

# **STRATEGY FOR CONSERVATION AND MANAGEMENT OF COMMERCIAL ALOE SPECIES IN KENYA**

Kenya Wildlife Service

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Cover photo: *Aloe calidophila*

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## LIST OF ACRONYMS

AMU	Aloe Management Units
CBD	Convention on Biological Diversity
CBS	Central Bureau of Statistics
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DRSRS	Department of Resource Survey and Remote Sensing
EU-BCP	European Union- Biodiversity Conservation Program
ICIPE	International Centre for Insect Physiology and Ecology
IUCN	International Union of Conservation of Nature
KEBS	Kenya Bureau of Standards
KEFRI	Kenya Forestry Research Institute
KEPHIS	Kenya Plants Health Inspectorate Services
KFS	Kenya Forest Service
KWS	Kenya Wildlife Service
LN	Legal Notice
MoA	Ministry of Agriculture
NEMA	National Environmental Management Authority
NDF	Non-Detrimental Findings
NGOs	Non Governmental Organizations
NMK	National Museums of Kenya
NPEP	National Poverty Eradication Plan
PRSP	Poverty Reduction Strategy Paper
SNV	Netherlands Development Organization
USAID	United States Agency for International Development



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## FOREWORD

The *Strategy for Conservation and Management of Commercial Aloe Species in Kenya* has been formulated to guide sustainable conservation and utilization of the aloe resource in the country. It focuses on striking a balance between socio-cultural, economic and ecological needs as the core pillars of sustainable development. The strategy aims at integrating interests in biodiversity conservation and economic development

Aloe exploitation in dry lands has been viewed as an entry point for wealth creation and biodiversity conservation by the local communities in the country. Thousands of poor inhabitants, mostly women are engaged in aloe sap tapping in the drier parts of Africa; Eastern Cape in South Africa, Kenyan dry lands and in Karamoja in Uganda.

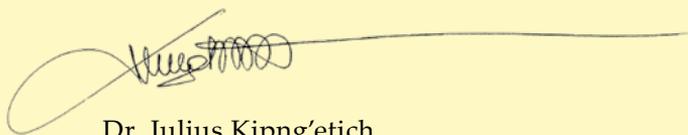
The Genus *Aloe* is listed under Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) which regulates international trade in endangered species. International trade in specimens of aloe species; live plants, parts or derivatives should therefore be compliant with the national laws and CITES regulations. In Kenya, there are approximately 60 indigenous species and subspecies of aloes. Among these species, five namely *Aloe secundiflora*, *Aloe turkanensis*, *Aloe rivae*, *Aloe calidophila* and *Aloe scabrifolia* are commercially exploited for aloe bitter gum.

There is considerable illegal trade in specimens of the Kenyan aloes which is threatening the resource base in the wild. The illegal trade has compromised the premiums of the resource and the recognition that Kenya's aloe bitter gum is of superior quality. However, the recent gazettment of the Wildlife (Conservation and Management) (Aloes species) Regulations, 2007 (L.N 403) will streamline the aloe sub sector through promoting domestication (artificial propagation) of the aloe species and certification of harvesting operations dependent on the wild



aloe resource base. In view of this, KWS together with other relevant government agencies particularly those responsible for conservation and management of wildlife has developed this strategy to enhance sustainable utilization of aloes in the country.

This strategy provides a framework for implementation of the Wildlife (Conservation and Management) (Aloe Species) Regulations, 2007 published in Legal Notice No 403 as subsidiary legislation on aloes. It further prescribes systems, procedures and institutional arrangements for the implementation of the regulations and therefore gives an outline on sustainable management of Kenya aloes taking into consideration the legal and administrative processes in respect to national and international obligations.



Dr. Julius Kipng'etich  
Director, Kenya Wildlife Service



# TABLE OF CONTENTS

LIST OF ACRONYMS _____	I
ACKNOWLEDGEMENTS _____	II
FOREWORD _____	III
<b>1 INTRODUCTION _____</b>	<b>1</b>
<b>1.1 STRATEGY FOR CONSERVATION AND MANAGEMENT OF COMMERCIAL ALOE SPECIES _____</b>	<b>3</b>
1.1.1 Strategic Vision .....	3
1.1.2 Strategic Goal .....	3
1.1.3 Strategic focus .....	3
1.1.4 Specific objectives .....	3
<b>1.2 STRATEGIC ACTIONS _____</b>	<b>4</b>
<b>2 BACKGROUND _____</b>	<b>7</b>
<b>2.1 ALOE CONSERVATION AND MANAGEMENT _____</b>	<b>7</b>
2.1.1 Species description and distribution .....	10
2.1.2 Areas of Aloe harvesting in Kenya .....	13
<b>2.2 STATUS OF CONSERVATION OF ALOES IN KENYA _____</b>	<b>13</b>
2.2.1 Regulations on Aloe management .....	14
2.2.2 Issues and challenges of aloe conservation and management .....	16
<b>3 IMPLEMENTATION FRAMEWORK _____</b>	<b>19</b>
<b>3.1 IN-SITU AND EX-SITU CONSERVATION AND MANAGEMENT _____</b>	<b>19</b>
3.1.1 Aloe Management Units and Certification process .....	19
<b>3.2 RESEARCH AND DEVELOPMENT _____</b>	<b>22</b>
<b>3.3 TECHNOLOGY TRANSFER _____</b>	<b>23</b>
3.3.1 Training .....	24
3.3.2 Technology and industrial link .....	24
3.3.3 Public education and awareness .....	24
3.3.4 Marketing and market access .....	24



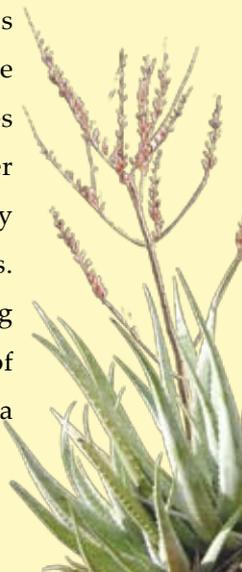
<b>3.4 INSTITUTIONAL COLLABORATION</b>	<b>24</b>
3.4.1 Kenya Wildlife Service	25
3.4.2 National Museums of Kenya (NMK)	25
3.4.3 Kenya Forestry Research Institute (KEFRI)	25
3.4.4 Kenya Forest Service (KFS)	26
3.4.5 Department of Resource Surveys and Remote Sensing (DRSRS)	26
3.4.6 Kenya Plants Health Inspectorate Services (KEPHIS)	26
3.4.7 Customs	26
3.4.8 Ministry of Agriculture (MOA)	27
3.4.9 National Environmental Management Authority (NEMA)	27
<b>3.5 MONITORING AND EVALUATION</b>	<b>27</b>
<b>3.6 LOGICAL FRAMEWORK</b>	<b>28</b>
<b>3.7 ACTION PLAN</b>	<b>30</b>
<b>3.8 FUNDING MECHANISM</b>	<b>30</b>
<b>3.9 COMPLIANCE</b>	<b>31</b>
<b>4 REFERENCES</b>	<b>33</b>
<b>ANNEX 1: GLOSSARY</b>	<b>34</b>
<b>ANNEX II: ALOE SPECIES REGULATIONS, 2007</b>	<b>35</b>
<b>ANNEX III STATUS OF ALOE SPECIES</b>	<b>45</b>
<b>ANNEX IV: NON-DETRIMENT FINDINGS</b>	
<b>SCORE SHEET FOR ALOES</b>	<b>47</b>
<b>ANNEX V: HARVESTING PROCEDURE COMPLIANCE</b>	
<b>FORM</b>	<b>51</b>



# 1 INTRODUCTION

Kenya's drylands support 28% of the total human population in the country and occupy 80% of the land area (CBS, 1999). Though endowed with natural resources, these areas remain underdeveloped. This is attributed to inefficient and unsustainable methods of resource extraction. These regions frequently experience prolonged drought and erratic and uneven rainfall distribution. The local communities have limited alternative livelihoods although nomadic pastoralism is the mainstay in these areas. The Government of Kenya aims to reverse these trends through elaborate programmes spelt out in the Poverty Reduction Strategy Paper (PRSP) of 2003, the Economic Recovery Strategy (ERS) and Vision 2030 for renewed growth. These policies outline strategies and mechanisms that will uplift the living standards of the local people and eventually have a multiplier effect on the economy. Pursuant to these policies, KWS and other government agencies responsible for conservation and management of natural resources in collaboration with stakeholders have initiated programmes to encourage alternative non-pastoral projects in drylands. Sustainable utilization of aloes has been identified as a potential community-based natural resource enterprise that will achieve such goals.

About 83 species of aloe occur in East Africa (Carter, 1994; Wabuye, 2006). About 60 species of Aloe have been identified in Kenya, many of which grow naturally in dry lands. Aloes are used by local communities for medicinal, cultural and aesthetic purposes. Industrial uses include pharmaceuticals, cosmetics, nutraceuticals among others. Some species of Kenyan aloes are currently being exploited for commercial bitter gum. However, concern has been raised locally and internationally about levels and impact of the exploitation to wild populations. Unsustainable harvesting of wild aloes poses many threats ranging from overexploitation to ecological imbalance and possible loss of the species. Overexploitation of the commercial aloe species in Kenya



prompted a Presidential decree in 1986 banning harvesting of aloes from the wild for commercial purposes. The Wildlife (Conservation and Management)(Amendment) Act, 1989 mandates KWS to formulate policies and regulations to govern conservation of all fauna and flora (not domesticated).

