Chapter 69
Population Growth and Urbanization in Africa:
Implications for the Environment

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ABSTRACT

This study examined the effect of population growth and urbanization on the environment (carbon dioxide emissions) for 37 sub Saharan African countries based on 1980-2010 annual data. Using the Pooled Mean Group estimation technique, the findings of the study show that affluence and industrialization have negative effect on the environment (increases carbon dioxide emissions) while urbanization does not have a significant effect on carbon dioxide emissions. The population variable is significant only in the long run but insignificant in the short run. Also, after controlling for the different age groups, the results show that the more active age group (15-59) is positive and significantly related to carbon dioxide emissions.

INTRODUCTION

Recent reports indicate that though there have been significant changes in the demography of the world in the last 20 years, changes in the size of the population have been more significant (United Nations [UN], 2014a). For example, the population of the world increased from 5.7 billion in 1994 to 7 billion in 2011 and an estimated figure of 7.2 billion in the beginning of 2014 and is expected to reach a population of 8.1 billion in 2025 and Africa's population growth is expected to contribute significantly to this.

Considering the limited facilities to support population growth in Africa, it is surprising to note that the region contributes 33 percent of the 82 million people added to the world's population annually. It is also expected to account for more than 80 percent of the global increase in population by 2050 (UN,

DOI: 10.4018/978-1-5225-7311-1.ch069

2014a). These estimates are not farfetched considering the fact that Africa's population size has grown from an average of 297 million in 1960-1964; 383 million in 1970-1974, 503 million in 1980-1984, 660 million in 1990-1994, 747 million in 1995-1999, 841 million in 2000-2004 and 944 in 2005-2009[1] (see Table 1 in Appendix).

Like population growth, the rate of urbanization has increased rapidly around the world. In 2014, more than 54 percent of the world's population was urbanized compared with the 1950 rate of 30 percent (UN, 2014b). Urbanization in Africa is increasing at a very fast rate. For example, urban population increased from an average of about 59 million in 1960-1964 to 75 million in 1965-1969, 94 million in 1970-1974, 117 million in 1980-1984 to 178 million in 1985-1989 (see Table 1 in Appendix). The average rise in the average urban population has been more profound after the 1990s. For example, the period 1990-1994 saw average urban population size of 216 million. This figure increased to an average of about 259, 306 and 361 million for the periods 1995-1999, 200-2004 and 2005-2009 respectively. The rapid rate of urbanization is attributed mainly to the movement of people from the rural areas to urban centers to seek jobs in both the formal and informal sectors and a better standard of living (Todaro, 1997).

The rapid population growth and urbanization are associated with high rate of infrastructural development and huge energy demand, all of which pollute the environment and consequently detrimental to the environment and human health (Shahbaz et al., 2014). Increasing urbanization implies increasing formation of cities, and as Sadorsky (2014) notes, cities usually become wealthier by expanding their manufacturing which can adversely affect the environment. Temurshoev (2006) asserts that developing countries generally experience higher levels of environmental degradation because of their lax environmental regulations. This is consistent with the observation that carbon dioxide emissions have increased consistently over the years from 171 million metric tonnes in 1964 to 446 million metric tonnes in 1979 and over 1100 million tonnes by 2010 (see Table 1 in Appendix).

Environmental degradation, especially the emission of carbon dioxide is believed to be the main cause of climate change (Kessel, 2000; Pittock, 2003; Rehan and Nehdi, 2005), which has adverse effect on agriculture, particularly in the tropics (IPCC, 2001). The implication is that the poorest parts of the world are in danger of escalating hunger (IPCC, 2001). Besides, climate change is also believed to have adverse effect on human health (see, Kurane, 2010; Dhillon and von Wuehlisch, 2013). Though population growth and urbanization might be good for education, health care, housing and other essential services if well organized (UN 2014a), it can pose great danger to human development if not well planned. Sub-Sahara Africa (SSA) recorded the lowest human development index (HDI) of 0.502 in 2013 (United Nations Development Programme [UNDP], 2014) amidst increasing population and urbanization. Africa also remains the poorest continent in the world (Handley et al., 2009).

In view of the rapid population growth and urbanization, this chapter seeks to examine its effects, if any, on the environment in Africa. Studies of this sort are very relevant due to the devastating effect of environmental degradation to the health of people, agriculture and the environment as a whole. Despite the fact that the poorest (developing) countries contribute the least to carbon dioxide emissions, they are the hardest hit victims of the consequences of climate change (Tiwari, 2011). Though the relationship between population growth and the environment has been studied (see for example, Dietz and Rosa, 1994; York et al., 2003; Cole and Neumayer, 2004; Poumanyvong and Kaneko, 2010; Zhu and Peng, 2012), the focus has majorly been outside Africa. This study therefore fills the gap in literature on Africa. Further, we contribute to the literature by examining not only the population size but also its structure in terms of the demographic dynamics and how it affects the environment.

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