AMBOSELI ECOSYSTEM TRUST

Amboseli Ecosystem Management Plan 2020-2030

Amboseli Ecosystem Trust
November, 2020

Plan Approval Page

The Governing Council of Amboseli Ecosystem Trust has approved the implementation of this management plan for Amboseli Ecosystem.

On behalf of **Amboseli Ecosystem Trust**

Chairman-AET

Date: 3rd-8-2020

Plan Endorsement Page

This plan has been endorsed by the Amboseli Group Ranches, the Kenya Wildlife Service, which has jurisdiction over Amboseli National Park, the County Government of Kajiado, which is responsible for spatial planning in Kajiado County, and the National Environment Management Authority.

On behalf of **Olgulului/Lolarashi GR**	*On behalf of* **Mbirikani GR**	*On behalf of* Eselenkei **GR**
DANIEL LETURESH	DANIEL METOE	Jonah OLE MAAI
Chairman	Chairman	Chairman
Date: 3/8/2020	Date: 4/8/2020	Date: 7/8/2020
On behalf of **Kuku GR**	*On behalf of* **Rombo GR**	*On behalf of* **ALOCA**
SOLOMON KAHEMJA	JOHN NKIPAPAI	Samuel Kaaski
Chairman	Chairman	Chairman
Date: 5/8/2020	Date: 6/8/2020	Date: 3/8/2020
On behalf of **County Government of Kajiado**	*On behalf of* **the Kenya Wildlife Service**	*On behalf of* the **National Environment Management Authority**
		MAMO B. MAMO
Governor	Director General	Director general
Date:	Date:	Date:

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Acknowledgements

This AEMP was prepared by Amboseli Ecosystem stakeholders through a highly participatory planning process (Annex 3). The planning process was coordinated by a Core Planning Team Comprising: Amboseli Ecosystem Trust, Kenya Wildlife Service, Amboseli Conservation Program, African Conservation Centre, International Fund for Animal Welfare, Big Life Foundation, Amboseli Trust for Elephants, School For Field Studies (SFS) National Environment Management Authority, County Government of Kajiado, and Born Free Foundation. The Water Resources Authority (WRA) participated in the Natural Resources Working Group meeting and gave valuable information. The Kenya Water Towers Agency(KWTA) and World Wildlife Fund participated at the tail end of the process but their contributions were immense during the validation workshop, and the latter provided financial support for post-validation activities including plan gazettement and integrating the plan with the Kajiado County Spatial Plan. The planning process was mainly funded through the GEF-funded and UNDP-implemented project named **"Enhancing Conservation in the Productive Southern Kenya Rangelands through Landscape Approach".**

AMBOSELI ECOSYSTEM TRUST	The Amboseli Ecosystem Trust coordinated the development of the Amboseli Ecosystem Management Plan.
UNDP gef	The planning process was mainly funded through the GEF-funded and UNDP-implemented project named "**Enhancing Conservation in the Productive Southern Kenya Rangelands through Landscape Approach".**
USAID FROM THE AMERICAN PEOPLE U.S. DEPARTMENT OF THE INTERIOR INTERNATIONALTECHNICAL ASSISTANCE PROGRAM	The United States Agency for International Development, and U.S. Department of the Interior - International Technical Assistance Program, funded the printing of the Amboseli Ecosystem Management Plan and co-funded the launch event.
ACC	African Conservation Center (ACC) and its affiliate African Conservation Programme (ACP) synthesized long-term ecological information on Amboseli Ecosystem into a plan foundation report.
KENYA WILDLIFE SERVICE	Kenya Wildlife Service co-funded the planning process and provided essential planning information.
ifaw International Fund for Animal Welfare	The International Fund for Animal Welfare co-funded the planning process and provided essential planning information.
BORN FREE	Contributed resources for the planning process and provided essential planning information.

AMBOSELI TRUST FOR ELEPHANTS	Amboseli Trust for Elephants (ATE) provided information on elephant movement in the Amboseli Ecosystem and contributed funds to support the planning process.
 BIG LIFE FOUNDATION	Big life Foundation co-funded the planning process and provided information to support the planning process
LION GUARDIANS	Lion Guardians provided essential planning information
nema	NEMA provided guidance on the appropriate planning process for development of an ecosystem plan and its subsequent Strategic Environmental Assessment (SEA)
SFS THE SCHOOL FOR FIELD STUDIES	The School for Field Studies (SFS) hosted the group ranch consultative meetings and provided data
AMBOSELI TSAVO GROUP RANCHES CONSERVATION ASSOCIATION	Amboseli Tsavo Group Ranches Association (ATGRA), through their executive, provided vital linkage between the core planning team and the land owners.
pecs Planning & Environmental Consultancy Services	Planning and Environmental Consultancy Services provided the technical assistance for plan development
KENYA WATER TOWERS AGENCY K · W · T · A	The Kenya Water Towers Agency(KWTA) participated in the tail end of the process and contributed immensely during the validation workshop

	The County Government of Kajiado participated in the process and contributed towards integration of the AEMP with the Kajiado County Spatial Plan
	World Wildlife Fund provided financial support for post-validation activities including plan gazettement and integrating the plan with the Kajiado County Spatial Plan
	The Water Resources Authority (WRA) participated in the Natural Resources Working Group meeting and provided valuable information

Executive Summary

The Amboseli Ecosystem Management Plan (AEMP) 2030 is an integrated plan that outlines how different land uses and natural resources in the Amboseli Ecosystem will be managed for the greater good of all stakeholders. The renewal of AEMP 2008-2018 for a further 10 years is a clear indication that the stakeholders, who include landowners, KWS, NGOs, the tourism industry and researchers, are committed to an ecologically viable Amboseli Ecosystem. The plan takes a broad multi-sectoral view of all the natural resources in the ecosystem against different land uses and how these interact with one another and, ultimately, how they co-exist within the ecosystem, and in concert progressively move towards realizing the universal consensus of Sustainable Development Goals (SDGs)

As a follow up of the AEMP 2008-2018, whose aim was to maintain habitat connectivity and safeguard the viability of the Amboseli migratory wildlife populations, the new AEMP strives to maintain and restore ecosystem integrity to safeguard AE's wildlife and community livelihoods. The ecosystem plan also spells out the role of AET and partnering organizations in presiding over the plan implementation, and defines the central role of the Noonkotiak Centre as the information and research hub of the ecosystem coordinating ecosystem monitoring and planning, setting up an information database, tracking and adapting management plans, developing a visitor and cultural centre, and an education outreach program.

The AEMP 2020-2030 integrates the land use plans of the key geographic units of the AE which are: Olgululuii/Lolarashi GR, Mbirikani GR, Eselengei GR, Kuku GR[1], Rombo GR, Former Kimana GR and Amboseli National Park. Group ranch land use plans have been developed to minimize land use conflicts and enhance community livelihoods. The plans consider facilitating conservation of viable wildlife populations at the ecosystem level by planning for wildlife migratory routes and critical refuges.
They also include restoring degraded lands through "Olopololi" (grass banks), resting and rotation of pasture use, soil erosion control measures and establishment of wildlife conservancies. As such, the top most environmental and social issues of concern addressed by the plan include: grazing and browsing pressure, loss of habitat, poaching, reduction in woody vegetation, loss of grassland, recurring droughts, potential for agricultural expansion, land subdivision and lack of land use planning, Human-Wildlife Conflicts, and social, economic and demographic changes.

During the stakeholder planning meeting, Amboseli Ecosystem Stakeholders agreed that primary ownership and responsibility for the implementation of the Amboseli Ecosystem Management Plan rests with the Amboseli Ecosystem Trust, which brings together all the major land owners and key partners in conservation and community development in the Amboseli Ecosystem.

The AEMP planning process was highly participatory and involved a broad spectrum of stakeholders in the Amboseli Ecosystem. The mechanisms used to ensure meaningful stakeholder participation in the planning process included, stakeholder planning workshops, thematic working group meetings, and stakeholder plan validation and approval meetings.

AE Vision Statement

AE's Vision is: "To sustainably manage and utilise the ecosystem's natural resources for community livelihood improvement"

[1] Kuku Group Ranch and Rombo Group Ranches Land Use Planning Processes are in progress

Key Ecosystem Values

The key values for the Amboseli Ecosystem describe the ecosystem's natural resources and other features that offer outstanding benefits to local, national and international stakeholders. Key values are critical to long-term maintenance of the ecosystem's socio-ecological characteristics. The key values are categorized as: Biodiversity, Scenic, Sociocultural (see table below).

Amboseli Ecosystem Exceptional Resource Values

Category	Exceptional Resource Value
Biodiversity	Habitat diversity
	Landscape diversity
	Big tusker elephants
	Array of ungulates
	Rich birdlife
	Large carnivores
	Wildlife Corridors
Scenic	Mount Kilimanjaro
	Valleys
	Hills
	Swamps and rivers
	Lake Amboseli
Socio-cultural	Authentic Maasai culture
	Rich history
	Cultural and historical sites of local importance
	Traditional pastoralism
	Bead work
	Employment
	Tourism
	Mining potential
	Cross-border connections
	Medicinal materials
	Long term research programmes
	Amboseli as a Biosphere Reserve
	Community wildlife conservation initiatives

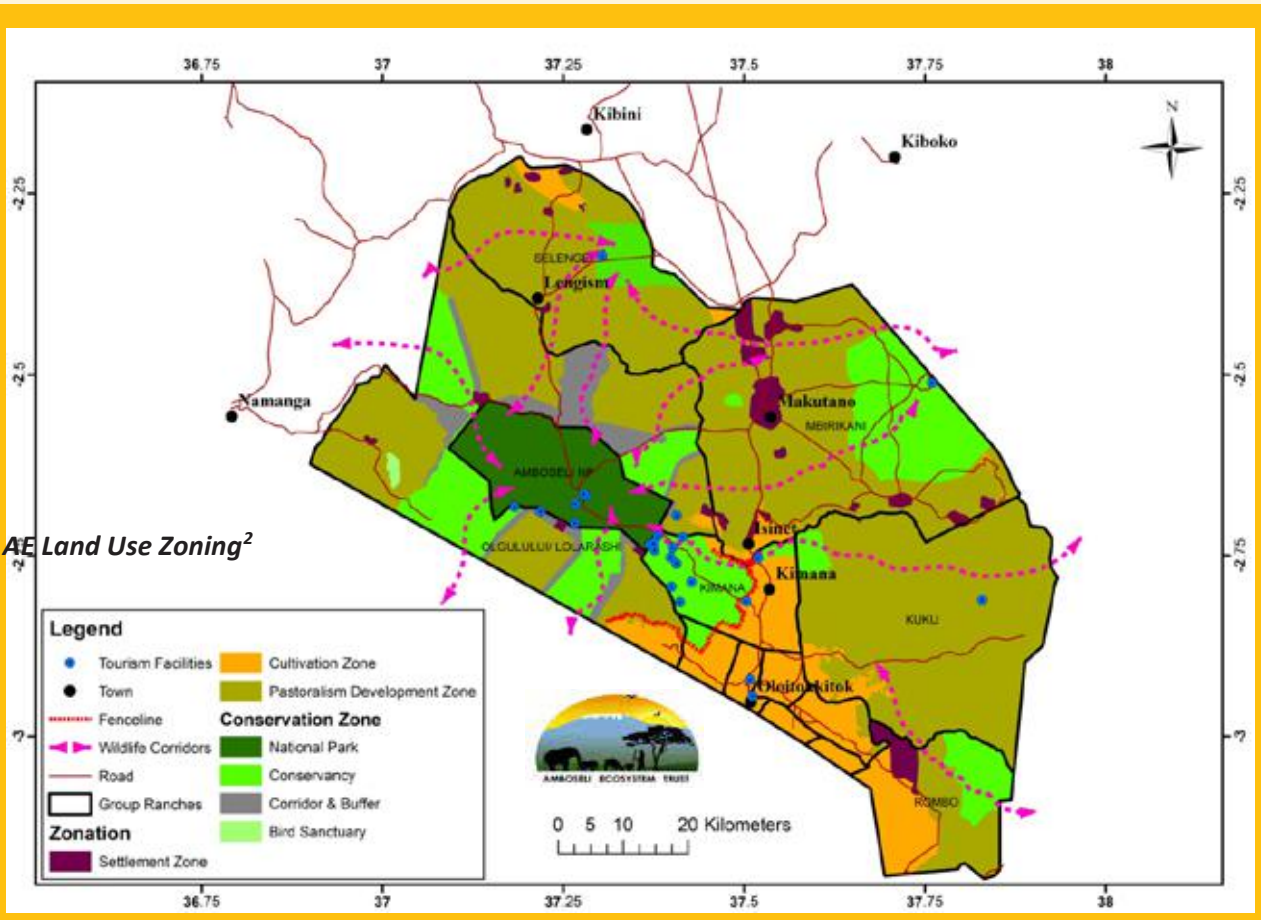
Ecosystem Zoning Scheme

The overall goal of the AE Zoning Scheme is to optimise sustainable economic returns to the AE residents, by:

- **Delivering the plan's community livelihood and socio-economic, tourism development and conservation objectives**;
- **Promoting the optimal use of land in different parts of the AE as measured by economic returns of the different land uses in these areas; and**
- **Reducing conflict between different forms of land use.**

Land use zoning

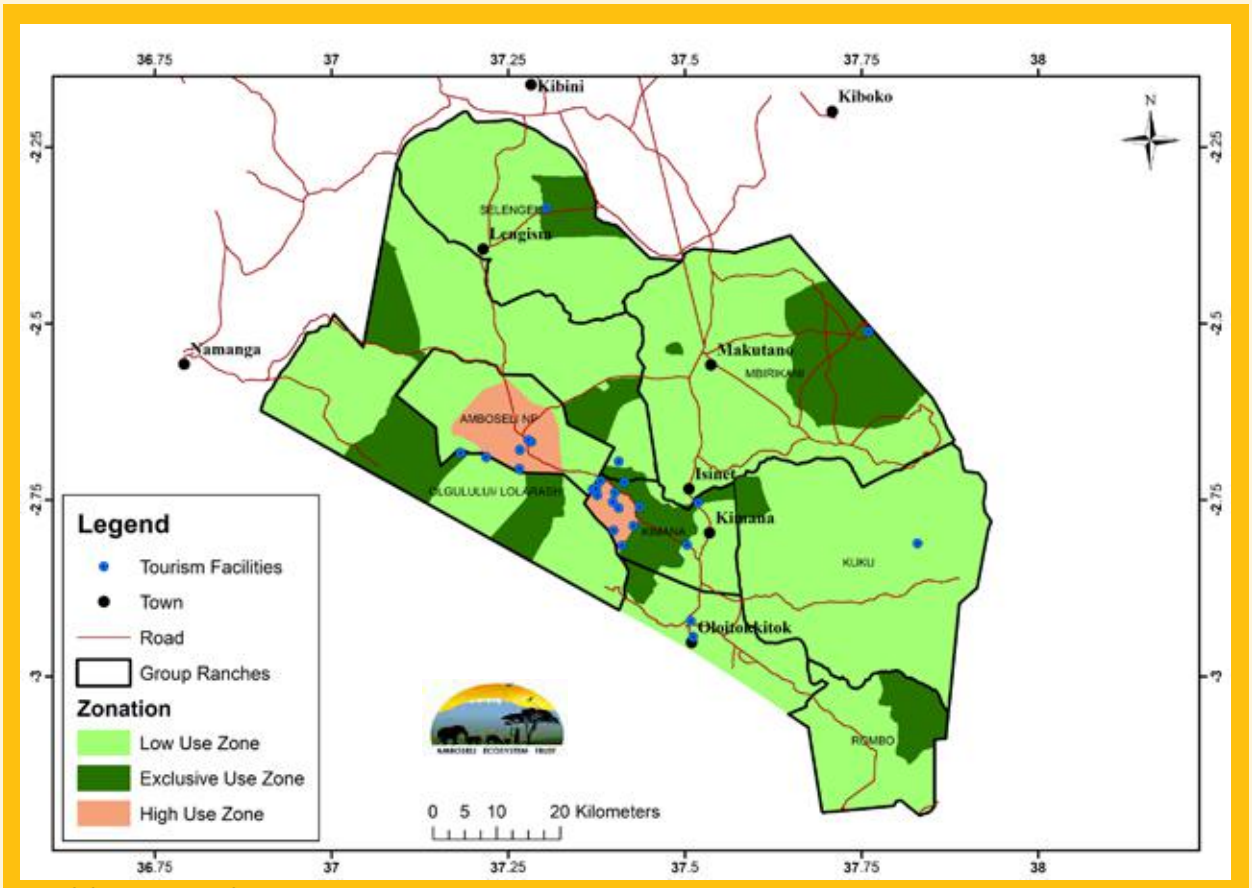
The AE zone types set out in the zoning scheme take account of the compatibility of the different AE land uses (existing and potential), and aim to promote complementarities between the different land uses, and to reduce conflict between them where these exist. Four major zone types are proposed as shown below.



AE Land Use Zoning[2]

AE Visitor Use Zoning: The AE visitor use zoning scheme provides a framework aimed at regulation and promotion of visitor use across the ecosystem. To achieve this, the ecosystem has been divided into three zones (High Use Zone (HUZ), Exclusive Use Zone (EUZ) and Low Use Zone (LUZ)) each of which provides unique visitor products and is best suited to a particular type of tourism and level of use. The visitor use zones have also been aligned with the land use zones, hence conflicts that arise between the needs of tourism and other major land uses such as pastoralism, conservation and agriculture are minimised, gaining or retaining much needed local support for conservation. The allowable activities, tourism facilities and infrastructure for each zone are also prescribed.

[2] Kuku GR zoning information is missing



AE visitor use zoning

Management Programmes

The plan has four management programmes which are briefly discussed below:

Community Livelihoods & Socio-economic Programme

The purpose of the Community Livelihoods and Socio-economic Programme is to win space for livestock, and improve livestock and agricultural productivity to realise the socio-economic aspirations of the AE community within a sustainable framework. To achieve this, AE stakeholders will strive to improve livestock production through pastoralism, promote sustainable agriculture, improve the living standard of the local community through enterprises, natural resource use and planned settlements, conserve and restore water catchment and wetlands; and control and monitor water usage. The key management actions that will be implemented under this programme focus on : improving the livestock grazing range for sustainable livestock production; adopting modern technology in production; value addition and storage of agricultural produce to minimise waste and economic losses, developing and implementing water allocation plans; protecting Kimana swamp from encroachment; establishing nucleated human settlements; and supporting establishment of new enterprises and employment to improve household income.

Tourism Development and Management Programme

The tourism development and management programme sets out objectives and actions that AE stakeholders will implement *to make Amboseli Ecosystem an outstanding responsible tourist destination offering a variety of premium visitor experiences while supporting conservation and communities.* To

achieve this, stakeholders will strive to ensure that tourism developments are coordinated to ensure proper standards, distribution and sustainability, local communities are adequately engaged to ensure they gain optimum benefits from tourism, tourism products are diversified to give visitors greater experience and variety, and tourism marketing is devolved and modernised to attract high end local and international tourists to different attractions within the ecosystem. The key actions to be implemented under this programme will focus on: controlling and regulating infrastructure growth; opening connecting circuits between ecosystems adjacent to AE; developing designated entry points and information centres for the conservancies; developing tourism accommodation and recreation facilities; establishing a tourism stakeholders' forum; promoting and facilitating development of cultural tourism; and establishing a Visitor Centre at Noonkotiak Community Resource and Cultural Centre.

Natural Resource Management Programme

The purpose of the Natural Resource Management Programme is to *sustainably manage natural resources in the AE to maintain ecological processes that continue providing ecosystem services to the local community.* To achieve this purpose AE stakeholders will strive to ensure that: ecological connectivity is maintained; degraded habitats are rehabilitated and restored; viable populations of threatened wildlife species are maintained; natural resources protection is enhanced; community developed plans to regulate access to natural resources are supported and promoted; and human-wildlife coexistence is promoted and conflicts proactively minimized. Key actions under this programme focus on: securing wildlife corridors; initiating new and supporting existing habitat, protection, restoration and rehabilitation measures; developing and implementing pasture management and livestock grazing plans; supporting the Amboseli Human-Wildlife Co-existence Committee; implementing the AE wide Human-Wildlife Interactions protocols to reduce HWC and prevent retaliatory wildlife killing; rehabilitating and maintaining wildlife barriers; establishing an ecosystem-wide consolation fund; and supporting community wildlife rangers

Institutions and Governance Programme

The purpose of the Institutions and Governance programme is *to strengthen the institutions, governance and collaboration mechanisms to enhance natural resource management and promote equitable sharing of benefits accruing from communally managed land*. To achieve this, AE stakeholders will strive to ensure that: the existing institutions and their operations are strengthened and new institutions are created to ensure sound management and use of natural resources; conservancies and other areas set aside for conservation are generating significant tourism revenues to land owners; support for the delivery of this management plan from the key institutional partners and other stakeholders is enlisted; and a community resource and cultural centre is developed. The key management actions that will be implemented under this programme focus on: strengthening the institutional and governance capacity of AET; working closely with relevant conservation entities to develop a viable conservation model; strengthening conservancies to support tourism development, conservation and livestock production; integrating the AEMP with the Kajiado County plans; establishing an Environmental Education Centre; establishing a Research and Monitoring Centre; and establishing a Visitor Centre.

Plan Implementation Strategy

The success of the Plan hinges on stakeholders' commitment to follow through with plan implementation. Hence, a Plan Implementation Committee will be established to coordinate and advise on implementation of the Plan. In this role, this committee will be an advisory body, functioning as a subcommittee of the Amboseli Ecosystem Trust and therefore will not override or substitute for management agencies, nor have responsibility for carrying out specific actions described in this Plan. The Committee will meet regularly and communicate with Plan implementers and other relevant stakeholders with enough frequency to ensure that the Plan remains a living document.

The Plan Implementation Committee will comprise of representatives from Kenya Wildlife Service Amboseli Ecosystem Trust, County Government of Kajiado, National Environment Management Authority and other government and nongovernmental agencies co-opted by these organizations.

The Plan Implementation Committee will:

a) co-ordinate the implementation of the Plan;
b) mobilize resources for Plan implementation;
c) monitor and evaluate the progress of activities;
d) identify constraints in plan implementation;
e) produce annual progress reports on plan implementation; and
f) recommend review of the management plan.