Internationally, trade in specimens of aloes is regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) under Appendix I and II listing using a system of permit and certificates. Trade in specimens of aloes (except *Aloe vera*) requires prior grant and presentation of an export permit. The export permit is granted when the following conditions have been met:

- a) Such export will not be detrimental to the survival of that species in the wild;
- b) That the specimen was not obtained in contravention of the laws of that country for the protection of the species;
- c) That there is monitoring of the export permits for specimens of species in question.

In response to concerns over overexploitation of and illegal trade in the commercial aloe species, KWS embarked on a process in 2004 to steer development of a long term strategy and policy to guide conservation and management of aloes. The process resulted into development and gazettelement in 2007 of Wildlife (Conservation and Management) (Aloe Species) Regulations, 2007 Legal Notice 403 of December 2007 as subsidiary legislation. This strategy plan is for the implementation of the aloe species regulations.



## **1.1 Strategy for conservation and management of Commercial aloe species**

### **1.1.1 Strategic Vision**

To contribute to conservation, management of viable populations of cultivated and wild aloes for present and future generations

### **1.1.2 Strategic Goal**

To conserve and manage aloe species for sustainable development

### **1.1.3 Strategic focus**

1. Promote the conservation and management of aloes for improved economic empowerment and environmental management
2. Conduct research to generate information to guide adaptive management and utilization of aloes
3. Promote development of appropriate technology for value addition and market access.
4. Promote appropriate technology transfer through established uptake pathways
5. Conduct public awareness and education to stimulate public attention about the values of aloe conservation, management and utilization

### **1.1.4 Specific objectives**

- a) To promote the conservation and management of Kenya aloes for improved livelihood and environmental service through wise land management practices
- b) To guide a program for sound ecological and sustainable use of commercial aloes by :
  - i) providing a simple procedure for sustainable utilization of aloes for local and international trade in accordance with the provision of the national and international obligations
  - ii) implementing the provisions of the Wildlife (Conservation



- and Management) (Aloe species) regulations, 2007 with regard to utilization of commercial aloes
- iii) implementing a system of monitoring to ensure the use of aloes complies with the relevant legislation and this strategy
  - iv) establishing monitoring and evaluation system
- c) To provide incentives to land owners to salvage aloes
  - d) To promote public education and awareness

## 1.2 Strategic Actions

- a) Develop programs for aloe value addition through research and development.
  - i) Brand Kenyan aloes for international market.
  - ii) Establish agronomic requirements for aloes to enhance cultivation programs.
- b) To generate scientific information to guide adaptive conservation and management of aloes through:
  - i) Assessment of the impacts of harvesting wild aloe populations
  - ii) Development of population models that will allow prediction of the outcome of various management prescriptions for the commercially exploited aloe species and encourage other research that supports the aim
  - iii) Identify, evaluate and document Aloe Management Units (AMU) and establish sustainable harvesting quotas for those units
- c) To promote public awareness and education on
  - i) Conservation status of the aloe with an emphasis on the commercial species.
  - ii) Socio-economic and ecological value of the aloes



## Outputs

Key outputs of this strategy shall be:

- i) regulated and managed exploitation of aloe resource
- ii) Creation of wealth and job opportunities for enhanced economy
- iii) streamlined aloe product value chain
- iv) improved premiums and market access
- v) appropriate technologies availed and transferred
- vi) improved information gathering and sharing
- vii) increased awareness on aloe conservation and management





## 2 BACKGROUND

### 2.1 Aloe conservation and management

Kenya has approximately 60 species of aloe of which 26 are endemic. Only five (*Aloe turkanensis*, *A. scabrifolia*, *A. secundiflora*, *A. calidophia* and *A. rivae*) are exploited commercially. Many of the commercial aloe species grow naturally in Baringo, Samburu, West Pokot, Turkana and Laikipia districts in abundance. Other areas known to have significant populations of aloes include Nakuru, Koibatek, Kajiado, Isiolo, Meru, Marsabit, Moyale, Narok and Wajir districts. Some parts of Nyeri, Kiambu, Thika, Machakos, Kitui and Mwingi districts and Nyanza, Western and Coast provinces are also known to have some naturally growing commercial aloe species (Figure 1). Some species of aloe have been grown in gardens and homes as flowers and live fences. In Kenya, many locals have traditionally used the sap and leaves for cure of various ailments including malaria, fungal and bacterial diseases. Other uses include, rangelands rehabilitation, bee forage, browse for wild animals, livestock fodder in dry season and as live fence and ornamental plants.

All species of aloe, except *Aloe vera* are listed under Appendices I and II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The international trade in aloes of Kenya is therefore subject to CITES guidelines and procedures. Harvesting from the wild is only acceptable when national non-detrimental findings have been done; and only after acceptable quota that will not be detrimental to the survival of the species in the wild is allocated. Artificial propagation and cultivation is however encouraged for commercial exploitation and is not subject to non-detrimental findings. The harvest depends on quantities cultivated and management of the species.

Regions where aloes are known to grow naturally experience low economic growth due to prevailing climatic conditions and other factors.



The Government through Vision 2030 seeks to provide an environment for citizens to create wealth using local resources to achieve developed status by 2030. Further, the National Poverty Eradication Plan (NPEP) lays down strategies geared towards reducing incidence of poverty in these areas by 50% by the year 2015. It also aims at strengthening the capabilities of the marginalized and vulnerable groups. It also spells out mechanisms for narrowing the gap in gender disparities by creating a healthy, educated and more productive population. It hopes to achieve this through supporting integrated natural resource management initiatives, promotion of best practices to help realize natural resource conservation and educate communities in targeted areas using existing potential for sustainable exploitation of the natural resources

The potential for sustainable aloe utilization is enormous but remains largely unexploited due to absence of information on the resource abundance and distribution, inefficient extraction methods, limited technological know how in processing the products, unclear marketing channels and low returns to primary producers. Sustainable exploitation of aloe requires a coordination framework that involves primary producers in aloe management, utilization and marketing, development of linkages and partnerships with local and international agencies dealing in aloe processing and marketing. There is also need to create awareness about regulations governing aloe utilization, products, marketing and the role of aloes in environmental conservation. Mechanisms for development of aloe based economic and social enterprises will also be essential in enhancing the profile of aloes.



