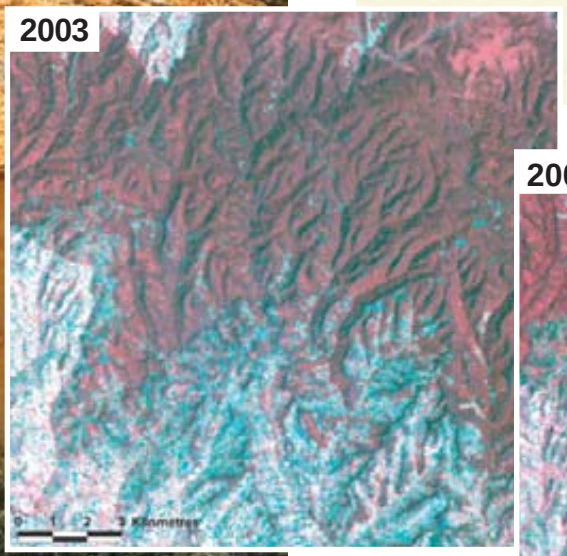
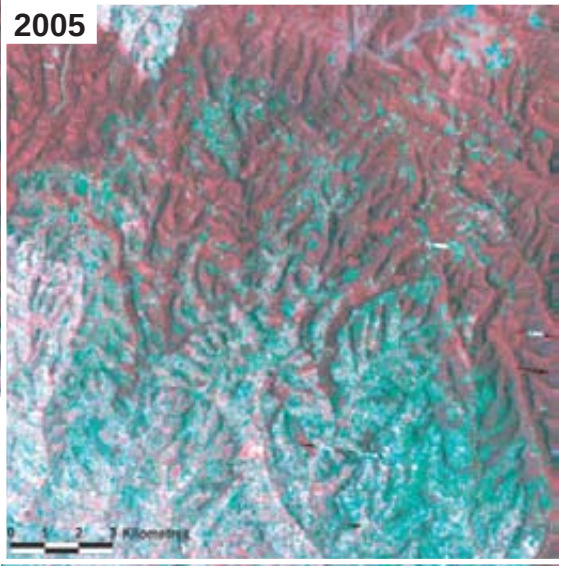




Changes in Forest Cover in Kenya's Five "Water Towers" 2003 - 2005

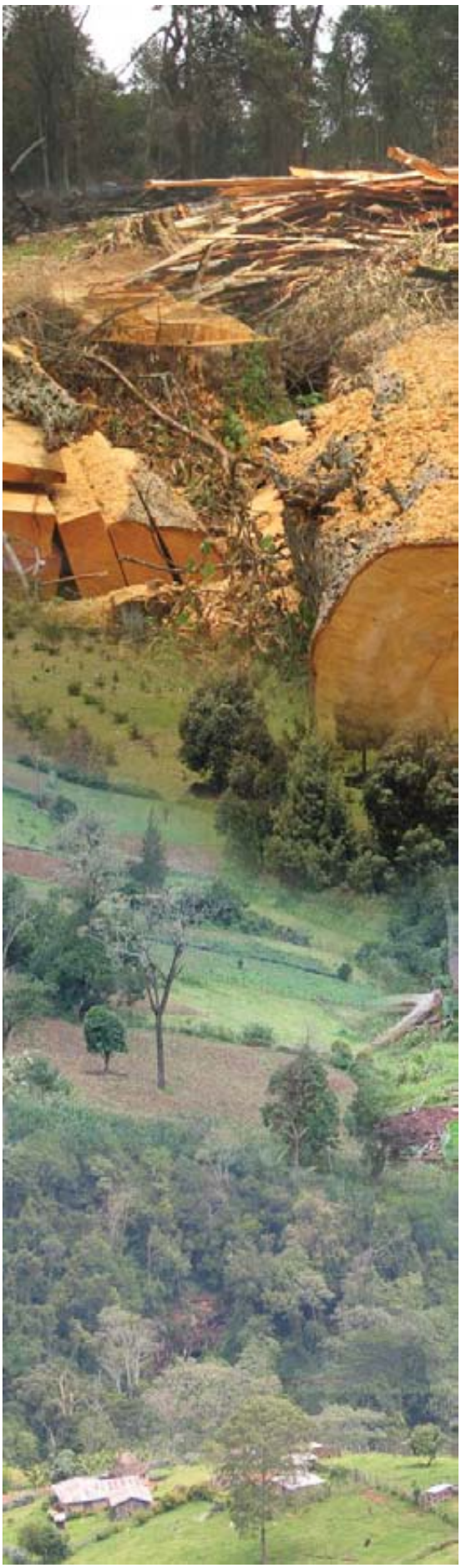
Report prepared by:

DRSRS

KFWG

With support from the Royal Netherlands Embassy

November 2006



Changes in Forest Cover in Kenya's Five "Water Towers" 2003 - 2005

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TABLE OF CONTENTS

FOREWORD

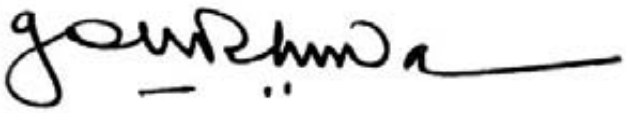
It is with great pleasure that I foreword this second volume of Changes in Forest Cover in Kenya's Five "Water Towers, namely Mt. Kenya, the Aberdare Range, the Cherangani Hills, the Mau Complex and Mt. Elgon forests. These forests are the lifeline of the Nation. They are the upper catchments of our main rivers that support the country's key economic sectors, including energy (hydropower generation covers 70% of our electricity needs), water, agriculture, livestock and tourism (our prestigious conservation areas depend on those rivers). These forests are also important in terms of carbon sequestration, soil conservation, provision of timber and non-timber products, as well as for their social, cultural and spiritual values.

The first volume that covered the period 2000-2003, revealed indigenous forest destruction in three of the five" water towers", amounting to a loss of 6,032 hectares over the three years. Improvements were, however, recorded on Mt. Kenya whilst in the Aberdares Ranges extensive cloud hindered detection of forest cover changes.

I am pleased to note from this second volume that illegal forest clearing has been contained in the forest reserves of Cherangani Hills and Mt. Elgon during the period 2003-2005 while Mt. Kenya forests are improving. The Mau Complex is currently the "water tower" experiencing unabated destruction. In terms of acreage, indigenous forest destruction increased from 6,032 hectares during the 2003-2005 period to 9,334 hectares in the 2003-2005 monitoring period. The Ministry is, therefore, committing to fully contain the continued forest destruction in the Mau and to restore the critical catchment value of that 'water tower". In this regard, I appreciate that the findings of this report will facilitate the Ministry to focus on areas that need urgent remedial measures.

I am confident that with the Forests Act 2005 in place and the current forest sector reform initiatives, forest protection and conservation in the country will attain optimal levels.

On behalf of the Ministry, I take this opportunity to thank DRSRS, KFWG and Royal Netherlands Embassy for their involvement in forest cover changes analysis and urge them, to continuously generate and share with us such invaluable information.



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ACKNOWLEDGEMENTS

This report on *Changes in Forest Cover in Kenya's Five "Water Towers" 2003 – 2005* is the second in a series of reports from monitoring studies aimed at providing information on changes in forest cover on the five key catchment forests in Kenya dubbed as the "water towers". The first report in this series was published in November 2004. This monitoring project arose from the need, underlined by key stakeholders, to promote good governance in forest management in Kenya. The Dutch Embassy, a close development partner of the Kenyan Government, has been instrumental to the project by providing the necessary funds and on-going support.

The project would not have been possible without the support of Mr. Christian Lambrechts, Policy and Programme Officer from the Division of Early Warning and Assessment, United Nations Environment Programme, who developed the project proposal and supervised its implementation.

Finally our gratitude goes to Liz Mwambui, Outreach Officer, KFWG, who prepared the final layout of the report and Fleur Ng'weno for editorial work.

Eric Akotsi
DRSRS

Michael Gachanja
KFWG

1.0 INTRODUCTION

Closed canopy forests cover only 1.7 per cent of Kenya's land area, yet provide crucial services to the people, the nation, and the environment. At a time when the world is confronted by climate change, forest cover can help to mitigate the effects of droughts and floods. Forests trap, store and slowly release rain water, the life blood of the economy. They support agriculture, fisheries, electricity production and urban and industrial development. Forests also produce wood and medicines, moderate climate, reduce erosion, shelter a disproportionate share of Kenya's biodiversity, and have religious and cultural significance. Yet Kenya's forests have been and remain the target of over-exploitation and uncontrolled and unplanned development.