Contents

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Acronyms

ACC	African Conservation Centre
ACP	Amboseli Conservation Project
AE	Amboseli Ecosystem
AEMP	Amboseli Ecosystem Management Plan
AERP	Amboseli Elephant Research Project
AET	Amboseli Ecosystem Trust
ALOCA	Amboseli Land Owners Conservancies Association
ANP	Amboseli National Park
ASALs	Arid and Semi Arid Lands
ATCWRA	Amboseli/Tsavo Community Wildlife Rangers Association
ATE	Amboseli Trust for Elephants
ATGRA	Amboseli/Tsavo Group Ranches Association
BLF	Big Life Foundation
EIA/EA	Environmental Impact Assessment/Environmental Audit
EMCA	Environmental Management And Coordination Act
EUZ	Exclusive Use Zones
FAO	Food and Agriculture Organisation
GEF	Global Environment Facility
GR	Group Ranch
HUZ	High Use Zone
HWC	Human Wildlife Conflict
HWCC	Human Wildlife Co-existence Committee
IBAs	Important Bird Areas
IFAW	International Fund For Animal Welfare
IUCN	International Union for Conservation of Nature
KATO	Kenya Association of Tour Operators
KCWS	Kimana Community Wildlife Sanctuary
KEBS	Kenya Bureau of Standards
KMD	Kenya Meteorological Department
KWTA	Kenya Water Towers Agency
KWS	Kenya Wildlife Service
LUZ	Low Use Zone
MAB	Man and The Biosphere
MDAs	Ministries, Departments and Agencies
MOU	Memorandum Of Understanding
MVA	Minimum Viable Area
NEMA	National Environment Management Authority
NGO	Non Governmental Organisation
NRCC	Noonkotiak Resource and Cultural Centre
PECS	Planning and Environmental Consultancy Services
PIC	Plan Implementation Committee
REDD+	Reducing Emissions from Deforestation and Degradation
RGS	River Gauging Station
SEA	Strategic Environmental Assessment
SFS	School for Field Studies
SORALO	South Rift Association of Land Owners
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WCMA	Wildlife Conservation and Management Act
WCMD	Wildlife Conservation and Management Department
WHO	World Health Organization
WRA	Water Resources Authority
WRUA's	Water Resource Users Association
WWF	World Wildlife Fund

Chapter 1. Introduction

1.1 The Plan

The Amboseli Ecosystem Management Plan (AEMP) is an integrated plan that outlines how different land uses and natural resources in the Amboseli Ecosystem will be managed for the greater good of all stakeholders. The renewal of AEMP 2008-2018 for a further 10 years is a clear indication that the stakeholders, who include landowners, KWS, NGOs, the tourism industry and researchers, are committed to an ecologically viable Amboseli Ecosystem. The plan takes a broad multi-sectoral view of all the natural resources in the ecosystem against different land uses and how these interact with one another and, ultimately, how they co-exist within the ecosystem.

The Amboseli Ecosystem Management Plan 2020-2030 is the second AEMP after the lapse of the first ten year AEMP 2008-2018. This AEMP incorporates lessons learned during the implementation of the first AEMP. It is a product of broad-based consultations among diverse stakeholders beginning with government entities of national and county levels, the group ranches, NGOs, Hoteliers and Tour Operators. The stakeholders and especially the CPT who were the Plan Implementation Committee (PIC) members of the first AEMP brought up diverse views, expertise and a plan foundation report describing biophysical and social components necessary to achieve the desired future conditions for community livelihoods, ecology, tourism, and institutions and governance systems in the AE. The report set out the strategic principles and socioecological relationships, and rationale for development of the new AEMP.

The plan foundation report was an update of a previous report that was used to develop the AEMP 2008-2018. It pinpointed threats to the productivity and viability of the Amboseli ecosystem and national park, the main threats, such as increasing farming, settlement, fencing, subdivision, water extraction from rivers and swamps, the loss of seasonal grazing grounds and drought refuges for livestock and wildlife, and heavy grazing pressure which was reducing the productivity and resilience of the ecosystem. The threats also included bush meat poaching, a breakdown of migrations and compression of wildlife (elephants especially) into Amboseli National Park, and the resulting loss of habitat and species diversity. It further recommended specific actions to combat the threats and the creation of Amboseli Ecosystem Trust (AET) to oversee the implementation of the plan. The updated report is the foundation of the new AEMP and AE stakeholders built on this foundation to develop the new plan.

The AEMP 2020-2030 has a wide scope which includes livestock development, rangeland and water management, agriculture, permanent settlements, and urbanization and new enterprises. It also addresses the changes over the last decade and the threats to the ecosystem. These threats include land subdivision, agricultural expansion, water extraction for farming and other commercial activities, loss of seasonal pastures, and the growing impact of grazers and browsers on habitat, species diversity, and plant production and on livestock and wildlife populations.

As a follow up of the AEMP 2008-2018, whose aim was to maintain habitat connectivity and safeguard the viability of the Amboseli migratory wildlife populations, the new AEMP strives to maintain and restore ecosystem integrity to safeguard AE's wildlife and community livelihoods. The ecosystem plan also spells out the role of AET and partnering organizations in presiding over the plan implementation, and defines the central role of the Noonkotiak Resource Centre as the information and research hub of the ecosystem, coordinating ecosystem monitoring and planning, setting up an information database, tracking and adapting management plans and developing a visitor and cultural centre and education outreach program.

The AEMP 2020-2030 integrates the land use plans of the seven key geographic units of the AE which are: Olgulului/Ololarashi GR, Mbirikani GR, Eselenkei GR, Kuku GR[3], Rombo GR, Former Kimana GR and

[3] Kuku Group Ranch and Rombo Group Ranches Land Use Planning Processes are in progress

Amboseli National Park. Group ranch land use plans have been developed to minimize land use conflicts and enhance community livelihoods. The plans consider facilitating conservation of viable wildlife populations at the ecosystem level by planning for wildlife migratory routes and critical refuges. They also include restoring degraded lands through "Olopololi" (grass banks), resting and rotation of pasture use, soil erosion control measures and establishment of wildlife conservancies.

The group ranch land use plans and the Amboseli National Park Management Plan constitute the bulk of the AEMP 2020-2030 and together with the plan foundation report prepared by ACP, should be read in conjunction with this plan.

1.2 Plan owners and implementers

During the stakeholder planning meeting, Amboseli Ecosystem Stakeholders agreed that primary ownership and responsibility for the implementation of the Amboseli Ecosystem Management Plan rests with the Amboseli Ecosystem Trust, which comprises all the major land owners and key partners in conservation and community development in the Amboseli Ecosystem.

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1.3 Plan purpose

The AEMP is designed to maintain a balance between conservation and development in the Amboseli Ecosystem. Specifically, the plan's main purposes are to ensure that:

1. **Pastoralism remains the mainstay of the local community**

Pastoralism is at the heart of evolution of the Amboseli ecosystem and also key to its conservation. It plays an important role in ecological dynamics while also being an important source of cultural and economic livelihood for the community. This is, however, threatened by demographic and economic changes that have led to increased sedentarization and attendant loss of critical habitat functions. The management plan seeks to preserve pastoralism as an important livelihood activity and also a factor of conservation of the overall ecosystem.

2. **The local community receives tangible benefits from improved natural resource governance**

A popular truism states that conservation is done for the people and this is no different with the Amboseli Ecosystem. This management plan seeks to empower the people to make decisions about their resources and at the same time bring them to the helm of management of their ecosystem to ensure they derive optimum economic benefits and socio-cultural growth. The success of the management plan will depend on how well the people benefit from the activities in the ecosystem.

3. **Habitat connectivity is maintained**

The integrity of the ecosystem depends in a large way on the movement of certain species of wildlife (e.g. elephants, wildebeest, and zebras) within the entire ecosystem and especially connectivity between the national park and outside conservancies and group ranches. These corridors have hitherto been subjected to serious threats due to unplanned developments of infrastructures and tourism investments, which in effect threaten one of the most critical ecosystem processes, animal migration (including livestock). This management plan endeavour to preserve this habitat connectivity to ensure the ecosystem and its values are maintained.
b

4. Viable populations of wildlife are maintained

One measure of successful conservation in the ecosystem is preservation of species diversity. This requires that key species of wildlife are maintained. Hence efforts will be made to ensure wildlife populations remain above survival threshold.

5. Cross-border collaboration is strengthened

The Amboseli elephants cross over the border between Kenya and Tanzania through the Amboseli – Kilimanjaro corridor and the Longido Game Controlled area where Amboseli elephants move some 25 km south of the border. There is therefore need for enhanced cross border collaboration between Kenya and Tanzania with respect to wildlife security to deter poaching in the greater Amboseli-Kilimanjaro ecosystem. There is also need to share education and community sensitization programmes between the two countries.

1.4 The Planning Process

The AEMP planning process was highly participatory and involved a broad spectrum of stakeholders in the Amboseli Ecosystem. The mechanisms used to ensure meaningful stakeholder participation in the planning process included, stakeholder planning workshops, thematic working group meetings, and stakeholder plan validation and approval meetings. Figure 1 shows the planning activities and their corresponding outputs.

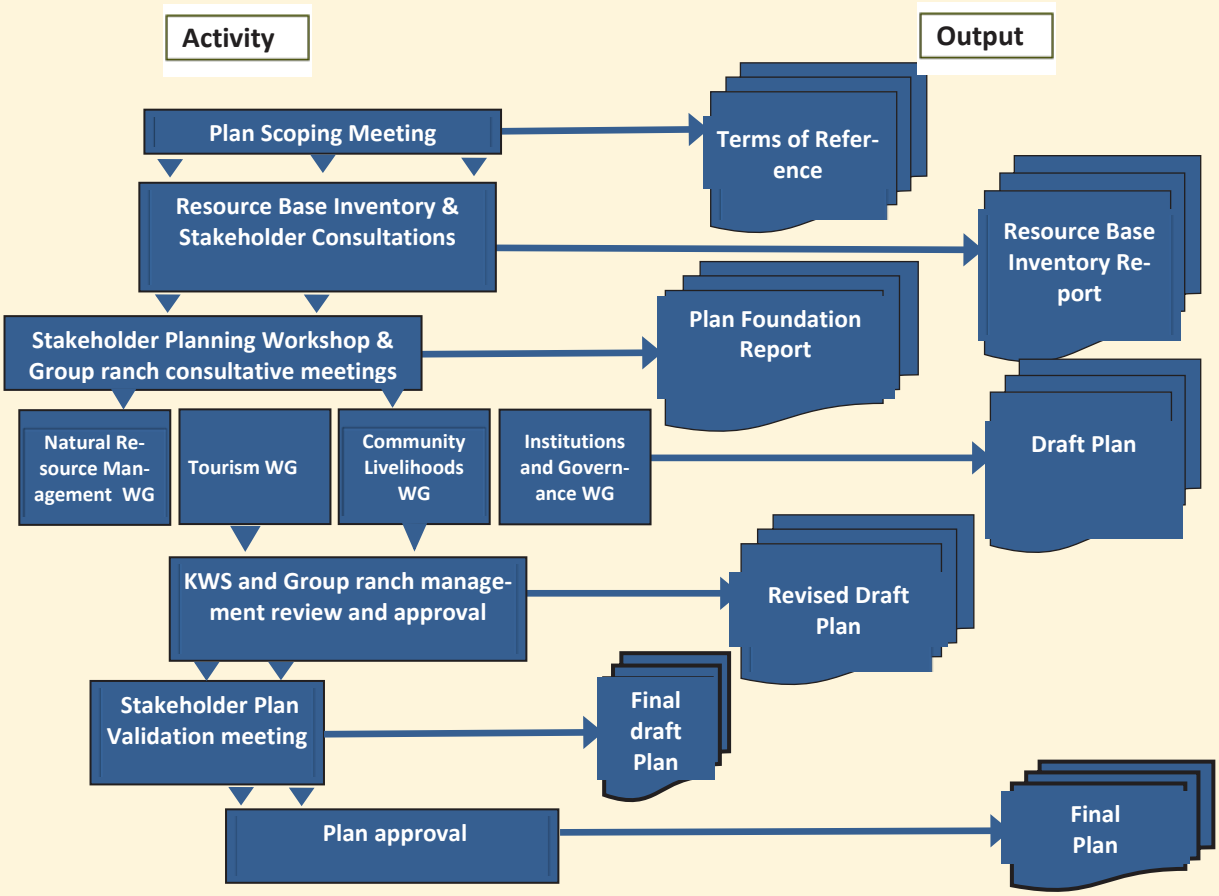


Figure 1. The AEMP Planning Process

1.5 Plan structure

The management plan is divided into five main chapters as follows;

- **Introduction.** This chapter defines the plan owner, outlines the purpose of the plan, gives a brief introduction to the planning process and stakeholder participation mechanisms, and describes the plan structure.

- **Plan Foundations**. This chapter provides an introduction to the AE, its location, its management units, and exceptional resource values. It sets out the AE's Vision Statement, which is the overall goal the plan aims to achieve.

