



## ZAMBIA

### Adaptation to the Effects of Drought and Climate Change in Agro-Ecological Zones 1 and 2 in Zambia

LEAST DEVELOPED COUNTRIES FUND	
LDCF grant	\$3,905,000
Cofinancing	\$7,100,000
NAPA completion	October 2007
Inclusion in LDCF Work Program	September 2008
Expected CEO endorsement	October 2009
Expected implementation start and completion	October 2009–October 2013
GEF Agency	United Nations Development Programme (UNDP)
Other executing partner	N/A

Zambia is already dealing with the early impacts of climate change. Since the late 1980s, there has been a tendency for the later onset and earlier withdrawal of rains, as well as more frequent droughts. In the last seven years of this decade, Zambia has had droughts in the rainy seasons of 2000–02 and 2004–05. Floods are becoming more widespread too: over half of Zambia's districts were affected in the last few years (2005–07), some for the first time in history. The impacts of these droughts and floods have been severe: crop failure, outbreaks of human and animal diseases, displacement of human populations, and destruction of property and infrastructure. In 2004–05 and 2006–07, the affected population sizes were 1.2 and 1.4 million people, respectively.

With very little infrastructure for water collection, Zambia is overwhelmingly dependent on rainfall. Water needs are met through boreholes and wells where available, or alternatively, rivers. Less than 5

percent of arable land is under irrigation. Climate change projections outlined in the National Adaptation Programme of Action (NAPA) point to an increase in temperature and a change in patterns of rainfall, leading to prolonged droughts and localized flooding. Experience shows that key crop varieties, such as maize, would not mature due to the shortening of the growing season in the southernmost part of the country, undermining food security in the region. Assessments of the economic costs of climate change on agriculture in Zambia have indicated that future climatic conditions in the southern regions will cause strong water deficits at critical periods of the cropping calendars, resulting in severe yield decreases for specific crops such as maize.

The NAPA has emphasized that, because of the shortening of the rainy season and higher seasonal temperatures, areas suitable for staple crops such as maize are likely to fall by more than 80 percent.



Climate change is superimposed on unsustainable land-use practices such as forest clearing for agriculture and charcoal production, which, combined with poor livestock management systems, have caused severe land degradation. Temperature increases are also likely to degrade the quality of rangeland for cattle, thereby leading to reduced productivity of cattle, which provides the main source of livelihood and draught power in many of the southernmost provinces.

### **Project Activities and Expected Impacts**

This LDCF project supports climate-resilient water management and agricultural practices, primarily focused on the very vulnerable southern regions. The project's basic starting point is to improve the capacity to supply and use climate risk information for seasonal climate risk management. An early-warning system is already in place to communicate climate risk information to the Ministry of Agriculture, but has two key weaknesses: outreach to farmers, water managers, extension officers, and other relevant stakeholders, including packaging the information in an accessible format, and the links between the Ministry of Agriculture and the district authorities.

The project addresses each of these barriers and works to improve the capacity to conduct and apply climate risk assessments to planning processes through the following activities:

1. Working with the Meteorological Service, Ministry of Agriculture, and other relevant government ministries and research institutions to improve seasonal weather forecasts in order to reach a satisfactory level of predictive skill for application by decision makers, government planners, and farmers
2. Training farmers, agricultural planners, and water managers to use climate information in water and land management practices
3. Adapting early warning systems so that they communicate climate risk information effectively to user groups
4. Conducting an economic impact assessment of the adaptation value of using climate risk information to adapt agricultural planning. Building on this platform of improvement in the quality of climate information disseminated and packaged to relevant stakeholders, the project implements local adaptation pilots in the agriculture and water management sectors, including, among others, technologies to capture and store

rainfall, soil protection techniques, water conservation techniques, and test planting of climate-resilient varieties. The pilots demonstrate the cost-effectiveness of different adaptation options, and subsequently measure yields, income changes, transaction costs, and acceptability by farmers, with a view to making the case for planning, policy, and budgetary adjustments.

Additionally, the demonstration pilots are set up to test adaptation "hypotheses" agreed by stakeholders during the project preparation phase; for example, early-maturing crop varieties is a cost-effective adaptation; appropriate agricultural water management improves yields of traditional crop varieties; integrated land management seeking to avoid cultivation, deforestation, and construction along river banks is an effective adaptation measure against flooding; and keeping sufficient food stocks is an effective tool to mitigate the impacts of poor harvest years.

Using the outputs above, the final leg of the project focuses on constructing a case for adjustments to the most influential national strategies and policies. A central part of this effort is based on information on the economic value of adaptation investments. The project develops, therefore, a detailed proposal on the government regulatory and fiscal support needed to scale up adaptation interventions. National dialogues are then organized to debate the project findings. Building on the existing national efforts, the project contributes to building the capacity for documenting lessons learned and the establishment of a mechanism for replication, and initiates a policy dialogue for formulation and review of policy and legal frameworks for adaptation initiatives.

### **Synergies and Coordination**

The project interventions are attached to, and seek synergy with, many existing agricultural sector programs already under implementation in Zambia that do not yet take into consideration the impacts of climate change on the success of their outcomes. This assures that the LDCF activities, while relatively limited in scope and scale, have a wide impact across the agriculture and water management sectors through learning, mainstreaming, and scaling up of successful pilot adaptation measures. Coordination and synergies are therefore being pursued with specific programs and projects currently being implemented in the following sectors: irrigation development, agricultural infrastructure, livestock development and productivity, agricultural technology development and dissemination, fertilizer support, and conservation tillage and moisture conservation.

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### **For More Information**

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