Persistent Hunger: Perspectives on Vulnerability, Famine, and Food Security in Sub-Saharan Africa

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malnutrition, poverty, natural disasters, conflicts, Sahel, political inequalities

Abstract

This review examines the persistence of chronic hunger in Sub-Saharan Africa in the twenty-first century and reviews dominant famine theories, concepts of vulnerability, and household livelihood security and responses to recent food crises in the region. The authors argue that famine occurrences are linked to historical and contemporary socioeconomic processes that have increased over time the vulnerability of African households to hunger and reduced their resilience to environmental and economic shocks, political conflict, and the rapid spread of HIV/AIDS. Approaches to famine need to move away from the "emergency relief" framework to better address the underlying conditions that make food shortages endemic. Future food security for Africa requires an integrated long-term response to household vulnerability on the part of African governments, civil society, and international partners by incorporating new technologies, local expertise, and active involvement of African communities living with the realities of recurrent famine.

INTRODUCTION

Famines and food shortages have recurred throughout human history owing to a variety of interrelated causes, including environmental crises and natural disasters, economic, social, and political inequalities, and violent conflicts. In the twenty-first century, however, the percentage of the world's population facing acute and chronic hunger is decreasing on every continent except Africa (Brown 2001). Sub-Saharan Africa is the only region of the world in which chronic food insecurity and threats of famine remain endemic for most of the population and the number of malnourished people is steadily increasing (Devereux & Maxwell 2001, Rukuni 2002). By 2010, an estimated 32% of Sub-Saharan Africa's total population of 400–500 million will suffer from malnutrition, compared with 4%–12% in other developing countries (Steyn & Walker 2000). Improving food security thus remains a central concern for African development and requires concerted effort on the part of African governments and international donors.

Although the imperative is clear to better address Sub-Saharan Africa's ongoing food crises, the international community and regional governments still lack consensus on how to define and respond to famine adequately. Drawing on multidisciplinary approaches, this chapter reviews dominant theories and conceptual frameworks for the study of vulnerability, food security, and famine in Sub-Saharan Africa; lessons learned from hunger prevention and relief programs; and perspectives on the future of hunger in the region, especially in the context of the HIV/AIDS pandemic's increasingly deleterious impacts. We demonstrate that Sub-Saharan Africans are not passive, powerless victims of famine and food insecurity. We argue that famines and food shortages are linked to persistent vulnerabilities, which are often the result of historical and contemporary processes that limit the options and opportunities of households.

A CONCEPTUAL FRAMEWORK FOR FAMINE, FOOD SECURITY, AND VULNERABILITY

In their discussion of famine in Ethiopia, Webb & von Braun (1994) define famine as "a catastrophic disruption of society as manifested in a cumulative failure of production, distribution and consumption systems" (p. 35). The principal consequences of famine are a concentrated decline of food consumption resulting in chronic weight losses for individuals and sharp increases in excess mortality, massive social disruption, and long-term resource depletion. Although famine has long been considered a discrete event triggered by external causes and amenable to technical solutions, researchers and scholars have recently challenged this view, arguing that famine must be understood as a long-term socioeconomic process that accelerates destitution of a society's most vulnerable groups to the point where their livelihood systems become untenable (Walker 1989, p. 6).

The negative effects of famine in Sub-Saharan Africa have been magnified by an upsurge of complex emergency situations rooted in structural vulnerabilities that limit equitable access to resources (Vogel & Smith 2002). High death tolls from famines are increasingly correlated with the presence of violent conflicts and the concentration of populations in refugee camps where disease epidemics are a common cause of mortality (de Waal 1998). Over the past two decades, 28 African countries have experienced violent conflicts along with their debilitating effects on livelihoods, food production, and access (Devereux & Maxwell 2001).[1] **Table 1** presents an overview of selected African famines during the twentieth century and their primary causes, of which nearly half involve conflict situations.

[1]In a study of 38 countries that experienced conflicts between 1961 and 2000, Teodosijevic (2003) determined that per capita agricultural and food production are 10% lower during a conflict and in the 5 years following it than in the 5 years prior to the conflict (Pingali et al. 2005).

Table 1 Selected twentieth-century African famines. Source: Devereux & Maxwell 2001, p. 118

Location	Years	Causal triggers	Estimated mortality
Nigeria (Hausaland)	1902–1908	Drought	5000
Tanzania (south)	1906–1907	Conflict	37,500
West Africa (Sahel)	1913–1914	Drought	125,000
Tanzania (central)	1917–1919	Conflict and drought	30,000
Zimbabwe	1922	Drought	47
Tanzania	1929	Drought	500
Rwanda	1943–1944	Conflict and drought	300,000
Malawi (Nyasaland)	1949	Drought	200
Ethiopia (Tigray)	1957–1958	Drought and locusts	250,000
Ethiopia (Wollo)	1966	Drought	50,000
Nigeria (Biafra)	1968–1970	Conflict	1,000,000
West Africa (Sahel)	1969–1974	Drought	101,000
Ethiopia (Tigray and Wollo)	1972–1974	Drought	350,000
Somalia	1974–1975	Drought	20,000
Uganda (Karamoja)	1980–1981	Conflict and drought	30,000
Mozambique	1982–1985	Conflict and drought	100,000
Ethiopia	1983–1985	Drought	800,000
Sudan (Darfur, Kordofan)	1984–1985	Conflict	250,000
Sudan (south)	1988	Conflict	250,000
Somalia	1991–1993	Conflict and drought	400,000
Sudan (Bahr el Ghazal)	1998	Conflict and drought	70,000

Review of Famine Theories

Theories of famine have shifted from an emphasis on environmental and demographic causes to economic and sociopolitical causes. Early work on famine was heavily influenced by Malthus who proposed that famine followed excessive population growth and served to keep carrying capacity in check by reducing populations to a level consistent with food production. Contrary to Malthus's predictions, however, famines have not limited population growth to any significant extent over history (Devereux 2001 a,b). Largely because of Malthus's influence, "the criterion of famine became a measurable increase in the death rate of an aggregation of individuals, diagnosed by medical professionals as being due to starvation and causally related to a measurable decrease in the availability of food" (de Waal 1989, pp. 17–18). This emphasis on famine as a "technical malfunction" requiring the intervention of experts (e.g., demographers, medical specialists, and agronomists or economists) has long dominated the field and obscured the social processes underlying food crises. The assumed linkage among famine, starvation, and mass mortality in both popular conceptions and technical definitions stems directly from the debate started by Malthus more than two centuries ago. Yet as more nuanced analyses have recently demonstrated, famine can occur in varying degrees of severity well before critical food shortages become evident. For example, villagers in Sudan distinguish a "famine that kills" from a range of other food crises experienced at the household level that may cause hunger and destitution but not necessarily lead to death (de Waal 2004).