- **AE Zoning Scheme.** This chapter sets out areas of the AE where different types of land uses are expected to be carried out during the plan period. It also provides a visitor use zoning scheme which defines the geographic areas where various types of tourist accommodation facilities and tourist activities are permitted.

- **The four management programmes.** The main bulk of the plan is divided into four management programmes:

    - **Community Livelihoods and Socio-Economic Programme**
    - **Tourism Development and Management Programme**
    - **Natural Resource Management Programme**
    - **Institutions and Governance programme**

Each programme includes a programme goal, which sets out the overall goal to which stakeholders under this programme are working towards, and a strategy describing the principles underlying the management approach pursued through the programme. Each programme also contains management objectives that stakeholders aim to achieve, and a set of specific management actions to achieve these goals.

- **Plan Implementation Strategy.** This chapter outlines the mechanisms that are needed to ensure effective plan implementation.

Chapter 2. Plan Foundations

2.1 Description of the Amboseli Ecosystem

The Amboseli ecosystem covers an area of approximately 5,700 Km² stretching between Kilimanjaro, Chyulu Hills, Tsavo West National Park and the Kenya/Tanzania border (Figure 2). The area is generally arid to semi-arid with a very small variation in its agro-ecological zones and is more suitable for pastoralism rather than cultivation with a high potential for conservation of wildlife and tourism enterprises. Administratively, the Amboseli ecosystem consists of Amboseli National Park and the surrounding group ranches. The group ranches namely; Kimana/Tikondo (now subdivided), Olgulului/Ololarashi, Eselenkei, Mbirikani, Rombo, Kuku A and Kuku B cover an area of about 506,329 hectares in Loitokitok Sub-County (see Figure 3). It also includes the former individual ranches located on the foot slopes of Kilimanjaro that are now under crop production, mainly rain fed agriculture.

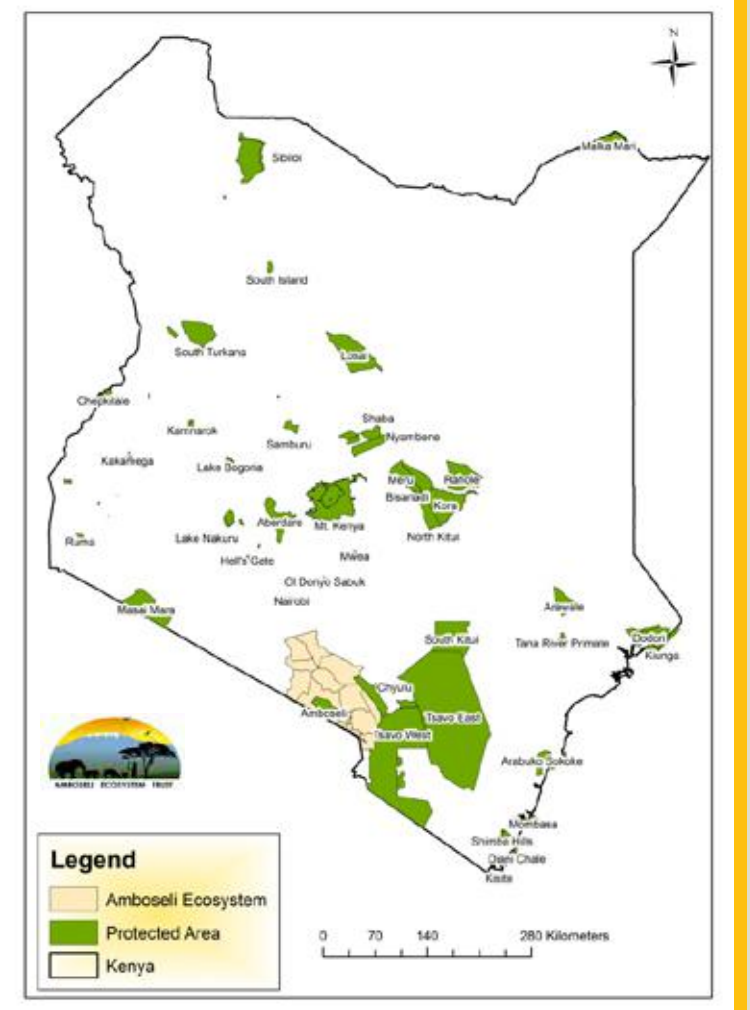


Figure 2. Amboseli Ecosystem: National Setting

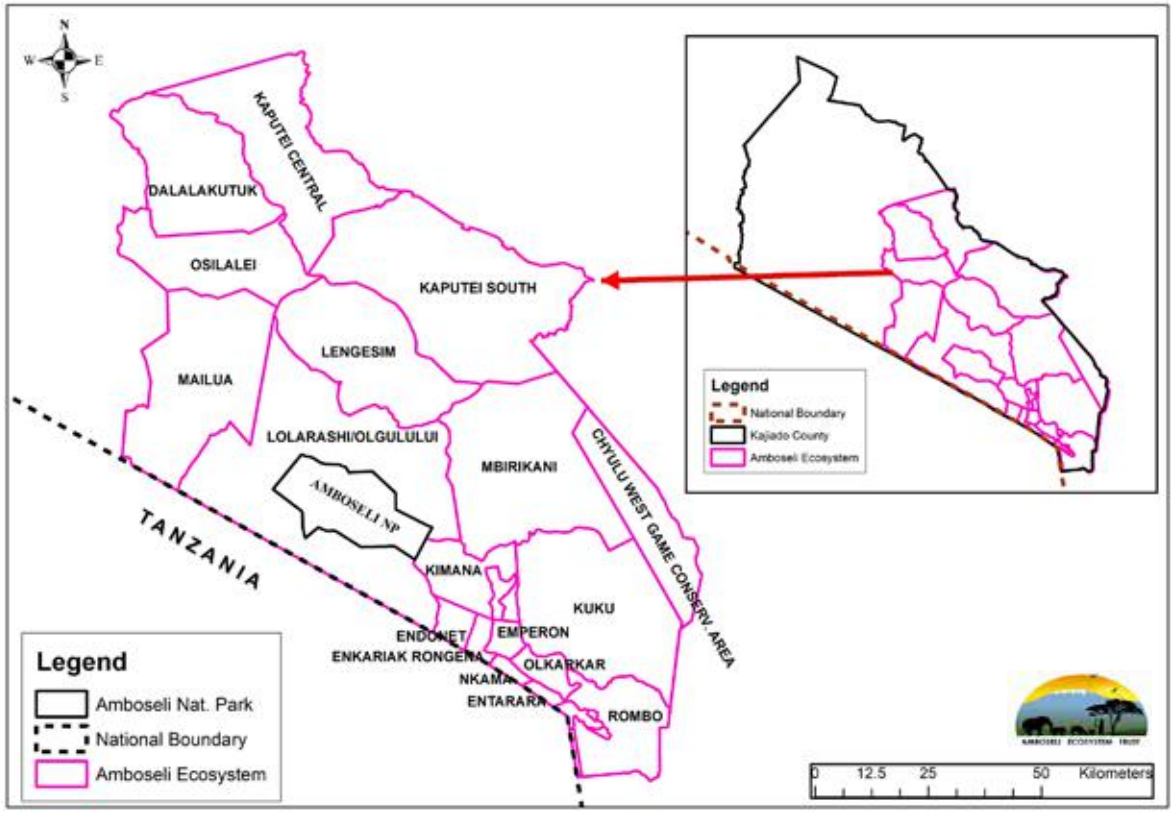


Figure 3. ***Amboseli Ecosystem: Regional Setting***

2.2 Redefining AEMP Boundaries Based On Land Use Changes

The previous plan (AEMP 2008-2018) defined a Minimum Viable Area (MVA) for sustaining wildlife and pastoral herds, minimizing the threats to the integrity of the ecosystem, and proposed specific mitigation measures. This MVA has shrunk considerably in the last ten years of plan implementation due to increased threats necessitating a revision and definition of a new MVA for the new ecosystem plan (Figure 4).

Focusing on the migratory populations of Amboseli National Park and linkages to adjacent ecosystems cuts down the size of the previous core MVA to approximately 4,000 km^2 and reduces the potential for conflict with farmers and settlers. The reduced area covers the Ilkisongo group ranches where the decline in wildlife production since the 1970s has, at 13%, been relatively small compared with the 45% loss for 8,500 km^2 area of eastern Kajiado. The difference confirms wildlife losses to be heavy on the subdivided ranches of Kaputiei and light on open Ilkisongo ranches of the Amboseli ecosystem. Livestock production has, however, declined 21% in both areas, largely due to the loss of cattle[4]. However, other studies by IFAW, KWS and SFS of collared elephants have shown elephants reclaiming the former ranges and going beyond the MVA (fig4b).

[4] Western et al, 2018. The Amboseli Ecosystem: Status, Changes and Recommendations for the Amboseli Ecosystem Management Plan 2018-2028

