



HOW CAN AFRICAN AGRICULTURE ADAPT TO CLIMATE CHANGE? INSIGHTS FROM ETHIOPIA AND SOUTH AFRICA

Perceptions of Stakeholders on Climate Change and Adaptation Strategies in Ethiopia

Assefa Admassie, Berhanu Adenew, and Abebe Tadege

The potential adverse effects of climate change on Ethiopia's agricultural sector are a major concern, particularly given the country's dependence on agricultural production. Securing Ethiopia's economic and social well-being in the face of climate change requires that policymakers and stakeholders work together to integrate climate change adaptation into the country's development process. Three stakeholder discussion forums held in 2006 in Addis Ababa, Awassa, and Bahir Dar as part of the project, "Food and Water Security under Global Change: Developing Adaptive Capacity with a Focus on Rural Africa," were attended by representatives of the government, civil society, business sector, and local communities. The forums elicited information to enable policymakers to make more informed decisions related to climate change adaptation.

The forums complemented ongoing efforts to develop the National Adaptation Program of Action (NAPA), which is overseen by a steering committee representing government, nongovernment, academic, and research institutions. Under NAPA, multidisciplinary technical working groups have been formed to assess the country's vulnerability to the adverse consequences of climate change, gauge current adaptation efforts, and identify ways in which public agencies could assist in minimizing the adverse impacts of climate change. In addition, two national and eight regional workshops were conducted involving nearly 500 participants with various areas of expertise. Like the stakeholder forums, the workshops solicited information to create greater awareness of climate change, assess the extent of the area's vulnerability, and help identify adaptation options.

This brief is based on a paper that presents findings from the stakeholder discussion forums, as well as NAPA's technical working groups and workshops. These meetings explored stakeholders' perceptions of vulnerability to climate change and considered ways in which adaptation measures could be further integrated into Ethiopia's development process.

VULNERABILITY TO THE ADVERSE CONSEQUENCES OF CLIMATE CHANGE

According to the National Meteorological Agency, long-term climate change in Ethiopia is associated with changes in precipitation patterns, rainfall variability, and temperature, which could

increase the country's frequency of both droughts and floods. The stakeholder forums and NAPA's technical working groups sought participants' perceptions of the impacts of changing climatic conditions. According to participants, although both developed and developing countries are affected by climate change, developing countries face greater challenges in overcoming its adverse consequences. Because Ethiopia is one of the least developed countries in the world, with a per capita income of less than US\$130 in 2006, workshop participants agreed that the country faces considerable hurdles in coping with the adverse impacts of long-term climate change. Low economic development, inadequate infrastructure, and lack of institutional capacity all contribute to the country's vulnerability to the adverse impacts of climate change.

In addition, Ethiopia's economy is heavily dependent on agriculture and faces increasing population growth. Ethiopia's agricultural sector contributes 47 percent of the country's gross national product and more than 80 percent of its exports. It also employs about 85 percent of the country's population of more than 76 million people (noting that Ethiopia is the third-most populous country in Africa after Nigeria and Egypt). With a current growth rate of about 2.8 percent per year, Ethiopia's population is expected to reach 129 million by 2030. Workshop participants emphasized that Ethiopia's low level of economic development combined with its heavy dependence on agriculture and high population growth rate make the country particularly susceptible to the adverse effects of climate change. Negative climatic impacts on crop and livestock production could result in a nationwide food shortage and greatly hinder the economy. If appropriate steps are not taken, workshop participants felt that food insecurity, deepened poverty, and increased incidence of disease, such as malaria and yellow fever, would be likely consequences.

A better understanding of the local dimensions of vulnerability is therefore essential to develop appropriate adaptation measures that will mitigate these adverse consequences. Accordingly, the stakeholder forums solicited input on those who are thought to be most vulnerable, based on economic, social, and environmental factors.