SEN'S ENTITLEMENT APPROACH

The groundbreaking work of Amartya Sen in *Poverty and Famines* (1981) introduced a new paradigm in famine studies by rejecting

FAD: food availability decline

Malthusian notions of food availability decline (FAD) per head and insisting on the salience of market forces and the role of the state in determining individual entitlements to food. According to Sen, starvation occurs when a person does not have access to enough food, often despite the availability of food for those who can afford it. Famines invariably affect populations in different ways depending on a household's ability to acquire food during crisis times. For instance, at the height of the 1972–1974 famine in Ethiopia, there was no significant reduction in overall food output, and people succumbed to starvation while food prices remained fairly stable. Similarly, during the Sahel famine of the mid-1970s, a survey by the Food and Agricultural Organization determined that the most-affected countries—Mali, Mauritania, and Niger—all produced enough grain even during the worst year (1973) to feed their populations, if the grain had been equally distributed.

In Sen's (1989, 1999) framework, vulnerability to famine is directly related to a household's level of entitlements. He defines entitlements as "a key set of alternative commodity bundles that a person can command in society using the totality of rights and opportunities that he or she faces" (p. 8). Entitlement relations are based on four different types of ownership: production, trade, labor, and inheritance or transfer. Through a combination of these means, individuals gain access to food directly or to the ability to acquire (purchase) it indirectly. Market functioning is central to a household's ability to access food, and starvation can occur even when food is readily available at local markets if a household lacks the appropriate entitlements. Famine is thus characterized by a collapse of entitlements for certain segments of society and the failure of the state to protect those entitlements. Sen's theoretical contributions revolutionized famine policy by shifting the debate from issues of availability to emphasizing the ability of individuals to obtain access to and control over food resources (Webb & von Braun 1994).

REVISING SEN: FAMINE AS A POLITICALLY DRIVEN PROCESS

Although Sen's work remains central in famine research and development studies more generally, several critics have cogently argued that Sen's overemphasis on economic market-based causation neglects the salience of politics, historical processes, and social disruption in creating conditions of vulnerability and famine (de Waal 1990, Duffield 1998, Edkins 2001, Hendrie 1997, Keen 1994, Rangasami 1985). In Sen's analysis, market forces replaced previous nonhuman actors (i.e., supernatural or natural explanations that considered famine an act of God or nature) and defined famine as an economic rather than a natural disaster (Keen 1994). Further shifting the focus of the debate, we should now examine the role of political agency in provoking and sustaining acute and chronic food insecurity, especially among disenfranchised and war-torn populations involved in complex humanitarian emergencies.[2]

In his reassessment of Sen's entitlement theory, de Waal (1990) points out that Sen fails to explain two central phenomena witnessed in famines: (*a*) Many people choose not to consume food rather than sell their vital assets, and (*b*) most famine mortality is caused by the outbreak of disease and widespread epidemics rather than simple undernutrition. In de Waal's integrated model of famine, a natural disaster or economic crisis precipitates famine, causing a loss of entitlements to staple foods and a threat to long-term socioeconomic stability. In this situation, people resort to a variety of coping strategies for temporary solutions, but the strategies often lead to impoverishment and social disruption. When coping strategies completely break down, social collapse ensues and results

[2]A humanitarian emergency is defined as "a situation affecting large civilian populations and usually involving a combination of conflict, food insecurities, and population displacement resulting in significant excess mortality or morbidity" (Kaiser et al. 2003, p. 129).

in health crises and excess mortality. Social collapse at this level is usually accompanied by violence, which renders food and medical relief less effective and quickly turns entitlement loss into destitution. In de Waal's view, famine is not limited to the standard notion of mass starvation unto death, but can also be considered "a more virulent form of poverty that leads to death" (p. 486).

Keen's (1994) case study of famine and relief efforts in southwest Sudan, one of the first to incorporate a theoretical conception of power into famine analyses, urges that famine be approached with a critical eye toward those who benefit from its misfortune. He asserts that famine does not merely reflect a failure of markets or policy; it is an indicator of success for particular groups of local, national, and international actors, especially in arenas of violent conflict and war, such as Sudan. Yet "famine discourse" tends to focus exclusively on the plight of the victims, ignoring the motives of its instigators and beneficiaries and what they gain by fostering and maintaining long-term famine conditions. Endorsing a liberal conception of the state as a protector of the public interest, Sen (1989) insists on the role of public policy in protecting entitlements. However, Keen counter-argues that states and powerful groups may actively promote famine and obstruct relief, especially when obstruction becomes a military strategy and weapon of war.

Drawing on a Foucaultian notion of the knowledge-power in discourse, Hendrie (1997) argues that the common discursive representation of famine as a "disaster event" effaces culpability and detaches the occurrence of famine "from its embeddedness within a set of historically specific and locally based economic and political processes" (p. 63). She closely examines how power is exercised in the context of international relief operations using a case study of refugees in Tigray, Ethiopia, who migrated to eastern Sudan in late 1984 following famine there. The range of technologies used to measure and control famine situations includes anthropometric measurements, early warning indicators, and the creation of universalized "vulnerable groups" who lose their individual identities to homogenization. Using Foucault's example of the institutionalization of madness, Hendrie notes that famine has been removed from the everyday social sphere and relocated into an expert realm of regulation and control that are exerted by powerful humanitarian institutions. Her work highlights the need to incorporate local discourses on famine in scientific research to understand better the particular contexts in which famines occur and to improve the planning and on-the-ground implementation of hunger relief programs. This need is significant because insiders' and outsiders' perceptions often differ significantly; insiders view famine as a problem of poverty and an intensification of ongoing processes rather than as an unusual or extraordinary circumstance.

Taking a more radical stance, Edkins (2001) advocates replacing the term famine with "mass starvation" in an effort to assign responsibility and demand accountability for the occurrence of famine, while linking it discursively with the genocides and mass killings. Edkins argues the dominant framework that regards famine as a failure that can be redressed by scientific or technical solutions limits many of the present ways of defining and theorizing famine. In her view, more emphasis should be placed on assigning responsibility for the persistence of hunger.

Defining Food Security

Large-scale problems of famine in Sub-Saharan Africa cannot be addressed without first improving the underlying food security status of populations at the national, regional, and household levels (Park et al. 1993). The earliest definition of food security emerged from the World Food Conference of 1975 and focused on "the availability at all times of adequate world supplies of basic foodstuffs to sustain a steady expansion of food consumption" (Maxwell & Watkins 2003). By 1986 this

had shifted to an emphasis on food access, as shown by the World Bank's definition of food security as "access by all people at all times to the food required for them to lead a healthy and productive life" (von Braun et al. 1999, p. 34). The four key elements that jointly comprise food security are the availability of food resources, access to those resources, sufficient consumption of food, and appropriate utilization in a sanitary and nutritious manner (Hussein 2002). Without all four elements, food security cannot be assured.