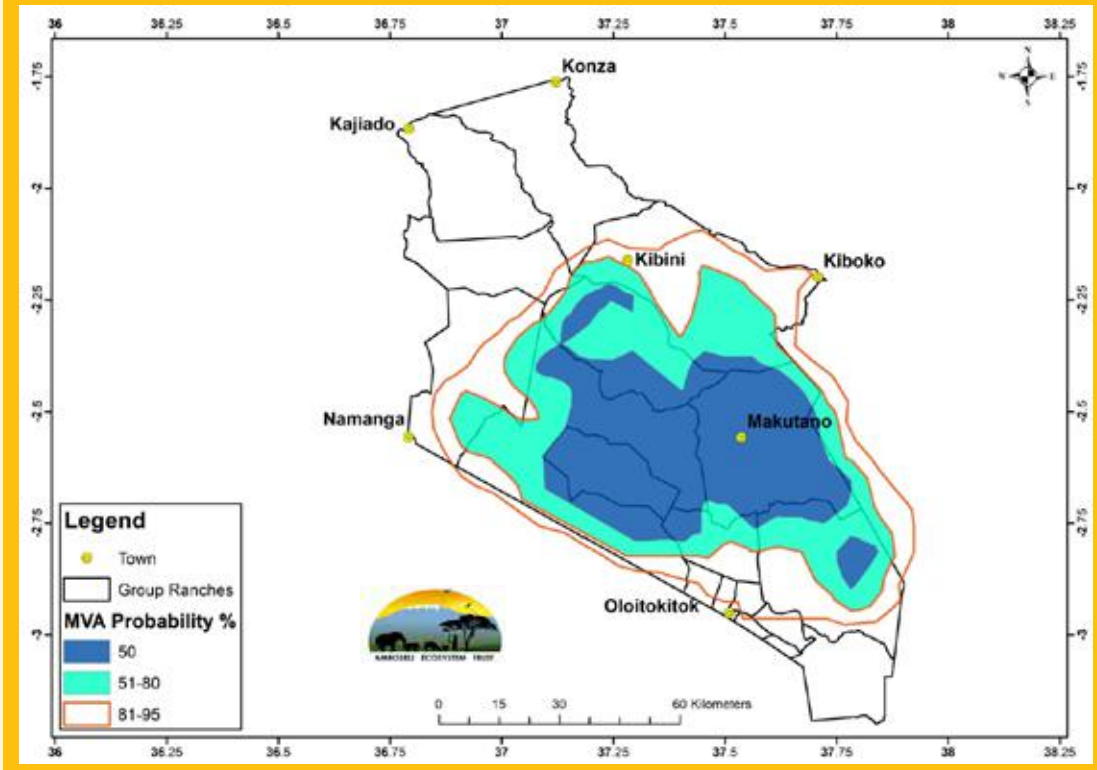


Figure 4a: AE's Redefined Minimum Viable Area

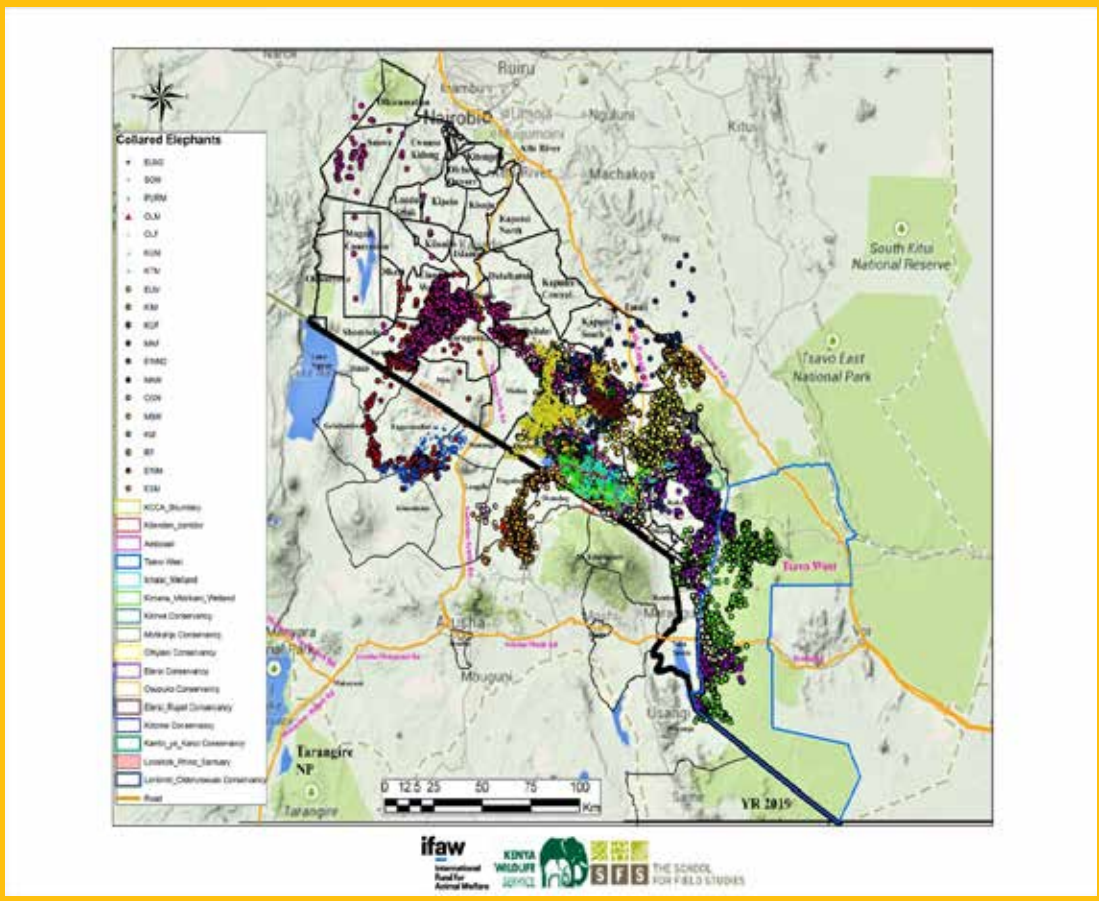


Figure 4b: AE Collared Elephants Movement

AE Vision Statement

A management plan vision is an inspiring, forward-looking statement that describes the managed place as it could be in 10 years as a result of the actions carried out in the planning area. It provides the overarching frame for determining the results we hope to achieve, while describing the most outstanding features of the planning area and how we would like it to be known and experienced.

Establishing a clear and insightful vision of how stakeholders would like the ecosystem to look in the future not only helps build consensus and understanding on what the plan is aiming to achieve, but more importantly ensures that the main thrust of the plan is to proactively work towards achieving the agreed vision for the planning area, rather than simply reacting to problems. During the stakeholder plan scoping workshop, stakeholders proposed key elements that should describe their vision for the Amboseli ecosystem. These proposals formed the basis for the following vision statement. The vision is elaborated by outlining the future desired state for each of the four key management programmes contained in this plan.

AE's Vision: "To sustainably manage and utilise the ecosystem's natural resources for community livelihood improvement"

- ***Community livelihoods:** Pastoralism remains the mainstay of the community's livelihood. The ecosystem is providing a wide range of goods and services that meet socio-economic needs of the community. The communities resident in the ecosystem support conservation efforts through active participation in conservation programmes and they show case their rich and diverse culture to diversify tourist attractions.*

- ***Tourism Development and Management:** Visitors are guaranteed a transformational and memorable experience as they interact with the AE in a peaceful, serene and secure environment. A variety of culture and nature based tourist activities are enjoyed.*

- ***Natural Resource Management:** Amboseli Ecosystem features a diversity of ecological processes, with rich and varied biodiversity interactions. This has resulted in healthy wildlife populations. Critical wildlife habitats such as dispersal areas, migratory corridors, and dry season wildlife watering and grazing areas have been secured. Improved protection and management of critical springs, swamps and rivers, and rainwater harvesting has increased supply of water for people, livestock and wildlife. The degraded rangelands have been rehabilitated increasing pastures for livestock and wildlife.*

- ***Institutions and Governance:** The Ecosystem has effective management institutions and clear governance systems.*

2.3 Key Ecosystem Values

The key values for the Amboseli Ecosystem describe the ecosystem's natural resources and other features that offer outstanding benefits to local, national and international stakeholders. Key values are critical to long-term maintenance of the ecosystem's socio-ecological characteristics. The key values are categorized as: Biodiversity, Scenic, and Sociocultural (Table 1).

Table 1. Amboseli Ecosystem Exceptional Resource Values

Category	Exceptional Resource Value
	Habitat diversity

Category	Exceptional Resource Value
Biodiversity	Landscape diversity
	Big tusker elephants
	Array of ungulates
	Rich birdlife
	AE conservation targets
	Large carnivores
	Wildlife Corridors
Scenic	Mount Kilimanjaro
	Valleys
	Hills
	Swamps and rivers
	Lake Amboseli
Socio-cultural	Authentic Maasai culture
	Rich history
	Cultural and historical sites of local importance
	Traditional pastoralism
	Bead work
	Employment
	Tourism
	Mining potential
	Cross-border connections
	Medicinal materials
	Long term research programmes
	Amboseli as a Biosphere Reserve
	Community wildlife conservation initiatives

Biodiversity Values

Habitat diversity

The Amboseli ecosystem falls under the Chyulu/Kilimanjaro volcanic natural region which is an Acacia dominated dry woodland savannah. This vegetation type supports the pastoralist lifestyle of the local Maasai and a wide array of savannah wildlife species, the cornerstone of tourism in the ecosystem.

The bigger part of the Amboseli ecosystem is semi-arid. Nevertheless, water springs associated with Mt. Kilimanjaro emanate at the basin of the ecosystem and give rise to several swamps which are critical to maintaining wildlife and livestock in the ecosystem. The high primary productivity of the swamps is able to sustain a vast array of wildlife species in a semi-arid environment and contributes to the high biodiversity and tourism value of the ecosystem.

Wildlife corridors

One of the key ecological processes in the AE is seasonal migration and dispersal of wildlife from the ANP to adjacent group ranches as connecting linkage to Chyulu and Tsavo West National Parks to the East and southwards across the border to Tanzania's Kilimanjaro National Park. However, increasing land use conversion is choking wildlife corridors resulting in changes in wildlife distribution patterns. This changing wildlife distribution has ecosystem wide effects on nutrient cycling and vegetation dynamics.

There are six major corridors that are vital to the continued ecological functioning of the Amboseli National Park (ANP), and to the maintenance of the entire ecosystem in its current form. These six corridors provide linkage of the park to the adjacent ranches and beyond (Table 2 and Figure 5).

Table 2. Wildlife corridors descriptions

Wildlife Corridor	Description	Threats
1. Amboseli NP-Olgulului South-Kitenden-Kilimanjaro NP Corridor	This landscape link helps maintain connectivity for large mammals between the montane forests of Kilimanjaro and Amboseli National Park. African Elephant move annually from Kilimanjaro into Amboseli National Park, and Eland, Buffalo and African Wild Dogs have also been observed moving in and out of the montane forest. Collared elephants have been shown to extensively use this corridor to move between the two parks with much of their wet and dry season ranges occurring in Kitenden Conservancy to the south of Amboseli NP. In addition, the corridor is used by many other species for foraging e.g. zebras, buffaloes, impalas and associated carnivores such as lions, cheetah, leopard and hyena. Traditionally, the Kitenden Corridor has been used as a seasonal livestock grazing area, and is sparsely populated with a small number of permanent and temporary settlements. Existing community infrastructure in the area is mainly limited to livestock water supplies, with the Kitenden Dam and borehole to the south of the conservancy.	While the Tanzanian part of the corridor measuring 6.6 km in length and 5 km wide is fully protected, the Kenyan side, in Olgulului South is only partially protected as a conservancy. The major threat to this corridor is agricultural expansion. The arable Kenyan part of the corridor, in Olgulului-Lolarashi GR is subdivided into 10 acres parcels and allocated to group ranch members. If these members settle and cultivate in the allotted land, the corridor will be completely severed. However, a conservation lease programme is currently securing these land parcels.
2. Amboseli NP-Kimana-Kuku-Chyulu West Corridor	This corridor is linked by several conservancies that have been established through a land lease programme. These Conservancies include Osupuko, Nailepu, Kilitome and Kimana Sanctuary in former Kimana Group ranch and Motikanju in Kuku Group ranch.	Threats include irrigated farming through borehole drilling, proliferation of tourism developments, settlements and fencing along the corridor. For instance, at the entry to Kimana Community Wildlife Sanctuary (KCWS) only an opening of about 50 meters wide is currently not blocked.
3. Amboseli NP-Olgulului North-Eselenkei Corridor	This corridor links Amboseli National Park with Olgulului North and Eselenkei. Diverse wildlife including elephants, wildebeest and zebras use this corridor to access wet season grazing areas in Eselengei and beyond.	The corridor is threatened by settlements that are increasing in tandem with population growth in the Amboseli area.

Wildlife Corridor	Description	Threats
4. Amboseli NP-Olgulului North-Mbirikani Corridor	This corridor links Amboseli National Park to Mbirikani and Chyulu through Olgulului North. It is used by migratory species including elephants, wildebeests and zebras that utilize the grassland plains in Mbirikani during the wet season. In Olgulului north the corridor is located in a proposed conservancy (Ole-Narika Conservancy), which if established, will protect a portion of this important wildlife migration route	The Olgulului section of the corridor is set aside as a dry season livestock grazing area and as such it is sparsely settled. The Emali-Loitokitok tar road is a big threat and roadkill is currently one of the biggest sources of wildlife mortality. In addition, the uncontrolled expansion of farming along the Mbirikani pipeline is a very severe and urgent threat that will soon block this corridor (as well as the one from Eselengei to Mbirikani) if not controlled.
5. Amboseli NP-Olgulului West-Ilaingarunyoni Hill	This corridor links Amboseli National Park to Ilaingarunyoni Hills, in Mailua Group Ranch, which is a major wildlife dispersal area. In these hills there have been reported sightings of large herds of herbivores, including elephants, moving from the Amboseli National Park during the dry season. The corridor has been set aside within the pastoralism and wildlife zone of Olgulului-Lolarashi group ranch. In addition land around Ilangarunyoni Hills, in both Olgulului and Mailua, is being set aside as conservancies and this is going to enhance protection of ecological linkages in this area.	Settlement within the conservancy is sparse. However, the Loolakir area to the north of the proposed conservancy has been developed along the major rivers, with boreholes and other permanent infrastructure. Development around the Meshanani entrance gate to Amboseli National Park has also become permanent limiting wildlife movement in this area. The major human influence potentially threatening habitats within the proposed conservancy is charcoal burning in the Ilaingarunyoni Hills
6. Amboseli NP-Olgulului South-Enduimet Wildlife Management Area (Tanzania) Corridor	This corridor links Amboseli National Park to Enduimet Wildlife Management Area in Tanzania. The corridor is used by elephants and other dispersing wildlife for migration and foraging. It hosts abundant resident wildlife attracted to the area by the variety of habitats, ranging from mature acacia woodland to open grassland and seasonal floodplains. These species include lion, cheetah, hyena, zebra, eland, buffalo, and giraffe. In Olgulului, the corridor is within the proposed Kitirua Conservancy.	The main threat in this corridor is continuing development of human settlement which could limit wildlife movement and use of the area.

