and southern Dosso) are useful for predicting price changes in other markets. In addition, the cross-border markets of Malanville (Benin) and Jibia, Illela and Mai-Adua (Nigeria) predict price changes in over 75 percent of the markets in Niger.³⁹ Notably, price changes in the capital city, Niamey, are not useful for predicting price changes in Niger. Overall, this means that prices in production regions can be useful in predicting price changes in Niger. This also suggests that markets located in deficit regions – primarily Tillaberi, Tahoua and Diffa – follow price movements in other markets more frequently.

58. ***In addition to supply shocks, grain market performance in Niger is partially determined by access to information.*** Market actors' (farmers and traders) access to price information has an important impact on grain market performance in Niger. Between 2001-2007, the introduction of cell phone towers throughout Niger enabled traders to search for price information over a larger number of markets, allowing them to move commodities to excess demand markets. This, in turn, reduced grain price dispersion between markets and lowered average grain prices (Aker 2008).

59. ***Niger needs to import, but arbitrage opportunities for imports vary on a intra- and inter-annual basis.*** . During most years, import parity prices for cereals (millet and sorghum) from northern Nigeria (Illela, Jibia and Mai Adua) are typically higher than domestic millet prices from October until May, meaning that there are no incentives to import (Figure 12).. This pattern changes between June until August, when domestic prices in Niger are *higher* than import parity prices, implying that there are positive spatial arbitrage opportunities. During this period – which coincides with the hungry season in Niger -- traders typically import grains from Nigeria.⁴⁰ This pattern was markedly different during the 2004/2005 marketing season.

³⁹ Kano, an important grain market located in northern Nigeria, does not appear useful in forecasting millet prices in a significant number of markets in Niger; it only “predicts” price changes in 29 percent of markets. However, price data for Kano are only available for 2003-2007, a relatively short time series for forecasting tests.

⁴⁰ When looking at trade with Burkina Faso and Benin, net marketing margins are consistently positive, and there are fewer intra- and inter-annual fluctuations. .

Figure 11: Key Forecasting Markets for Niger

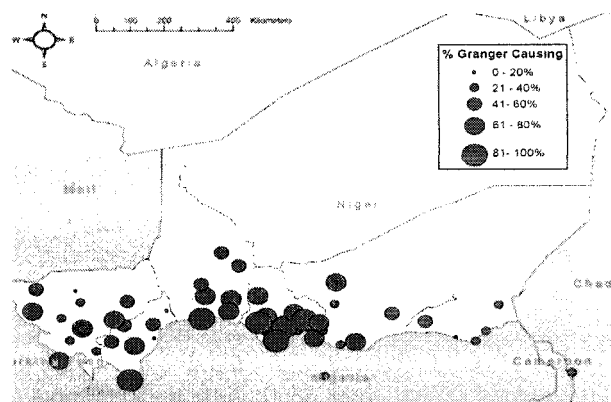
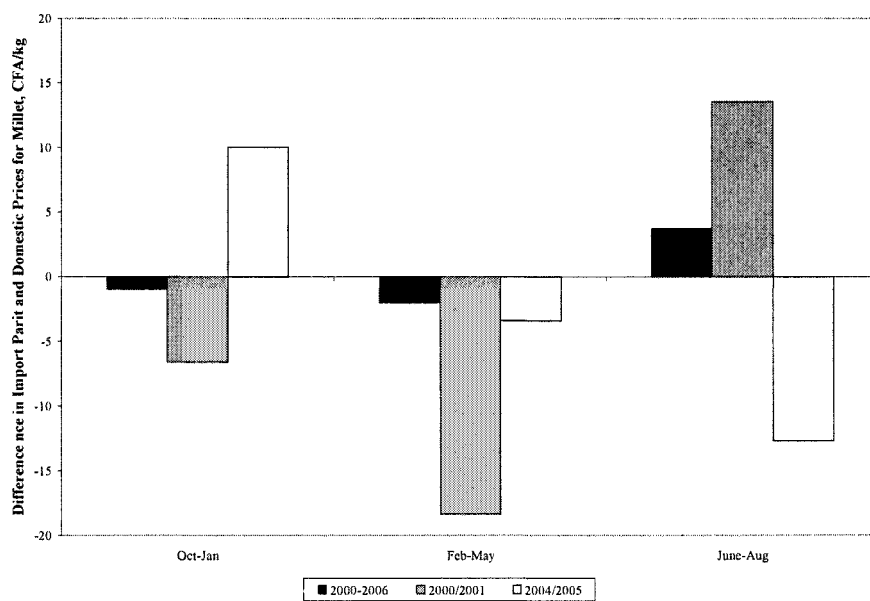


Figure 12: Comparison of Millet Prices in Niger and Nigeria



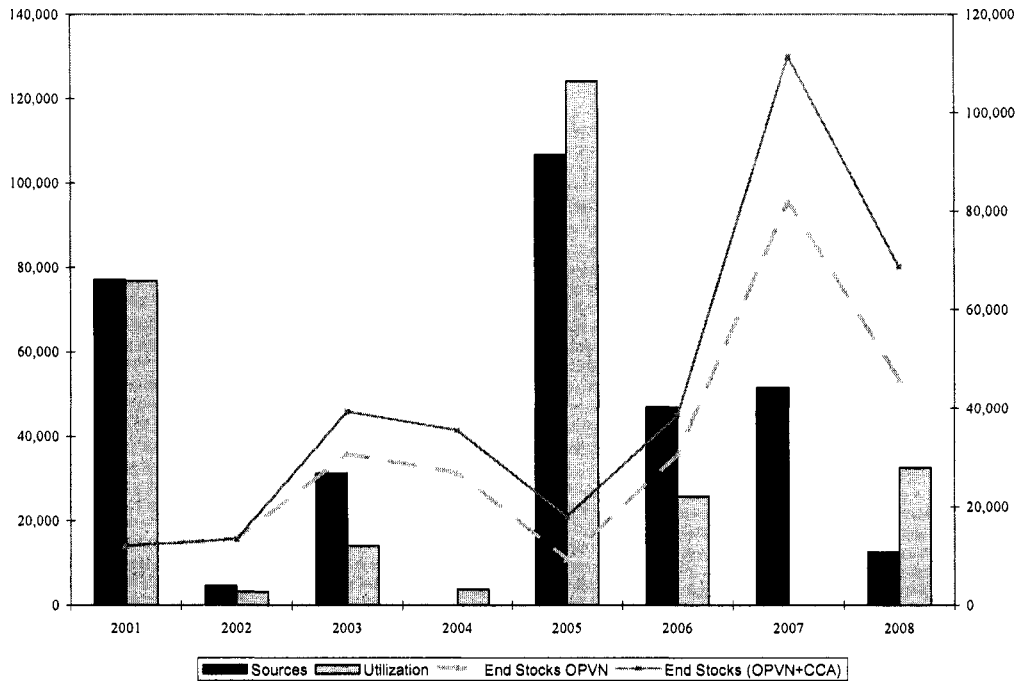
CHAPTER 4: GOVERNMENT INSTITUTIONS AND PROGRAMS AND RESPONSE TO THE 2005 FOOD CRISIS

Although the need to support poor and food insecure households is substantial, safety net programs in Niger are small, designed for emergency food crises, and receive limited government funding. The food crisis in Niger in 2005 caught national policy-makers and the international community by surprise. Estimates of national food production during the 2004 harvest suggested only a 12 percent decline relative to the ten-year average and gave little cause for concern. However, predictions of a large-scale food crisis did not occur until April 2005. In one sense, the major cause of the crisis was the extremely low level of household income, which makes households vulnerable to serious malnutrition even during normal production years. During 2004/2005, two additional shocks precipitated the food crisis: 1) drought and corresponding production shocks in 2004, which lowered household-level production and incomes for the 2004/2005 marketing season; 2) a sharp rise in food prices in May 2005, which reduced access to food for all net buying households. The response of the GoN and the international community (donors, NGOs and WFP) consisted primarily of the use of food aid for emergency distribution, FFW, the sale of approximately 40,000 MT of cereals at subsidized prices and “Cash-for-Work” (CFW) programs. In spite of these efforts, in some of the worst-affected regions, the gross and child mortality rates reached well above international thresholds for humanitarian crises. Understanding the factors that contributed to the 2005 food crisis is important for preparing for and responding to future food crises.

INSTITUTIONAL MECHANISMS FOR RESPONSE TO FOOD CRISIS

60. *Since the Sahelian famines of the 1970s, a variety of governmental and non-governmental institutions have been established to prepare for and respond to food crises in Niger.* The Niger’s Food Production Office (*Office des Produits Vivriers du Niger* - OPVN) was established in order to manage the purchase and sale of staple cereals (millet and sorghum) in the country. Between 1990-1998, OPVN focused on monitoring the food security situation and managing the country’s strategic grain reserves (defined as the stocks held by the end of the calendar year). During this time, Niger also drastically reduced its strategic grain reserves, previously an important part of the country’s emergency response strategy. In 1992, for example, Niger’s strategic grain reserves were 85,000 MT, and fell to 12,000 MT in 1998. Since 2000, the OPVN’s strategic grain reserves have averaged 27,000 MT.

Figure 13: Quantities of Food Aid Obtained and Distributed by OPVN & CCA during 2001-2007



Notes: “Sources” refer to the total quantity of food aid obtained (as foreign aid or other sources) by OPVN and CCA during a particular year. “Utilization” refers to the total quantity of food aid distributed by both agencies. End stocks are the quantities of food aid remaining at the end of the fiscal year.

61. In 1998, the GoN created a new structure for managing food crises, the National Body for the Prevention and Management of Food Crises (*Dispositif National de la Prevention et la Gestion des Crises Alimentaires - DNP-GCA*). The objective of this new structure was to reduce food insecurity by ensuring better coordination among the various organizations. The DNP-GCA, overseen by a National Consultation Committee (*Comission Mixte de Concertation*, or CMC) is responsible for overseeing and coordinating (i) the interventions related to the country’s strategic grain reserves, and (ii) donor funds provided to governmental structures. Under the broader umbrella of the CMC, the four local Government structures involved in the preparation of and response to food crises include: *the Cellule de Crises Alimentaires (CCA)*, primarily responsible for decision-making with respect to food crises; the *Systeme d’Alerte Précoce (SAP)* or local early warning systems, responsible for collecting and analyzing data on food insecurity; OPVN, responsible for managing the country’s strategic grain reserves; and local market information systems for agriculture and livestock (SIMA)(see Box 4).

62. In addition to the DNP-GCA, there are a number of non-governmental and international actors involved in the prevention of and response to food crises. These include non-governmental organization, such as Africare, Catholic Relief Services, CARE, and WVI; international bodies (WFP, FAO, UNICEF), regional structures (i.e., CILSS) and donors (ie, the European Union, USAID’s Famine Early Warning Systems

Network (FEWSNET). These institutions are all involved in the prevention, preparation and management of response to food crises. In this context, these organizations collaborate with the GoN in establishing famine early warning systems, executing activities to mitigate the effect of food crises; and responding to food crises once they occur.