Food insecurity thus has multiple causes, and it is rooted in "combinations of political instability, environmental marginality and economic powerlessness" (Vogel & Smith 2002, p. 316). It is no longer viewed as the result of agriculture's failure to produce sufficient food, but rather as the consequence of the failure of livelihood systems to guarantee access to sufficient food at the household level (Devereux & Maxwell 2001). Food insecurity may occur as an acute or chronic problem, enduring for varying time periods and differing in degrees of severity. A population suffering from chronic food insecurity is more vulnerable to full-blown famine, and small fluctuations can lead to emergencies (Herdt 2004). Factors such as volatile price swings, limited government capacity to provide food and agricultural support, and the politicization of land ownership create conditions in which people have little resistance to disruptions of normal activities by drought, poor harvests, economic crises, and price inflation that may quickly create conditions for famine.

Because food insecurity is a multidimensional phenomenon, it is difficult to measure, and measurement requires examination of a combination of related indicators (Frankenberger & Coyle 1993). Some of the proxy indicators commonly used in food security assessments include agricultural production, livestock holdings, landholdings, multiple income sources that typically generate varied amounts of income, daily food consumption in terms of quantity and diversity, local food prices, anthropometric measurements of children under five (to assess wasting and stunting), and the degree to which households rely on coping strategies, such as wild plant consumption, seasonal migration and wage labor, and asset liquidation.

Several major shifts in food security studies and policies have occurred since the 1970s. First, the unit of analysis has moved from the global/national level to the local/household level. Second, the scope of analysis has shifted from a "food first" approach to an emphasis on the performance and sustainability of household livelihoods. Third, subjective perceptions of food security among local populations now complement objectively measurable indicators of food security (Devereux & Maxwell 2001). By combining quantitative and qualitative indicators, food security studies have thus improved in accuracy and validity. For example, food security assessments have begun to rely on local knowledge of household vulnerability by asking local populations to rank the vulnerability status of individual households and communities (Woodson 1997).

Participation by individuals, transparency in the management of resources, and vulnerability reduction must figure among the primary goals to fight against famine and hunger in Sub-Saharan Africa.

INCORPORATING VULNERABILITY AND THE HOUSEHOLD LIVELIHOOD SECURITY FRAMEWORK

In terms of chronic poverty and vulnerability, Africa remains the world's most disadvantaged continent. The 2000–2001 World Development Report states that nearly half (40%) of the total Sub-Saharan population of ~500 million people lives below the international poverty line of one dollar per day (Devereux & Maxwell 2001). By 2020 the population is projected to increase by 70%, accompanied by a 30% rise in child malnutrition (Pinstrup-Andersen et al. 1999). The gross national product has fallen ~1% annually in the past

two decades across the continent (Gaile & Ferguson 1996), and Africa's share of world agricultural exports has decreased from 10% to 4% since 1960 (Devereux & Maxwell 2001).

While the broad term vulnerability has been often used to mean vulnerability to poverty or risk, it has sometimes been treated as a cause and/or symptom of poverty. Vulnerability frameworks arose from the realization that the underlying vulnerability status of a population is a more important determinant of the extent and duration of a crisis than the discrete environmental hazards that may trigger the crisis (Prowse 2003). For instance, the relationship between drought and famine is strongest in places where the resource base is poor, poverty is endemic, and public capacity for prevention is weak. Although coordinated, rapid government intervention prevented drought from leading to famine in Zimbabwe, countries such as Sudan and Ethiopia are highly susceptible to drought-induced famine owing to political and economic systems weakened by repeated crises over time (von Braun et al. 1999).

In the Sahel, persistent vulnerability characterizes the relationship of the population to a continuous record of droughts and food shortages (Finan & Langworthy 1997). Simplistic portrayals of food shortages and hunger in the Sahel do little to reveal the underlying causes of a crisis. Famines and droughts in that region of Africa can be viewed within a framework of structural vulnerability defined as a function of exposure to stress and the limited ability to recover from negative impacts. The multidimensionality of vulnerability requires not only a focus on environmental factors such as limited rainfall, but also a consideration of social inequalities (e.g., power differences among classes and ethnic groups) and struggles over land and other natural resources (Blaikie 1985). Vulnerability is a socially constructed phenomenon influenced by institutional and environmental dynamics. An adequate vulnerability framework not only provides an understanding of the current crisis situation, but also allows an analysis of future risk scenarios (Nelson 2005).

Although the concept of vulnerability is a powerful one, it must be made useful for policy makers. This idea implies that local variations in vulnerability must be presented to policy makers in a comprehensible and functional manner.

GIS: geographic information systems

Vulnerability can be analyzed on various levels, including individual, community, regional, and national levels. It can be further separated into external factors that comprise the particular risks and shocks experienced by a population and the internal aspects that relate to a population's increasing inability to cope with those shocks (Chambers 1989). During the 1990s vulnerability analysis became a domain of expertise in its own right with the rise of vulnerability assessment studies and mapping. Vulnerability mapping uses a geographic information systems (GIS) framework for organizing data layers that includes secondary data on water sources, rainfall, and basic physical and social infrastructure. With this basic data set, the framework uses a community sampling process and a participatory research approach to involve local populations in the actual definition and mapping of their own vulnerability (Nelson 2005).

The main gaps that still need to be addressed in vulnerability studies include the multiple scales of analysis that create problems in aggregating data, the absence of objective criteria against which to compare a zero state of no vulnerability, and the complicated nature of dynamic systems that involve different combinations of variables over time and space (Webb & Harinarayan 1999). Vulnerability mapping tends to be descriptive. It is important to add an analysis of causality within the framework.

A household's capacity to absorb and recover from famines (or other shocks) can be analyzed instructively from a livelihood perspective (Ellis & Mdoe 2003). Livelihoods are the means by which the household as a unit and its individual members make a living and

HHLS: Household Livelihood Security

pursue their goals. They encompass the existing capabilities and assets as well as the sustainability types of socioeconomic activities pursued (Chambers & Conway 1992, Ellis 2000). Households and livelihoods represent the private dimension of vulnerability. Ideally, households operate in ways that minimize risk and that increase the ability to manage negative shocks (Nelson 2005).