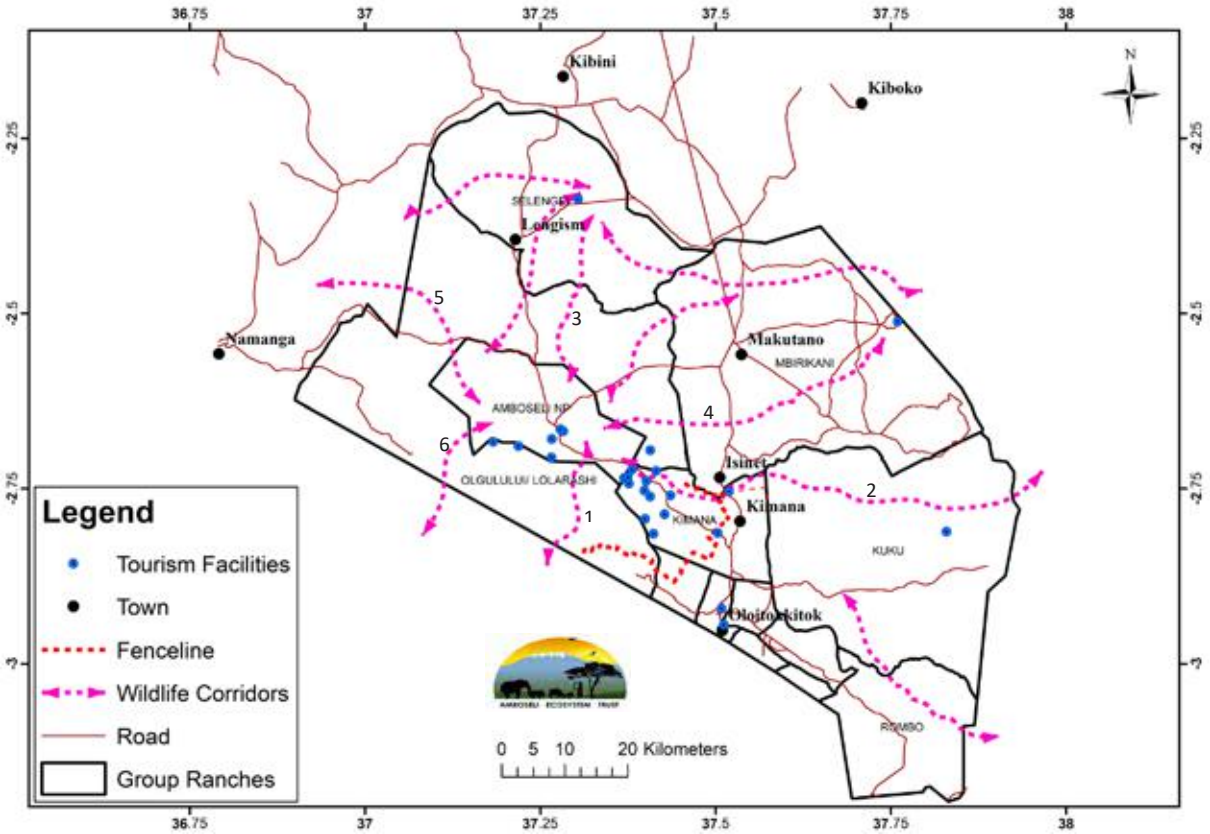


Figure 5. ***Key Wildlife Corridors in the Amboseli Ecosystem***

Big tusker elephants

Amboseli ecosystem has an elephant population of about 1600 according to latest data. These elephants are a major driving force in the ecology of the Amboseli Ecosystem and are closely associated with habitat changes in the Amboseli National Park. The elephants have been the subject of the longest running elephant study in the world and as a result of the long and close interaction with researchers, Amboseli elephants are approachable giving visitors excellent opportunities for watching them at close range. They further attract a lot of interest from wildlife filmmakers, especially the impressively large-tusked males (Figure 6), which promotes Amboseli as a tourist and research destination.

Figure 6. ***One of the late Big Tusked Amboseli elephants named Tim***

Array of ungulates

Though Amboseli ecosystem is a semi-arid environment, it supports a wide range of ungulates, which in turn support carnivores such as lion, leopard, cheetah, hyena, jackals, civets, and serval cats. This agglomeration of ungulates makes Amboseli an important wildlife conservation area in Kenya. The AE also hosts Giraffe which have recently been uplisted by CITES to protect their numbers which are estimated to be between 100,000 and 110,000 globally. The ungulates habitat utilization pattern closely overlaps with livestock, making Amboseli Ecosystem a unique mosaic of people and wildlife for which it is famous.

Rich birdlife

Amboseli National Park is one of the 62 Important Bird Areas (IBAs) in Kenya and thus it is recognized as globally significant for bird conservation. The ecosystem has a rich birdlife, with over 400 species recorded, of which 40 are birds of prey. It has globally threatened bird species (e.g. Lesser Kestrel), restricted-range birds that are found only in a very small area such as the Taveta golden weaver, bird species that live only in a particular vegetation type such as the Grosbeak weaver, and regionally threatened bird species such as Martial eagles. The bird-life in Amboseli is diverse due to the varying habitats. In October-December when the rains are on or about, the local birds are joined by migrants such as European storks from the Northern hemisphere, sometimes in fairly large numbers, which makes Amboseli a popular destination for birding safaris and research.

Large carnivores

The main carnivore species including the leopard, lion, cheetah, and caracal, hyena, and serval cat can be seen easily in the Amboseli Ecosystem, especially inside Amboseli Park[5]. They are among the principal tourist attractions in the Park and adjacent areas and play a significant role in the overall ecosystem dynamics especially in controlling the herbivore populations.

[5] Except for leopard which are not present in the Park, but only in the wider ecosystem

AE Conservation targets

The Amboseli Ecosystem stakeholders have selected a set of seven conservation targets from different levels of biodiversity (species, communities and ecological systems) that represent and encompass the full array of biological diversity found in the plan's geographical scope area. These targets are monitored over time to discern the status of ecosystem health as well as effectiveness of management. The seven conservation targets for the AE, the rationale for their selection, important subsidiary targets, and key ecological attributes of the conservation targets are shown in Table 3.

Table 3. AE's Conservation Targets

	Conservation Target	*Rationale for Selection*	*Important subsidiary targets*	*Key ecological Attributes*
Systems	**River and Swamp systems**	➢ Only few rivers and swamps ➢ Critical habitats for wildlife and livestock ➢ Under severe threat from human activities	➢ Kimana wetland ➢ Nolturesh wetland ➢ Swamps within Amboseli Ecosystem ➢ Riverine habitats ➢ Wetland associated avifauna ➢ Hippopotamus ➢ Reptiles and amphibians ➢ Waterbuck	➢ River regime (flow and level) ➢ Water quality ➢ Riparian habitats ➢ Aquatic life forms ➢ Associated catchments
	Wildlife migratory corridors	➢ Critical to maintenance of ecosystem connectivity and ensuring a minimum viable conservation area	➢ Kimana – Kuku corridor ➢ Kitenden corridor	➢ Size and status of the corridor ➢ Wildlife use of corridor
Habitats	**Acacia Woodland and Grassland mosaic**	➢ Important for browse and graze ➢ Important for breeding and wildlife cover ➢ Threatened by overgrazing, crop farming and human settlement	➢ Browsers: lesser kudu, impala, gerenuk, giraffe, black rhino ➢ Grazers: zebra, wildebeest, hippopotamus, buffalo ➢ Birds: Ostrich, Martial eagles, fish eagles, Kori Bustard	➢ Size of Acacia woodland/bush land ➢ Grassland condition ➢ Vegetation composition and structure ➢ Graze and browse availability ➢ Composition and size of herds of ungulates
	Hilly habitats	➢ Critical habitats for wildlife and livestock ➢ Important water catchment (Chyulu hills) ➢ Important tree species ➢ Tourism value (scenery)	➢ Coke's hartebeest, ➢ Black rhinos ➢ Sandalwood ➢ Raptors ➢ Endemic birds	➢ Forest cover ➢ Graze and browse availability ➢ Tree species composition ➢ Abundance of bird species
Species	**Lion**	➢ Important for tourism ➢ Threatened by poisoning, spearing, habitat fragmentation, diseases	➢ Lion ➢ Cheetah ➢ Hyena ➢ Wild dog	➢ Population size and structure ➢ Habitat size and quality ➢ Genetic diversity ➢ Prey species and availability ➢ Health
	Elephants	➢ Keystone role of maintaining habitats ➢ Classified as threatened by IUCN ➢ Of great tourism and scientific interest	➢ Migratory grazers such as wildebeest and zebras	➢ Population size and structure ➢ Habitat size and quality ➢ Water availability ➢ Dispersal areas/migratory corridors

	Conservation Target	*Rationale for Selection*	*Important subsidiary targets*	*Key ecological Attributes*
	Giraffe	• Declining population due to habitat loss and poaching for bush meat • Classified as threatened by IUCN	➢ Coke's hartebeest ➢ Gerenuk ➢ Impala ➢ Dik dik ➢ Thomson and Grant gazelle	➢ Population size and structure ➢ Habitat size and quality ➢ Dispersal areas

Scenic values

Kilimanjaro

Mount Kilimanjaro, the highest mountain in Africa, lies on the Kenya-Tanzania border. It has three scenic peaks, Shira, Kibo and Mawenzi. The mountain is very popular with both local and international mountain climbers. However the best views of the mountain and its majestic peaks are on the Kenyan side, making it one of the popular attractions to the Amboseli ecosystem.

Landscape diversity

Outside Amboseli National Park are a number of geomorphologic features that stand out and are of tourism interest. These include Mount Kilimanjaro, Chyulu Hills, Losoito, Lemipoti, Ilaingarunyoni, and Lemomo hillls among others. In Amboseli National Park, the Observation and Ilmerisheri hills are of special interest. The Observation hill is the highest point in the Park and is popular with visitors as a walking/hiking trail, while the peak is a picnic site, offering synoptic a 360-degree view of the Amboseli National Park.

Socio-cultural values

Authentic Maasai culture

Maasai culture is unique because of its relative preservation in the face of rapid cultural changes across the world in general, and in defiance of Western influence to which the majority of other cultures in Africa have succumbed. This has made Maasai people very popular and their culture is a desirable tourism product and one of the greatest tourism assets in the ecosystem. Further, their livestock and nomadic grazing has been an important ecological process that has shaped Amboseli ecosystem.

Rich history

Mount Kilimanjaro: The Amboseli-Kilimanjaro ecosystem boasts of a rich history. The Wachagga people of Tanzania talk of Mawenzi receiving fire for its pipe from his younger brother Kibo. Another of their legends talks of demons and evil spirits living on the mountain and guarding immense treasures. Arab and Chinese traders in history told of a giant mountain lying inland from Mombasa. Slave traders passed below it and sometimes raided the villages of the Wachagga but it was not till the middle of the 19th century that a more serious interest was taken in the mountain and attempts were made to scale it. In 1848 Johann Rebmann, a missionary from Gerlingen in Germany, while crossing the plains of Tsavo, saw Mount Kilimanjaro. Rebmann's report stimulated great interest in Germany and in the following years several expeditions were organized.

Swamps: Water from Kilimanjaro trickles down porous rocks and underground channels and erupts into numerous springs in the Amboseli Ecosystem. The swamps support irrigated agriculture in the ecosystem and are the major sources of water and forage for livestock during the dry season.

Cultural sites of local importance

Although many of the cultural and sacred sites are not well documented in the Amboseli Ecosystem, there is rich history that needs to be well understood and protected. These include areas used by the Maasai for various cultural ceremonies such as circumcision. Other cultural sites include the Maasai Moran Manyattas, and the Chyulu caves.

