Chapter 57
The Dynamics of Food Insecurity in Ethiopia

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ABSTRACT

This paper assesses the dynamics of food insecurity in Ethiopia and tests policy options and scenarios that could alleviate the problem in the future. The study assess food security based on the pillars; food availability, access to food and stability. A System Dynamics model is designed which integrate population, market and food production sectors and is used to analyze past and future developments. Model results show that both the food supplies and the purchasing power of the population were insufficient for ensuring the required daily calorie intake of the population. Land degradation contributed considerably to the poor average productivity of the land. Policy analyses show that policy options such as land rehabilitation and capacity building for skilled use of agricultural land, and inputs need to be combined carefully to account for their different implementation times. Scenarios on average rainfall and food expenditure show that the food production and the purchasing power of the population are considerably influenced by erratic rainfall and economic growth respectively.

INTRODUCTION

Food insecurity remains a challenge in a world with a growing and more demanding population. The Millennium Development Goal on poverty and hunger aimed at reducing the number of undernourished people by 50% by 2015, i.e., reducing the number of undernourished to no more than 420 million people in 2015. However, data shows that the number of undernourished people is 805 million worldwide in 2014 (Food and Agriculture Organization-Food Security Indicators [FAO-FSI], 2014).

In Ethiopia, food insecurity has been a serious problem for decades. Since the 1970s, a series of production failures have caused chronic food insecurity (Berhane, Diressie, Hadino, Hoddinott, Kumar, Lind, Seyoum, Sabates-Wheeler, Tefera, and Yohannes, 2013; Haberli, 2013; Amede, Kaluski and Ophir, 2001). Data from disaster risk management and food security sector (DRMFSS) show that, in the last decades, several million people required immediate food assistance. As a result, Ethiopia has

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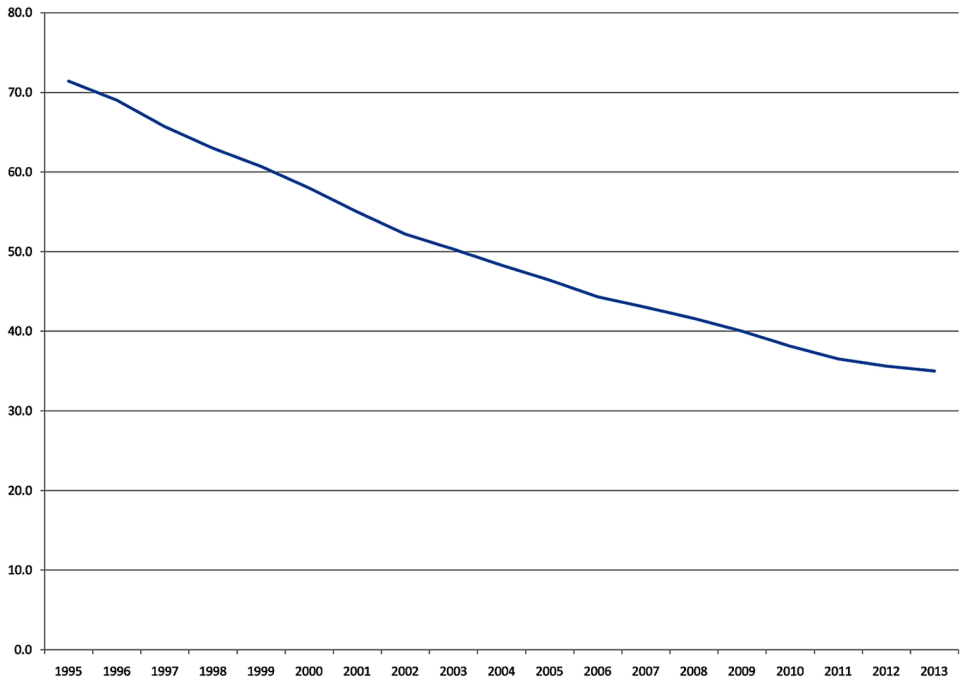
been the largest recipient of food aid in Sub-Saharan Africa. The prevalence of undernourishment shows that a large proportion of the population has been undernourished over the past one and a half decades. Although the proportion of the population undernourished improved from 69 percent in 1994/95 to 35 percent in 2013/14 (FAO-FSI, 2014), it still remains at an undesirable level.

The definition of food security is adopted from the World Food Summit which states that food security exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life. The analysis addresses three of the four pillars of food security (FAO, 2003, 2006; Messerle, 2011) which are; food availability, access to food, and stability.

Agriculture is the main economic activity in Ethiopian where more than 80% of the population is employed. Nevertheless, agricultural productivity and production is limited. Researchers attributed the causes of limited productivity and production to; insufficient and erratic rainfall, land degradation, low input application, rapid population growth and market imperfection (Chadhokar, 2003; Jolejole-Forman, Baylis, Lipper, 2012; Zelleke, Abera, Agegnehu and Rashed, 2010). However, very little is done to integrate the causes of the problem into unified conceptual framework. In this paper, a System Dynamics model is designed, calibrated and tested which integrates population, food production, and the market sectors so as to investigate and examine the processes underlying food insecurity and the impact of different policies and scenarios in alleviating the problem. This paper is a refined version of the previous

Figure 1. Prevalence of undernourishment



Source: FAO-FSI (2014)