The Household Livelihood Security Approach

The Household Livelihood Security (HHLS) framework grew out of a food security perspective but is based on the observation that food is not the only basic need. Other needs such as political participation, education, shelter, and meeting social obligations are as important as food. A livelihood "comprises the capabilities, assets (stores, resources, claims, and access) and activities required for a means of living; a livelihood that is sustainable can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation" (Frankenberger 2003).

Household livelihood security, then, refers to adequate and sustainable access to income and resources to meet basic needs (including food, potable water, health facilities, educational opportunities, housing, involvement in policymaking, and time for community participation and social integration). Livelihoods include a range of on-farm and off-farm activities that together provide a variety of procurement strategies to make a living. Thus, each household can have several possible sources of entitlement, which constitute its livelihood. These entitlements are based on the household's endowments and its position in the legal, political, and social fabric of society. The risk of livelihood failure determines the level of vulnerability of a household to income, food, health, and nutritional insecurity. The greater the share of resources devoted to the acquisition of food and health service, the higher the vulnerability of the household to food and nutritional insecurity. Therefore, livelihoods are secure when households have secure ownership of, or access to, resources (both tangible and intangible) and income-earning activities, including reserves and assets, to offset risks, ease shocks, and meet contingencies. Households have secure livelihoods when they can acquire, protect, develop, utilize, exchange, and benefit from assets and resources (Frankenberger 2003).

Two major challenges of incorporating HHLS into food security analysis are integrating local livelihoods data into central databases at the national level and financing the costs of scaling up the methods employed at the local level (Hussein 2002).

HOUSEHOLD COPING STRATEGIES

In the 1980s several scholars began looking systematically at the range of coping strategies employed by African households in food crisis periods (Corbett 1988, de Waal 1989, Rahmato 1991, Watts 1983). Normally, coping strategies differ from everyday livelihood strategies; however, in regions that face repeated shocks, coping strategies may come to be integrated into the routine set of daily livelihood activities. As coping strategies are blended with "normal" activities, people become more sensitive to shocks and less resilient (Davies 1993). Roncoli et al. (2001) point out that although coping strategies may serve the short-term purpose of responding to a crisis, the same strategies may require substantial trade-offs, increase risk, and constrain long-term responses and adaptation.

One of the underlying assumptions in earlier famine studies was that households would react to crises by seeking first to ensure food consumption. Studies conducted in Sudan, Nigeria, and Burkina Faso, among other countries, revealed that although coping strategies vary according to context, several common trends emerge across rural villages of Sub-Saharan Africa, and households

confronted by risks to their food entitlements seek to minimize long-term impacts in similar ways. In his detailed ethnographic study of the effects of the 1973–1974 famine in northern Nigeria, Watts (1983) noted that households tend to hold onto key assets as long as possible and do not resort to mass migration until all other options have been exhausted. In times of crisis, households often prioritize safeguarding their present assets or purchasing new ones instead of acting to maintain or increase levels of food consumption (Corbett 1988). For example, during the 1984–1985 famine in Darfur, Sudan, people spent as little as 10% of their incomes on food, utilizing most of their money instead to preserve household assets (de Waal 1990). Furthermore, when assets must be disposed of, there is an observed hierarchy in which assets that take the form of self-insurance (e.g., jewelry) are liquidated well before productive assets (e.g., livestock, land, or tools). Accordingly, the sale of productive assets can be considered a clear distress signal that indicates a lack of other options.

The stages of coping strategies begin with insurance mechanisms, followed by the disposal of productive assets, and finally, destitution, usually accompanied by forced migration (Corbett 1988). Rationing food consumption is a common response that starts well before disposal of key assets. Rising levels of malnutrition should thus be interpreted not as failure of strategies adopted but as one of their costs. "Famines and food crises may be seen by household decision makers primarily as a threat to the long-term economic security of the households, rather than simply in terms of an increased risk of malnutrition, disease or mortality" (p. 1108). In this view, famine conditions are created when a majority of households are forced to prioritize the maintenance of current food consumption levels over their future capacity to ensure income generation.

Inter-household transfers and loans increase in the early stages of response to food shortages. Because coping strategies follow a distinct pattern, the timing of relief plays a critical role in determining the effectiveness of these strategies.

Niger's 2004–2005 Food Crisis

Images of malnourished Nigerien children televised around the world in 2005 caught the international community's attention. However, a careful examination of the historical record suggests that the food crisis experienced in Niger in 2005 was not a transitory emergency but a permanent feature of mounting vulnerability. Growing population pressures, land degradation, climate change, reduced income-generating opportunities, and a complexity of other factors, including the low status of women, are working together to make Niger the poorest country in the world. Chronic malnutrition levels of 40% are recorded in many areas of Niger, and it is estimated that 40% of the rural population cannot satisfy its minimal calorie intake requirements. Food production and arable land per capita are declining. Niger is becoming increasingly dependent on food aid and imports. Since the 1980s, Niger has increasingly become unable to feed itself. Even in a good rainfall year such as 2005, rural families who can produce enough food to feed themselves year round are rare. Most families produce enough food to cover their needs for no more than six months. Diets are generally deficient in protein, calories, and essential vitamins and minerals. In addition, the decline of pastoral and agricultural resources is also leading to an increased number of conflicts between farmers and herders. The traditional coping mechanisms of both groups are no longer as viable as they once were in dealing with drought and food shortages (Bernus 1980, Mortimore 1991).

The scarcity of farmland has forced Niger's agrarian population to revert to survival strategies incompatible with sustainable natural resource management. Niger's heavy reliance on increasingly scarce wood as the main source of household energy is a major cause of natural resource degradation. Land scarcity is forcing many farmers onto lands traditionally

reserved for pastoralists. This results in lower yields and increased conflicts with pastoralists.

The food crisis experienced in Niger in 2005 was not a transitory emergency but a permanent characteristic of the rising struggle for survival in Niger. Annual rainfall data for the past 30 years shows that 1973, 1975, 1981, 1983, 1987, 1993, 2002, and 2004 were the worst rainfall years. However, 2004 was far from being the driest year for Niger in the past 30 years. So what made 2004 stand out in the media? Where were the media in 2002, 1993, . . . 1973? Medecins sans Frontières were the first to report the high rates of malnutrition in Niger in 2005. However, the child malnutrition rates reported in 2005 were similar to previous years (CARE-BARA 1997).

One lesson from the recent food crisis in Niger concerns the tardiness with which assistance was mobilized despite repeated warnings since the poor harvest of 2004. High market prices, poor management of the national cereal reserves, and locust infestations in some areas have aggravated the food shortage situation.

Effective and sustainable ways to deal with famine and food shortages in Niger must address the underlying causes of increased vulnerability for most households in the country. Among those underlying causes, one must figure the low status of women in Niger's male-dominated society. In addition, food crisis prevention should be an integrated component of emergency relief assistance. However, one major challenge is to have donors ready and willing to fund crisis prevention and alternatives to famine relief interventions rather than fund emergencies that never end.