Box 4: National Mechanism for the Prevention and Management of Food Crises in Niger: the *Dispositif National de Prévention et de Gestion des Crises Alimentaires (DNP-GCA)*

Since 1998, Niger's government and major food aid donors have managed a National Mechanism for the Prevention and Management of Food Crises in Niger, the *Dispositif National de Prévention et de Gestion des Crises Alimentaires (DNP-GCA)*. Its primary mission is (i) to help the Government build cereal and financial reserves designed for food aid during crises; and (ii) to implement actions supporting the population during food crises.

Management: The DNP-GCA is managed by the National Consultation Committee (CMC) for State donors, which is responsible for (i) defining the operational goals, and (ii) handling programming, coordination, and management of resources made available to prevent and moderate food insecurity. The Prime Minister and his office represent the Government. The Technical and Financial Partners consist of 12 members including 5 from the EU: Germany, Belgium, France, Italy, and the European Commission; 1 from Europe outside the EU: Swiss Confederation; 2 from outside Europe: Canada and the United States; and 4 United Nations bodies: UNDP, WFP, FAO, and UNICEF. A framework agreement, signed by the State and all 12 partners in 2005, defines the methods of operation and for the utilization of DNP-GCA resources. Within this framework, two organizations were created:

- The National Consultation Committee (CMC): This is a strategic organization at the level of the Prime Minister, Ambassadors and Representatives who meet once per year to assess the status of the previous campaign and outline the major lines for intervention for the coming year.
- The CRC, Comité Restreint de Concertation (Special Advisory Committee): This is a technical organization at the level of the Prime Minister's cabinet and of the delegates from the Financial and Technical Partners who negotiate and approve programs (unanimously), authorize expenditures and manage the available funds, assess the operations implemented, and monitor the CMC's actions.

DNP-GCA Tools: The DNP-GCA has mobilized two tools:

1. ***The Stock National de Réserve, SNR (National Reserve Stock):*** The SNR is used only in years of national or regional crisis to implement a rapid response while waiting the mobilization of international humanitarian and national solidarity aid. The SNR's optimal volume is 110,000 tons of cereals. The SNR is composed of:
 - ***The Stock National de Sécurité, SNS (National food security stock):*** A physical stock of 80,000 tons of cereals (millet, sorghum, maize, and rice) stored in the warehouses of the Office des Produits Vivriers du Niger (OPVN). This stock is used to avoid the development of speculation by implementing subsidized sales.
 - ***The Fonds de Sécurité Alimentaire, FSA (Food Security Fund):*** A financial reserve to purchase 30,000 tons of cereals in case of major crisis and low national stocks. Purchase decisions will be made by common agreement with the partners and entrusted to the OPVN, which will receive a lump sum remuneration of 10,000 FCFA per ton.
2. ***The Fonds Commun des Donateurs, FCD (Common Donor Common Fund):*** This fund is the first level of resources that can be mobilized for financing actions to respond to small food crises. This fund will primarily finance actions for the prevention and moderation of crises (Cereal banks, cash for work for soil reconstitution, subsidized cereal sales, targeted free distribution of cereals).

Primary DNP-GCA Bodies: Aside from the CRC, the other bodies are:

- The Cellule de Crises Alimentaires, CCA (Food Crisis Cell): This is the executive body of the DNP-GCA and is responsible for the implementation and monitoring of the programs retained by the CMC. The CCA (created in 1998) is primarily responsible for (i) ensuring the proper coordination of assistance programs; (ii) ensuring the proper operation of the DNP-GCA; (iii)

assessing food aid needs; and (iv) keeping records of food aid received and actions implemented to moderate crises.

- The Cellule de Coordination du Système d'Alerte Précoce, SAP (Early Warning System Coordination Cell): responsible for collecting and processing information from various information systems (SIMAgricole, SIMBetail, Enquête permanente d'estimation des récoltes, (EPER (agriculture production survey), etc.). Additionally, SAP monitors vulnerable areas on a monthly basis.
- The Office des Produits Vivriers du Niger, (OPVN (Food Crop Authority): it is responsible for maintaining the Stock National de Reserve (storage and renewal of the stock) and the logistical management of food aid (distribution of services, commercialization of food aid destined for sale, and processing of stocks).
- The Information Center (IC): Attached to the Prime Minister's Cabinet, this is the distribution and communication body for the DNP/GCA.

Source: GoN and FTPs.

Early Warning Systems

63. *A variety of local, regional and international famine early warning systems exist in Niger to collect, analyze and disseminate information concerning possible food crises.* These include the governmental early warning system (EWS, or SAP) and Agricultural Market Information System (*Système d'Informations sur le Marché Agricole* - SIMA); the USAID-funded famine early warning system network (FEWS NET); international organizations, such as World Food Program (WFP), UNICEF and various community-based early warning systems established by international NGOs; and CILSS, a regional body. In general, these systems rely on rainfall data, agricultural production, remote sensing and market information (i.e., prices) to generate predictions regarding the food security situation in the country.

64. *Despite important efforts and available climatic, production, price and food security data, the national, regional and international early warning systems were not able to complete their mission: predicting in an accurate and timely manner the magnitude, scope and location of the food crisis in 2005.* While some institutions warned of a food crisis in drought-affected regions as early as December 2004, these predictions were based primarily on data concerning drought and production shocks. In addition, once the most vulnerable regions were identified in 2005, this process was not without problems.⁴¹ This was related to a variety of factors, including the following:

- **Different conceptions of food insecurity and vulnerability.** In general, each organization – even among the early warning systems -- uses its own framework for food security and vulnerability. While there is considerable overlap among these frameworks, there is not a common understanding of these concepts among different actors. Consequently, developing common and transparent early warning indicators is difficult.
- **Early warning system indicators exist, but there are no thresholds to trigger action.** Unlike malnutrition data -- where there are clear thresholds for a crisis – thresholds for the drought, production or price

⁴¹ Government of Niger, Prime Minister's Office, EC, SAP/CG. *Situation Alimentaire dans les Zones Vulnérables* (May 2005).

data do not exist. Although there is substantial data available in Niger – and the early warning system organizations (CCA, SAP, SIMA and FEWSNET) do an excellent job of analyzing these data - -the analyses focus on production and price trends, rather than threshold levels to trigger a crisis. Such thresholds are required in order to determine whether a crisis will occur.

CAUSES OF THE 2005 FOOD CRISIS

65. *In 2004, Niger experienced a severe drought that contributed to a 12 percent reduction in cereal production relative to average production of the previous ten years.* Between January and June 2005, millet prices rose to a level that was 25 percent higher than the ten-year average, with the price of a 100-kg sack of grain representing approximately 37 percent of national per capita income during the height of the food crisis. By June 2005, an estimated 2.4 million *Nigeriens* were affected by severe food shortages, with more than 800,000 of these classified as critically food insecure (USAID FEWSNET 2005). Although the 2005 food crisis was not of the scale of the 1968-74 or 1983-84 famines, the gross mortality rate reached 1.5 deaths per 10,000 per day in targeted regions, with a child mortality rate of 4.1 deaths per 10,000 per day (Médecins sans Frontières 2005) (Box 5). Both of these are above the threshold mortality rates used to define a humanitarian crisis.⁴²

Box 5: History of Food Crises in Niger

During the first post-colonial decade, the country succeeded in reaching food self sufficiency due to low demography, good rainfall, and acceptable crop yields from rudimentary agricultural systems. Until mid 1960s, the cereal balance sheets were in excess: a cereal surplus of 49 kg per person per year was recorded between 1960 and 1965. However, by late 1960s, the country registered an important food shortage for the agricultural campaign of 1968-1969.

In 1972 and 1973, food production dropped dramatically: food shortage was estimated at about 400, 000 tons in 1973. The main causes of these food crises were: the lack of valorization of marketable agro-pastoral products; fiscal pressure; and the decline in cash crops. All these factors combined with the effects of harsh climatic conditions resulted in the most serious food crisis that the country had faced since its independence.

During the 1976-1982 period, conditions were favorable (substantial uranium revenues, fiscal deficit reduction with the suppression of capitation taxes, increase in support to farmers, and favorable climatic conditions). Between 1975 and 1982, uranium replaced peanuts in terms of foreign currency injection into the development of the public sector. From 1982, the State disengaged from the market and production sectors: producers were made responsible through sale and production co-operatives, and seeds and pesticides subsidies were eliminated.

In 1983-1984, the country faced a new food crisis, due to the cumulated effects of the deterioration of climatic conditions, the structural adjustment policy and the closing of the Niger-Nigeria border (1983). Another food shortage comparable of that of 1973-83 took place due to a heavy drought.

In 1984 – 1985, the Nigerien farmers, who never knew a stable, sustainable and good food situation, again faced a big crisis. The needs for food aid were estimated at 410, 000 tons (in addition to imports of 125, 000 tons).

1990-1991 and 1993-1994: during these years, people faced food shortages.

The 1996-1997 crisis: This crisis is still remembered by the Zarma (western part of Niger) and the Haoussa (central part of Niger) regions. The important campaign shortage resulted from the severe drought period of August 1996.

⁴² The crude mortality rate used to define a humanitarian crisis is one death per 10,000 people per day.

2001, Niger was part of a trans- regional food crisis, which was particularly severe in many regions due to depletion of both farmers' food stocks and national security food stocks (the national security stock dropped from 200.000 to 100.000 tons). Food scarcity was observed in almost all the regions. The price of a 100 kg bag of pearl millet reached CFA 25, 000 in many regions of the country. Even other neighboring countries such as Mali, Burkina Faso and Nigeria were affected.

The 2004-2005 crisis: even though it was not as severe as that of 1973-1984, it exceeded that of 1996-1997. One of the consequences of food crises is the increasing evolution of cereal imports. Since 1973, staple food importing (millet, sorghum) has considerably increased. But it is mainly rice that constitutes the major part of the introduced products (more than 50% of the imports of cereals).

66. *As is the case with chronic and seasonal food insecurity in Niger, the causes of the 2004/2005 food crisis are multiple and complex.* Although rural households in Niger are susceptible to a variety of risks, including droughts, floods, pest attacks, health epidemics and economic shocks, not all of these shocks result in food insecurity or food crises. Whether or not the shock results in food insecurity depends on households' assets, risks and risk management strategies. The inter-related factors that contributed to the food crisis in 2004/2005 include production and marketing factors that have an impact on food availability and market prices; the extended level of poverty and low level of assets the limited household's income and access; the poor level of health and sanitation and ultimately the delays in the relief response.

