



## **Demographic Projections, the Environment and Food Security in Uganda**

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#### Keywords

- ❖ Food security
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- ❖ Mortality

## **ABSTRACT**

**Uganda's population growth currently stands at 3.6% given the above population growth, feeding Uganda's future population is an important challenge .this paper considers what we know about the relationship between population and food security and what population projections suggest will be the case over the next half century. It considers how the major sources of population change will affect food security in Uganda during this period. Furthermore, it articulates the implications of population shocks, including HIV/AIDs and conflicts, on food security. The paper also discusses the implications of population increases on the environment and the use of land. Finally it suggests that land reform can be used to ameliorate some of the negative consequences of growth on food security.**

## **1. Introduction**

This paper considers what we know about the relationship between population and food security and what population projections suggest will be the case over the next half century. We cannot predict the constraints or possibilities that will determine future population trends; however population projections allow us to talk about the present and to appreciate the challenges of the future. The current size and pace of growth of the human population is unprecedented. The number of people to be fed in a population is determined by four possible flows: people enter or leave a population, by being born, dying, migrating in, or migrating out. Demographers make projections under strong and conservative assumptions of a constant situation. Population projections are estimated on the basis of the basic components of population growth remaining constant. This assumption is necessary for projections. However, population forecasts are based on anticipated changes in the basic components of population growth. In the situation of no change, the population growth in Uganda will continue to contribute to environmental degradation especially in situations where land holdings have become smaller and smaller. In the situation of positive changes such as declines in fertility, improved access to safe and nutritious food, increasing education, and land reform, population growth may not be a significant problem for food security.

There is a dynamic interrelation among population, food security, the environment, and natural resources (DasGupta 1993; Lutz et al. 2002; Sen 1999; UNCTAD 2010).

Three crucial processes produce food insecurity: (1) food stocks--determined by the domestic production of food, and the capacity to import food for the population; (2) access to food—determined by the level of poverty and transportation and distribution systems within a given area; and (3) nutritional adequacy (a subject handled more fully in Thomas and Zuberi 2011). A food-insecure situation exists when necessary food stocks are not available to the population; and when there is insufficient access to food for the population to maintain consumption at adequate nutritional levels to maintain an active life style. Procuring adequate stocks of food and making them accessible to the population in need results in food security. Population projections help us understand how current food insecurity may impact future populations.

## **2. Population Growth in Uganda**

Uganda's population growth rate of 3.2 percent is one of the highest in the world, and is unsustainable as it strains the country's revenue and puts a lot of pressure on government's ability to provide social services such as food, Education, housing, health, employment, water and sanitation, thus undermining Uganda's economic gains. It also puts pressure on land and other natural resources, thus compromising the environment as increased number of human beings look for means of livelihood. Indeed effects of high population growth are already being felt in Uganda. They are partly to blame for shortage of health services, unemployment, high prices for food stuff, inadequate classrooms and inadequate resources for effective and efficient social service delivery, to mention but a few.

High population growth rate has also not spared households where large families imply more mouths to feed and more people to provide for in terms of several basic needs. This has left heads of households helpless and unable to adequately cater for their families.

Implications of large family size at household level include; high expenditure on health, education, food, housing and sanitation and high demand for land and fuel wood.

All these challenges keep members of the household in perpetual poverty.

In short, a rapid increase in human numbers Creates; High demand for food, High demand for energy which in turn force people to encroach on forests and woodlands, Pressure on environment such as water, High demand for health services, High demand for education services, and High demand for housing and sanitation. This situation is projected to get even worse in future if practical measures are not put in place to address the current challenges.

The main factor behind this rapid increase in human numbers is the high fertility of Ugandan women. A woman in Uganda produces on average a total of 7 children during her reproductive life of 15 to 49 years. By age 15-19 about 26% of the girls are either pregnant or already have a child. Research findings indicate that most of the pregnancies in Uganda are unwanted or unintended. Yet contraceptive use is still at only 24%, although unmet need is at 41%.

This means that there is a lot that needs to be done since women who would like to regulate their births are not using family planning methods. Reasons for not using range from limited access to services, to lack of information, unexplained side effects, rumours and misconceptions.

In addition, Ugandans generally desire large families for old age security and pride. Other drivers of high fertility include; Households with lower education, Polygamy, Cultural preferences for boys, Uncertainty on life expectancy, Children as life insurance in old age, Early marriages, Source of Labor, Limited access to Reproductive Health services and information and Poverty and Societal pressures

It has been argued by some schools of thought that a large population is good for a country because it creates demand and provides a big market for various products. However this may not apply to Uganda due to the following reasons.