THE FUTURE OF FOOD SECURITY IN SUB-SAHARAN AFRICA: TOWARD A RIGHTS-BASED APPROACH

Food Security as a Human Right

The International Covenant on Economic, Social, and Cultural Rights adopted by the United Nations in 1966 formalized the right to food as a basic human right, which had been cited in the 1948 Declaration of Human Rights. The Rome Declaration on World Food Security in 1996 reaffirmed the "right of everyone to have adequate access to safe and nutritious food . . . and be free from hunger" (FAO 1996, p. 631). However, despite these declarations, no international mechanisms have been devised to uphold this right formally. The 1996 World Food Summit brought together leaders of 185 countries to develop actions to end world hunger. Food insecurity and vulnerability mapping systems were created at this summit to monitor global and national efforts to reach food security goals. Another tool recently devised to link human rights standards with humanitarian interventions is the The Sphere Project (Oxfam 2000), which is the first attempt to develop globally applicable minimum standards of humanitarian response (Young & Way 2004).

A rights-based approach to food security emerges from a more general human rights framework that affirms the basic rights of all people irrespective of race, culture, religion and gender. The approach implicates a wide range of local, nongovernmental, and international actors in defining policy and actions to reduce hunger. It can refocus attention on several important aspects of food security, including the responsibility of international institutions and states to guarantee human rights, the agency of food-insecure groups to claim their legal rights, and the ways of incorporating rights-based indicators into food security measurement (Hussein 2002).

Impacts of HIV/AIDS on Food Security

The most significant change in livelihood security and the nature of famine over the past decade in Sub-Saharan Africa has been the rapidly growing impact of HIV/AIDS (de Waal 2004). The AIDS epidemic has affected Sub-Saharan Africa more than any other region of the world, and the highest

global rates of HIV infection and AIDS-related deaths are in Africa, especially southern Africa (de Waal & Whiteside 2003). In addition, AIDS claims a high proportion of lives of the most productive adult household members, leaving behind children and senior household members who have difficulty replacing the lost labor force (Kadiyala & Gillespie 2003).

In an analysis of the recent food crisis in southern Africa, De Waal & Whiteside (2003) argue that HIV/AIDS has created a new category of highly vulnerable households owing to the presence of illness or AIDS-related deaths. The rising threat of HIV/AIDS to African livelihoods is the root cause of a new variant of famine in which African households face increasing vulnerability to food shortages and diminished possibilities of recovery. Elevated rates of adult morbidity and mortality caused by AIDS drastically reduce the household labor force, skills, and assets. The burden of caring for sick individuals further decreases the productive capacity of the household and increases dependency ratios within households. Because AIDS increases inter- and intrahousehold inequality, it is also a significant factor in making Africans more susceptible to the effects of famine (de Waal & Whiteside 2003).

In addition, the relationship between HIV and malnutrition creates a vicious cycle. HIV-infected individuals have a greater need for proper nutrition and caloric intake and are more vulnerable to food crises. Food insecurity also raises risk of exposure to initial HIV infection by increasing the likelihood that people will engage in high-risk behaviors, such as seasonal migration. HIV and malnutrition compound their effects reciprocally in an afflicted individual: As increased morbidity makes dietary intake requirements higher, the individual has greater nutritional deficiency, which further suppresses the immune system and hastens the progression of the disease (Gillespie & Kadiyala 2004, Hendriks 2005). Whereas other household members may choose to reduce caloric intake in the early stages of a crisis, as a strategy to preserve their livelihoods in the long run, HIV-positive individuals face severe health repercussions in this situation. HIV sufferers have greater nutritional needs (Haddad & Gillespie 2001); therefore reducing overall food consumption is not a viable strategy (O'Donnell 2004). Fortified, high-energy foods developed in the 1990s have been used successfully by nutrition specialists in patient-specific treatments, including those for HIV patients. Nevertheless, these food supplements do not reduce the necessity of expanding access to antiretroviral drugs or other medical treatments for HIV/AIDS patients (Webb 2003).

The realities of the HIV/AIDS pandemic in Africa must be more fully integrated into famine, food security, and vulnerability studies and interventions. Gillespie & Kadiyala (2004) advocate adopting an HIV/AIDS lens in all development and humanitarian programming, using a framework similar to the household livelihood security framework described above, which would more fully integrate the changing needs of communities affected by HIV/AIDS into the discourse and practice of aid.

FEWS: famine early warning systems

FAMINE PREVENTION AND RESPONSE STRATEGIES

The idea of early warning systems can be traced to the Indian Famine Codes established in the colonial era to provide a systematic assessment of risk of famine in India. During the 1970s, the combination of falling food stocks worldwide and an increase in droughts affecting India and Africa renewed interest in early warning systems (Webb & Harinarayan 1999). Contemporary famine early warning systems (FEWS) use remote-sensing data from satellites that detect levels of chlorophyll production in plants as an indicator of food production. Together with economic data on prices and quantities of foods available in local markets, these data provide indications of national and regional food needs, which are used in policy decisions

WFP: World Food Program

(Gaile & Ferguson 1996). These systems are often conceived and funded by the international community to prevent massive disasters. They are not designed to address localized small-scale vulnerabilities. The fact that food crises occur in Sub-Saharan Africa on a regular basis is evidence of the limitations of the existing warning systems.

Howe & Devereux (2004) have argued for the need to develop a multilevel, graduated definition of famine based on intensity and magnitude measures to complement traditional early-warning systems in a comprehensive humanitarian information system (Maxwell & Watkins 2003). Currently there are no generally accepted criteria of which rates indicate the onset of a famine, and this lack of consensus contributes to delays in intervention and lack of accountability on the part of various stakeholders. The establishment of such criteria would allow for more effective and proportionate responses and greater accountability of food crises. In this proposed universal system, famine intensity would measure the severity of a crisis in terms of anthropometric and mortality indicators and food security descriptors, whereas famine magnitude would assess the aggregate impact of the crisis in affected populations according to excess mortality rates. Such scales would establish standardized criteria for identifying the onset of famines worldwide and would serve as a useful tool for stakeholders engaged in famine prevention and relief.