Domestic and Regional Food Availability in 2004/2005: Drought, Production Shocks and Commercial Imports

67. *The lower domestic food availability was a result of widespread regional drought and market prices.* The food production decline was certainly an important factor, but staple food crop production was even lower in the 2000 drought year. Yet, according to the local early warning systems, a severe food crisis did not occur in 2000/2001.⁴³ Thus, it is important to consider other factors that contributed to the 2005 food crisis. These include the large number of departments affected by production shocks in 2004 (that dramatically reduced farm household incomes in these areas); production shocks on key forecasting markets in Niger and Nigeria; changes in the quantities imported from neighboring countries (especially Nigeria) due to unfavorable marketing conditions. More specifically, the inter-related factors that contributed to the food crisis in 2004/2005 include the following:

- *Factor #1: Drought contributed to up to a certain extent to the loss of production.* Between 1996-2006, Niger experienced droughts in 1996, 2000 and 2004, with annual rainfall lower than one standard deviation from the mean (Nicholson et al 2000). 32 percent of departments experienced drought in 2000, compared with 50 percent of departments in 2004. Nevertheless, staple food crop production was 10 percent higher in 2004 as compared to 2000; total production of cereals (millet, sorghum, fonio and rice) was estimated at 2.05 million MT in 2000 (195 kg/capital), as compared with 2.63

⁴³ Although a severe food crisis did not occur in 2001, households did suffer from seasonal food insecurity during the hungry season (soudure) between May-August.

million MT in 2004 (218 kg/capita). This suggests that drought is not perfectly correlated with levels of per capita grain production.⁴⁴

- **Factor #2: A Higher Percentage of Departments were Affected by Drought in 2004.** In 2000, only 15 percent of the departments experienced a per capita decrease of more than 50 percent. By contrast, in 2004, over 25 percent of departments suffered a per capita decrease in grain production of more than 50 percent.⁴⁵ This means that the percentage of departments affected by production shocks – as opposed to national-level production – is important for market performance, grain prices and food crises in Niger.
- **Factor #3. Key Markets in Niger and Nigeria were Affected by Drought in 2004.** In addition to the percentage of markets affected by drought, which markets are affected is also important. Since prices in Niger respond to supply shocks, drought in surplus-producing regions (such as Maradi and Zinder) will have a larger impact on price levels than drought in deficit regions (such as Tahoua and Tillaberi). In 2004, the markets affected by drought were key surplus-producing markets. Average (deflated) millet prices in these markets were 15 CFA/kg higher in October 2004 as compared to October 2000.⁴⁶ Therefore, while total and per capita grain production was higher in 2004, price levels in key forecasting markets were 17 percent higher at the start of the 2004/2005 marketing season. This suggests that monitoring prices on these markets during the 2004 harvest could have served as an indication of a potential food crisis.
- **Factor #4. Prices were Higher in northern Nigeria, Making it Unprofitable to Import.** Following the 2004 harvest, the FAO and WFP estimated that there would be a cereal “deficit” of 278,350 MT in 2004/2005, taking into account commercial imports (FAO and WFP, 2004).⁴⁷ This prediction assumed that Niger would be able to import from neighboring countries (Benin, Burkina Faso, Mali and Nigeria) in order to reduce its cereal deficit. During most years, domestic millet prices in Niger are lower than prices in Nigeria from October until May. This pattern changes from June until August, when prices in Niger are *higher* than those in northern Nigeria. During this period, traders typically import grains from Nigeria.⁴⁸ The situation during the 2004/2005 marketing season was markedly different. Figure 12 shows the millet prices between Jibia (Nigeria) and Maradi (Niger)

44 There was not a strong correlation between drought-affected and food crisis zones during the 2004/2005 marketing season. The correlation between food insecure and drought-affected regions in 2004/2005 was .02.

45 During non-drought years, less than 3 percent of all departments experience a per capita decrease in grain production greater than 50 percent.

46 The forecasting markets included those markets that Granger-cause more than 75 percent of markets in Niger: Gaya, Maradi, Guidan Roumdji, Tessaoua, Tounfafi and Zinder (Niger); Jibia, Illela and Mai Adua (Nigeria); and Malanville (Benin).

47 The norm used for cereal consumption by the GoN is 240 kg/capita. This is based upon a population-based weighting of the 200 kg/person norm for nomadic populations and the 250kg/person norm for agricultural populations. In 2004, the FAO/CILSS/PAM 2004 mission adopted a norm of 239 kg of dry cereals (millet, sorghum) and 20,5 kg of wheat and rice.

48 When looking at trade with Burkina Faso and Benin, net marketing margins are consistently positive, and there are fewer intra- and inter-annual fluctuations.

for several years. Between October 2004 and May 2005, millet prices in Niger were lower than those in northern Nigeria, as is the case during most years. However, millet prices in Nigeria remained higher than domestic millet prices for the entire 2004/2005 marketing season. Regardless of the reasons for higher millet prices in Nigeria during this period, the impact is clear: It was not profitable for traders to import grains from Nigeria during the year of the food crisis (although it was profitable in 2001). While prices in Benin and Burkina Faso were lower than those in Niger during 2005, it is unclear whether sufficient quantities of grains could have been imported from these countries.⁴⁹

68. *Simulations of the effects of the shortfall in Niger's food production in 2004-05 on market prices suggest that a decline in net imports was partly responsible for the huge spike in millet prices.* If there had been no change in net trade in cereals in unofficial markets in 2004-05, the 26 percent decline in millet production in that year would have resulted in an estimated 39 percent increase in the average real market price of millet (Table 17).⁵⁰ The actual real price increase in Maradi in the October 2004 - September 2005 crop marketing year was even larger -- 58 percent. This suggests that, in addition to the production shortfall, net availability was further reduced by a reduction in net imports, a conclusion which is consistent with interviews with traders (Care, CRS, HKI and WVI, 2007). The normal flow of informal sector millet imports from Nigeria is likely on the order of 100-200,000 MT per year. The model simulations suggest that net imports may have fallen by 200 thousand tons (equivalent to 10 percent of net millet supply (1.98 million tons) in 2003-04 and 15 percent estimated net millet availability from production only in 2004-05). In combination with the 26 percent drop in millet production, a decline in net imports of this magnitude would have been enough to result in an increase in real millet prices of 56 percent, very close to the actual price increase in Maradi in this period.⁵¹

⁴⁹ Although official import data is of dubious quality, there are several sources that suggest that the quantity of cereal imports fell dramatically during the first half of 2004/2005, particularly from Burkina Faso and Nigeria. WFP (2005) noted that the level of imports between October 2004 and June 2005 was 35 percent of the five-year average, i.e., 25,000 MT as compared to 71,000 MT. This was not the case during the 2000/2001 marketing year.

⁵⁰ Note that the model simulations take into account the effects of lower household incomes in that year that reduced market demand for millet.

⁵¹ Because levels of net imports, demand parameters and the extent of market integration are uncertain, these estimates can only provide a rough approximation of the effects of changes in production and net imports on market prices. See Dorosh (2008) for sensitivity analysis regarding these assumptions.

Table 19: Simulated Price Effects of Production Shock and Net Imports, 2004/05

		Sim 1: Production Shock Only 2004/05	Sim 2: Production Shock and Lower Imports 2004/05	Sim 3: Sim 2 with Cross- Price Effects 2004/05
Production (mn tons)	2003/04 2.745	2.038	2.038	2.038
Production Shock	---	-26%	-26%	-25.8%
Net Production Change (mn tons)	---	-0.460	-0.460	-0.460
Net Trade (mn tons)	0.200	0.212	0.012	0.012
Total Supply (mn tons)	1.984	1.537	1.337	1.337
Change in Supply (percent)	---	-22.6%	-32.6%	-32.6%
Per capita consumption (kg/person)	147.0	113.8	99.0	99.0
Simulated Real Price Change (percent)	---	39%	56%	0.618
Actual Real Price (Maradi, October-Sept)	---	58%	58%	0.578

Source: Model Simulations, (Dorosh, 2008).

Access in 2004/2005: Incomes, Grain Prices and Cereal-Livestock Terms of Trade

69. *The drought and subsequent production shock in 2004 not only reduced domestic supply, but also affected households' purchasing power.* The drought reduced households' production of staple food and cash crops (such as cowpea), thereby resulting in lower household incomes for the 2004/2005 marketing year. In fact for the country as a whole, a 0.6 percent drop in real GDP (a proxy for the change in total household incomes) and a 3.3 percent increase in the population implied a 3.9 percent drop in per capita incomes in 2004/2005.

70. *Grain price increases in 2004/05 were greater than during the 2000/01 drought, suggesting a sharper decline in household access to food for net food purchasers.* Average grain prices in 2004/2005 were 25 percent higher than the 10-year average. By contrast, prices during the 2000/2001 marketing season were only 12 percent higher than the 10-year average. In addition, grain prices in food crisis regions were 8 percent higher as compared to non-crisis regions (Table 18). Although a higher percentage of markets in food crisis regions were affected by drought, the regions were similar with respect to most other characteristics (Aker 2007).

Table 20. Grain Prices (CFA/kg) by Food Crisis Region in Niger, 2004/2005

	Food Crisis Regions		Non Food Crisis Regions		Difference in Means s.e.	Difference in Distributions	
	Mean (s.d.)	Obs	Mean (s.d.)	Obs		D-statistic	p-value
Price dispersion between markets (CFA/kg)	29.6(22.7)	1392	24.99(19.7)	3828	4.602***(1.6)	0.0872	0
Grain Price (CFA/kg)	164.96(43.4)	183	151.8(39.0)	155	13.10***(6.63)	0.148	0.051

Notes: Data from SIMA/Niger. * is significant at the 10% level, ** significant at the 5% level, *** is significant at the 1% level. All prices are in 2001 CFA.