In Uganda over 70% of the total population of 34 million people is not in productive employment hence increasing dependency and poverty. About 68 percent of the population is engaged in subsistence farming (producing for only their stomachs) while 56% is under 18 years of age, they are either in school or are just redundant, or are engaged in subsistence activities and yet will soon get into child bearing age and are ready to fuel the population growth even further. In addition, 4.6% of the population are aged 60 years or above. One can conclude from this that over 60 percent of Uganda's population if not more, is either children or elderly, or unemployed who are not contributing meaningfully to national development.

In the case of Uganda therefore, the argument that a large population is good does not hold water unless efforts are put in place to turn this large population into an asset rather than a burden which it is today.

### **3. Mortality**

The healthcare worker shortage in Sub-Saharan Africa is among the world's greatest challenges. The WHO estimates a shortage of roughly 1.5 million health care workers in Sub-Saharan Africa alone, where 3% of the world's health workforce spends just 1% of world healthcare spending on a full 24% of the global burden of disease. The result is the dire indices we see in Africa, with life expectancy 30 years less than the rich world, infant mortality 20 times higher and childhood mortality 30 times higher than in rich countries. Demographic trends portend a worsening crisis. History has taught us that improving the health of a population is a critical piece for any poverty reduction and economic growth strategy.

Since SSA comprises the world's poorest region, improving the health of people throughout sub-Saharan Africa comprises an essential starting point and remains a top global priority.

Mortality and morbidity rates in Uganda are among the world's highest. Life expectancy in Uganda is 53.45 years 2013. Uganda's infant mortality rate of 64.82 per 1000 live births is the world's 33rd highest. Causes include infectious diseases such as malaria, HIV, diarrheal disease and acute respiratory infections, compounded by short birth intervals and malnutrition. In addition, 6.5% HIV prevalence rate, is a percentage which is among highest in the world. Uganda's maternal mortality rate of 310 deaths/100,000 live births (2010 Mundi index) is roughly 50 times higher than that of the United States. This is coupled with the world's third highest total fertility rate (unchanged over two decades at 6.7 (6.7 what? Babies per woman?). There is poor access to health services across the country, with only about half of the population living within 5 km of a health facility (MoH, Mid Term Review 2003). Furthermore, only 42.7% of Ugandan parishes have any type of health facility at all, with wide variations between rural and urban areas and between districts. Clearly, health status across Uganda is poor and there is a clear need for rural programs that can make measurable and sustainable improvements in this area.

Studies of the relationship between food and child death would benefit greatly from a more expansive investigation of the relationship between malnutrition and the various subsequent causes of death. Typically, such an analysis would be conducted using vital registration data as the numerator and population census data as the denominator. However, vital registration data are typically not available in sub-Saharan African countries with a few exceptions to be found in the Northern African region, countries like South Africa, and a few cities in West and East Africa.

#### **4. HIV/AIDS**

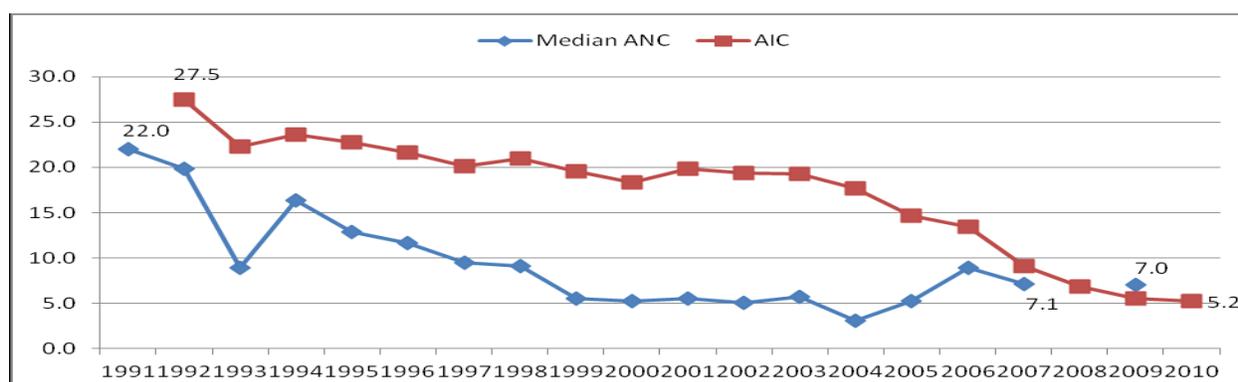
Food security is a consequence of and contributor to the HIV epidemic. The complexity of the HIV epidemic's relationship to food security is worthy of serious consideration. The factors contributing to the HIV epidemic differ by social economic and political considerations. Hence, different nations experience and respond to the HIV epidemic in different ways. Many sub-Saharan Africans confront multiple pressures such as social, health, political, and environmental. The HIV epidemic has been one of the major contributors to these pressures. In this way, HIV has been a shock to population growth and composition on the African continent.