GEOGRAPHIC INFORMATION SYSTEMS

Geographic information systems (GIS) are playing an increasingly important role in food security. A GIS stores and links cartographic map features with geographically referenced, spatio-temporal data on socioeconomic and other kinds of conditions. GIS methods have been most widely used in the developing world for public health and epidemiology, especially for tracking cases of tuberculosis and malaria, and have become standard tools in humanitarian emergencies (Park & Baro 2003). GIS is especially useful as a component of rapid assessments to identify the magnitude and locations of a crisis and the resources needed for relief operations. GIS has greatly improved ways of presenting and analyzing epidemiological data and spatio-temporal information that has implications for programmatic planning and logistics, resource allocation, and monitoring and evaluation of humanitarian emergencies (Kaiser et al. 2003, p. 137). Further integration of GIS methods in prevention and relief efforts will enable improvements in famine early warning systems, assessments, monitoring and evaluation.

Improving the Aid Encounter: The Role of International Organizations, Government, and Civil Society

Since the mid-1970s with the onset of a world food crisis, the international community has created several structures to monitor, prevent, and respond to global food crises, including the World Food Program (WFP), a branch of the United Nations responsible for obtaining and moving large quantities of food in response to emergencies, global FEWS, and expanded agricultural programs in foreign universities funded by USAID and other bilateral aid programs (Herdt 2004). Traditionally, famine relief in Africa has taken the form of multilateral food aid brokered by large international organizations such as WFP, national governments, and nongovernmental and community-based organizations. Food aid can be essential not only in replacing lost assets but also in lessening the economic threat of famines by helping to preserve existing assets (de Waal 1990). One of the biggest problems associated with food aid has been the inadequacy of African transportation infrastructures for ensuring reliable and equitable food delivery. In recent food crises in Sudan and Ethiopia, for example, food relief piled up in capital cities and intermediate points owing to a lack of available and reliable

transportation to distribute food to remote rural areas (Gaile & Ferguson 1996). Also, the high potential for diversion of food aid can be attributed to corruption at various levels. Government corruption and inefficiency are major obstructions to food aid distribution (Lee 2004). Even in the best-case scenario when food aid successfully arrives at its destination, its trajectory commonly ends in a site conveniently located along a main paved road axis for ease of unloading and storage. Because of these logistical constraints, remote villages are rarely served directly by traditional food aid programs.

For more than half a century, millions of people affected by famine have been fed by American humanitarian groups provided with food by the U.S. government. To save money, Congress is considering spending a quarter of the food-aid budget on purchases of food from other countries, although current law requires such purchases to be from American farmers. This change risks cutting out the U.S. middlemen who make significant profits from the food-aid business. Indeed, the funds going to middlemen are as great as those going to farmers. Most major charities have also been tied into this system of contractual obligations and quid pro quo arrangements, and they doubt that there will be as much congressional support for aid if it does not also benefit U.S. farmers (Thurow & Kilman 2005).

> [Whereas] parts of Africa are routinely wracked by hunger, some countries often produce surpluses of wheat and corn. In 2003, for instance, the United States sent ~100,000 tons of American-grown grain to Uganda at a cost of $57 million to feed people in the country's north. At the same time, Ugandan farmers elsewhere were producing surplus crops their government could not afford to buy and transport. John Magnay, chief executive of Uganda Grain Traders Ltd., estimates that the United States could have purchased more than twice as much grain if it had bought it locally. He calculates that USAID spent $447 per ton for U.S. corn delivered to his country. The cost for Ugandan corn was $180 per ton. (Thurow & Kilman 2005, p. A1)

There is no doubt that U.S. farmers and shippers are able to benefit from the bilateral food programs, but is that benefit more important than finding creative and more efficient ways to save lives and protect livelihoods?

Cash transfer programs are gaining more advocates in the African context and are likely to continue expanding in the future. Cash transfers offer several benefits over food aid, especially by significantly decreasing the overhead and transportation costs of delivery, increasing local cash flows, stimulating market growth, and allowing beneficiaries more autonomy to prioritize household needs and to choose how to spend aid in local markets. Critics of cash programs have aired concerns that cash transfers have a higher potential for corruption, are difficult to monitor, and could lead to rapid price increase because of an influx of cash in local markets. In 2005, in Niger, the British Red Cross initiated the first large-scale pilot cash-assistance program in the Tanout region of northeastern Niger to benefit 5700 households in 90 of the most vulnerable villages in Tanout. Each household received a lump sum of $240 to meet household food and livestock needs in response to last year's widespread food shortages and livestock loss. Global positioning satellite points were established for each household for long-term monitoring purposes. The project was well received by local communities who cited the advantages of controlling their own use of the aid. Today, this innovative project is viewed as one of the best success stories during the recent food crisis in Niger.

Recent critics of aid programs have pointed out that donors often remain "trapped in an eternal present" (Keen 1994, p. 215) with little understanding of the historical context or future implications of famines or famine relief operations. In addition, agencies have tended to separate short-term relief

efforts from longer-term development initiatives, thereby constructing a false dichotomy between two points that coexist on the same continuum. Famine prevention needs to be more fully integrated into long-term development programs rather than waiting until a crisis erupts. Humanitarian relief should ideally aim to preserve livelihoods, and relief should be linked to longer-term development programs (Pingali et al. 2005). In addition, both emergency and sustainable development interventions should be better tailored to the needs of heterogeneous groups with different income and livelihood strategies and geographic locations (Webb & von Braun 1994).

A Needed Focus on Exit Strategies

An exit strategy for an emergency food program is a specific plan describing how the program will withdraw from a region or population while assuring that the achievement of development goals is not jeopardized and that further progress toward these goals will continue after the program ends. "Exit" refers to the withdrawal of externally provided resources, whether material goods, human resources, or technical assistance, from the operational area. The goal of an exit strategy is to assure the sustainability of the program's impacts and activities.

Any emergency response to a famine or food crisis must be accompanied by appropriate exits from these same emergencies. Knowing how to end an emergency response must be as important as knowing when to begin one.

Disasters or crises often extend beyond national boundaries. In these settings, one must consider the broader regional context. A primary example of cross-border crisis is conflict. For example, one cause of the complex emergency in Côte d'Ivoire, and a critical component of the response, is massive displacement both internally and in neighboring countries.

A second example of a shock that requires a regional approach is HIV/AIDS, a long-wave emergency often exacerbated by other shocks. One common coping strategy for populations facing long-term poverty, conflict, or detrimental changes in the policy or macroeconomic situation is cross-border migration. This is particularly problematic in a region with high rates of HIV/AIDS, such as southern Africa.

Emergency responses in the face of recurrent shocks can be programmed more strategically by undertaking activities that reduce households' exposure to risk and increase their resilience to shocks before they occur. Emergency response is put into a broader framework of risk management and can be effectively linked to safety nets and development activities. We must establish a holistic conceptual framework that focuses on short- and long-term vulnerability. The primary emphasis should be on the risks and resiliencies of households and communities. Such a conceptual framework not only identifies the types of information that need to be collected in assessments, but also identifies the types of interventions appropriate for saving lives in the short term and enhancing livelihoods in the long term. The key to this framework is to illustrate that artificial divisions between emergency programming and development programming are inappropriate. By focusing on vulnerability these distinctions are no longer relevant.

