KENYA WETLANDS ATLAS

UNEP

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Ministry of Environment and Mineral Resources
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To obtain copies of this publication, please contact:
The Permanent Secretary
Ministry of Environment and Mineral Resources
P.O. Box 30126-00100 Nairobi
Tel +254202730808/9
Fax +254202734722
Email: psoffice@environment.go.ke
Website: www.environment.go.ke

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FOREWORD

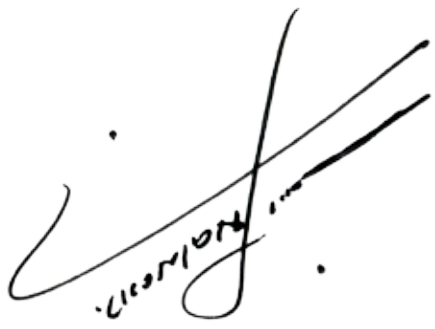
Wetlands are among the most important ecosystems in Kenya. The integrity of the country's water resources and agricultural productivity is sustained by our wetlands. They are nutrient rich and productive most of the year. During the dry seasons, wetlands are the only places where the local communities are able to access quality pasture and their edges support production of vegetables and other quick maturing crops for household consumption. They also control floods and clear water of pollutants through filtration. Wetlands are therefore a key resource for the achievement of Vision 2030.

Despite the important role that wetlands play in sustaining livelihoods in Kenya, they have been subjected to severe pressure and rapid degradation. The results have been detrimental and even catastrophic in many areas of the country. For example, flash floods in western Kenya have become more common, severe and destructive as there are no wetlands to hold back any massive overland flow, leading to loss of property, destruction of infrastructure and damage to crops. This phenomenon is compounded by climate change and the increasing frequency of extreme weather events. In some parts of the country, this has now become an annual event and the resulting shock to the country's national economy has been a major destabilizing factor to sustained economic growth. It is therefore apparent that the attainment of the Vision 2030 goals hinges on how well we manage our wetlands.

The government is mindful of the opportunities lost through wetland degradation and has embarked on a long term strategy to promote their protection. This strategy will, however, only be effective if all Kenyans embrace it through valuing the services rendered by wetlands. This demands that every Kenyan has access to reliable and up to date information on the dynamics playing out in wetland ecosystems and their value to the economic development of the country. This information should be especially clear and easily understood by all Kenyans who depend on wetlands for their livelihoods. The Ministry of Environment and Mineral Resources is therefore very pleased to release the Kenya Wetlands Atlas. It provides decision-makers, interested readers, and others who care about the integrity of Kenya's wetland with invaluable visual information about the state of the country's wetlands resources using satellite images, maps, graphics, ground photographs, and scientifically evidence based story lines to provide a succinct account of what is happening to the various wetlands in the country.

The Ministry is grateful to UNEP for its support in preparing this Atlas and continues to treasure the close collaboration it has with this global institution which Kenya is honoured to host. We are also indebted to DANIDA for the generous support the agency has continued to extend to the environment sector in Kenya.

I would like to congratulate all the national and international experts, national institutions and development partners whose contribution has made this landmark publication possible. It is my sincere hope that this publication will inspire every Kenyan into action. I wish you an enjoyable reading.



Hon, AMB, Chirau Ali Mwakwere, EGH, FCIT, MP.
Minister of Environment and Mineral Resources

PREFACE

Wetlands occupy approximately 3-4 per cent of Kenya's land area. Despite this seemingly small geographic extent, wetlands provide some of the most critical ecosystem services to a large number of communities in the rural areas and are indispensable to the very survival, health and welfare of human beings and biodiversity. They are therefore crucial to the attainment of the MDGs and the Vision 2030 goals. Despite the critical functions wetlands provide they are constantly under threat and many continue to be degraded and even lost at an alarming pace.

The Kenya Wetlands Atlas provides visual evidence of the extent and severity of the changes taking place in Kenya's wetlands spanning thirty years, mostly occasioned by intense detrimental human activities. The Atlas is the first major publication depicting the dynamics in Kenya's wetlands using satellite imagery. The site-specific, side-by-side display of "before and after" satellite images show different kinds of changes in wetland ecosystems all over the country such as: agricultural encroachment; urban growth into wetland areas; altered hydrology (dams, shrinking lakes, river diversions, and drained wetlands); modified and degraded coastal areas; and the impacts of climate change. The satellite images and the story lines are supported by graphs, maps, and photographs to provide complete and compelling scientific evidence. It is important to note that the different sites highlighted by the change pairs in the Atlas only serve as examples to illustrate that degradation and loss of Kenya's wetland ecosystems is a widespread problem that needs to be urgently addressed.

The visual story told by these images should spur action among all decision makers in the country and trigger concerted remedial action at all governance levels. The Atlas, among others;

- provides scientific evidence of environmental change in Kenya's wetlands and raises decision-makers' awareness about its causes and effects;
- depicts the links between wetland ecosystems and people by showing where and how human populations have interacted with the wetlands and how the population may be affected by the highlighted and anticipated changes;
- provides resource materials for educational purposes.

The Kenya Wetlands Atlas is a very valuable resource for all who have an interest in the sustainable management and conservation of Kenya's wetlands. It is the result of collaboration among many partners of the Government of Kenya. I would like to express the gratitude of the Government of Kenya to our partners in this process, especially the United Nations Environment Programme (UNEP) and the United States Government whose support through its technical agencies not only made the availability and analysis of satellite data possible but also made capacity building of our national experts possible. I am confident that this Atlas will raise the stature of the country's wetlands and provide evidence-based information to support the process of formulating the National Wetlands Policy.