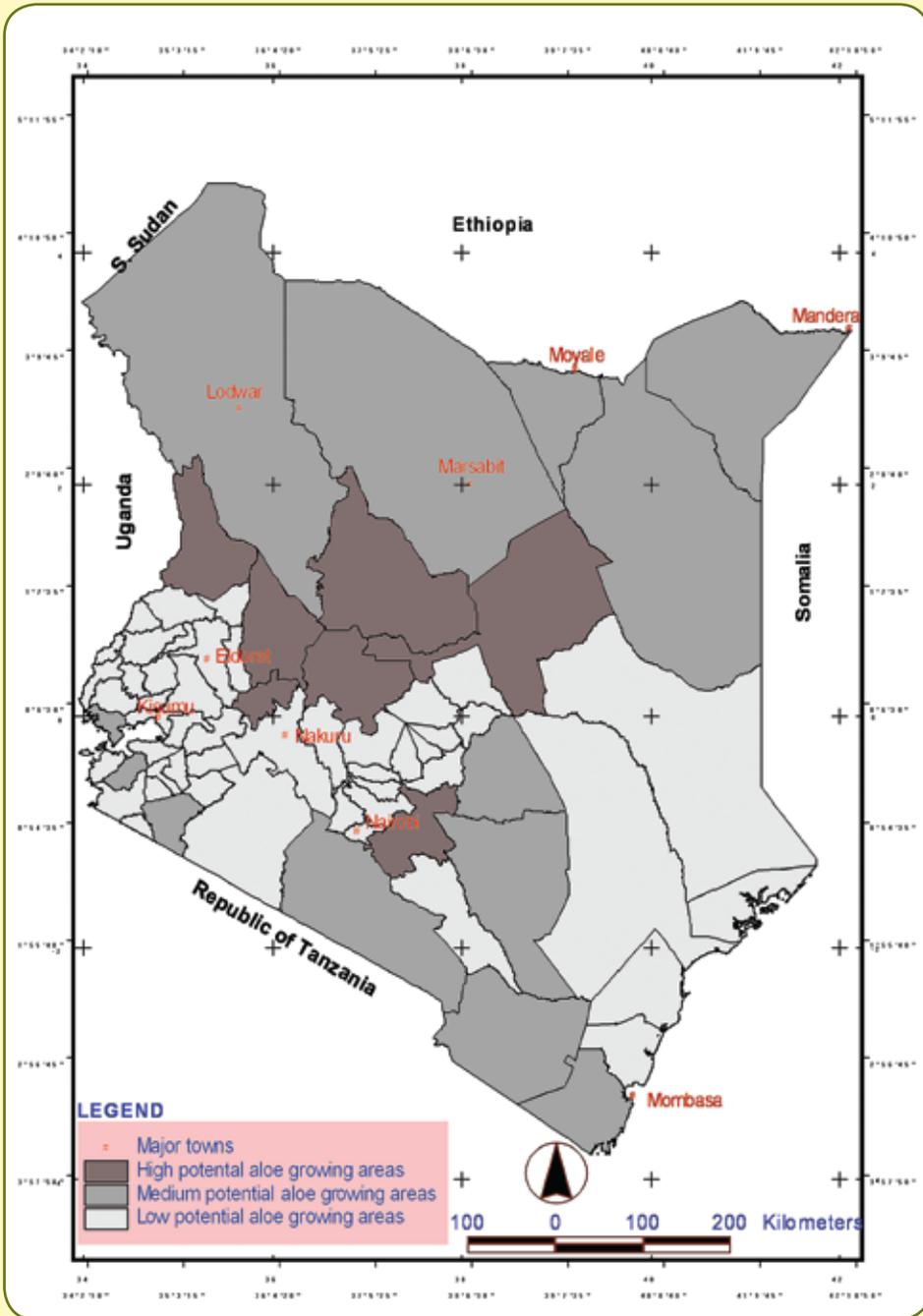


Figure 1: Districts with varied aloe populations



### 2.1.1 Species description and distribution

Five Kenyan species of aloes namely *Aloe secundiflora*, *A. scabrifolia*, *A. turkanensis*, *A. calidophila*, and *A. rivae* have been identified as sources of commercial aloe bitter gum.



*Aloe secundiflora*

*Aloe secundiflora* is stemless species growing solitary or sometimes suckering. Older plants may have stems up to 30cm long. The leaves are borne in a compact rosette of up to 1 meter in diameter, erect or spreading and slightly re-curved at towards the tips. The inflorescence is up to 2m high, multi-branched with bright red, pink or yellow flowers. *A. secundiflora* is the most commonly observed aloe species and widely distributed in the country. *A. secundiflora* highly hybridizes and some of the hybrids are source of the commercial aloe gum especially in Kwale, Kilifi and Taita-Taveta districts.





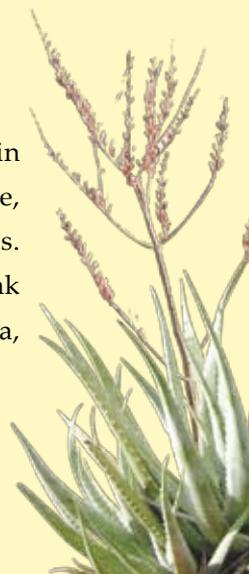
*Aloe scabrifolia*

*Aloe scabrifolia* is a sprawling species, with stems of up to 120cm. It branches from the base to form clumps of up to 3m in diameter. The leaves are borne in a loose rosette, are erect to spreading and often recurved. The inflorescence is up to half a meter tall, with dull red flowers. *A. scabrifolia* is restricted and occurs mainly in Samburu, Laikipia, Isiolo and Marsabit districts.



*Aloe turkanensis*

*Aloe turkanensis* is a shrub with stems of up to 70cm long. It grows in loose clumps up to 2m diameter. Leaves are borne in a compact rosette, are erect to spreading with elongated whitish spots on both surfaces. The inflorescence is many-branched, up to 30cm long and bright pink in colour. *A. turkanensis* is mainly found in Baringo, Isiolo, Laikipia, Turkana and West Pokot districts.





*Aloe rivae*

*Aloe rivae* is a stemless species growing solitary or in small clumps. Older plants have a stem up to 60cm high. Leaves are borne in a dense rosette, erect or spreading and slightly recurved at the tips. The inflorescence is much branched up to 75cm high with bright red or yellow flowers. The species has restricted distribution in Kenya and occurs in Marsabit district especially in Badha Huri area.



*Aloe calidophila*

*Aloe calidophila* is a shrub with stems up to 1m high, branching from the base to form clumps. Leaves are in fairly loose clumps, much recurved and dead leaves are persistent on the stem. The inflorescence is up to 1.3cm high with bright red flowers. *A. calidophila* has restricted distribution and is mainly found in Marsabit, Wajir and Moyale districts.



### 2.1.2 Areas of Aloe harvesting in Kenya

It has been documented that, commercial aloe harvesting in Kenya begun in the 1950s at the coast and later spread to the interior. Baringo, East Pokot, Isiolo, Kajiado, Kilifi, Kwale, Laikipia, Marsabit, Moyale, Samburu, Taita-Taveta, Turkana, Wajir, West Pokot and Yatta districts are the major commercial aloe harvesting areas. (Fig 2.)

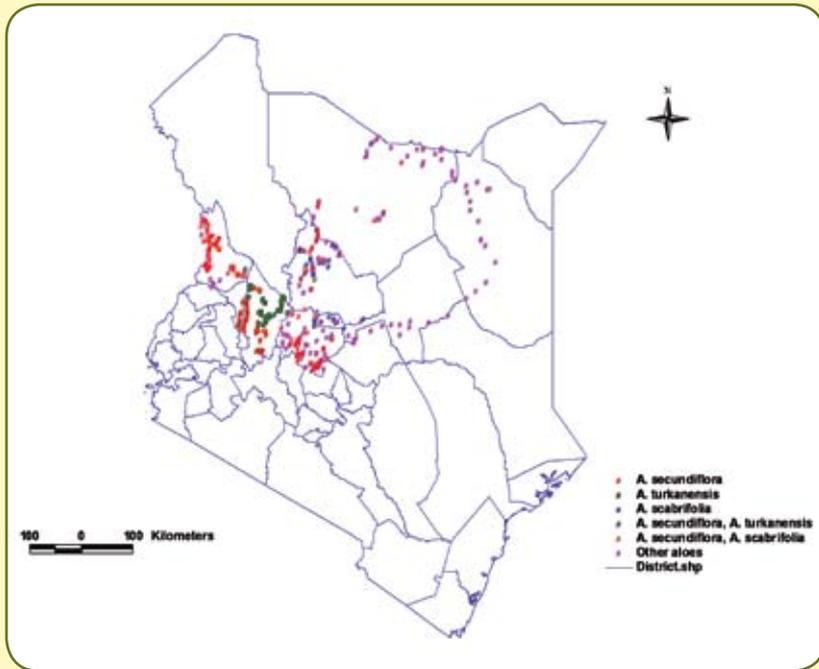
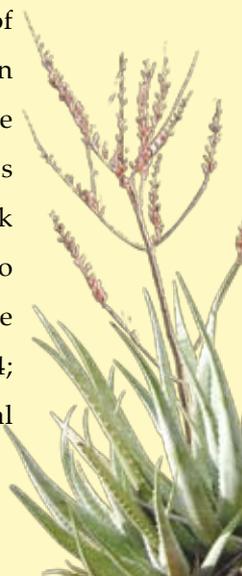


Fig. 2 Map showing areas of harvesting of commercial indigenous aloes in Kenya in selected districts

### 2.2 Status of Conservation of Aloes in Kenya

There have been efforts to conserve aloes in Kenya both *in-situ* and *ex-situ*. *Ex-situ*, aloes have been conserved through the establishment of demonstration plots, botanical gardens and germplasm preservation in gene banks and *in-situ*; aloes are conserved in their wild habitats. The Nairobi Botanic garden and other private gardens are present examples with substantial collections of Kenyan aloes on display. Recent work to establish the status of commercial aloes has given impetus to conservation work. Several studies have been done to establish the conservation status of aloes in the wild (Oldfield, 2003; Newton, 2004; Wabuyele, 2006). Detailed information on the status of the commercial



aloe species as presented in Lubia *et al* (2005); Mukonyi *et al* (2007) and Mukonyi *et al* 2008 gives indication of the current status of Kenyan aloe species (Annex III).

### **2.2.1 Regulations on Aloe management**

Initiatives have been taken at local and international levels to streamline operations and utilization of Kenyan aloes.

#### **2.2.1.1 National regulations**

Prior to the Wildlife (Conservation and Management) (Aloe Species) Regulations, 2007 published in Legal Notice No 403, Kenya lacked adequate regulations and mechanisms to oversee or regulate the protection, conservation and management of aloes, outside protected areas. The unclear provisions for regulation of use of the species within the wildlife legislation framework saw the unchecked utilization of the aloe species in the 1980s resulting into over exploitation and wanton destruction of aloes in the wild. This prompted a Presidential Decree in 1986 prohibiting harvesting of the species from the wild for commercial purposes and instead encouraged establishment of aloe plantations for commercial exploitation of the species. The Wildlife (Conservation and Management) Amendment Act, 1989 mandates Kenya Wildlife Service to formulate policies to govern conservation of all fauna and flora (not domesticated).

Increased demand for alternative investment opportunities, technological innovations and expanding socio-economic developments, has resulted in increased demand for utilization of plants and their products (including aloes) as alternative source of income. In response, Kenya Wildlife Service has undertaken several consultative processes to develop a conservation and management strategy for commercial aloe species with the objective of regulating trade in the species to sustainable levels. The steps include undertaking national aloe resource mapping and quantification to advise the Minister in charge of wildlife in accordance with the Act, interventions regarding harvesting from



the wild populations for commercial trade and development of national guidelines for certification of artificially propagated sources for export /import.