Impacts of HIV on food security can be as detrimental as food insecurity has been on the epidemic. (Drimie and Gillipsie, 2010; Ferga et al. 2010; de Waal and Whiteside 2003). Moreover, HIV and secondary infections associated with the virus negatively affect the nutritional status of infected individuals (van Liere 2002; Ferga 2010). HIV impacts the population at the individual, household and societal level.

Individuals living with HIV have altered patterns of food utilization. HIV positive persons may experience increasing caloric requirements, while at the same time experiencing less appetite and reduced metabolism. For example, the HIV epidemic has contributed to problems in labor and problems for the laborer. The epidemic primarily attacked individuals in their prime labor ages and removes them ultimately from the labor force. This suggests that the epidemic has wider implications for food security across sub-Saharan African countries

**HIV Prevalence.** Trend: Data from Ante natal clinic (ANC) sentinel sites and those from AIDS Information Centre (AIC) indicate that generally, there has been a general decline in trend of HIV prevalence in the country from a high of between 22.0% and 27.5% in early 1990's to a low of between 5.2% and 7% in the population as indicated by median ANC prevalence among pregnant women attendees and prevalence among AIC attendees (Figure 1). This has been corroborated by data from the UHSBS 2006 and UAIS 2011 which indicated that the prevalence was at 6.4% and 6.7% in 2004/05 and 2011 respectively; this difference in prevalence of HIV however is not statistically significant.

**Figure 1: Trend in HIV Prevalence in Uganda, 1991-2010**



### Incidence of HIV Infection

**New Cases of HIV infection:** Recent estimates as is shown in the table below indicate that the annual number of new HIV infections in the country (i) increased by 11.4% from 115,775 in 2009/10 to 128,980 in 2011/12 and (ii) rose among adults by 16.4% during this period although there was a 6.2% decline in new infections among children <15 years of age, most likely because of improvements in PMTCT uptake.

The number of new HIV infections in 2012 also indicated that apart from the rate being the fourth highest number of all 53 countries in Africa, it also suggested that every hour in Uganda around 15 people were newly infected with HIV and hence permanently sero-converted.

**Table 1: Trends in HIV incidence 2009–2012 using mathematical modeling**

Indicator	Population	December	December	December	December
		2009	2010	2011	2012
<b>People newly</b>	Total	115,775	119,258	124,261	128,980
	Adults	87,727	91,967	97,163	102,157
<b>Infected with</b>	women	49,566	51,948	54,873	57,685
	children	25,746	24,878	24,548	24,142
<b>HIV/AIDS</b>					

## **5. Environment and Natural Resources**

Important constraints influence the increasing size of Uganda population. These constraints have impacts on the growth rate of the population, and they are a major factor in the quality of life of the population. As indicated above, biologically, the population dynamics of mortality and reproduction determine the rate of population growth. In Uganda, both environmental and social processes resist these dynamics and further regulate the rate of population growth, and the quality of life of the population (Zuberi et al. 2003).

Economic crisis, climate change and population growth interact in ways that will make sustaining food security a daunting task over the next 30 years for several African countries like Uganda. This trend is important when we consider that African countries tend to have weak purchasing power for food in the global market; however in some cases they rely on food imports. This weak condition leads to consumption deficits during times of high prices or declines in production. This situation might be reversed if Uganda produced more food for growing populations while simultaneously combating poverty and hunger.

Natural resources like food, water, energy, land, phosphorus, and biological diversity can limit the size of the human population on earth. While there are various opinions about the carrying capacity of Earth, it has long been held that in situations of high population growth, a natural constraint is obvious (Cohen 1995; Preston 1996; Pebley 1998). For example, if high population growth is not matched by increased food production, then food shortages relative to past consumption will follow. Natural resources are in part anthropogenic—the result of the influence of human beings on nature. How humans use these natural resources are also influenced by our social organization. The fact that there is enough fresh water for everyone on planet Earth does not automatically translate into everyone having access to a glass of drinkable water. The vast fertile soils, numerous water basins and rivers in Uganda do not automatically solve the food insecurity situation.

The problem of feeding Uganda's population reflects a regional problem. Eighty percent of the African diet is made up of maize, cassava, sorghum, millet, wheat, rice, plantains, and yams. Although, the bulk of this food is produced locally there are some important exceptions. Agricultural output in Africa has increased since the 1970s; however these increases in the production of wheat and rice have failed to see the pace of growth seen in other regions (UNCTAD 2010)

## **6. Civil Conflict and Population**

The pestilent impact on Africa has been unpredictable, yet they have dominated the past 50 years. The more recent stagnation or reversal of mortality gains have been attributed to the poor performance of African economies, the rise of civil wars, and the continued prominences of diseases like malaria with the emergence in the last 20years of new infections like HIV/AIDS. Certain social processes have also had a tremendous impact on population well-being, and these processes will continue to have an impact on Uganda population and food security in the immediate future.