Although often problematic and inadequate, the work of international aid organizations has been indispensable in relieving some of Africa's greatest food crises in recent decades. Alleviating famine, however, should not fall exclusively within the purview of international organizations. African governments must play a major role in improving national-level responses before relying on external sources of aid. Sen (1999) proposed that famines have never occurred in functioning electoral democracies and that democracy is the best guarantee against famine. This statement has been challenged by the occurrence of famines in democratic regimes in India (Bihar Famine) and Sudan

(1986–1989 famine) that ensued despite the presence of democratic governments with competitive elections and a free press (Myhrvold-Hanssen 2003). Although Sen insists on the importance of a free press and active political opposition in preventing famine, one must consider the constraints posed by illiteracy on the ultimate power of the press. Africa has the lowest literacy rates in the world, and this factor limits the ability of the population to react to early warnings issued by the press.

Nevertheless, Sen's link between famine and governance remains a crucial consideration in the future of hunger relief. Famines are not likely to cease without improving government accountability and strengthening civil society. Good governance must include efficient and accountable use of resources, transparent and nondiscriminatory distribution of resources, participatory planning, and control of resources at a decentralized, local level (Webb & von Braun 1994). Good governance also requires the presence of a strong and active civil society, and this is another area in which capacity building is needed. Education is another essential component in reducing food insecurity. Studies of child malnutrition have shown that improvement in women's education is the single most important factor in reducing child malnutrition, associated with a 43% decline in malnutrition (Smith & Haddad 2000). More emphasis on ensuring basic literacy and access to education and health care throughout Africa is an important long-term investment in future food security.

In conclusion, an important paradigm shift is underway in the field of famine and food security studies. Famine is now explained less in terms of an anomalous disaster event and more commonly as a process rooted in long-term social, economic, and political inequalities and sharply exacerbated by the incidence of violent conflict and war. More research on the household-level impacts of famine and contextual knowledge in crisis situations is necessary to understand better the nature, scale, and history of crises and the evolution of different aspects of food security as conditions change during crises (Flores et al. 2005). This type of local knowledge is essential to assess the needs, most effective responses, and role of social actors. Anthropological methods are well suited to play a key role in addressing these knowledge gaps. Anthropologists have added valuable perspectives in famine and food security studies, including the addition of long-term ethnographic studies, integration of qualitative data and local forms of knowledge, and a greater emphasis on the socio-political dimensions of food crises that address power relations.

Future food security for Africa depends on good governance, sound economic growth policies, and active preparedness (Webb & von Braun 1994). Until the underlying issues of political accountability and economic disparity are adequately addressed, in the context of African governance and civil society, by international humanitarian interventions and local development planning, the persistence of hunger will continue to plague most African nations well into the twenty-first century.

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LITERATURE CITED

Bernus E. 1980. Famines et sécheresses chez les Touaregs Sahéliens. *Africa* 50(1):1–7

Berry L, Downing TE. 1993. Drought and famine in Africa, 1981–86: a comparison of impacts and responses in six countries. See Field 1993a, pp. 35–58

Blaikie PM, ed. 1994. *At Risk: Natural Hazards, People's Vulnerability, and Disasters*. New York/London: Routledge

Brown L. 2001. Eradicating hunger: a growing challenge. In *State of the World 2001*. New York: Worldwatch Inst., Norton

CARE-BARA. 1997. *Evaluation de la Sécurité des Conditions de Vie dans le Département de Maradi au Niger*. Atlanta: CARE International

Chambers R. 1989. *Farmer First: Farmer Innovation and Agricultural Research*. London: Intermed. Technol.

Chambers R, Conway G. 1992. *Sustainable rural livelihoods: practical concepts for the 21st century*. Discussion Pap. 296, Inst. Dev. Stud., Univ. of Sussex

Corbett J. 1988. Famine and household coping strategies. *World Dev.* 16(9):1099–112

Davies S. 1993. Are coping strategies a cop out? *IDS Bull.*

de Waal A. 1989. *Famines That Kill*. Oxford: Clarendon Press

de Waal A. 1990. A re-assessment of entitlement theory in the light of the recent famines in Africa. *Dev. Change* 21:469–90

de Waal A. 1998. *Famine Crimes: Politics and the Disaster Relief Industry in Africa*. Bloomington: Indiana Univ. Press

de Waal A. 2004. *Famine that Kills: Darfur, Sudan 1984–1985*. New York: Oxford Univ. Press

de Waal A, Whiteside A. 2003. New variant famine: AIDS and food crisis in Southern Africa. *Lancet* 362:1234–37

Devereux S. 2001a. Livelihood insecurity and social protection: a re-emerging issue in rural development. *Dev. Policy Rev.* 19(4):507–19

Devereux S. 2001b. Sen's entitlement approach: critiques and counter-critiques. *Oxford Dev. Stud.* 29(3):245–63

Devereux S, Maxwell S. 2001. *Food Security in Sub-Saharan Africa*. London: ITDG

Duffield JS. 1998. *World Power Forsaken: Political Culture: Political Culture, International Institutions, and German Security Policy After Unification*. Stanford, CA: Stanford Univ. Press

Edkins J. 2001. *Whose Hunger? Concepts of Famine, Practices of Aid*. Minneapolis: Univ. Minn. Press

Ellis F. 2000. *Rural Livelihoods and Diversity in Developing Countries*. Oxford: Oxford Univ. Press

Ellis F, Mdoe N. 2003. Livelihoods and rural poverty reduction in Tanzania. *World Dev.* 31:1367–84

Finan T, Langworthy M. 1997. *Waiting for Rain: Agriculture and Ecological Imbalance in Cape Verde*. Boulder, CO: Lynne Rienner

Flores M, Khwaja Y, White P. 2005. Food security in protracted crises: building more effective policy frameworks. *Disasters* 29(Supp. 1):S25–51

Food and Agriculture Organisation of the United Nations (FAO). 1996. Commitment 3. Rome declaration on world food security and world food summit plan of action. *Report of the World Food Summit*. Rome: FAO