The Government has considered allowing controlled trade in specimens of Aloe species under the following guiding principles:

- Utilization of aloes should be sustainable and should not be detrimental to their conservation or supporting ecosystems
- Sustainable use of aloes is a legitimate means of satisfying the subsistence, spiritual, cultural, recreational and commercial needs of the people of Kenya
- Conservation of aloea and their natural habitats and microhabitats on private and communal lands will be enhanced through landowners and regulatory agencies
- Economic benefits derived from using Aloe species shall be used sustainably to create economic incentives for the landowners to conserve the species and their natural habitats and to cooperate with the regulatory authorities pursuing conservation goals.
- Aloe management programmes shall be adaptive based on the best available scientific and indigenous knowledge about the species and its habitats and provide for regulation, monitoring, reporting and review and adjustment.
- Enhancement of aloe conservation will be the control point for consideration when evaluating sustainable use management options.

These principles are embedded in The Wildlife (Conservation and Management) (Aloe species) Regulations, 2007 annexed as Annex II to this strategy.



### 2.2.1.2 International regulations

Trade in Aloe species and their derivatives is regulated under the provisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). All Aloe species except *Aloe vera* are listed in Appendices I and II of CITES. CITES Appendix I listed species include all species threatened with extinction, which are or may be affected by trade and international trade in these species is generally prohibited. CITES Appendix II listed species include all species which although not necessarily now threatened with extinction may become so unless trade in specimen of such species is subject to strict regulation in order to avoid utilization incompatible with their survival and other species which must be subject to regulation in order that trade in specimens of certain species may be brought under effective control. Indigenous Kenya aloes are listed in Appendix II of CITES and therefore any international trade in these species and their derivatives require CITES permit/certificate. Export and import of wildlife species under CITES Appendices are regulated through use of Permits and Certificates issued by designated CITES Management authorities in consultation with the scientific authorities.

An export permit can only be issued by the Management Authority provided that the Scientific Authority has advised that the proposed export will not be detrimental to the survival of the species and that the Management Authority is satisfied that the specimens were legally obtained. CITES is therefore a powerful tool for achieving consistent international regulation of trade in wildlife for conservation and sustainable use.

### 2.2.2 Issues and challenges of aloe conservation and management

There exist various challenges to the sustainable utilization of aloes in Kenya. These challenges range from social, to economic and environmental protection. They include:



- (i) Unsustainable utilization of wild aloe populations
  - Over reliance on wild populations and limited aloe cultivation
  - Lack of standardized protocols for harvesting aloes
- (ii) Research and development
  - Quality planting materials
  - Pests and diseases control
- (iii) Value addition to raw products
  - Limited technological innovation
  - Limited access to credit facilities
  - Quality assurance procedures
- (iv) Awareness on conservation, management and utilization of aloes
  - Land tenure and changing land use patterns
  - Undervaluation of aloe as a commercial plant
  - Resource ownership
  - Lack of information on agronomic practices
- (v) Regulatory framework
  - Controlling illegal trade
  - Enforcement and compliance monitoring
  - Cross-border trade
- (vi) Markets and Market access
  - Fair trade (equity and benefit sharing)
  - Unclear and unfavorable market channels
- (vii) Operational institutional governance structure
  - Lack of viable community aloe bioenterprises



**BARINGO ALOE BIO-ENTERPRISE  
PROJECT**

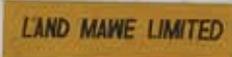


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## 3 IMPLEMENTATION FRAMEWORK

This strategy outlines nine programme areas for implementation, namely, *in-situ* and *ex-situ* population management, research and development, technology transfer, marketing and markets access, institutional collaboration, monitoring and evaluation, funding mechanism, compliance and strategy review.

### 3.1 In-situ and ex-situ conservation and management

#### 3.1.1 Aloe Management Units and Certification process

Most aloes grow outside protected areas. They occur on private land, trust land and communal land. Land tenure is changing and some of the communally-owned lands are being subdivided for individual ownership. Aloe populations in protected areas (Parks and Reserves) will be strictly for conservation however, utilization of populations in non protected areas shall be regulated subject to stipulated conditions within the Aloes species regulations and non detriment finding studies (Annex II & III)

To promote conservation of these aloes the following measures will be explored:

- a) Provide incentives for salvaging aloes in areas where land use change is taking place
- b) Promote aloes as alternative sources of income
- c) Promote aloe cultivation as a competitive land use option
- d) Encourage multiple land use that incorporates aloes, e.g. grazing/ aloe farming.





*Christine Boit, District Warden, Baringo, assessing a potential AMU*

### **3.1.1.1 Establishment of Aloe Management Units (AMU) and Certification schemes**

Selection of AMU areas will be based on critical aloe population areas as informed by resource quantification and land tenure system.

AMU certification in delineated areas will require:

- (a) Formation of associations whose membership will be aloe farmers and or AMUs
- (b) Development of production and business plans
- (c) Create awareness among members on the provisions of aloe regulations and strategic plan.
- (d) Introduce internal control and compliance program to ensure adherence to aloe utilization guidelines.
- (e) Produce a register of association members (to assist in permits, marketing and promotion of members).

For both AMUs and plantations, standards to be set for certification shall be simple but provide for a practical progression, from reducing

unsustainable practice to introducing quality management to achieve sustainable Aloe management in all the identified Aloe management units, within areas of operation.

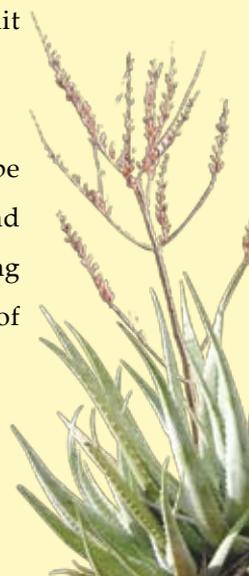
Specific considerations for setting up AMU's and standards will involve the following:

- (a) Targets for aloe production from sap and Aloe bitter gum.
- (b) Targets on acreage to be put under aloe propagation.
- (c) Appropriate harvesting methods to ensure sustainable harvesting.
- (d) Proportional percentage of acreage set aside for conservation.
- (e) Structures for resource management and benefit sharing.
- (f) Funding support for research and monitoring from profits accrued from sales.
- (g) Opening and maintaining of registers of all members within an AMU.
- (h) Penalties and restrictions for non-compliance.
- (i) Setting open and closed seasons for Aloe harvesting.

The harvesting procedures, quantities required and season for aloe harvesting are important basics to ensure sustainable management of targeted commercial aloes.

Harvesting parts and derivatives for aloes shall include seeds, leaves and whole plants. Procedures for sustainable harvesting of aloes for commercial purposes shall be established before application for permit to export is made.

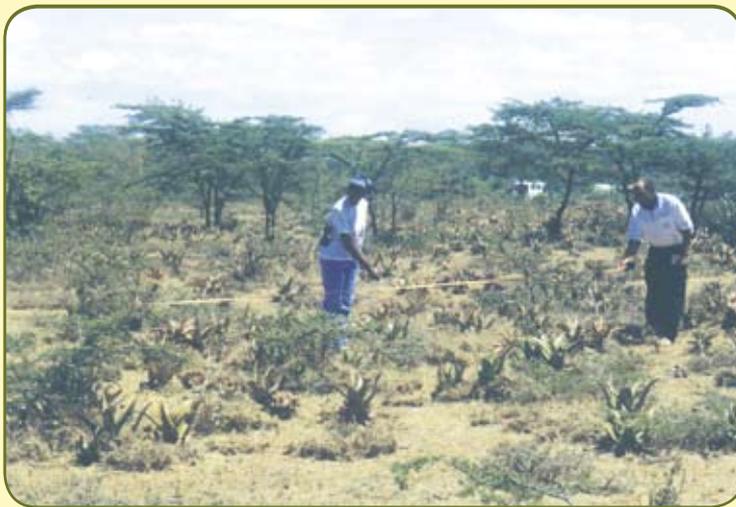
Details on the species and locality targeted for exploitation shall be provided beforehand. The species will be harvested separately and processing of Aloe bitter gum done separately for purposes of branding the products and monitoring impacts of harvesting on populations of each subject species.



Harvesting of Aloes will be based on type and locality and will take place during specified period. Amount of Aloe sap collected and details of households harvesting will be recorded and certified. There shall be routine harvesting and post harvest handling training conducted on the ground on principles of sustainable harvesting and quality assurance.

### 3.2 Research and Development

As part of adaptive conservation and management approach to aloe, appropriate population status assessment procedures will be established as a basis for monitoring and evaluation. Focus will be on the five indigenous commercial aloe species to regulate the impact of harvesting for trade. In addition, further research will be directed to in-depth understanding of other Kenyan aloes for conservation and utilization. Aloe resource off-take levels shall be assessed continuously as per CITES procedures for undertaking non-detrimental findings studies and determination of harvesting quotas. In addition research and development will endeavor to undertake technological innovation, aloe product development and value addition. Appropriate technologies for production, management and efficient aloe harvesting and post harvest handling will be developed, to enhance aloe resource conservation in the country.