71. *Although grain prices during the 2004 harvest were relatively higher as compared to 2000, they initially followed a similar pattern to that of other drought years. However, prices increased significantly during the last four months of the 2004/2005 marketing season. Figure 15 shows the seasonal price change for cereals in domestic and cross-border markets for Niger between 1999 and 2006. The greatest intra-seasonal price increase occurred in 2004/2005, which was year of the food crisis; during this year, millet prices increased by 89 percent between the harvest period (October) and the hungry season (August). In comparison, prices only increased by 75 percent during 2000/2001. Interestingly, prices in 2004/2005 followed a similar pattern to that of the 2000/2001 marketing season until May 2005; at that time, they increased significantly and stayed at this level until the end of the marketing season. This period also coincided with the height of the food crisis.*

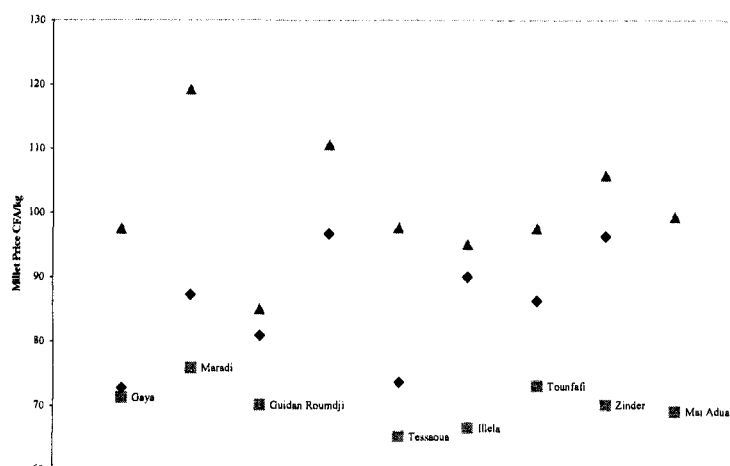
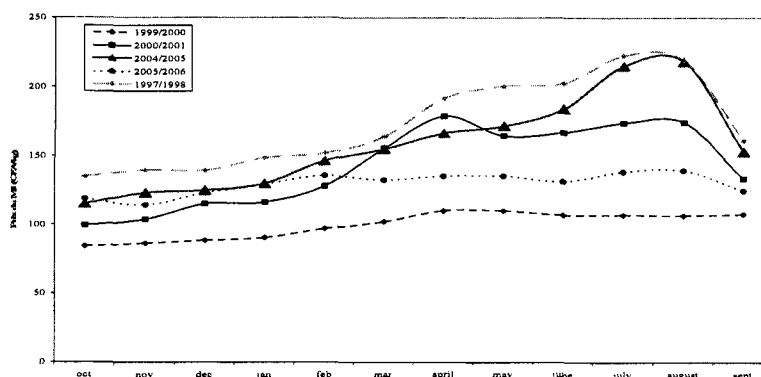


Figure 14: Grain Price Levels of Key Forecasting Markets during the Harvest Period

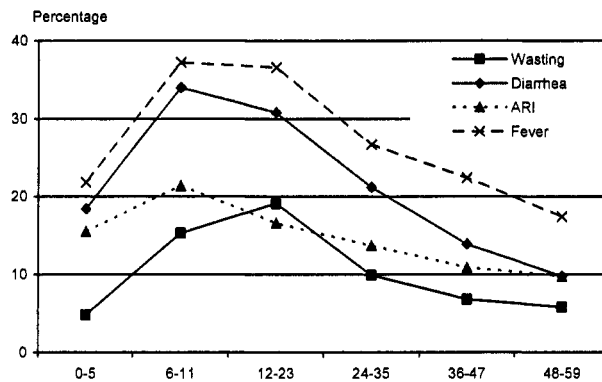
Figure 15: Intra-Seasonal Change of Millet Prices by Year



Utilization: Diseases, Health Services and Behavior

72. *Although the immediate causes of the 2004/2005 food crisis were related to drought, production shocks and price increases, the situation was exacerbated by structural factors, especially those related to the poor health and nutritional status of the Nigerien population.* Poor nutritional outcomes are determined not only by food intake, but also by a variety of other factors, including infectious diseases and the care and management of these diseases. Based upon the data from targeted health and nutrition surveys in 2005 (i.e., HKI, MSF and UNICEF, among others), there is little to suggest that the 2005 food crisis was due to a health shock, such as an outbreak of meningitis, malaria, typhoid or other diarrheal diseases. The DHS/MICS survey of 2006 provides important information on the health and nutritional status of the population.

Figure 16: Distribution of Children with an Infectious Illness and Acute Under-nutrition, by Age Group



Source: EDS et MICS (2006)

73. *Infectious diseases, particularly those associated with limited access to potable water and health-seeking behaviors, are of particular concern in Niger.* Infectious diseases affect the growth and nutritional well-being of young children. Figure 16 shows the relationship between infectious diseases and under-nutrition (wasting) in Niger, according to age group. The relationship between the two is clear: (i) a sick child loses weight as a result of appetite loss, reduced absorption and higher energy requirements to fight off the disease; and (ii) a malnourished child has lower immunity, therefore is at higher risk of falling ill and getting more severe infections. Reduced consumption and absorption result in under-nutrition.

74. *While there is no evidence that child care practices significantly changed during the 2004/2005 food crisis, limited access to sufficient quality and quantity of food exacerbated the poor health and nutritional status of the population.* The duration and severity of a child's illness is partly determined by preventive practices and child care behaviors once the child becomes ill. According to DHS/MICS survey (2006), child care practices during illness were poor: only 36 percent of children under five suffering from diarrhea were given more fluids than usual, 29 percent of children were treated with

an oral rehydration therapy, and 6 percent were offered more food than usual. In addition, only 13.5 percent of infants aged 0-6 months were exclusively breastfed, an important protective measure to avoid exposure to pathogens (DHS/MICS, 2006).⁵²

RESPONSES DURING THE FOOD CRISIS

75. *In 2004/2005, a variety of governmental, local and international organizations responded to the food crisis.*⁵³ These interventions involved (i) Food based programs, such as free distribution of food, therapeutic feeding programs (ii) Food for work programs (FFW); (iii) the sale of cereals at subsidized prices; (iv) Other interventions, such as Cash-for-Work (CFW) programs and Seed Vouchers and Fair (SVF) programs. In spite of these efforts, in some of the worst-affected regions, the gross mortality rate and child mortality rates rose well above international thresholds for humanitarian crises.

- Food based programs: During the 2005 food crisis, food aid resources were used in two types of programs: vulnerable feeding programs and cereal banks. *Vulnerable feeding* programs during the crisis included (i) general distribution programs, which provided general rations to entire communities, regardless of gender, age or nutritional status; and (ii) therapeutic feeding programs, which involved providing intensive curative care for severely malnourished recipients, primarily children under 5.⁵⁴ Finally, in some communities, food aid was provided to replenish the stocks of existing *cereals banks*, or new cereal banks were created (in addition to an initial stock).
- FFW programs during the crisis provided food resources (usually to all households in the community) in return for work on community-based infrastructure projects, such as *demi-lunes* in community pastures or farm-to-market roads.
- Cereal sales at subsidized prices. Along with community-based interventions targeted at individual households, the GoN also organized the sale of cereals at subsidized prices during the 2005 crisis. The GoN sold approximately 40,000 MT of subsidized cereals in Niamey and other regions between February and June 2005 (WFP 2005b), with 12,750 MT sold in February-April 2005, and 30,000 MT sold between April-May 2005. Both of these sales used food aid resources..

⁵² Infant and child care and feeding practices are often closely associated with aspects of motherhood, such as teenage motherhood, short birth intervals, and maternal mortality. While data on health behaviors and motherhood status are rare, maternal mortality in Niger is estimated at 1,600 maternal deaths per 100,000 live births, one of the highest maternal mortality rates in the world. (DHS/MICS 2006).

⁵³ NGOs that implemented food aid programs between 2000-2007 include Action contre la Faim, Africare, CARE, Catholic Relief Services (CRS), Helen Keller International (HKI), Concern Worldwide, Medecins sans Frontières, Plan-Niger; international organizations include UNICEF, the World Food Program (WFP); and the GoN, including the Cellule de Crise Alimentaire (CCA), the Dispositif National de Prévention et de Gestion des Crises Alimentaires (DNP-GCA) and OPVN.

⁵⁴ The establishment of centers for therapeutic feeding should be considered when the rate of malnutrition among under-fives exceeds 10% and the capacity of existing facilities is exceeded.

- *Other emergency response programs:* In addition to food-based interventions, two other types of emergency interventions were implemented during the 2005 crisis: Cash for Work (CFW) and seed vouchers and fairs (SVFs). The GoN and the IRC (International Rescue Committee) both implemented CFW programs in targeted areas; based upon the FFW approach, community members were provided with cash payments in return for work on a community-based infrastructure projects. Additionally, CRS implemented *Seed Vouchers and Fairs* (SVFs), seed fairs in particularly food insecure areas. Participants were provided with vouchers (worth a specific amount) to purchase the seeds; seed sellers included farmers and/or traders in the area. The primary idea behind the SVFs was to mitigate the medium-term impact of the food crisis by providing households with seeds for the next harvest. However, rather than importing seeds, the seed fair sought to facilitate exchanges between buyers and sellers.

76. *Food distributed and sold during the food crisis came from two primary sources: imported food aid, mainly from the US and the EU; and local and triangular purchases, the latter of which was provisioned from Nigeria.* Although quantitative data on the location, magnitude, timing and price of these purchases are not available, the largest local purchase appears to be the GoN's purchase of 40,000 MT between February-May 2005. WFP purchased 5,800 MT of cereals locally in 2004/2005, including 3,800 MT of millet in October 2004 and 2,000 MT of imported rice in July 2005. In addition to these local purchases, WFP also bought approximately 10,500 MT of sorghum in Nigeria. Several other NGOs also acquired food aid via local and triangular purchases in 2004/2005, although the quantities and locations of these purchases are difficult to verify. Nevertheless, these quantities appear to be relatively small in magnitude (i.e., less than 1,000 MT)

77. *Understanding the impact of local purchases, and developing guidelines and criteria for using local or triangular purchases as compared to imported food aid, is an important policy concern for Niger.* The impact of these local and triangular purchases on domestic supply and food prices in Niger is difficult to measure without detailed information on their location, magnitude and timing. If local purchases took place in key "forecasting" markets in Niger or Nigeria – such as Maradi, Jibia or Mai Adua – and significant quantities were involved, then the impact on supply and hence local prices could have been substantial.

78. *Criteria for targeting vulnerable regions for the implementation of emergency programs were unclear.* Due to the lack of explicit and transparent criteria (or thresholds) for determining a food crisis and identifying vulnerable regions, the areas most affected by the food might have not been reached in 2005. Although a list of vulnerable villages was first produced in May 2005, this initial list did not coincide with qualitative and quantitative evidence observed by international and non-governmental organizations. This prompted considerable friction between the GoN and the international community. Although numerous institutions attempted to update this information by conducting additional food security assessments, to-date, a list identifying the most severely affected regions during the 2005 food crisis is still not available.

GOVERNMENT SAFETY NET AND SOCIAL PROTECTION PROGRAMS

The mechanisms for preventing and responding to food crises discussed above represent only one of a range of interventions that comprise a social protection system. Social safety nets (safety nets for short) are non-contributory transfer programs targeted to the poor and to individuals vulnerable to poverty and to shocks. These programs have the simultaneous goals of (i) providing assistance to households in poverty, thus contributing to a reduction in the impact of poverty and to helping them get out of poverty, and also to help households face the impact of shocks; and (ii) reducing the effects of globalization, macroeconomic shocks, and structural changes, and thus contributing to more sustainable growth⁵⁵. These are programs such as:

- Cash transfers or food coupons, by category or subject to resource conditions, such as family allowances or social pensions.
- In-kind transfers, school meal programs or supplements designed for mothers and children are the most widespread, but they also include distribution of meals ready to eat, school supplies, uniforms, etc.
- General Price subsidies, often for food or energy, targeted to households.
- Employment through labor-intensive public works programs, sometimes called "workfare" (conditional transfers).
- Cash or in-kind transfers to poor households, subject to meeting specific educational or health conditions.

79. Exemption from duties for basic services, health services, education, public services, or transportation.

80. *Social safety net programs in Niger have primarily been implemented by governmental, non-governmental and international actors on an annual basis.* These programs in Niger include the subsidized sale of cereals, free food distribution, and, in a few cases, food or cash for work. In addition, there are a few safety net programs that support the access of the poor to health and education programs, such as school feeding programs and nutritional support.