This report is the second in a series of monitoring studies being undertaken on the five "water towers" of Kenya – Mount Kenya, the Aberdare Range, the Mau Forest Complex, Mount Elgon, and the Cherangani Hills. These are the five largest forest blocks in the country, and are all montane forests. They form the upper catchments of all the main rivers in Kenya (except the Tsavo River originating on Kilimanjaro). The "water towers" provide water to all installed hydro-power plants, producing some 70 percent of Kenya's electricity output. These montane forests are also surrounded by the most densely populated areas of Kenya, because they provide enough water for intensive agriculture and urban settlements.

The 2003-2007 economic recovery strategy paper recognizes that Kenya faces serious environmental challenges due to previous forest mismanagement, and that deforestation is a key symptom of environmental damage. Kenya's civil society now also has a strong voice, willing to challenge poor environmental governance. Up to date information on the condition of the forests, however, is often lacking, limiting the ability of concerned stakeholders inside and outside government to lobby or direct actions against illegal exploitation and destructive development.

In order to remove such obstacles to advocacy towards good forest governance, this report presents the findings of the detection of major forest cover changes between 2003 and 2005 in Mt. Kenya, the Aberdare Range, the Mau Complex, Mt. Elgon and the Cherangani Hills. The initiative to monitor the five "water towers" began in the year 2003 with the support of the Dutch embassy. Results were published as *Changes in Forest Cover in Kenya's Five "Water Towers" 2000 – 2003*. Using satellite imagery (Landsat 7 Enhanced Thematic Mapper) with a resolution of 30 metres, the analysis of temporal scenes enables the detection of major forest cover changes, in particular encroachment. This analysis is undertaken in a two-year interval in an effort to provide all concerned stakeholders with an early warning system that will enable them:

1) to identify threatened forest areas in due time; and,
2) to prioritize their interventions in these areas in order to reverse detrimental forest cover changes.

1.1 Objective

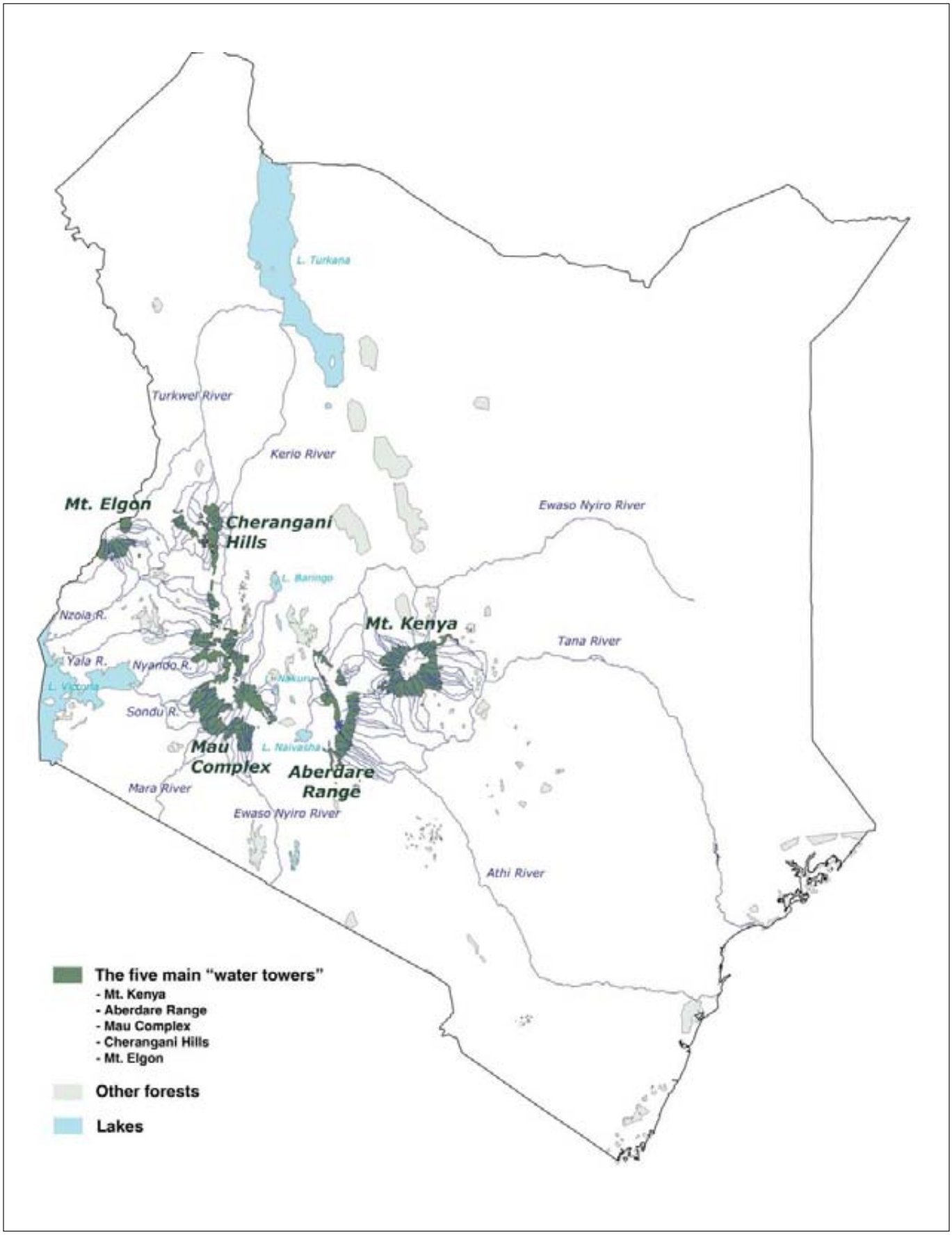
To alert key stakeholders in forest management and conservation about current and critical forest cover changes in the main catchments of the country and to provide them with the necessary information to prioritize interventions towards addressing these changes in good time.