*Researchers sampling aloes in Laikipia*



*A. secundiflora gum*



*A. turkanensis gum*



*Commercial products from aloe*

### 3.3 Technology transfer

Inadequate technology transfer tools, skills and financial capacities are major setbacks in aloe management and sustainable utilization. There is inappropriate information gathering mechanism, inadequate information dissemination materials and clearing house mechanism. It is imperative therefore, that Information gathered is documented and



packaged to meet the needs of various stakeholders. Thus, appropriate packed technology will be transferred through:

### **3.3.1 Training**

This programme will involve transfer of appropriate technology on agronomic practices, harvesting, product development and value addition. The process will also impart entrepreneurship skills.

### **3.3.2 Technology and industrial link**

Technovations will be linked to end users such as industries through appropriate technology transfer contractual agreements

### **3.3.3 Public education and awareness**

The biological, ecological and socio-economic importance of aloe shall be promoted in a coordinated approach using various media among them public exhibition and extension activities. The awareness programmes will include development of community programmes to promote aloe cultivation schemes and sustainable aloe harvesting methods.

### **3.3.4 Marketing and market access**

Lack of organized marketing systems and information gathering has led to improper pricing and unfair equitable benefits to resource owners impacting negatively to aloe conservation in the country. Aloe product value chain marketing will be streamlined through the government marketing and regulatory structures to ensure better pricing and benefits to rural communities. Possibilities of access to loans through established community organizations will be explored by various stakeholders.

## **3.4 Institutional collaboration**

Kenya Wildlife Service is designated Kenya's wildlife authority with mandate to coordinate, administer and regulate all trade and transactions on wildlife on behalf of the government in consultation



with other lead agencies. For purposes of the implementation of the Wildlife (Conservation and Management) (Aloes species) Regulations, 2007, the following institutions will play a key role:

#### **3.4.1 Kenya Wildlife Service**

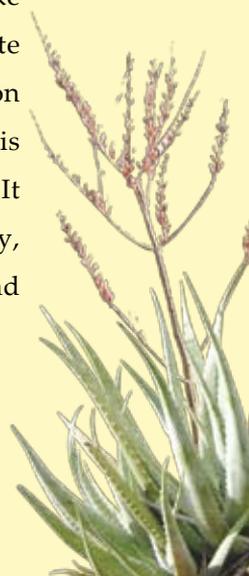
Kenya Wildlife Service is the CITES Management Authority for the Kenya government. CITES makes it obligatory for each country to designate and register one or more management and scientific authorities, to coordinate, manage, administer and advise on utilization, trade and transactions of all CITES listed species. KWS therefore has statutory obligations to ensure that all trade and transactions of wildlife out and into Kenya are within the provisions of the national legislations and in compliance with CITES provisions, which Kenya is a signatory.

#### **3.4.2 National Museums of Kenya (NMK)**

NMK is Kenya's scientific authority. Its key obligations include advising the Wildlife Management Authority, that the removal of the species from its habitat does not affect its survival in the wild. NMK has enormous expertise in plants conservation and management. KWS and NMK have worked closely together to ensure that the national obligations are enforced and complied with, within the statutory provisions and international conservation protocols.

#### **3.4.3 Kenya Forestry Research Institute (KEFRI)**

As a State Corporation established in 1986, its mandate is to undertake forestry research, generate appropriate technologies disseminate information and provide extension services on sustainable utilization and management of forests and their products, with special emphasis on socio-economic empowerment of communities to create wealth. It has a wide scope, which includes, dry land forestry, plantation forestry, and non-timber products, which takes care of conservation and management of Aloe species.



#### **3.4.4 Kenya Forest Service (KFS)**

The mandate of Kenya Forest Service is to enhance protection, conservation, development and management of all forest resources in the country, with special emphasis on development of commercial plantations and protection of indigenous species. The forest service shall play a major role in harmonizing Aloe conservation and management, with the larger forest industry including community mobilization in joint and integrated forest management.

#### **3.4.5 Department of Resource Surveys and Remote Sensing (DRSRS)**

Department of Resource Survey and Remote Sensing play a critical role in species monitoring, population dynamics especially abundance, threats, mapping and other social economic activities. The department is part of the national aloe resource mapping team. The use of remote sensing techniques in mapping of natural resources cannot be overemphasized. DRSRS will therefore continue playing a major role in aloe assessments, monitoring and mapping.

#### **3.4.6 Kenya Plants Health Inspectorate Services (KEPHIS)**

KEPHIS is a government institution, which coordinates, administers and enforces Kenya's regulations/procedures for importation/exportation of any form of plant material, such as seeds, cuttings, bud, wood, fresh fruits, flowers, plantlets, timber and agricultural produce. The role of KEPHIS in Aloe regulation will therefore be in the issuance of phytosanitary certificates in case of exports of whole plants and or specimens of aloes.

#### **3.4.7 Customs**

The Customs is an enforcement agency with the mandate of verification of accompanying documents and clearance for exports and imports. Customs shall play a critical role in verifying quantities of aloe products exported from and imported into the country against the accompanying permits and certificates.



#### **3.4.8 Ministry of Agriculture (MOA)**

The Ministry of Agriculture has identified and classified aloes as an emerging crop and therefore supplement and complement the activities of the lead institutions with regard to commercialization of aloe plants. The ministry through its structures shall provide extension services to the Aloe farmers

#### **3.4.9 National Environmental Management Authority (NEMA)**

The National environment management authority (NEMA) was established under the Environment Management and Coordination act (EMCA) of 1999. The key mandate is to supervise and coordinate all matters related to environment in Kenya. NEMA in conjunction with relevant lead agencies prescribes measures for conservation of biological resources. It further prescribes measures for the sustainable utilization and management of genetic resource. Aloe utilization, conservation and management will be subject to rules and regulations within the provisions of EMCA Act, 1999.

#### **3.5 Monitoring and Evaluation**

A monitoring and evaluation system will be set up to fast track the implementation of the Wildlife (Conservation and Management) (Aloe species) Regulations, 2007, the national and local needs and the set priorities in regard to utilization of aloe resources to achieve the desired objectives.

A monitoring program on the impact of harvesting on aloe populations shall be periodically undertaken. Harvesting and trade returns shall form an integral component of the impact monitoring by providing information on the taxa, extent and quantity of materials harvested and exported.



### 3.6 Logical Framework

Narrative summary Goal	Objective verifiable indicators	Means of verification	Risk/assumptions
<p>To contribute to improved livelihood for Kenyans through sustainable utilization of viable Kenyan aloe populations</p>	<p>Increased number of individuals involved in aloe production for livelihood</p>	<p>Census reports on livelihoods/impact assessments</p>	<p>Markets for aloe raw products and derivatives exist</p>
<p><b>Purpose</b> To provide framework for sustainable commercial Kenyan aloe utilization</p>	<p>Legislative, policy and administrative structures in place.</p>	<p>Policy document Strategic framework in place Certification established, reports &amp; records</p>	<p>Adequate aloe plantations in place Proper management &amp; conservation in AMUs Aloe product value chain will be streamlined within the main government structures.</p>
<p><b>OUTPUT-1</b> Research of aloe subsector undertaken</p>	<p>Status of aloe exploitation established Quality assurance procedures established Value added products</p>	<p>Reports &amp; published papers Registered technologies (patented) Technology/transfer agreements Value added products</p>	<p>Availability of technology and technological expertise</p>
<p><b>OUTPUT-2</b> Networking and coordination systems established</p>	<p>A centralized quality data base Coordination system established</p>	<p>A centralized data base in place</p>	<p>Lead agencies will harmonize research &amp; development activities of aloe</p>
<p><b>OUTPUT-3</b> Sustainable aloe based enterprises established and promoted</p>	<p>Functional Aloe based Enterprises established</p>	<p>Aloe products in the market Number of existing cottage Industries</p>	<p>Adequate aloe raw materials available Market for aloe products available and accessible</p>
<p><b>OUTPUT-4</b> Enhanced regulatory system</p>	<p>Monitoring, enforcement, compliance evaluation systems in place</p>	<p>Inspection reports Licenses, registered operations applications, court cases,</p>	<p>Collaboration of all stakeholders Compliance with gazetted Aloe species, regulations, 2007</p>
<p><b>OUTPUT-5</b> Enhance institutional capacities towards aloe conservation &amp; utilization</p>	<p>Institutional Capacity enhanced Improved governance structure</p>	<p>Number of aloe conservation botanical gardens in place Number of aloe farms Registration certificates, title deeds</p>	<p>Institutions are willing to embrace aloe regulations guidelines</p>
<p><b>OUTPUT-6</b> Enhance technology and information transfer uptake pathways</p>	<p>Appropriate technologies &amp; dissemination material developed &amp; transferred to relevant stakeholders</p>	<p>Number of publications, Media talk shows, News prints, reports, Number of trained people</p>	<p>Funds available, Technologies acceptable to stakeholders</p>