81. *Although the need to support poor and food insecure households is critical in Niger, government spending on food-crisis safety nets represents only a small percentage of total government expenditure on social programs.* Between 2000 and 2006, education represented the largest percentage (54 percent) of total governmental expenditure on social programs, followed by health (32 percent) and social safety nets (14 percent). These percentages remained relatively constant over the time period, with the exception of 2001 and 2005. In general, social safety net programs remain a

⁵⁵ See Grosh et al. (2008) for a complete description of social safety nets.

relatively small portion of the government's total annual budget, representing between 1 and 5 percent of the total expenditures between 2001 and 2006, compared to a more stable allocation for education (18 percent) and health (about 10 percent) (Table 19).⁵⁶

Table 21 Distribution of Safety net programs between 2001 and 2006 (percent)

	2001	2002	2003	2004	2005	2006
Total Percent of Gov Budget	5.10	0.27	1.15	1.22	6.33	5.19
Within Safety nets						
Nutrition and food based programs	3.6	34.1	7.5	53.1	14.5	34.1
Transfers and Public Works (HIMO)	0.1	3.0	7.3	8.0	5.3	12.9
Prevention and management of food crises	95.8	53.6	60.3	19.5	79.6	50.5
Others	0.5	9.2	24.8	19.4	0.6	2.5

Source: Official data & Staff estimates

82. *Since the late 1990s, governmental safety net programs have been primarily used to help poor households respond to food crises, and most of the programs are financed by external resources.* Between 2001 and 2006, more than 80 percent of the safety net expenditures of the Government were used for preventing and managing food crises. 67 percent of funding for these programs came from external resources. Thus, in that period, 70 percent of total spending on safety nets – Government and external – focused on food crises, with external financing accounting for the majority of spending (Table 20). While these data may exclude emergency and non-emergency food aid distributed by other non-governmental and international actors during this time period, two things are clear: (i) the government has only limited resources available for safety nets; and (ii) spending on safety nets strongly favors emergency response, particularly food crises.

⁵⁶ Data provided on governmental expenditures on safety net programs over time, as well as the percentage of the total budget expenditures need to be reviewed and double checked with the MEF.

Table 22 – Source of financing of Safety nets 2001-2006

	Recurrent budget	Investment budget				Grand Total
		Gov	External	Gov IPPTE	Total	
Nutrition and food aid	2.4	-	11.7	5.4	17.0	19.4
Transfers and Public Works (HIMO)	1.6	3.2	0.7	1.0	4.9	6.5
Prevention and management of food crises	-	3.2	67.1	-	70.3	70.3
Others	-		0.5	3.1	3.7	3.7
Total	4.0	6.4	80.0	9.5	95.9	100.0

Source: Official data & Staff estimates

83. *Since most of the safety net programs are implemented during food crises, they are managed by institutions responsible for food emergency interventions.* A large percentage of safety net program have been coordinated by CCA and implemented by the CCA, OPVN and a variety of NGOs (Section 1). Table 21 shows the quantities of in-kind programs managed by the GoN, by year and by type of program, between 2001 and 2007. The CCA is primarily responsible for FFW and cereal banks, whereas both agencies are involved in the sales of cereals at subsidized prices and general and targeted distributions. Over the past seven years, the greatest quantities were distributed in 2000/2001 and 2004/2005, the years of drought. Therefore, during non-drought years, there were relatively limited safety net interventions available in the country, despite the fact that over 50 percent of the population is food insecure each year. CCA and OPVN rely on strategic grain reserves, imported food aid and local purchases in order to obtain food aid. Between 2000 and 2007, approximately 30 percent of all food aid used for governmental safety net programs was obtained via local purchases.⁵⁷

Table 23. Governmental (Emergency) Safety Net Programs, by Year and by Program

Year	Subsidized Sales (MT)	General distribution (MT)	Cereal Banks (MT)	Livestock Banks	CFW (CFA)	FFW (MT)	Seeds (MT)
2001	14,500	0	1 596	11	193,294,625	342	536
2002	3,140	0	0	0	0	0	305
2003	5,000	0	605	25	17,606,250	137	0
2004	0	0	0	0	0	0	0
2005	38,209	65,029	7,235	107	576,663,000	1,160	500
2006	10,130	10,606	4,080	0	1,891,814,958	0	0
2007	0	0	0	0	202,000,000	0	450
2008 (Planned)	7,000	11,561	0	0	1,530,047,648	0	1.100

Source: CCA 2007

Notes: Cereal banks and seed distributions are planned for May-August 2008, although the tonnage is not available.

⁵⁷ Although this is provided in the official figures, the percentage derived from local purchases appears to be greatly underestimated. This could be due to a different classification of local and triangular purchases. For example, in 2005, it is estimated that OPVN purchased 2,300 MT of grains for sales and distribution; at the same time, other documents report that approximately 40,000 MT were purchased in 2005 by the GoN. However, the CCA reports that it purchased 50,000 MT of food from neighboring countries.

84. *To improve the functioning of its emergency response interventions, the DNP-GCA developed a national contingency plan for food security and nutrition with the participation of a variety of governmental and non-governmental actors.* Developed in 2007, the document outlines the strategies priorities for the DNP-GCA in preventing and managing food crises in the country. The overall objective of the plan is to minimize the impact of food crises by ensuring households' access to staple foods and protecting their assets, mainly via the national security stock and emergency cash resources. The document also outlines a variety of early warning indicators (i.e. cereal deficit, food prices and severe malnutrition) in order to identify different food crisis scenarios, and to implement appropriate interventions (i.e., general food distribution, FFW, CFW, subsidized sales, seed distributions).

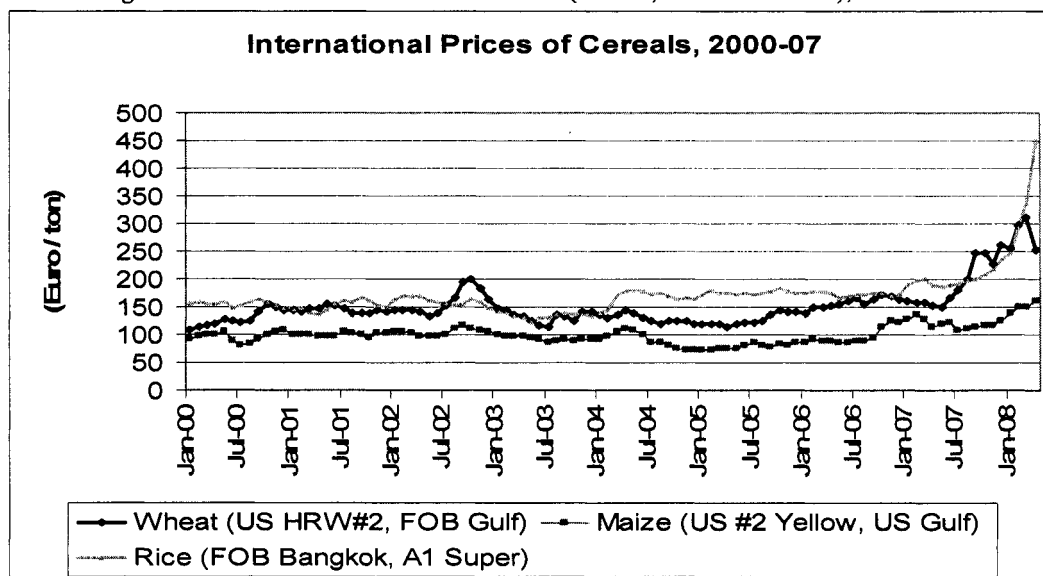
85. *There is a lack of agreement on what are the most effective safety nets interventions in Niger.* The list of response interventions outlined by the national contingency plan includes most of the same instruments that have been used in the past few years and puts more emphasis on CFW versus FFW and cereal banks. However there is no good indication of what has been more effective. The data on cereal banks from the 1990s shows that these have not been sustainable. CFW programs, which are usually preferred to FFW, are fairly new interventions that have not been fully evaluated in Niger. In addition, CFW programs are only appropriate if prices are sufficiently low.

NIGER 2008: PREPARING FOR AND RESPONDING TO A POTENTIAL FOOD CRISIS

86. *International prices of major cereals (rice, wheat and maize) have been on an upward trend since 2006.* International prices of rice, wheat and maize have risen sharply since early 2006 (Figure 17). Maize prices have increased by 45 percent in Euro (and CFA) terms between March 2006 and March 2007, due in large part to increased demand for maize for ethanol production in the U.S.. Wheat prices rose sharply in late 2007 following a poor harvest in Australia (a major exporter of wheat), which aggravated a situation of low international wheat stocks. By March 2008, international wheat prices (in Euro and CFA terms) were 96 percent higher as compared to those of March 2007. The increase in international rice prices has been the most dramatic. Following India's ban on private sector exports of non-Basmati rice in late 2007, as well as similar bans by Vietnam and other exporters, international rice prices rose to 449 Euro/MT in April 2008 (nearly US\$700/MT), 126 percent higher than in March 2007. Overall, prices of maize, wheat and rice were 106, 71 and 90 percent higher, respectively, in Euro terms, in March 2008 than in March 2006.⁵⁸

⁵⁸ In USD terms, international maize, wheat and rice prices were 166, 120 and 145 percent higher in March 2008 as compared with the previous year.

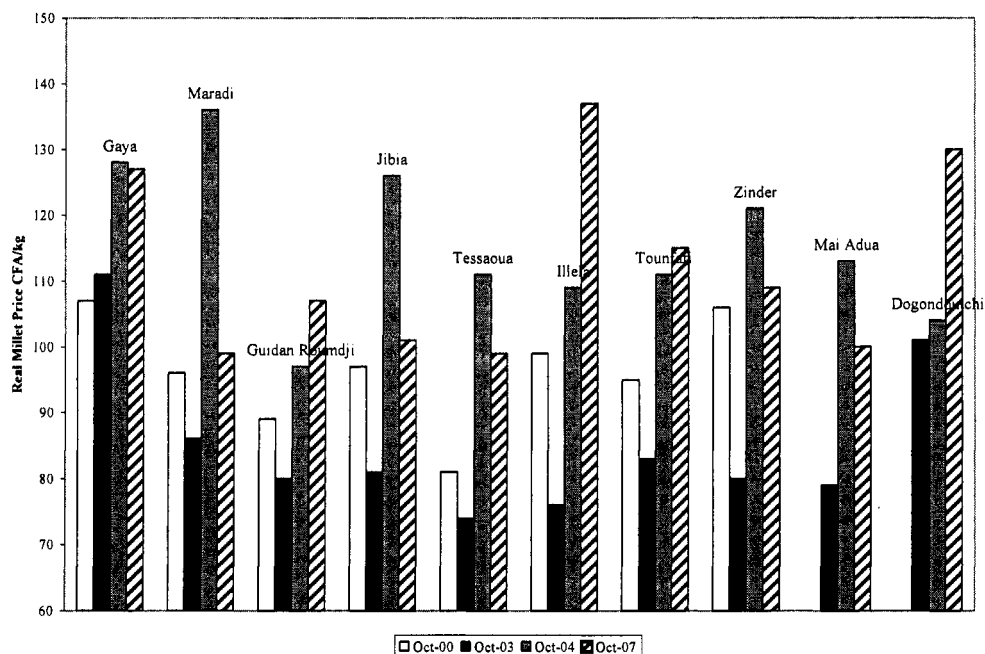
Figure 17: International Prices of Grains (Wheat, Rice and Maize), 2000-2007



87. *The increase in international food prices should have a limited impact on food security in Niger, which primarily imports millet, sorghum and maize.* In this environment of high international grain and petroleum product prices, poor consumers, especially those in net food importing countries, face serious threats to their food security. To some extent, Niger is insulated from the direct effects of these international price increases, as neither sorghum nor millet is internationally traded in large volumes. Niger's prices for these commodities are affected by supply and demand conditions in Nigeria. Similarly, Niger imports maize from Benin and Nigeria, which are important local producers of this commodity. Consequently, changes in international maize prices are filtered through Nigeria. And finally, while wheat and rice prices in Niger are more closely linked with those in international markets, these commodities are not major staples of the poor in Niger, especially rural areas.