The farming community was identified as the most vulnerable because of its dependence on agricultural production for its livelihood. Within the farming community, small-scale, rainfed subsistence farmers as well as pastoralists were identified as more vulnerable to changing climatic conditions than others. In addition,

farm households without assets and financial resources were identified as especially vulnerable, as their limited resources restrict them from easily adapting to the changing climate.

Participants noted that throughout society those who are marginalized based on their sex, age, education, ethnicity, or economic status are more vulnerable to negative climate change impacts than others. Female-headed households in Ethiopia, for instance, were identified as particularly vulnerable to climate change given greater constraints to adaptation than male-headed households. Likewise, participants argued that those with low levels of education are more vulnerable to the adverse effects of climate change because they are less likely to be aware of long-term climate change and tend to be more averse to the risks associated with some adaptation measures.

In addition, certain regions of the country were identified as being more susceptible to the negative effects of changing climatic conditions. In particular, participants identified those in the arid, semi-arid, and dry subhumid lowlands as being more vulnerable to the adverse effects of climate change than those living in the highlands. Lowland households with fewer and less diversified assets than highland households are less able to invest in adaptation measures and to meet their basic needs when faced with the adverse consequences of climate change. In addition, the lowlands have become increasingly depleted and, as a result, many pastoralists from the lowlands have migrated to highland areas, leading to social conflicts over land.

ADAPTATION MEASURES AND POLICY RECOMMENDATIONS

Workshop participants identified the adaptation measures communities adopt when confronted with climate-related shocks. These include diversification of livelihood sources, migration, participation in nonfarm activities, sale of assets, settlement and resettlement activities, and the adoption of improved water management systems. To further mitigate the adverse effects of climate change, participants considered ways in which adaptation measures could be better integrated into Ethiopia's development process and offered policy recommendations.

As part of the development process, participants recommended that social and physical infrastructure be improved and institutions dealing with climate-related issues including the meteorology agency be strengthened to increase the country's

adaptive capacity. In addition, workshop participants suggested implementing improved water resource development, land management, food security, health, and education programs. There is also a need to expand nonagricultural employment opportunities and provide skills training, particularly in rural areas.

Another recommendation is greater investment in data collection and research on climate change and extreme weather conditions in Ethiopia. Environmental and drought monitoring systems should be introduced at national and regional levels to monitor climate changes. Such systems would provide early warnings on predicted weather extremes, enabling stakeholders to take corrective measures in advance to minimize potential damages. Additionally, in-depth studies on vulnerability and adaptation should continue.

Participants also recommended expanding awareness of global warming and its potential impacts by providing reliable and up-to-date information to the public. Information about the appropriate adaptive measures should be made available to the entire national community. As part of this effort, communication between policymakers, nongovernmental organizations, research institutions, and the media, among other actors, should be strengthened in order to ensure accurate information is available and widely disseminated.

Finally, workshop participants recommended that all stakeholders be included in the development process. When considering measures to reduce vulnerability to the adverse effects of climate change, government, civil society, the private sector, and local communities should all participate in the discussion. In particular, policymakers should be sure to draw on knowledge and experience from local communities. By overlooking local knowledge, policies can constrain rather than enhance the adaptive capacity of communities. Furthermore, knowledge of the environment is passed down through generations of experience of working on the land and, thus, local farm communities offer invaluable information regarding adaptation to changing climatic conditions that would not likely be acquired through other channels.

FOR FURTHER READING

Admassie, A., and B. Adenew, Stakeholders' Perceptions of Climate Change and Adaptation Strategies in Ethiopia, *EEA Research Report* (Addis Ababa: Ethiopian Economic Association, 2008) Available at: <http://www.eeacon.org/Research%20Materials.htm>.

A. Admassie (aadmassie@yahoo.com) is director of the Ethiopian Economic Association (EEA)/Ethiopian Economic Policy Research Institute (EEPRI) in Ethiopia.

B. Adenew (berhanuad@yahoo.com) is a senior researcher at EEA/EEPRI in Ethiopia. **A. Tadege** (a_tadege@yahoo.com) is head of the Research and Studies Department at the National Meteorological Agency (NMA) in Ethiopia.

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