Activities/ Strategies	
1.1	Prioritize research areas on Kenyan aloes
1.2	Document survey & map out Kenyan Aloe species
1.3	Brand Kenyan Aloe products for markets
1.4	Develop aloe based products of required standards
1.5	Establish monitoring and evaluation procedures
2.1	Establish appropriate systems for networking and coordination
2.2	Establish a centralized data base clearing house mechanisms
2.3	Take continuous inventory on initiatives
3.1	Develop a business plan for sustainable exploitation of aloe products
3.2	Explore best partnership arrangement to fulfill CITES and CBD arrangements on aloe business and aloe conservation.
3.3	Support establishment of community based cottage industries
3.4	Put in clearing house mechanisms for market and market access
4.1	Monitor, evaluate and review existing aloe utilization levels
4.2	Periodic review of aloe regulations and administrative procedures in regards to utilization
4.3	Ensure compliance and enforcement of regulations in respect to aloe utilization.
4.4	Domesticate regional and international agreements policies, treaties and conventions in respect to aloe utilization.
5.1	Improve stakeholders capacity through education & awareness
5.2	Facilitate transfer of appropriate technologies to stakeholders



### 3.7 Action Plan

	Priority Objective	Lead institutions	Collaborating Institutions
1	Scientific research & evaluation	KWS, KARI, KEFRI, NMK, KEBs	ICIPE, Universities
2	Networking and coordination	KWS, NMK, KEFRI	NGO's
3	Promote sustainable aloe based enterprises	Respective ministries, KARI, KIRDI, KEFRI, KWS KEBs, Communities, Private sector	NGO's
4	Enhance enabling policy and legislative environment	Respective ministries, KWS, NMK, NEMA, KEFRI	Stakeholders
5	Enhance institutional capacities towards aloe utilization	Respective ministries, KEFRI, NMK, KARI, KWS, ICIPE, NGO's, Universities	Stakeholders
6	Enhance technology and information transfer uptake pathways	Stakeholders	Stakeholders

### 3.8 Funding Mechanism

Effective implementation of the strategy will require involvement of wide range of stake holders. The strategy goals will be implemented in stages from short-term to long-term interventions. Legal, policy and administrative issues will be operationalized within the first month of implementation. Resources will be required to implement the activities outlined in this strategy. Therefore there is need to mobilize and put in place proper funding mechanisms. It is envisaged that an initial budget of Kenya shillings 180 million will be required for the short term interventions within the first five (5) years for the following budget lines; operationalization of the Aloe Species Regulations 2007, building and equipping one techno park, product development and value-addition, training/incubation activities and research, monitoring and evaluation. Resources to meet these budget lines shall be sought from the Government of Kenya, donors and private sector partnerships.



### 3.9 Compliance

Implementation of this strategy shall be in compliance with the Wildlife (Conservation and Management) (Aloes Species) Regulations, 2007 annexed to this document and the Wildlife Act.



*Ibrahim Lubia (right), Chief Licensing Officer (KWS) and Christine Boit, KWS Warden, assessing aloe plantation in Baringo*

### 3.10 Strategy Review

Efforts shall be made to improve on this strategy through the following processes:

- a) Periodic review of the aloe regulations and administrative procedures in regard to regulation of exports of Aloe extracts;
- b) Field status assessments for the commercially exploited species: *A. scabrifolia*, *A. secundiflora*, *A. calidophila*, *A. rivae* and *A. turkanensis* to direct the process for determining and reviewing of quotas for sustainable levels of harvesting where appropriate and as a basis for future monitoring;
- c) Periodic field monitoring to ensure that other Aloe species in the approved harvesting units; the Aloe Management Units are not impacted by collecting for trade.





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- Oldfield; S. (2003). Review of significant trade in East African Aloes CITES Report.
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## ANNEX I GLOSSARY

For the purpose of the present guidelines, unless the context otherwise requires:

“Aloe Specimen” means Live or dead aloe plant or any readily recognizable part or derivative thereof

“Aloe Management Unit (AMU)” means area delineated for the purposes of sustainable controlled harvesting of aloes from the wild

“Artificial propagation” means domestication or planting specimens of aloe to establish a population(s) either by use of seeds, suckers or tissue culture material either in a controlled environment or in the wild:

“Wild population” means those populations of aloe species that have not been planted by man and are growing naturally.

“Landowner” means an individual or a group of individuals legally registered under a parcel of land as defined by the Kenya Land Act.

“Certification” means authoritative verification of source of aloe specimen by competent designated authority

“International trade” means export, re-export or import of specimens of aloe (also as defined by CITES)

“Non-Detriment findings (NDF )” means assessment of impacts of species exploitation to the wild population.

“Species” means one of the basic units of biological classification and a taxonomic rank. A species is often defined as a group of organisms capable of interbreeding and producing fertile offspring.



# ANNEX II

## ALOE SPECIES REGULATIONS, 2007

*Kenya Subsidiary Legislation, 2007*

LEGAL NOTICE NO. 403

### THE WILDLIFE (CONSERVATION AND MANAGEMENT) ACT

(Cap. 376)

IN EXERCISE of powers conferred by section 67 of the Wildlife (Conservation and Management) Act, the Minister for Tourism and Wildlife makes the following Regulations:-

#### THE WILDLIFE (CONSERVATION AND MANAGEMENT) (ALOE SPECIES) REGULATIONS, 2007

1. These Regulations may be cited as the Wildlife (Conservation and Management) (Aloe Species) Regulations, 2007.

2. There shall be a register kept by the Kenya Wildlife Service to be known as the Register of Artificial Propagation of Aloe Species.

3. (1) A person intending to engage in propagation of Aloes for commercial purposes shall apply to be entered in the Register as an artificial propagator of aloes.

(2) The application under paragraph (1) shall be in form APA 1 in the Schedule.

4. The Kenya Wildlife Service may, if it deems it fit, make such visits to the premises of the applicant for purposes of verifying the accuracy or veracity of the information provided by an applicant for registration under regulation 3.

5. (1) The Kenya Wildlife Service shall, upon the receipt of an application for registration under regulation 3, within thirty days either grant the applicant a registration certificate or provide him with a written indication that the application has been rejected.

(2) Where the Service has rejected an application it shall provide the applicant with reasons therefor and may, if it deems it fit allow the applicant to meet such further conditions as the Service may deem fit and file a fresh application.

6. (1) A person who intends to export or re-export aloe species or any derivatives therefrom, from Kenya shall apply to the Service for an export certificate in that respect.

(2) A person who intends to import aloe species or any derivatives therefrom, into Kenya shall apply for an import certificate in that respect.

(3) An application under this regulation shall be made in Form APA 2.

7. In considering applications for registration under these Regulations, the Service shall take into account the following principles:-

(a) that artificial propagation of aloe species shall be provided an environment for sustainable utilization of the species and shall not be detrimental to its conservation in the wild or of its supporting ecosystems;

(b) that the conservation of aloe species and their natural habitats and microhabitats is enhanced.



8. (1) Every applicant for registration under regulation 3 shall pay a fee of Kenya shillings five hundred.

(2) Every applicant for a certificate under regulation 6 shall pay a fee of Kenya shilling ten thousand.

9. The Service in consultation with the National Museums of Kenya, Kenya Plant Health Inspectorate Service, Kenya Forest Research Institute and the Commissioner of Customs shall monitor the activities of the registered aloe artificial propagators and ensure that they comply with the conditions set out in the certificate of registration.

10. The export of aloe species from Kenya, shall notwithstanding these Regulations comply with any requirement under any law relating to export from Kenya of any plant or plant product.

11. A Person who—

- (a) artificially propagates aloe species for commercial purposes;
- (b) exports or re-exports from Kenya aloe species or any derivatives therefrom;
- (c) imports into Kenya aloe species or any derivatives therefrom, contrary to these Regulations commits an offence.



## SCHEDULE

Form APA. 1

APPLICATION FOR REGISTRATION OF OPERATION FOR  
ARTIFICIAL PROPAGATION OF ALOE SPECIES

I/We apply for Registration of an operation for Artificial Propagation of Aloe Species and declare that all information provided is true.

## 1. DETAILS OF APPLICANT

## (a) Name &amp; Designation

.....

Name of Business/Organization

.....

## (b) Postal Address .....

.....

## (c) Physical address

Nearest Urban Centre: .....

District .....

Division .....

Location .....

Sub-location .....

Telephone .....

Fax .....

Email: .....

Dated .....

Signature .....

## 2. DATE OF ESTABLISHMENT .....

## 3. SIZE OF OPERATION IN HECTARES (HA.) .....

## 4. LAND OWNERSHIP

Individual ownership

 YES

 NO

Group ownership

 YES

 NO

Status of Land ownership .....

Evidence of land ownership or Title Deed No. ....

5. SPECIES BEING ARTIFICIALLY PROPAGATED *(please confirm from experts from qualified authority)*

1. ....

2. ....

3. ....

4. ....



6. SOURCE OF PARENTAL STOCK AND QUANTITIES (tick in the boxes where applicable)

Source of parental stock Propagating material Quantities (Kg/pcs)

(a) Natural source (Wild) [ ] Seeds..... Suckers..... Others (specify).....