Land Use

The bulk of the ecosystem falls under eco-climate zones IV and V and are thus classified as arid to semi-arid and pastoralism is predominant. However, there is a small portion of high agricultural potential land on the wetter slopes of Mt. Kilimanjaro. As a result of the differences in agro-climatic zones, three different land use systems are discerned, while a fourth land use system, which cuts across these zones, is also evident. These land uses include:

- **Intensive rain-fed farming:** this land use is practiced on the higher slopes of Mt. Kilimanjaro (2000 meters above mean sea level). This zone is characterized by land demarcations into individual parcels of 10 to 100 acres.

- **Commercial beef production**: This land use is carried out in individual ranches located in the medium altitude (1500-2000 masl). Land parcels were originally demarcated into parcels ranging from 500 to 5,000 acres. Due to population increase these former ranches have further been subdivided into smaller units, which are not viable for ranching.

- **Traditional pastoralism**: Pastoralism of the semi-nomadic, transhumant variety has been the land use of choice for hundreds of years in the Amboseli ecosystem. Emerging land use activities in the ecosystem, whether agriculture- or wildlife-based, have to compete not only economically, but culturally and spiritually with pastoralism. This plan emphasizes that pastoralism is central to maintaining viable wildlife populations in the ecosystem. However, failure of the group ranch system to improve livelihoods and security of tenure has led to their ongoing dissolution and subdivision threatening viability of pastoralism as a land use.

- **Irrigated agriculture:** This is mainly practiced along perennial sources of water (springs and swamps) in the ecosystem. The main enterprise is horticultural crop production for commercial purposes. The rapid expansion of irrigated agriculture, particularly along the Nolturesh pipeline, is one of the biggest and most urgent threat to the West-East connectivity of the ecosystem.

- **Wildlife based tourism**: This land use has been gaining popularity since the establishment of Kimana Community Wildlife Sanctuary in the mid-1990s. All the six Amboseli ranches have set aside concession areas for wildlife based tourism. This is a clear indication that conservation can co-exist with other potential land uses in the ecosystem.

Long term research programmes

The Amboseli Baboon Project: The Project was started in 1963 and it focuses on baboon research at the individual, group, and population levels. Since the early 1960s, more than 50 researchers have

carried out studies on baboon ecology, documenting vast knowledge on population, behavioral and reproductive ecology of the species. Figure 7 shows the area used by the studied baboons.

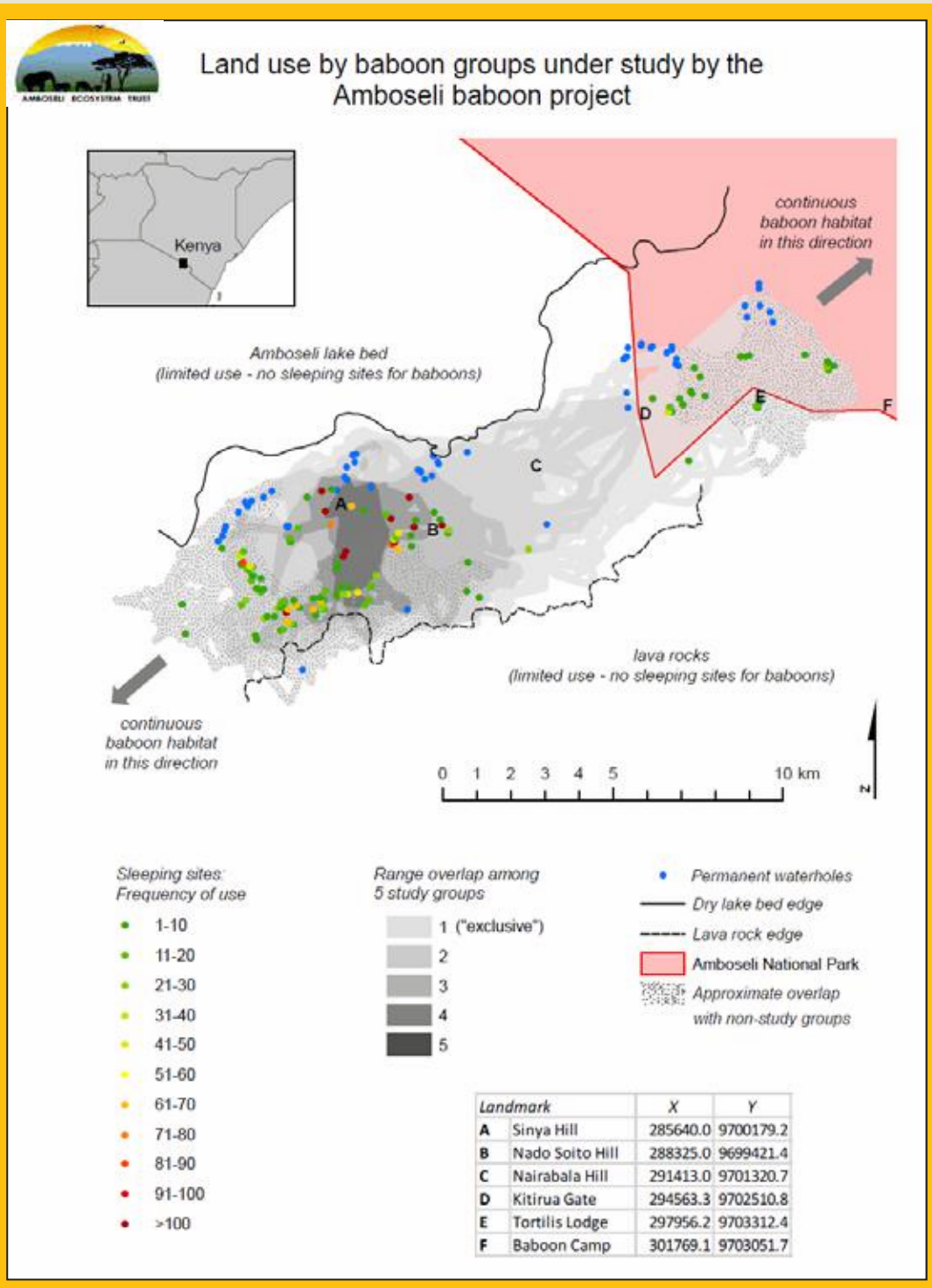


Figure 7 ***Land used by baboons studied by Amboseli Baboon Research Project***

Amboseli Conservation Programme (ACP): The ACP was started in 1967 and focuses on providing long-term data on the structure, dynamics and changes of the Amboseli ecosystem and technical support for its conservation. ACP has played a central role in conservation in the Amboseli ecosystem, and is credited with foundational scientific information that supported establishment of Amboseli National Park and it also prepared the initial Park development plans. Further the programme provided the management plan frameworks, plan foundation documents, for Amboseli Ecosystem Management Plan 2008-2018 and the current AEMP 2020-2030.

Amboseli Trust for Elephants (ATE): This project started in 1972 and hence makes the Amboseli elephants the most studied free-ranging population in the world. The ATE has generated a wealth of knowledge of the elephants making the Amboseli elephants one of the most famous wild elephants in the world, attracting large numbers of both local and foreign tourists to Amboseli ecosystem. The original research done by ATE has transformed our understanding of elephant biology and behavior, and this dataset serves as an important baseline for elephant populations across Africa, detailing individual life histories for more than 3,500 elephants, most of who have been tracked from birth to death. Since the 1990s ATE, formerly Amboseli Elephant Research Project (AERP) has trained elephant researchers and managers from across Africa and Asia.

Amboseli as a Biosphere Reserve

Amboseli ecosystem is a member of the global network of biosphere reserves, which are areas of terrestrial and coastal/marine ecosystems or a combination thereof, which are internationally recognized within the framework of UNESCO's programme on Man and the Biosphere (MAB). They are nominated by governments to promote solutions to reconcile conservation and sustainable use.

Amboseli ecosystem was listed as a biosphere reserve in 1991 becoming the fifth biosphere reserve[6] in Kenya. The core area of the reserve is the protected Amboseli National Park while the buffer zone comprises of the six group ranches, Olgulului-Lorarashi, Eselengei, Mbirikani, Kimana, Kuku, and Rombo.

Community wildlife conservation initiatives

Amboseli Ecosystem Trust: Amboseli Ecosystem Trust is a registered charitable Trust incorporated under the provisions of the Trustees (Perpetual Succession Act) chapter 164 of the Laws of Kenya. AET is mandated to mobilize resources for the implementation of Amboseli management plan[7]. AET works directly with over 27,400 land owners and reaches thousands of people, supporting projects and programmes that promote socio-economic services and building people's capabilities to meet their basic needs and claim their basic rights.

Amboseli/Tsavo Group Ranches Association (ATGRA): The Amboseli-Tsavo Group Ranches Conservation Association (ATGRCA) was established in 1997 to provide a platform for Group Ranch representatives to coordinate conservation activities that impact across Group Ranch boundaries. It is credited with the establishment of the Amboseli-Tsavo Game Scouts Association (now Amboseli/Tsavo Community Wildlife Rangers Association).

Amboseli/Tsavo Community Wildlife Rangers Association (ATCWRA): ATCWRA is an umbrella body that coordinates all the community rangers' activities in the ecosystem. It was formed originally under the auspices of ATGRA, with the purpose of enhancing wildlife conservation and management in the group ranches. Community game scouts/rangers are natural resource managers based at the village level that are involved in day-to-day management of wildlife in the group ranches.

The ATCWRA set up the *Amboseli Conservation Academy* as a training resource for local community rangers.

[6] As of 2008, Kenya had six biosphere reserves. These are: Mt Kenya, Mt. Kulal, Malindi/Watamu Marine, Kiunga Marine, Amboseli and Mt. Elgon

[7] http://www.amboseliconservation.org/about-the-board.html

2.4 Major Issues of Concern

Environmental Issues

Issue 1: Grazing and browsing pressure

There is increasing grazing and browsing pressure on the Amboseli rangelands and national park causing decline in plant and animal productivity and diversity and contributing to an increase in human wildlife conflict. This is mainly as result of increasing dryland farming, wetland irrigated farming, sedentary pastoralism and land use segregation effects. Traditional pasture management and grazing rotation systems have fallen apart as traditional leadership structures have been replaced by modern politics.

Issue 2: Loss of habitat

Subdivision, farming, towns and villages have greatly reduced the area available for wildlife and pastoralism in the AE. The Kaputei area is heavily settled and fenced leading to virtual collapse of migratory patterns. Namelok and Kimana swamps, the Lolturesh River down through the Soit Pus Swamp and areas around Iltilal has also been subdivided, settled and farmed. These developments have substantially reduced the areas in eastern Kajiado still open to wildlife and mobile livestock herds. Drought refuges for both wildlife and livestock have been lost, and rangeland productivity and recovery has similarly been lost.

Issue 3: Poaching

Poaching has declined to manageable levels since 2008 due to the formation of a large well-managed community ranger force. However, incidents of trophy and bushmeat poaching, though not common, are reported. The threat of poaching is inextricably linked to the livelihood stability and welfare of the communities whose information and activities directly influence the success of anti-poaching initiatives.

Issue 4: Reduction in woody vegetation

Reduction of woody vegetation has continued and includes an extensive loss of shrub and herb cover. The reduction in woody vegetation has caused loss of habitat and species diversity in Amboseli National Park and a reduction in the diversity of large herbivores. The most conspicuous loss has been in the browsing species associated with the woodlands—impala, giraffe, bushbuck and lesser kudu. This calls for habitat restoration measures to ensure that a habitat conducive for browsers is available both inside and outside the Amboseli National Park.