Frankenberger T. 2003. *Managing Risks, Improving Livelihoods: Program Guidelines for Conditions of Chronic Vulnerability*. Tucson: Tango Int. 2nd ed.
Frankenberger T, Coyle PE. 1993. Integrating household food security into Farming Systems Research Extension. *J. Farm. Syst. Res. Extension*
Gaile GL, Ferguson A. 1996. Success in African social development: some positive indications. *Third World Q.* 17(3):557–72
Gillespie S, Kadiyala S. 2004. *HIV/AIDS and Hunger*. Ithaca, NY: Int. Food Policy Res. Inst.
Haddad L, Gillespie S. 2001. Effective food and nutrition policy responses to HIV/AIDS: what we know and what we need to know. *J. Int. Dev.* 13:487–511
Hendriks SL. 2005. The challenges facing empirical estimation of household food (in)security in South Africa. *Dev. South. Afr.* 22(1):103–23
Hendrie B. 1997. Knowledge and power: a critique of an international relief operation. *Disasters* 21(1):57–76
Herdt RW. 2004. Food shortages and international agriculture programs. *Crit. Rev. Plant Sci.* 23(6):505–17
Howe P, Devereux S. 2004. Famine intensity and magnitude scales: a proposal for an instrumental definition of famine. *Disasters* 28(4):353–72
Hussein K. 2002. Food security: rights, livelihoods and the world summit—five years later. *Soc. Policy Admin.* 36(6):626–47
Kadiyala S, Gillespie S. 2003. *Rethinking food aid to fight AIDS food consumption and nutrition division*. Discussion Pap. 159.
Kaiser R, Spiegel PB, Henderson AK, Gerber ML. 2003. The application of geographic information systems and global positioning systems in humanitarian emergencies: lessons learned, programme implications and future research. *Disasters* 27(2):127–40
Keen D. 1994. *The Benefits of Famine: The Political Economy of Famine and Relief in Southwestern Sudan, 1983–1989*. Princeton, NJ: Princeton Univ. Press
Lee H. 2004. Fasting for food: Ethiopia's years of famine. *Harvard Int. Rev.* 26
Maxwell D, Watkins B. 2003. Humanitarian information systems and emergencies in the Greater Horn of Africa: logical components and logical linkages. *Disasters* 27:72
Mortimore M. 1991. *Adapting to Drought: Farmers, Famines and Desertification in West Africa*. New York: Cambridge Univ. Press
Myhrvold-Hanssen TL. 2003. *Democracy, News Media, and Famine Prevention: Amartya Sen and The Bihar Famine of 1966–67*. Oxford: Oxford Univ. Press
Nelson D. 2005. *The public and private sides of persistent vulnerability to drought: an applied model for public planning in Ceará, Brazil*. PhD thesis, Tucson: Univ. Ariz. Press
O'Donnell M. 2004. *Food Security, Livelihoods and HIV/AIDS: A Guide to the Linkages, Measurement and Programming Implications*. London: Save the Children
Oxfam. 2000. *The Sphere Project: Humanitarian Charter and Minimum Standards in Disaster Response*. Oxford: Oxfam
Park T, Mamadou B. 2003. The Six Cities Project: developing a methodology of surveying densely populated areas using social science assisted and diachronic remote sensing based classification of habitation. *J. Polit. Ecol.* 10:1–23
Park TK, Baro M, Ngaido T. 1993. Crisis of nationalism in mauritania. In *Risk and Tenure in Arid Lands: The Political Ecology of Development in the Senegal River Basin*, ed. TK Park, pp. 87–121. Tucson: Univ. Ariz. Press
Pingali P, Alinovi L, Sutton J. 2005. Food security in complex emergencies: enhancing food system resilience. *Disasters* 29(Suppl. 1):S5–24

Pinstrup-Andersen P, Pandya-Lorch, Rosegrant MW. 1999. *The World Food Situation: Recent Developments, Emerging Issues and Long Term Prospects*. Washington, DC: Int. Food Policy Res. Inst.

Prowse M. 2003. *Towards a clearer understanding of the relation between vulnerability and chronic poverty*. CPRC Work. Pap. No. 24. Chronic Poverty Res. Cent. (CD)

Rahmato D. 1991. *Famine and Survival Strategies: A Case from Northeast Ethiopia*. Uppsala, Sweden: Nordiska Afrikainstitutet

Rangasami A. 1985. Failure of exchange: entitlements theory of famine: a response. *Econ. Polit. Weekly* 20

Roncoli C, Ingram K, Kirshen P. 2001. The costs and risks of coping with drought: livelihood impacts and farmers' responses in Burkina Faso. *Climate Res.* 19:119–32

Rukuni M. 2002. Africa: addressing growing threats to food security. *Am. Soc. Nutr. Sci.* 132:S3443–48

Sen A. 1981. *Poverty and Famines: An Essay on Entitlement and Deprivation*. Oxford, UK: Clarendon

Sen A. 1989. *Inequality Reexamined*. Oxford: Oxford Univ. Press

Sen A. 1999. *Development as Freedom*. Oxford, UK: Oxford Univ. Press

Smith LC, Haddad L. 2000. *Overcoming child malnutrition in developing countries: Past Achievements and Future Choices. Food Agriculture and the Environment.* Discussion Pap. 30. Washington, DC: Int. Food Policy Res. Inst.

Steyn NP, Walker ARP. 2000. Nutritional status and food security in Sub-Saharan Africa: predictions for 2020. *Asia Pac. J. Clin. Nutr.* 1:1–6

Thurow R, Kilman S. 2005. Meal ticket: farmers, charities join forces to block famine-relief revamp; Bush administration wants to purchase African food; lobby says buy American; proposal is stuck in Congress. *Wall Street J.* Oct. 26, p. A1

Vogel C, Smith J. 2002. The politics of scarcity: conceptualising the current food security crisis in Southern Africa. *South Afr. J. Sci.* 98:315–17

von Braun J, Teklu T, Webb P. 1999. *Famine in Africa: Causes, Responses and Prevention*. Baltimore, MD: Johns Hopkins Univ.

Walker P. 1989. *Famine Early Warning Systems: Victims and Destitution*. London: Earthscan

Watts M. 1983. *Silent Violence: Food, Famine and Peasantry in Northern Nigeria*. Berkeley: Univ. Calif. Press

Webb P, Harinarayan A. 1999. The measure of uncertainty: the nature of vulnerability and its relationship to malnutrition. *Disasters* 23(4):292–305

Webb P, Harinarayan A. 2003. Can famine relief meet health and hunger goals simultaneously? *Lancet* 362:40–41

Webb P, von Braun J. 1994. *Famine and Food Security in Ethiopia: Lessons for Africa*. New York: Wiley

Woodson DG. 1997. Lamanjay, food security, sécurité alimentaire: a lesson in communication from BARA's mixed methods approach to baseline research in Haiti, 1994–1996. *Cult. Agric.* 19(3):108–22

Young H, Way SA. 2004. Linking rights and standards: the process of developing "rights-based" minimum standards on food security, nutrition and food aid. *Disasters* 28(2):142–59

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