1.2 Study Area

The study area comprises of the five "water towers" of the country: the Aberdare Range, Mt. Kenya, Mt. Elgon, Mau Complex and the Cherangani Hills forests. In total, they cover over 1 million ha and form the upper catchments of all main rivers of Kenya except Tsavo River. In addition they provide goods and services to both forest-adjacent communities and to the country. These forests are presented in figure 1.

[1] UNEP (2001). *An Assessment of the World 's Remaining Closed Forests*

Fig 1: Location of the five main catchment areas - the "water towers"



1.2.1 Aberdare Range forests

The Aberdare Range is located in central Kenya, on the eastern edge of the Rift Valley. The forest belt of the Aberdare Range comprises a number of forest reserves, including Aberdare, Kikuyu Escarpment, Kijabe Hill, Kipipiri and Nyamweru, as well as some forest areas in the Aberdare National Park. The forests cover over 250,000 ha. These forests form part of the upper catchments of Tana River, Kenya's largest river, as well as Athi, Ewaso Nyiro (North) and Malewa rivers. They are also the main catchments for the Sasumua and Ndakaini dams, which provide most of the drinking water to Nairobi. The forests are characterized by a high diversity of vegetation types, because of the wide altitudinal range (from 1,800 to 3,600 metres) and the climatic differences between the slopes. In addition, the Aberdare Range offers spectacular scenery for tourism.

1.2.2 Mt. Kenya forests

Mt. Kenya forests are located on the equator, 180 km north of Nairobi and on Africa's second highest mountain. Most of the forest belt is protected as National Reserve with some forest areas located within the National Park. They cover over 220,000 ha and form the upper catchments of the Tana and Ewaso Nyiro rivers. Mt. Kenya forests alone are estimated to meet more than 40% of the country's water needs.

Like the Aberdare Range, the forest vegetation is characterized by a high diversity of forest types. Mt. Kenya forests are rich in terms of species, in particular plant species. Mt. Kenya has a very attractive scenery that is highly appreciated by tourists. It therefore has great potential for domestic and foreign tourism.

1.2.3 Mau Complex forests

The forests of the Mau Complex when combined cover an area of over 400,000 ha. The Mau Complex is the largest remaining closed canopy forest block in Eastern Africa. It forms the upper catchments of all, but one, rivers that drain west of the Rift Valley, including Nzoia, Yala, Nyando, Sondu and Mara, which drain into Lake Victoria. It is also the main catchment of critical lakes and wetlands in the Rift Valley, including lakes Baringo, Nakuru, Naivasha, Natron and Turkana. The forests of the Mau Complex are also very rich in flora and fauna.

1.2.4 Mt. Elgon forests

Mt. Elgon forests are located north of Lake Victoria on the border between Kenya and Uganda. The forest belt is protected as National Park and Forest Reserve; the latter covers 73,706 ha. Mt. Elgon forms the upper catchment area for two major rivers: Nzoia and Turkwel rivers. It also provides water to the Malakisi River that crosses the small scale farming area south of the mountain before entering Uganda. The forest has species that are globally threatened including Kenyan endemics, making the area a priority for species conservation and an attraction for tourists.

1.2.5 Cherangani Hills forests

The Cherangani Hills forests comprise a number of forest reserves covering the Cherangani hills on the western ridge of the