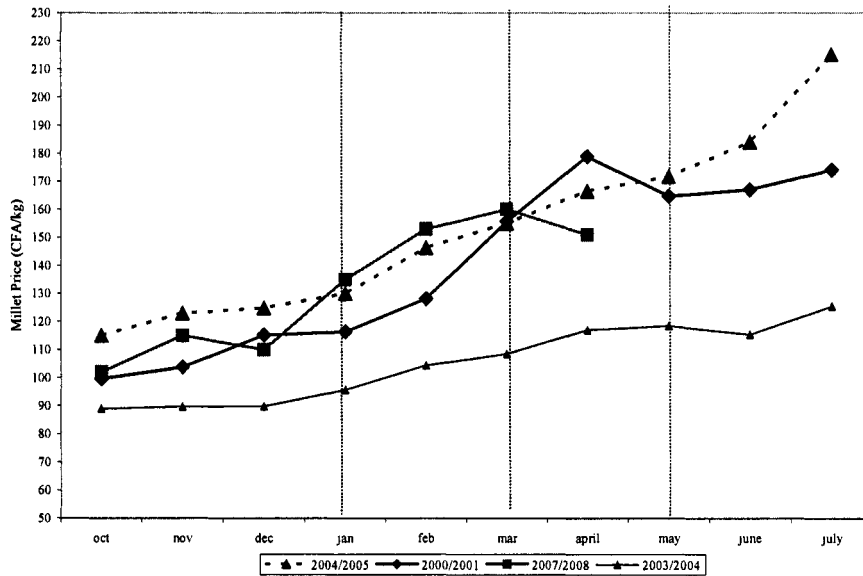
88. *Price increases of staple grains (millet, sorghum and maize) in 2007/2008 appear to be driven by irregular rainfall and poor harvests in late 2007, not by international price movements.* While departmental-level production data are not available, Figure 18 shows millet prices in key forecasting markets in Niger and Nigeria for October 2007. The prices on several of these markets – namely, Gaya, Guidan Roundji, Tessaoua, Illela, Tounfafi, Mai Adua and Dogondoutchi – are higher or close to the price levels of the 2004 harvest. The prices for Benin (Malanville), Maradi and Jibia, however, are below the October 2004 levels. This suggests that there were production shocks on these markets during the 2007 harvest, similar to those in 2004, but not of the same magnitude. Therefore, while 2007 was considered to be a normal harvest, the price data suggest that perhaps key markets were affected during the harvest period.

Figure 18: Millet Prices on Key Forecasting Markets during the Harvest Period in 2000, 2004, 2007



89. *The GoN, early warning systems and NGOs should monitor price differences between Nigeria and Niger to determine whether grain imports will be profitable in 2007/2008.* During normal years, prices in northern Nigeria are lower than those in Niger as of May/June, thereby making it profitable to import grains from Nigeria. In 2004/2005, prices in northern Nigeria were above those in Niger for the entire marketing season, suggesting that imports were not profitable during this year. In order to determine whether imports from Nigeria will be profitable in 2007/2008, the early warning systems and NGOs should monitor grain prices on cross-border markets and compare them with prices in Niger. If prices in northern Nigeria remain higher than those in Niger, this suggests that Niger would need to import from other countries. The following price pairs should be compared: Malanville (Benin)-Gaya, Illela (Nigeria)-Konni, Jibia (Nigeria)-Maradi/Dan Issa, Mai Adua (Nigeria)-Zinder/Matameye, and Kantchari (Burkina Faso)-Torodi. Figure 19 shows how millet prices have been changing in 2007/2008, as compared with other drought and non-drought years (2000/2001, 2003/2004 and 2004/2005). Between October and March, grain prices in Niger and northern Nigeria have been following a pattern similar to a drought year. However, as of April 2008, prices have fallen slightly on these markets. This suggests that price movements in May/June should be monitored carefully, and any emergency preparedness and response interventions should not put pressure on local and regional supply.

Figure 19: Changes in Millet Prices between the Harvest and Hungry Periods



90. *In the meantime Government and International Organizations are preparing a response program.* To cope with the price increases, as part of the emergency measures, the Government has already taken temporary fiscal measures to mitigate the impact while also replenishing cereal stocks. More specifically, the VAT and customs duties on rice imports have been suspended for three months in an effort to alleviate the impact of the increase in food prices on consumers. In addition, with international supports, existing governmental and non-governmental institutions are in the process of preparing a response based on existing emergency mechanisms, which consist of food based programs for emergency distribution and “Food for Work”; subsidized cereals; and “Cash-for-Work” programs to raise purchasing power of affected households.

CHAPTER 5: SUMMARY AND POLICY OPTIONS

Niger faces serious problems of poverty and household food insecurity. Although the magnitude of the problem is most evident during years of climatic shocks, especially drought, the problem is in fact a chronic one. Low levels of food availability, limited economic access to food and poor health and nutritional status have resulted in food insecurity and malnutrition for much of the population, even in years of normal harvests. Faced with limited resources, a high prevalence of poverty and periodic droughts and other shocks, an effective food security and social protection strategy is essential for Niger. Such a strategy should include three key components: (i) improving the efficiency and scope of safety net programs; (ii) promoting effective medium-term strategies and investments to improve food availability and utilization; and (iii) strengthening emergency response. Avoiding future food crises will also require greater recognition of the major importance of regional markets (particularly Nigeria) in influencing market prices, food imports (and exports), and ultimately household food consumption in Niger. Finally, any social protection strategy will need to be consistent with the country's overall strategy for growth and poverty reduction, the ultimate solutions for food insecurity and the poor health and nutritional outcomes associated with both poverty and household food insecurity.

SUMMARY OF FINDINGS

Poverty and Food Security

91. *More than 50 percent of Niger's population suffers from some form of food insecurity and most of the population does not consume the minimum daily caloric requirements for adequate nutrition.* Nutritional data show that much of the rural population suffers from seasonal food insecurity and both rural and urban populations are vulnerable to transitory food insecurity, defined as reduced access to food after a shock. Analysis of household survey data shows that although there was some improvement between 2005 and 2006, the food security situation of the poor remains very fragile, with many households consuming only slightly above the minimum daily caloric requirement. Higher food prices would most likely prompt consumption in these households to drop below that level, unless there were compensating gains in household incomes (including transfers). Among coping strategies used by households to mitigate shocks are: use of food aid; reduction in number of meals per day; migration; and asset and livestock sales. Overall, poor households are more exposed to shocks, the poorest regions are the most vulnerable to food insecurity and coping mechanisms make households more vulnerable to future food insecurity.

Food Availability and Markets

92. *Because over two thirds of daily caloric consumption comes from cereals, production, total availability, market prices and performance of markets for cereals are*

crucial determinants of food security. Typically, over 80 percent of Niger's total availability of cereals comes from domestic production, mainly millet and sorghum. Droughts and pest attacks cause large fluctuations in domestic production, and production losses vary substantially across regions within Niger. Formal sector imports (food aid and commercial imports), consist mainly of wheat, maize and rice, and are on average only a small share of supply (7 percent of the average 2.8 million tons of annual total net cereal availability from 2000 to 2005). Unofficial imports of millet from Nigeria may have added as much as 200 thousand tons to total net supply in recent years, though there is considerable uncertainty over these magnitudes. Survey evidence and analysis of prices indicate that Niger's wholesale cereal markets are generally well integrated. Markets in southern Niger are also well integrated with markets in Nigeria close to the border. However, lack of data prevents detailed analysis of price links between major markets in northern Nigeria (e.g. Kano) and Niger.

The 2005 Food Crisis, current surge in international prices and Government response

93. ***In early 2005, national policy-makers and the international community were caught by surprise by reports of sharp price increases and serious malnutrition in southern Niger.*** Estimates of national food production in late 2004 had suggested only a modest decline in production relative to medium-term trends, though it was clear that the October 2004 harvest was likely to be smaller than that of 2003. One major cause of the crisis was the extremely low income level of households, which contributes to their low nutritional status in normal years and makes them highly susceptible to major income and price shocks. In 2005, two major shocks occurred: a sharp rise in food prices (related to even more dramatic price increases in some of Nigeria's markets beginning in mid-2004), and losses in food production and incomes for those farmers whose late 2004 harvests were affected by drought and locusts.

94. ***The Government's response was not adequately sufficient to mitigate the impact of the 2004/5 crises on the vulnerable groups.*** The government's response, with international support, consisted mainly of food aid for emergency distribution and "Food for Work"; the sale of approximately 40 thousand tons of cereals between February and June 2005; and "Cash-for-Work" programs to raise purchasing power of affected households. In spite of these efforts, in some of the worst-affected regions, the gross mortality rate and child mortality rates rose well above international thresholds for humanitarian crises. Avoiding such crises in the future will require better monitoring of production and prices at local levels to capture information regarding households experiencing large shocks to incomes and purchasing power, monitoring and ongoing analysis of cereal markets and likely trade flows from neighboring countries (especially Nigeria), and improved response capacity of the government.