Ali D. Mohamed, CBS
Permanent Secretary
Ministry of Environment and Mineral Resources

PRODUCTION AND EDITORIAL TEAMS

Policy Advisory Team

Government of Kenya
Hon. Amb. Chirau Ali Mwakwere, EGH, FCIT, MP, Minister, MEMR
Ali D. Mohamed, CBS, Permanent Secretary, MEMR
Jaspat Agatsiva, Director, DRSRS

UNEP
Mounkaila Goumandakoye
Desta Mebratu
Frank Turyatunga
Henry Ndede

Technical Coordination

DRSRS
Charles Situma
Laban Ojiambo

UNEP
Ashbindu Singh
Charles Sebukeera
Christopher O. Ambala
Arshia Chander (SGT, Inc)

Production

Coordinating Lead Author and Principal Editor
Monday S. Businge

Authors
Judith Nyunja
Samuel Ogada Ochola
Bruce Pengra (ARTS)
Eugene Apindi Ochieng

Illustrations & Satellite Image Analysis
Eugene Apindi Ochieng
Bruce Pengra (ARTS)

Editors
Jane Barr
Arshia Chander (SGT, Inc)
Charles Sebukeera
Eugene Apindi Ochieng

Design and Layout
Kim Giese (SGT, Inc)

Photographs
As credited

Sectoral Contributors

Central Government Institutions
Dorothy Nyingi (National Museums of Kenya)
Jane Kibwage (Ministry of Fisheries Development)
James Kairo (KMFRI)
Benard Opaa (NEMA)
Jane Macharia (National Museums of Kenya)
Judith Nyunja (KWS)
Gloria Nafula (NEMA)
John Owino (IUCN)
Frank Msafiri (NCCD-K)
Peterson Njiru (WRMA)
Nancy Nguru (TARDA)
Gabriel Sanya (NEMA)
Vanessa Ndoo (NEMA)
Brian Waswala (KWS)
Johnson Maina (KMD)
Henry Roimen (DRSRS)
Fred Omengo (KWS)
Isabela Masinde (MEMR)
Jacob N. Kimani (MEMR)
Dan M. Kithinji (MEMR)

Higher Learning and Research Institutions
Monday S. Businge (University of Nairobi)
Samuel Ogada Ochola (Kenyatta University)
Philip Raburu (Moi University)
Paul Obade (Kenyatta University)
P.T Thenya (University of Nairobi)

Development Partners
Moses Mbego (UNEP)
Julie Kaibe (UNEP)
Elizabeth Masibo (UNEP)
Evans Koech (UNEP)

Non Governmental Organizations
George Sikoyo (Lake Victoria Basin Commission)
Patrick Muraguri (Africa 21st Century Org.)
Hadley Becha (CANCO)
Eric Khamala (RCMRD)
Fiesta Warinwa (AWF)
James Ongo (RCMRD)

ACRONYMS

AEWA	Agreement on the Conservation of African-Eurasian Migratory Waterbirds (African-Eurasian Waterbird Agreement)
ASALs	Arid and Semi Arid Lands
AWF	African Wildlife Foundation
AWS	Africa Water and Sanitation
CAACs	Catchment Area Advisory Committees
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)
CSOs	Civil Society Organizations
DANIDA	Danish International Development Agency
DECs	District Environmental Committees
DRSRS	Department of Resource Surveys and Remote Sensing
EAC	East African Community
EMCA	Environmental Management and Coordination Act
ESFC	Environmentalistes San Frontier Consultants
ESP	Economic Stimulus Package
EWEs	Extreme Weather Events
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GHG	Greenhouse gases
GIS	Geographic Information Systems
GoK	Government of Kenya
IBAs	Important Bird Areas
IPCC	Intergovernmental Panel on Climate Change
ITCZ	Inter-Tropical Convergence Zone
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resources Management
JF	January and February
JJA	June, July and August
JJAS	June, July, August and September
KEFRI	Kenya Forestry Research Institute
MPAs	Marine Protected Areas
NBCs	Nile Basin Countries
NBI	Nile Basin Initiative
NEMA	National Environment Management Authority
NEPAD	New Partnership for Africa's Development
NEWP	New England Wetland Plants
NIB	National Irrigation Board
NMK	National Museums of Kenya
NOAA	National Oceanic and Atmospheric Administration
NRCS	USDA Natural Resources Conservation Service
NTEAP	Nile Transboundary Environmental Action Project
NWCPC	National Water Conservation and Pipeline Corporation
OND	October, November and December
REDD+	Reducing Emissions from Deforestation and Forest Degradation, Forest Conservation, Sustainable Management of Forests and Carbon Stock Enhancement
SEI	Stockholm Environment Institute
SST	Sea-Surface Temperature
TDIP	Tana Delta Irrigation Project
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP DEWA	UNEP Division of Early Warning and Assessment
UNEP/WCMC	UNEP World Conservation Monitoring Centre
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNSD	United Nations Statistics Division
URT	United Republic of Tanzania
US$	United States Dollar
USA	United States of America
USAID	United States Agency for International Development
USDA	US Department of Agriculture
USGS	United States Geological Survey