(b) Established nurseries [ ] Seeds..... Suckers..... Others (specify).....

(c) If (b), give name of registered owner and location of the nursery

(d) Quantities of mature plants expected to be harvested in one year

Attach a marketing/Business plan for your operation (optional)

7. EVIDENCE OF SOURCE OF MATERIAL (give as detailed information as possible about the background of the operation e.g. sales receipt)

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8. COMMENTS BY KWS AREA WARDEN OR HIS/ HER DESIGNEE (DAO or DRØ) (Upon visit to and Inspection of the artificial propagation operation.)

Name..... Signature ..... Date.....

9. (a) COMMENTS BY NATIONAL MUSEUMS OF KENYA- Botanist In Charge.

Name..... Signature ..... Date.....

(b) COMMENTS BY KWS CHIEF LICENSING OFFICER

Name..... Signature..... Date.....

10. KWS DIRECTOR'S APPROVAL/DISAPPROVAL

Signature ..... Date.....

If disapproved, reasons given and any Corrective Actions Requested (CAR)



.....  
.....  
11. Registration No. of operation allocated and as entered into the National Register of Operations.

KE/APA/District \_\_\_\_\_ No. \_\_\_\_\_ /Year \_\_\_\_\_

12. Details Entered in the National Register by:

Name..... Signature..... Date .....

**CERTIFICATE OF REGISTRATION FOR PROPAGATION OF ALOES  
IN KENYA**

Date of issue.....

Name of Propagator.....

Address .....

Telephone.....

Physical location of the propagation unit

District: .....

Division: .....

Location: .....

Sub-location:.....

Nearest urban Centre: .....

Registration Number of land parcel.....Size of land .....

Species of aloe under propagation .....

Products/ Specimens anticipated from the propagation unit

Registration number:

KE/APA/District \_\_\_\_\_ /No. \_\_\_\_\_ /Year \_\_\_\_\_

Registering Officer.....Designation.....Signature .....



EXPORT OF SPECIMENS OR PRODUCTS OF ALOES FROM REGISTERED OPERATIONS IN KENYA

APPLICATION FOR EXPORT/ RE-EXPORT/IMPORT PERMIT

I/We apply for Export/ Re-export/import permit and declare that all information provided is true to the best of my knowledge.

1. DETAILS OF APPLICANT

- (a) Name and Designation.....  
.....  
Name of Business/Organization.....  
P.I.N. ....
- (b) Postal Address.....  
Email address.....  
Telephone.....
- (c) Nationality

2. DETAILS OF CONSIGNEE

- (a) Name.....  
Company.....
- (b) Postal Address.....  
Telephone/Fax No. ....  
Email address.....
- (c) Nationality .....

3. DETAILS OF MATERIALS

- (a) Common name and scientific name of plant (Genus and species).....  
.....
- (b) Description of part or derivative, mark or numbers  
.....  
.....
- (c) Quantity/number of material and/or net weight to be exported (kg).  
.....
- (d) If for re-export, country of origin and export permit number.  
.....  
.....



4. State whether material was taken from natural source (wild) or artificially propagated.

.....  
 .....

5. If taken from natural source (wild) state locality and name of approved Aloe Management Unit (AMU)

Locality..... Name of approved AMU.....

6. If taken from registered operation for Artificial Propagation of plant material for commercial purposes, indicate the Registration No. of the Operation and date of establishment

KE/APA/District...../No..... Year.....

Name of seller..... ID Card No..... Signature .....

*(Attach evidence of purchase e.g. Receipt, sale agreement etc)*

7. Details of previous application approved or rejected.

.....  
 .....

Name of applicant..... Signature..... Date.....

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8. (a) Comments from Scientific Authority, National Museums of Kenya (NMK)-Botanist In Charge

.....  
 .....

Name..... Designation..... and official stamp

Signature..... Date.....

- (b) Comments from Scientific Authority, and Kenya Wildlife Service (KWS)

.....  
 .....

Name ..... Designation ..... Signature .....

Date.....

- (c) Comments from the Director, Kenya Plant Health Inspectorate Service (KEPHIS) advising on issuance of



Phytosanitary Certificate (in case of whole or part or Plant material). (Note: an inspection of the material will need to be inspected within 48 hours before the export takes place).

9. KWS Chief Licensing Officer's remarks.

Signature.....Date

NB: To certify that the specimen are not obtained in contravention of the law.

10. KWS Director's Approval/Disapproval

Signature.....Date

Note:

- 1. Original document as per 4 to 7 above to be attached to this application.
- 2. Approval for all import MUST BE granted prior to the actual importation.
- 3. Duly filled in copy to be returned to KWS following declaration of shipment with Customs and export.

10. DECLARATION BY CUSTOMS DEPARTMENT/EXPORT ENDORSEMENT

(Customs office at the point of exit to retain a copy of this form)



Block	Quantity				
A					
B		<i>Point/port of export</i>	<i>Date</i>	<i>Official stamp &amp; title</i>	<i>Signature</i>

THE WILDLIFE (CONSERVATION AND MANAGEMENT) ACT  
(Cap. 376)

ALOE EXPORT/RE-EXPORT/IMPORT SUPPLEMENTARY PERMIT

Issued under Section 45 of the Wildlife (Conservation and Management) Act and in accordance with Aloe Species Artificial Propagation Regulation, 2007)

Consignee's Name .....  
Address .....  
Country .....

Export/Re-export/Import  
(Delete whichever not applicable)  
Valid Until .....  
Authority Issuing Permit  
.....  
.....

Consignor's Name .....Special Conditions:  
Address .....  
Country .....



Details of specimen(s) to be exported/re-exported/imported

Common Name	Scientific Name	Description of part or derivative	Quantity	Country/Locality of Origin
A				
B				
C				

This Permit is issued by ..... of .....

On.....Official Stamp:

Title and signature of officer  
signing on behalf of the  
Authority

.....

Dated the 27th November, 2007.

MORRIS DZORO,  
*Minister for Tourism and Wildlife.*



## ANNEX III STATUS OF ALOE SPECIES

Table 1: A list of Aloe species in Kenya showing their conservation status

Species	Conservation status sensu IUCN	Distribution
<i>Aloe juvenna</i>	CR (Newton 1998)	Kenya (R) (Southern Narok) (E)
<i>Aloe myriacantha</i>		Kenya, Tanzania, Uganda
<i>Aloe citrina</i>		Kenya (V), Mandera, Ethiopia, Somalia
<i>Aloe secundiflora</i>		Kenya, Tanzania, Ethiopia
<i>Aloe rivae</i>	V	Ethiopia (R) Kenya (R)
<i>Aloe murina</i>		Kenya (Nguruman) E
<i>Aloe erensii</i>		Kenya (Northern Turkana) Sudan
<i>Aloe parvidens</i>		Kenya, Ethiopia, Somalia, Tanzania
<i>Aloe wollastonii</i>		Kenya, Tanzania, Uganda
<i>Aloe amudatensis</i>	V	Kenya (Southern Turkana), Uganda
<i>Aloe chrysostachys</i>	V	Kenya (V)-Kitui & Meru (E)
<i>Aloe classenii</i>	V	Kenya (V) (Taita) (E)
<i>Aloe ellenbeckii</i>		Kenya (V) Somalia
<i>Aloe kiliffensis</i>		Kenya (E) (Coast)
<i>Aloe lateritia</i> Engler var. <i>lateritia</i>		Kenya (South East)- Tanzania
<i>Aloe lateritia</i> Engler var. <i>graminicola</i>		Kenya (E)
<i>Aloe lolwensis</i>		Kenya (E) (Island Lake Victoria)
<i>Aloe macrosiphon</i>		Kenya, Tanzania, Uganda
<i>Aloe massawana</i>	CR (Newton 1998)	Kenya (Coast), Tanzania, Ethiopia
<i>Aloe pirottae</i>	LR/C (Demissew 2003)	Kenya
<i>Aloe ruspollana</i>		Kenya, Ethiopia, Somalia
<i>Aloe turkanensis</i>		Kenya, Uganda
<i>Aloe tweediae</i>		Kenya, Sudan, Uganda
<i>Aloe ukambensis</i>		Kenya (E) (Kitui/Taita)
<i>Aloe wrefordii</i>	CR (Newton)	Kenya, Uganda, Sudan
<i>Aloe amicorum</i>		Kenya .E. (Marsabit)
<i>Aloe confusa</i>	R/V	Kenya (R) (Taita), Tanzania (V)
<i>Aloe kulalensis</i>	R	Kenya (R, E) (Marsabit)
<i>Aloe powysiorum</i>	(R)	Kenya (R, E) (W. Kenya)
<i>Aloe aegeodonta</i>		Kenya (E) (Kitui District)
<i>Aloe archeri</i>	VCR (Newton 1998)	Kenya (V) (Laikipia, E)
<i>Aloe calidophila</i>	R	Kenya (R) Ethiopia (R)
<i>Aloe carolineae</i>		