95. ***Is Niger affected by the International Increase in Food Prices and How should the Government respond in 2007/8?*** High international world prices for grains are cause for concern because of their potential effects on domestic markets, as well as the potential for reduced availability of food aid if Niger (or even Nigeria) should suffer a production shortfall, (as appears to have been the case in late 2007). To some extent, Niger is

insulated from the direct effects of these international price increases because neither sorghum nor millet is internationally traded in large volumes. Niger's prices for these commodities are affected by supply and demand conditions in Nigeria. Wheat and rice prices in Niger are more closely linked with those in international markets, these commodities are not major staples of the poor, especially rural areas. However the price increases of maize, sorghum and millet in Nigeria in 2007 and early 2008, driven mainly by irregular rainfall and poor harvests in late 2007 and not by international price movements, might raise some concerns. In the short run, it is important that the government monitor international and domestic market prices and recognize that increases in market prices in Niger that coincide with price movements in Nigeria (for maize, sorghum and millet) and international markets (for rice and wheat) are likely not due to non-competitive behavior on the part of domestic traders, but on increases in the cost of additional supply. As such, the government should avoid placing restrictions on storage and trade of cereals, but instead make efforts to promote market efficiency through transparency of government policies on food aid flows, other official imports, and releases of stocks. Open consultations with private sector traders and importers to share information is one way of building confidence (Minten and Dorosh, 2006; Dorosh, 2008). In addition, the GoN should consider not engaging in local or triangular purchases of grains in Niger or in Nigeria, to avoid putting pressure on local supply and hence prices.

OUTLINE OF A FOOD SECURITY AND SOCIAL PROTECTION STRATEGY

96. To better address the chronic and severe transitory food insecurity problems of Niger, broad response is needed, including: (i) safety nets to protect poor and vulnerable households; (ii) medium terms policies and investments to improve food availability and utilization; and (iii) measures to strengthen the emergency response.

Safety nets to protect poor and vulnerable people

97. *Although the food insecurity problems that occur in drought years are most visible, safety nets are needed even in years of normal harvests to address the need of chronic food insecure households.* Every year at least 20 percent of the population is severely chronic food insecure. In addition there are many poor and vulnerable households, which in case of face individual level shocks (e.g. injury, sickness or death in the family, loss of jobs) they will be forced to greatly reduce household purchasing power and access to food and fall deeper into poverty. Farmers also face price risks and suffer income losses if post-harvest prices are low; making it difficult to meet current consumption needs and repay debts.

Box 6: Ethiopia's Productive Safety Net Program (PSNP)

In Ethiopia, over 40 percent of the population lives below the national poverty line and over 20 percent of the population is extremely poor (below 1,650 kilocalories per person per day). Since the variability in rainfall is among the highest in the world, and fluctuations in rainfall are inversely related to mean incomes, every year for more than two decades the government of Ethiopia has launched an international emergency appeal for food aid. This annual emergency assistance was designed to meet the consumption needs of both chronically and transitorily food-insecure households. Despite substantial amount of humanitarian assistance, evaluations have shown that emergency assistance was unpredictable for both planners and households, often arriving late relative to need. As a result of the delays and uncertainties, the emergency aid could not be used effectively and did little to protect livelihoods, prevent environmental degradation, generate community assets, or preserve household assets (physical or human capital).

Characteristics of the Program: Given these shortcomings of the emergency aid regime, in 2005 the Ethiopian government started implementation of a new program, the Productive Safety Net Program (PSNP). The PSNP replaced the emergency humanitarian appeal system as the chief instrument in the country's safety net. The program is currently operational in 234 chronically food-insecure districts (of a total of 692 districts), and targeted about 7 million people in 2006. The PSNP provides resources to chronically food-insecure households in two ways: (i) through payments to the able-bodied for participation in labor-intensive public works activities; and (ii) through direct grants to households composed of the elderly or those who cannot work for other reasons.

Impact of the PSNP: A 2005 beneficiary survey found that the PSNP had had a significant positive effect on beneficiaries' well-being as calculated by both subjective and objective indicators¹. The survey found that three in five beneficiaries avoided having to sell assets to buy food in 2005, and according to 90 percent of the households, this was a result of their participation in the PSNP. Moreover, almost half the beneficiaries surveyed stated that they had used health care facilities more and 76 percent of these households credited the PSNP with this enhanced access. More than one-third of surveyed households enrolled more of their children in school and 80 percent of them attributed this to participation in the PSNP.

Ongoing reforms: Significant work is planned to further improve implementation capacity and bring systems to a level of functioning not previously possible with fragmented and temporary programs. Work is also beginning on a contingent grant mechanism (conditional cash transfer) to provide resources in the same districts to help transient food-insecure households during periods of drought. The mechanism will use a rainfall-based index that uses 30 years of rainfall data to trigger funding. Moreover, the PSNP is complemented by a larger food security program that tries to help households raise their incomes by means of resettlement grants, household income-generating packages, and water harvesting. Households that benefit from the PSNP are also entitled to assistance under other parts of the food security program. Food security interventions financed by donors that fall outside the PSNP are, however, rarely coordinated at local levels, and their links to basic rural services are also weak.

Lessons Learned: The PSNP illustrates many of the issues that surround safety nets in very low-income countries, namely:

- The program is moving in a clearly beneficial direction by means of a basic design that not only seeks to use resources in ways that save lives, but also assist in livelihoods. The progress in implementation to date suggests that this is possible even in a very low-income setting.
- The design process and implementation planning have undergone a fairly harsh triage. Even when fully realized, the program will only provide a safety net in about a third of the country. The districts selected are appropriately the poorest, but many poor people also live in the unserved districts. Moreover, the program has phased its implementation. It is focusing first on consolidating the basic PSNP. It hopes to enrich it eventually in a number of dimensions, but program managers and donors have realized that everything could not be accomplished right away. Thus, for example, the contingent fund for droughts was not implemented until the third year of the PSNP.
- Good implementation requires diligent and sustained effort. By 2007, the program had many positive outcomes, and early qualitative assessments of its targeting and impacts are positive, but more remains to be done to consolidate implementation. Good implementation also requires flexibility and innovation. For example, the government was initially having problems with the program's monitoring system, but in the interim, it deployed so-called rapid response teams to visit districts to identify and solve implementation problems. This gave managers a sense of what was going well and what was not and whether adjustments were needed in individual districts or at a more systemic level. Meanwhile, the design of the monitoring system was simplified and a pilot to computerize it is under way.
- An important part of the reform is the shift to a multidonor, multiyear framework rather than an annual emergency appeal system with each donor running a separate initiative. This is complemented by the decision to deliver the program through regular government systems rather than special implementation units common in donor funded programs. The multiyear framework and the reduction in fragmentation should permit the development of much more effective administrative systems. The multidonor framework should also aid in resilience, in that withdrawal or a reduced commitment by a single donor will have a less deleterious effect.

Source: WB 2008 Safety Net Book

98. ***The challenge lies in developing a general safety net system and of designing an effective system that can be adequately financed.*** The mechanisms for prevention and response to food crises as currently implemented by the National Mechanism for the Prevention and Management of Food Crises in Niger (DNP-GCA) constitute only a part and one stage in the implementation of a safety net system. Consequently, to develop a general safety net system for households suffering from chronic and seasonal and transitory food insecurity, it is necessary to (i) formulate a safety net program suitable for the PRSP2 and RDS; and (ii) coordinate between the State and the technical and financial partners. This in turn will require the inclusion of safety net programs in the government budget and the confirmation of a long-term financial commitment on the part of the technical and financial partners (TFPs). Decisions on the magnitude of safety nets must take into account the costs of the program and possible tradeoffs with investments related to the overall poverty reduction strategy. The decision-making process is critical and should include consultation with civil society, concerned government agencies and donors. Once a sustainable safety net program is in place, it could be scaled up both in the number of beneficiaries and the amounts transferred in the event of a major production shortfall. In order to ensure support for safety net programs, it is crucial that their financing be included in the government budget, perhaps with a commitment of long-term financial support from donors. For example, in Ethiopia, a country also confronted with recurring food crises, the government and donors have agreed upon multiyear financing programs to replace the annual calls that often led to delays in routing food aid or to inappropriate utilization of funds. (See Box 6.) This medium term finance mechanism has increased effectiveness of the design and implementation of programs and has reduced uncertainty among the participants.

99. ***Existing government programs involving distribution of food could be included in the overall safety net system, though steps should be taken to improve the efficiency of their operation.*** This would require (i) an assessment of the effectiveness of existing programs (HIMO [labor-intensive public works programs] such as "Food for Work" (FFW) and "Cash for Work" (CFW); free distribution of foodstuffs; subsidized food sales; cereal banks; school cafeterias; etc); (ii) a review of the existing targeting system to determine the challenges of addressing the needs of chronically poor people; and (iii) an improvement in the program monitoring system. Within this framework, to ensure that the safety net system is effective (in crisis and normal periods) it must be possible (i) to guarantee that the "Food for Work" (FFW) and "Cash for Work" (CFW) programs are well organized and give productive results; (ii) to limit the amount of free distribution of food as well as subsidized sales, and pay specific attention to synchronization and localization of sales; (iii) to ensure that the purchase of local foodstuffs is well planned; and (iv) that targeting of programs follows transparent and efficient procedures for the selection of the regions and households to benefit from the program. Free distribution of food and subsidized sales of food should be done only on a limited scale, with careful attention to timing and location of sales, avoiding sales at the time of harvests that could reduce farmers' revenue.

New safety nets programs could be introduced. Once the vulnerable groups are identified and evaluation of the existing programs is completed, it will be necessary to

identify pilot programs that could be tested based on transparent eligibility criteria, coverage and cost. Among these new programs to pilot are cash payments and conditional cash transfers. Cash programs have an advantage over in-kind food distribution because they avoid operational costs involved in storage and movement of food, as well as possible disincentive effects on production during periods when food availability is not a constraint (e.g. harvest periods or, more generally, good harvest years). Conditional cash transfers, such as those linked to school attendance, offer benefits both in terms of increasing incomes of targeted households and increased participation in socially desirable programs (i.e., linked to school attendance and health service utilization for children).

Medium term policies and investments to improve food availability and utilization

100. ***Medium term policies and investments are also needed to reduce vulnerability to production shocks, raise incomes of the poor, and enhance market efficiency.*** For example, in Bangladesh, longer term investments in rural roads (often built through food for work or cash for work programs) and agricultural research and extension were combined with effective government policies that promoted expansion of small-scale irrigation through liberalization of the import of small pumps and food policy management to ensure that food aid flows did not have market price disincentives for domestic food production (see Box 7). As a result, over a period of about two decades, the country was able to double its food production, raise rural incomes and reduce dependence on food aid imports. India, likewise, used food for work and public works programs to develop irrigation that increased agricultural production and rural incomes.

Box 7: Enhancing Food Security in Bangladesh

Bangladesh has made considerable progress in increasing food production and enhancing food security through support of agricultural research and extension, investments in roads, maintaining price incentives for domestic production, liberalization of domestic and international trade in cereals, and targeted public food distribution.

Bangladesh suffered a major famine in 1975 following flood-induced production shortfalls in late 1974, as the country lacked foreign exchange for imports and government stocks for targeted distribution. Thereafter, the country invested heavily in small-scale irrigation (including major private sector investments in tube-wells), agricultural technology and roads. As a result, Bangladesh was able to double its rice production between the mid-1970s and the late 1990s. Particularly important for food security was the increase in winter season crops (boro rice and wheat) that enabled a major harvest following the traditional monsoon season harvest.

