



Atlas of
Rwanda's Changing Environment
Implications for Climate Change Resilience



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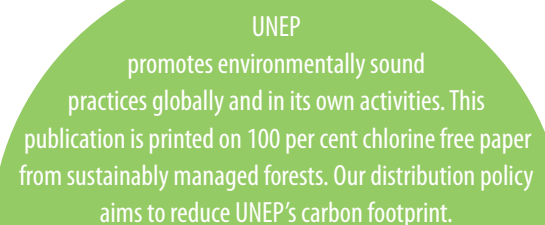
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Two rare Angolan colobus monkeys (*Colobus angolensis*) in Nyungwe Forest National Park.

Foreword

Rwanda's State of the Environment report for 2011 titled 'Atlas of Rwanda's changing environment: Implications for climate change resilience' has taken on an exciting pictorial form. It draws the attention of decision makers to environmental hotspots where human activity has led to environmental degradation. The Atlas also showcases the results of successful policy interventions that have mitigated and reversed some of the negative environmental impacts.

Rwanda has recorded an impressive annual economic growth rate that has averaged 8 per cent per annum over the last five years and sustained a relatively low, single digit inflation rate. The Country has also successfully integrated components of environmental sustainability in the various policies such as Vision 2020, the Country's long term development blueprint which was finalized at the turn of the millennium. These have set the stage for steering the economy to a low carbon development pathway that is essential to building a green economy.

As an economy still dependent on ecosystem services supplied by natural resources for the majority of the population, implementation of policies on ecosystem rehabilitation were prioritized. Success in restoring degraded wetlands, riverbanks and lakes won Rwanda the prestigious Global Environmental Award. The Country was also awarded the 2010 Green Globe Award for successfully restoring the ecological functioning of the Rugezi-Burera-Ruhondo network, an inland freshwater lake-wetland ecosystem.

Reforestation programmes in all parts of the Country have increased Rwanda's forest cover to 10 per cent in the past decade. The 2004 National Forest Policy which provided an innovative policy framework for these reforestation efforts, as well as Law N° 57/2008 relating to the prohibition of manufacturing, importation, use and sale of plastic bags won Rwanda the prestigious Future Policy Award in 2011.

Rwanda is implementing complementary policies of land use reorganisation including gradual conversion of unplanned and scattered rural settlements into space optimized, utility serviced and environmentally friendly villages known as Imidugudu. This will facilitate efficient land use and enable consolidation of fragmented land parcels into commercially viable farms where large scale agriculture which is associated with several economies of scale, can be practised.

In order to lower carbon emissions and attain energy security, the Country is proactively exploring the opportunities that tap the abundant reserves of methane gas in Lake Kivu. The potential for harnessing geothermal energy in the Country is also very promising and under serious consideration. It is envisaged that these initiatives will reduce Rwanda's overreliance on fossil fuels that are emitters of greenhouse gases (GHGs).

Our consistent efforts to transition Rwanda to a low carbon, climate resilient development path earned the Country the coveted Energy Globe Honorary Award in 2010. The Country was also privileged to host the 2010 World Environment Day global celebrations.

The Government is also committed to ensuring equitable utilization of the Country's domestic and transboundary natural resources for the benefit of present and future generations. For example, by virtue of its unique position at the headwaters of the Nile, Rwanda is acknowledged as an important 'water tower' of the Nile Basin Countries (NBCs) and actively participates in the river's management. Indeed in 2010, Rwanda, along with Kenya, Uganda, Tanzania, Burundi and Ethiopia, signed the Nile Basin Cooperative Framework Agreement that is a cooperative and coordinated mechanism for managing the Nile water resources.

Despite these commendable achievements, there are also many vivid reminders that our natural resources' heritage is becoming increasingly scarce as the Country's population grows. This is threatening livelihoods and a range of development goals enshrined in Vision 2020 and the MDG-based Economic Development and Poverty Reduction Strategy (EDPRS). The Atlas' chapter on environmental change highlights these changes using before and after satellite images, aerial and ground photographs, statistical analyses, spatial trends and trend graphs. Future scenarios are also presented and accompanied by a number of policy recommendations.

It is my hope that this Atlas will serve as a useful tool in our collective effort to continue building a low-carbon, climate resilient economy that will deliver Rwandans out of the grip of poverty and one that can be proudly handed over to future generations.



Hon. Stanislas Kamanzi
Minister of Natural Resources
Republic of Rwanda

Preface

The State of the Environment Report is a biennial mechanism laid out in the law to provide decision-makers with an articulate view of the nature and extent of environmental degradation and climate change as well as recommended corrective actions.

The first State of the Environment Report was published in 2009. It measured environmental performance at the national level against the targets set out in Vision 2020 and its Millennium Development Goals (MDGs) based implementation framework, the Economic Development and Poverty Reduction Strategy (EDPRS).

The 2009 State of the Environment (SoE) Report highlighted successful environment management measures and focussed on erosion control efforts and conservation of biological diversity as key areas of interest. Thus, it demonstrated commendable environmental management progress in the post-genocide era.

This report titled 'Atlas of Rwanda's changing environment: Implications for climate change resilience' is the second edition in the SoE Report series. It presents a visual account of the country's environment based on extensive scientific evidence identified and supplied by stakeholders from the various sectoral institutions and implementation agencies. The maps, current and historical satellite images, aerial and ground photographs and storylines provide compelling evidence of human and climate change induced environmental degradation.

This Atlas reflects briefly on the progress made to mitigate environmental degradation and climate change in relation to the recommendations of the 2009 State of the Environment Report. Recent monitoring through the EDPRS shows progress of sectoral targets specified in Vision 2020 to be generally on track.

The key hotspots of environmental change featured in the Atlas include issues of land use pressure, rapid urban expansion and associated environmental health problems. The Atlas illustrates exponential population growth over the last four decades using the City of Kigali as an environmental hotspot. Issues of urban sprawl, solid waste management and industrial zoning are discussed using compelling images.

It is encouraging to witness the corrective policy measures in progress, illustrated in the Atlas as positive changes. Some of the successful policy interventions featured in the Atlas show model integrated livelihood activities based on complementary policy actions bringing together planned and serviced rural resettlements locally known as Imidugudu. These model settlements enable land consolidation and crop intensification, simple rainwater harvesting for domestic use and irrigation of high value food crops for improved nutrition and export, and livestock biogas production for domestic energy, dairy and fertilizer requirements.

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