<i>Aloe ketabrowniorum</i>		Kenya (E) (Marsabit)
<i>Aloe lensayuensis</i>	V	Kenya (V, E) (Marsabit)
<i>Aloe microdonta</i>		Kenya (Coast), Somalia
<i>Aloe muticolor</i>		Kenya (E) (Marsabit)
<i>Aloe pustuligemma</i>		Kenya (E) (Southern Turkana) (E)
<i>Aloe rugosifolia</i>	V	Kenya (V), Ethiopia (V)
<i>Aloe scabrifolia</i>		Kenya (E) (Laikipia, Samburu)
<i>Aloe tugenensis</i>		Kenya (Baringo) (E)
<i>Aloe vituensis</i>	V	Kenya (V), Sudan
<i>Aloe wilsonii</i>		Kenya (W. Pokot), Uganda
<i>Aloe cheranganiensis</i>	V	Kenya (V), Uganda (V)
<i>Aloe dawei</i>		Kenya, Rwanda, Uganda, Congo
<i>Aloe deserti</i>	V	Kenya (V) (Nairobi-Taita)-Tanzania
<i>Aloe elgonica</i>	V	Kenya (V) (Eldoret-Mt. Elgon) (E)
<i>Aloe fibrosa</i>	V	Kenya (V), (Machakos)- Tanzania (V)
<i>Aloe francombei</i>		Kenya (Laikipia) (E)
<i>Aloe kedongensis</i>		Kenya (Kiambu, Naivasha) (E)
<i>Aloe morjensis</i>		Kenya (Kajiado), Tanzania
<i>Aloe ngongensis</i>	V	Kenya, Tanzania
<i>Aloe nyeriensis</i>		Kenya (V, E) (Laikipia & Nyeri)
<i>Aloe penduliflora</i>	V+CR	Kenya (E) (Taita)
<i>Aloe rabaiensis</i>		Kenya, Tanzania, Somalia
<i>Aloe ballyi</i>		Kenya (I), Tanzania
<i>Aloe elata</i>		Kenya- (Nguruman)- Tanzania
<i>Aloe volkensii</i> Engler ssp. <i>Multicaulis</i>		Kenya, Tanzania, Uganda, Rwanda
<i>Aloe volkensii</i> Engler ssp. <i>Volkensii</i>		Kenya, Tanzania

### Key

V	-	Vulnerable	R	-	Rare
CR	-	Critical risk	E	-	Endemic



# ANNEX IV

## NON-DETRIMENT FINDINGS SCORE SHEET FOR ALOES

For any commercial activities on Aloes listed under CITES appendix II it is recommended to evaluate non-detrimental effects that may affect species conservation.

Life history: What is the commercial Aloe species' life history	High reproductive rate, long lived	
	High reproductive rate, short lived	
	Low reproductive rate, long lived	
	Low reproductive rate, short lived	
	Uncertain	
Ecological adaptability: To What extent are the commercial Aloe species adaptable (habitat, diet, environmental tolerance etc)	Extreme generalist	
	Generalist	
	Specialist	
	Extreme specialist	
	Uncertain	
Dispersal efficiency: How efficient are the species' dispersal mechanism at key life stages?	Very Good	
	Good	
	Medium	
	Poor	
	Uncertain	
Interaction with Humans: Are the Aloe spp tolerant to human activity other than harvest?	No interaction	
	Pest/Commensal	
	Tolerant	
	Sensitive	
<b>NATIONAL STATUS</b>		
National distribution: How are the commercial Aloe spp distributed nationally	Widespread, contiguous	
	Widespread, but fragmented	
	Restricted and fragmented	
	Localized	
	Uncertain	



National Abundance: What is the abundance of the commercial Aloe species nationally?	Very abundant	
	Common	
	Uncommon	
	Rare	
	uncertain	
National population trend: What is the recent national population trend for the commercial Aloe spp.?	Increasing	
	Stable	
	Reduced, but stable	
	Reduced and still decreasing	
	Uncertain	
<b>SPECIES</b>		
Quality of information: What type of information is available to describe abundance and trend in the national population of the commercial Aloe species	Quantitative data, recent	
	Good local knowledge	
	Quantitative data, outdated	
	Anecdotal information	
	None	
Major threats: What major threat are the species facing (including overuse/habitat loss and alteration/invasive species/other and how severe is it?	None	
	Limited/reversible	
	Substantial	
	Severe/irreversible	
	Uncertain	
Illegal off take or trade: How significant is the national problem of illegal or unmanaged off take or trade in the commercial Aloe spp.?	None	
	Small	
	Medium	
	Large	
	Uncertain	
Management History: What is the history of harvest of the commercial Aloe spp.	Managed harvest: ongoing with adaptive framework	
	Managed harvest: ongoing but informal	
	Managed harvest: new Unmanaged harvest: ongoing or new	
	Uncertain	
Management Plan of equivalent: Is there a management plan related to the harvest of the commercial Aloe species?	Approved and coordinated local and national management plans	
	Approved national/state/provincial management plans Approved local management plan	
	No approved plan: informal unplanned management	
	Uncertain	



Aim of harvest regime in management planning: What is harvest of the commercial Aloe spp. aiming to achieve?	Generate conservation benefits	
	Population management / control	
	Maximize economic yield	
	Opportunistic, unselective harvest or none	
	Uncertain	
Quotas. Is the harvest of commercial Aloe spp based on a system of quotas?	Ongoing national quota based on biologically derived local quotas	
	Ongoing quotas "cautious" national or local	
	Untried quota: recent and based on biologically derived local quotas	
	Market driven quota(s), arbitrary quotas or no quotas	
	Uncertain	
Harvesting in protected areas: What percentage of the legal national harvest of the commercial Aloe spp. occurs in State controlled Protected Areas	High	
	Medium	
	Low	
	None	
	Uncertain	
Harvesting in areas with strong resource tenure or ownership: What percentage of the legal national harvest of the commercial Aloe spp. occurs outside Protected Areas, in areas with strong local control over resource use?	High	
	Medium	
	Low	
	None	
	Uncertain	
Harvesting in areas with Open access: What percentage of the legal national harvest of commercial Aloe spp. occurs in areas where there is no strong local control giving de facto or actual open access?	None	
	Low	
	Medium	
	High	
	Uncertain	
Confidence in Harvest management: Do budgetary and other factors allow effective implementation of management plan(s) and harvest controls for commercial Aloe spp?	High confidence	
	Medium confidence	
	Low confidence	
	No confidence	
	Uncertain	
Methods used to Monitor harvesting of commercial Aloe spp: What is the principal method used to monitor the effects of commercial Aloe harvest?	Direct population estimates	
	Quantitative indices	
	Qualitative indices	
	National monitoring of exports	
	No monitoring or uncertain	



Confidence in harvest monitoring: do budgetary and other factors allow effective harvesting monitoring commercial Aloe spp.?	High confidence	
	Medium confidence	
	Low confidence	
	No confidence	
	Uncertain	
Utilization compared to other threats: What is the effect of harvesting of commercial Aloe spp. when taken together with the major threat that has been identified for the species	Beneficial	
	Neutral	
	Harmful	
	Highly negative	
	Uncertain	
Incentives for commercial Aloe spp. conservation: At the national level, how much conservation benefit to commercial Aloe spp accrues from harvesting?	High	
	Medium	
	Low	
	None	
	Uncertain	
Incentive for commercial Aloe spp. Habitat Conservation: At the national level, how much habitat conservation benefit is derived from commercial Aloe spp. harvesting?	High	
	Medium	
	Low	
	None	
	Uncertain	
Proportion strictly protected: What percentage of commercial Aloe species' natural range or population is legally excluded from harvest?	>15%	
	5-15%	
	<5%	
	None	
	Uncertain	
Effectiveness of strict protection measures: Do budgetary and other factors give confidence in the effectiveness of measures taken to afford strict protection?	High Confidence	
	Medium confidence	
	Low confidence	
	No confidence	
	Uncertain	
Regulation of Harvest effort: How effective are any restrictions on harvesting (such as age or size, season or equipment) for preventing overuse of the commercial Aloe spp.?	Very effective	
	Effective	
	Ineffective	
	None	
	Uncertain	



# ANNEX V HARVESTING PROCEDURE COMPLIANCE FORM

This form will be used as a tool for monitoring Aloe harvesting in the designated Aloe Management Unit. The following information to be filled in the form will therefore be used for purposes of enforcement and compliance with regard to harvesting procedures.

1. Name of harvester .....

2. Harvester status (tick where appropriate)

Aloe owner.....

Owner contracted.....

Hired.....

3. Name of Aloe Management Unit .....

4. Name of village where sap harvested .....

5. Owner/Household where Aloe Sap is sourced .....

6. Type/Species of Aloe harvested .....

7. Estimated Number of Aloe plants harvested .....

8. Total Yield of Sap realized .....

9. Date and Month when sap is harvested.....Date(s)..... Month.....



10. Certification by AMU-Leader.

I certify that information given in number 1 to 9 is correct.

Name .....

Signature.....Date .....

SAP DELIVERY RECORDS (to be entered at the factory)

11. Date of sap delivery .....

12. Quantities (litres).....

13. Delivery status ..... Accepted/Rejected (delete where appropriate) (If rejected, give reasons)

.....  
.....

Name of Officer receiving .....

Signature ..... Date .....