Following major production shortfalls due to massive floods in 1988 and 1998, Bangladesh was able to prevent recurrence of famine. In 1988, the government relied on large public stocks of rice and wheat, government commercial imports and food aid inflows to help stabilize market prices and permit large-scale public distribution of grains. A decade later, following the 1998 floods, trade liberalization made private sector imports of rice and wheat possible, and the private sector responded with over 2 million tons of rice imports from neighboring India. As a result, rice prices were stabilized without large-scale public distribution of grain or food aid flows, and at minimal cost to the government. Food aid-supported and other public distribution programs were used, however, to target flood-affected and other poor households.

As shown by the Bangladesh experience, an appropriate mix of public and private investments, combined with adequate price incentives, can lead to increased production and reduced variability of major cereals. Moreover, it is possible to promote private trade to increase availability of food and stabilize prices while operating major targeted food transfer schemes to directly increase access to food of poor households. Such a combination of policies can substantially lower fiscal costs, but requires transparency on the part of the government in order to reduce risks for private sector trade.

Source: del Ninno et al., (2001) ; del Ninno, Dorosh and Subbarao (2004):

101. ***There is need to promote efficient domestic agriculture production.*** For Niger, increasing agricultural productivity and the level and stability of domestic production would help increase food availability, raise rural incomes and reduce output and rural income fluctuations. To achieve this, designing and implementing policies to promote efficient domestic agricultural production are crucial. This will include investments in agricultural research and extension, investments in road construction and maintenance, and increasing market infrastructure (e.g. provision of basic storage facilities in major markets). Also essential in Niger's semi-arid environment is to improve access to water for agriculture through investments in irrigation and water retention (e.g. check dams, where appropriate).

102. ***Ensure trade policies do not impede cereal market development.*** Internal and external trade policies should consistently support short-term market efficiency, especially in emergencies, and avoid measures that impede medium-term market development. In particular, the government should avoid placing restrictions on storage and trade of cereals, but instead make efforts to promote market efficiency through transparency of government policies on food aid flows, other official imports and releases of stocks. Open consultations with private sector traders and importers to share information are one way of building confidence.

103. ***Reducing price risk for farm products would also increase incentives for production and reduce variability of rural incomes.*** This need not involve direct government intervention in markets, which in many countries has proven to be ineffective and expensive, often reducing the efficiency of markets by reducing incentives for private sector processing, trade and storage. Instead, promotion of farmers' groups can help small producers to pool their products and make use of group storage or transport facilities. Improvements in market information systems on prices and volumes of production and market supplies can also help farmers to increase their bargaining power and make more informed decisions on their sales. Already, the use of cell phones has proven to be effective in improving transmission of price information across markets.

104. ***Increasing access to food for the rural poor could also include measures to support diverse household income-generating activities.*** Micro-credit through local NGOs has been successful in supporting these activities, particular in situations where there is sufficient effective market demand for the outputs. In the medium term, investments in education and vocational training are also needed to increase human capital and raise labor productivity.

105. ***Finally, improvements in health and sanitation are needed to promote better nutritional outcomes and overall health.*** Increases in food consumption alone may not be lead to improved nutrition if disease or otherwise poor health limits the effective utilization of food by individuals, especially pregnant and lactating women, small children and infants. Programs that address the overall health and sanitation environment, as well as care and feeding practices of infants, need to be supported, particularly among the poorest households.

Strengthening emergency response and improving the information system

106. Significant progress has been made in monitoring and responding to acute disasters. Nonetheless, further steps are needed to **strengthen early warning systems and emergency response** (see Annex 1).

107. **Revise the Government National Contingency Plan.** As discussed earlier, several institutions are involved in early warning and emergency response. Implementation of the government's National Contingency Plan for Food Security is needed to strengthen the key institutions involved, particularly with regard to timely analysis and policy design. In this context, the role of the OPVN should be more clearly defined, along with the operational rules regarding use of the emergency food security stock. Given the multiplicity of actors (various government agencies, NGOs, donors), a more comprehensive system of monitoring food procurement, distribution and stocks through all the various programs should be set up.

108. **Improve the information system of the early warning system.** Current early warning systems provide valuable information on markets in Niger. However, monitoring and analysis of price movements, particularly in Nigeria (not just in border markets), and the broader international markets are also crucial in order to allow as much time as possible to arrange for additional food aid or government commercial imports in the event of a poor domestic harvest. This will require significant strengthening of analytical capacity within the key government institutions (CCA, SAP, SIMA). Likewise, encouraging the free flow of information in newspapers and other media can help inform of the government of situations where urgent action is needed.

109. **Use safety net programs to complement the emergency response.** Once sustainable safety net programs are developed, the government could substantially scale them up in the event of a major production shortfall. This will require effective contingency planning, including arrangements for financing and effective program implementation, with areas of responsibility clearly delineated.

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ANNEX I: DESIGN OF EARLY WARNING SYSTEMS

There is considerable debate as to the appropriate design of early warning systems for the prediction of drought and famine in Africa. Much of the debate centers on the ability of current or prospective indicators to provide location-specific, timely, and cost-effective information. Macro-level environmental data are generally agreed to be useful, but they are often unable to identify the individual communities most in need of relief. Furthermore, while grain prices and dispersion in Niger are strongly affected by climatic shocks, there was not a strong correlation between drought and food crisis regions in 2005. Consequently, an early warning system based solely upon climatic indicators would have over (or under) estimated the severity of the crisis. Similarly, although per capita grain production was higher in 2004 than 2001, the severity of the food crisis was much greater in 2005 compared to 2001; consequently, an early warning system that depends primarily upon production levels would have underestimated the severity of the food crisis. In an effort to minimize concerns related to using macro-level indicators, the use of local-level indicators has been recommended to generate predictions on the food supply at the village or sub-district level. However, the choice of indicators remains controversial.

Drought and Agricultural Production

Indicators of drought and agricultural production are timely and easy-to-use, and can provide early information on a possible food crisis in West Africa. Nevertheless, as experience has shown in Niger, droughts do not necessarily lead to food crises, or vice versa. De Waal (1998) notes that effective early warning indicators should be reliably associated with the development of food crisis conditions; more specifically, they should generate few responses to situations where food crises do not actually develop ("false positive" responses) and should not fail to respond when an actual famine is approaching ("false negative" responses). Relying solely upon drought and agricultural production as early warning indicators for Niger would have generated a "false positive" in 2001, but yielded a "false negative" in 2004.

While drought and agricultural production-based predictions are prone to error, these indicators can be strengthened by changing the level of analysis. Rather than focusing on the presence of drought or national per capita production, a more appropriate indicator would be the percentage of departments affected by drought or by production shocks. For example, while overall per capital production was higher in 2004, the percentage of departments affected by production shocks was much higher. Similarly, drought and production levels in the northern regions of Benin and Nigeria should also be monitored.

Monitoring Domestic and Regional Market Prices

Market activity at the national, regional, and local levels has been used to signal an impending food shortage in a variety of early warning systems (Huss-Ashmore 2007). In general, two aspects have been monitored: the amount of grain or livestock being traded, and changes in the prices of these commodities. These indicators are interconnected, as changes in the quantity of commodities traded affect their prices. However, monitoring the amount of grain traded – either domestically or via imports – is difficult, especially in the West African context. One indication of impending food crisis is an unusually high or rapid increase in the price of staple food grains (McCorkle, 1987; Walsh, 1986).

As with all market data, the interpretation of price changes in agricultural markets depends on local circumstances (Huss-Ashmore, 2007). Normal seasonal fluctuations in prices need to be considered when assessing the meaning of sudden market shifts. Only increases that significantly exceed those expected for a particular period can be considered as signs of unusual shortfall.⁵⁹

The relationship between market performance and food crises in Niger provides some indications of the appropriate focus, timing and interpretation of changes in market prices. Although the current early warning systems in Niger monitor a variety of markets, not all markets affect grain prices or food security to the same degree. First, early warning systems should carefully monitor key “forecasting” markets within Niger and in the sub-region (Benin and Nigeria). To be precise, strategic forecasting markets could be defined as those markets that “Granger-cause” a significant number of markets in Niger (e.g., over 75 percent), including those located in Benin and Nigeria.

A secondary consideration is the timing of the monitoring of market prices. While current systems monitor prices on a monthly basis, the harvest (October-November) and hungry (June-August) periods are of most concern. The relatively higher prices in Granger-causing markets during October 2004 could have served as a key indicator of the potential crisis during the 2004/2005 marketing season. This is especially important in light of the slow adjustment speed of market prices. Therefore, early warning systems should also monitor prices on key forecasting markets in Niger, Benin and Nigeria during the harvest period, in order to determine whether price levels are higher at the outset of the marketing season.

⁵⁹ Variations in local circumstances mean that economic activities, as famine indicators, do not function equally well for all populations. Cutler (1985) shows that both the retail price of coarse rice and the demand for fertilizer served as accurate warning signals for famine conditions in Bangladesh in 1979. Similarly, McCorkle (1987) argues that flux in market prices of cereals and livestock is one of the most promising quantitative markers of famine onset in West Africa. Using data from Burkina Faso, she shows that the food crisis of 1983-84 was accurately signaled by a tripling of the price of sorghum, a sharp fall in the selling price of cattle, and an increase in the number of farmers defaulting on their advance sales agreements with grain merchants. By contrast, de Waal (1988) argues that economic indicators were poor predictors of famine for Darfur, Sudan, in 1984-85. Despite two complete harvest failures in northern Darfur and one in southern Darfur, economic data proved to be neither sensitive to nor specific in the prediction of increased mortality.

While monitoring prices and price changes in strategic markets is important, knowing that prices are “higher” or have “increased” does not provide an effective indicator for determining whether there will be a food crisis. Based on the livelihood security studies and poverty studies conducted by international organizations, a threshold grain price in key national and regional markets should be identified.

Fuel Prices

Traditionally, fuel prices are not included as early warning indicators in the West Africa region. While grain prices are fairly inelastic to changes in gas prices or transport costs, such changes do affect spatial arbitrage opportunities. Consequently, changes in fuel prices can impact the spatial allocation of goods, thereby affecting food supply and prices. Monthly fuel prices and transport costs could be a timely and cost effective indicator of food crisis, especially for remote or distant markets.

Market Information

Most early warning systems focus on providing relevant and timely information to policymakers, rather than the market actors themselves. Market performance, however, depends on symmetric access to appropriate information. Asymmetric information prevents market actors from engaging in optimal arbitrage opportunities. Although market information systems collect and disseminate price information in several West African countries, survey evidence suggests that these are not always used by traders and farmers. A recent study in Niger found that cell phone coverage is associated with a statistically significant reduction in grain price dispersion, as well as lower grain prices. The main mechanism for this result is a change in traders’ behavior, as traders use cell phones to gather market information and to make decisions about the optimal allocation of goods. This suggests that the data and analysis of early warning systems should not only be available to policymakers, but also to market actors