Scientific studies of the impact of civil conflict and food security in sub-Saharan Africa are scarce. Civil wars, local conflicts, and other forms of social unrest have documented impacts on the production and availability of food (Allouche 2011; Gates et al. 2010; Clover 2002; Jenkins and Scanlan 2001). In fact, many recent occurrences of food scarcity in African countries are driven by the interaction of various forms of population pressures, environment challenges, and also include civil conflict (see Casale et al. 2010).

During periods of conflict, food security is mainly compromised by direct attacks on the means of production, the failure to plan for food insecurity, and the use of food to reward allies or punish perceived enemies (Allouche 2011; Macrae and Ziwi 1992).

Furthermore, as observed in recent conflicts in Uganda, hostilities can result in widespread hunger and starvation as a result of either limited access to vulnerable populations by aid organizations or the large-scale victimization of civilian populations by their governments (Allouche 2011; Clover 2002). The victims often survive and bear the scars of the conflict. For example, in Burundi and Rwanda orphan hood was more likely to result from armed conflict than from HIV/AIDs related deaths (UN 2009c).

A more obvious impact of African conflicts is their immediate effect on the disruption of food production and distribution systems (Jenkins and Scanlan 2001).

Another critical demographic shock resulting from conflicts is associated with the impact of hostilities on population mobility and redistribution (Allouche 2011; Clover 2002). Conflict and persecution are major reasons why populations move from their homes, either within their own country or beyond their national borders. Such forced migrants (both internally displaced persons and refugees) face unique challenges that constrain their ability to produce, stock, and consume food as was the case for people of Northern Uganda with atrocities committed by LRA rebels. Their flight to more secure destinations is usually long and arduous, sometimes lasting for several weeks (Brennan and Nandy 2001). Yet, during this period, forced migrants are exposed to repeated episodes of hunger, malnutrition, and starvation. On arrival at safe destination areas, refugees and other displaced persons are usually assembled in resettlement campus, where the lack of resources and limited freedom of movements diminishes their ability to pursue sustainable livelihoods (Jacobsen 2002). Over time, residents of refugee and displaced camps become significantly dependent on food

## **7. Population and Land**

Uganda's population growth rate is one of the highest in Africa. This faster rate of population growth presents serious challenges for the issue of food security. The African population is expected to increase by over 360 million to 1.2 billion by 2025, and by over a billion to 1.9 billion by 2050. In fact, food production is barely keeping pace with African population growth. Africa is experiencing shrinking availability of land for people to work. Africa could lose 247 million acres of farmland by 2050 due to changes in the climate (UNCTAD 2010; Seo & Mendelsohn 2006).

Population growth and finite land suggest a demographic urgency for changes in the way that land is viewed at the national level. Most African nations like Uganda are confronted with this demographic urgency of land reform on the continent. Basically, many of the poor need technology and rural infrastructure to provide income, affordable food, and better opportunities for their children's education and health care (also see Juma2011). The relationship of land to agricultural productivity is direct. Agriculture is produced on land. The relationship of land tenure systems on the future of food security in Uganda is an important element in the equation. Land ownership has an impact on the use of agricultural laborers, and the degree that rural populations have access to land for productive labor. The transferring of user rights of large tracts of land for foreign investment is on the rise.

Finally, possession of land is a major determinant of households' productive abilities, and it may determine the households' capacity to invest in agricultural development.

## **8. Population insight on food security**

The status of food security in Uganda is worrying. The share of Ugandans suffering from food insecurity measured in terms of caloric intake is alarmingly high with low rates of income poverty. Based on the 2005/06 Uganda National Household Survey data, the study provides insights into access to food at household level. More importantly, the study shows that average caloric intake stood at 1,970 calories per person per day, which is below the minimum caloric requirement of 2,200 calories. As such, populations of 17.5 million Ugandans in 3.1 million households were unable to meet the minimum caloric requirement in 2006. This raises questions on whether Uganda will be able to achieve the Millennium

Development Goal (MDG) 1: halving extreme poverty and hunger by 2015. While Uganda is on track to halve extreme poverty, it is less likely to halve extreme hunger by 2015. Yet the results suggest that food insecurity and income poverty are closely linked. Similarly, food insecurity at household level is closely linked to child nutrition status. In other words, antipoverty interventions and interventions to address food insecurity and child nutrition status have to be closely linked. The results further suggest that income growth, land under cultivation, changes in food prices and education attainment of household head significantly impact on caloric intake.. Food insecurity is also marked with significant spatial variations that need to be taken into account in designing anti-food insecurity interventions.

The famine that hit some districts during 2009 demonstrates that adverse effects on the agricultural sector directly increase vulnerability to food insecurity. At the same time, increasing land under cultivation improves food security at household level. This suggests that improving agricultural productivity is a key to long term food security.

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