Issue 5: Loss of grassland

A far greater threat to the Amboseli ecosystem is the loss of grassland and the attendant drop in pasture production due to heavy grazing pressure. The loss of productivity has intensified impacts of droughts (measured by lack of pasture) as manifested in heavy loss of livestock and wildlife in 2009. The results of the long-term counts of livestock and wildlife show that heavy sustained grazing is primary cause of livestock and wildlife losses in the Amboseli ecosystem. The results do show, however, that the losses can be reversed through an ecosystem-wide integrated AEMP.

Issue 6. Recurring droughts

Drought is recurrent in Arid and Semi Arid Lands (ASALs), such as Amboseli, occurring every 10-15 years[8]. The rising frequency and severity of drought has a direct impact on livelihoods of the local pastoralist community. For instance, the 2009 drought was far more severe than in the 1970s due to the restricted space and pasture available to livestock and wildlife. Over 95 percent of the wildebeest, 60 percent of the zebra and cattle, and a quarter of the elephants died in the course of six months. Wildebeest numbers dropped to 200 and would unlikely have recovered without the immigration of herds from Tsavo West and Ngaserai in Tanzania[9].

The potential impact of droughts has increased as the number of residents of ASALs has grown, and as access to key resources has become more competitive. During droughts, farmers and herders maintain a range of coping strategies including mobility and diversity of income sources. Past droughts have triggered changes in the attitudes and values of Maasai pastoralists with a considerable impact on land-use patterns. Some pastoralists have adopted rain-fed farming at the foot slopes of Kilimanjaro and irrigated cropping at perennial water sources (swamp edges and rivers) as a drought coping mechanism. These arable areas also happen to be dry season grazing areas for wildlife and the conversion of such areas to agriculture depletes the wildlife habitat.

Issue 7. Potential for agricultural expansion

The area most suited to non-intensive rain-fed agriculture in the ecosystem is restricted to the agro-ecological zones LM5 (Lower- Midlands Livestock-Millet Zone) and UM4 (Upper-Midlands Sunflower-Maize Zone) at Loitokitok-Entonet area and the south-eastern corner of the Olgulului group ranch bordering Entonet. In terms of production capabilities UM4 is the more productive of the two, with good yield potential for a variety of crops such as beans, chick peas, sweet potatoes, sunflowers, soya beans and onions. LM5 is less productive and the zone is mainly suitable for millet and livestock; however it has a fair yield potential with limited maize production. Land falling within these AEZs in Olgulului/Ololarashi have already been subdivided into 10-acre plots and allocated to members for cultivation. With rain fed arable area completely subdivided, subdivision has now extended to marginal areas in LM6 and LM7 zones, in Kitenden area, where the Kitenden Corridor linking Amboseli and Kilimanjaro montane forests is located [10]. Figure 8 shows the Agro-ecological zones.

[8] In the last four decades widespread droughts occurred in 1975,1977, 1980, 1983/84, 1991/92, 1999/2000, 2004, and 2007/09 (source: Republic of Kenya(2004), National Policy on Disaster Management; KWS&TAWIRI, 2010)

[9] Western et al, 2018. The Amboseli Ecosystem: Status, Changes and Recommendations for the Amboseli Ecosystem Management Plan 2018-2028

[10] Source: Campbell, D.J, Lusch, D.P., Smucker, T., and Wangui, E.E. 2003. Root Causes of Land Use Change in the Loitokitok area, Kajiado District, Kenya. Land Use Change Impacts and Dynamics (LUCID) Project Working Paper 19. Nairobi, Kenya: International Livestock Research Institute.

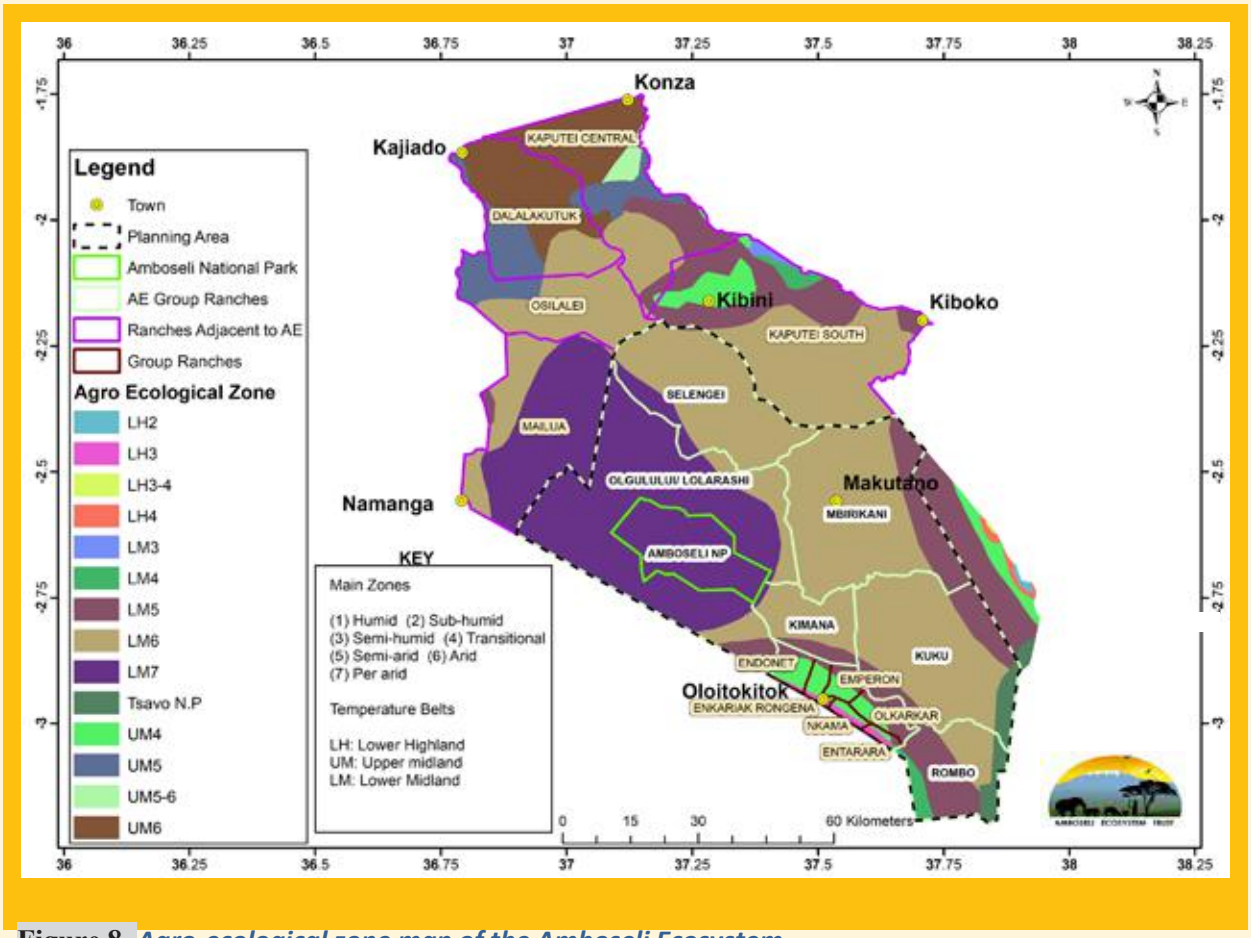


Figure 8. *Agro-ecological zone map of the Amboseli Ecosystem*

Social Issues

Issue 8: Land subdivision and lack of land use planning

The biggest threat to the viability of the Amboseli ecosystem and the free-ranging wildlife herds of East African savanna ecosystems in general is land subdivision. Kimana/Tikondo Group Ranch has been sub-divided into individual land parcels measuring 25ha. The other group ranches have also resolved to subdivide and allocate land parcels to group ranch members. The outcome of land subdivision in Kimana/Tikondo group ranch has been sale of land to people from outside the community who convert pastoralism land to cultivation and tourism use. It is likely that the Kimana land subdivision will be replicated in the other group ranches with adverse impacts on the viability of landscape wildlife species such as elephant and pastoralism mode of livestock production. There is therefore need to consider land use models that will ensure that a viable minimum area is maintained to support viable wildlife populations as well as traditional pastoralism after the group ranches are subdivided.

Despite widespread concerns that group ranch subdivision will fragment wildlife dispersal areas further, and interfere with their movement patterns, subdivision has been adopted in all group ranches in Amboseli ecosystem and currently the ranches are in different stages of the land subdivision process (Table 4).

Further, unplanned (and inefficient) expansion of agriculture and settlement areas are leading to loss of grazing for livestock and wildlife, and blocking corridors such as in Kimana and along Nolturesh pipeline. This calls for integrated land use planning at the ecosystem level that balances conservation and development.

Table 4. Group ranch subdivision status

Group ranch	Date incorporated	Size in Hectares	Registered Members	Land subdivision stage
Kimana/Tikondo	1972	25,120	843	Subdivided
Olgulului/Lolarashi	1975	147,050	11,485	Members have approved subdivision. Subdivision has been carried out at arable areas at Namelok swamp and Entonet-Kitenden area
Kuku "B"	1975	96,000	6052	Subdivision carried out in the arable areas at Kisanjani, area bordering Kimana, and area bordering Tsavo West
Kuku "A"	1984	18,712	6517	Not subdivided
Rombo	1973	38,000	3665	Half of the ranch is subdivided and subdivision is now extending to the rangeland.
Eselengei	1975	74,794	3413	Land survey is to commence soon. The whole ranch apart from the area set aside as a conservancy will be subdivided.
Mbirikani	1981	122,893	4627	Subdivision carried out in the arable areas around the swamps.

Issue 9: Human-Wildlife Conflicts

Human-wildlife conflict has risen sharply to the point of undercutting gains in community-based conservation. This is manifested mainly in form of livestock predation, crop raiding and human injury and death.

Issue 10: The social, economic and demographic changes

The social, economic and demographic changes underway among the predominantly pastoral community of the Amboseli ecosystem are causing fundamental changes in livelihoods, both out of necessity and choice. In the long run, social and economic development is likely to relieve the pressure on land. Meanwhile, for the many pastoralists who remain herders, land subdivision, sedentarization and a loss of seasonal grazing decreases their mobility, herd sizes and resilience to drought. The same pressures pose severe threats to wildlife in the Amboseli ecosystem and national park and intensify competition between people and wildlife over shrinking space and resources.

According to the 2009 National Population Census, the population of Kajiado County in 2009 was 690,000, up from around 149,000 in 1979. This five-fold increase in population is due to both immigration and fertility rates (averaging just over 2.6% annually). The increase at the County level is also reflected at the ecosystem level where membership of group ranches has also been increasing at a similar high rate. For instance Olgulului-Lolarashi GR increased its membership from 1300 in 1987 to 13,428 by 2012 which is an increase of around 3.6% annually. An increase in population results in an increased demand for land to settle and livelihood support (e.g. agriculture and livestock keeping). It also necessitates increase in public infrastructure thereby negatively impacting rangelands.

The social, economic and demographic changes have transformed Amboseli from a savanna ecosystem dominated by free-ranging wildlife and livestock populations driven largely by rainfall, to a highly transformed landscape shaped by human activity.

Chapter 3. Ecosystem Zoning Scheme

3.1 Introduction

Coexistence of wildlife and human activities on the same land has always been challenging, especially due to competition for resources as well as direct conflict between the two. This is made more complex due to growing infrastructure and settlements which cut off wildlife movement corridors thereby undermining viability of wildlife populations in small ecological islands. Zonation is one of the most important management strategies available for harmonizing these conflicting interests and maximizing opportunities for diverse land-use activities. It enables the communities to control the use of natural resources and prevent over-exploitation; provides a way of keeping areas secure for emergency grazing during droughts; prevents conflicts between the different land-use options and utilization options; and allows the communities to protect and benefit from areas of unique or exceptional value[11].

This chapter sets out the main ingredients of the AE Zoning Scheme, which forms a key component of the ecosystem management plan. The chapter starts by giving the goal of the zonation scheme, and the rationale underlying the key features of the scheme. The major zone types are then described, along with a map of the AE showing the geographical boundaries of the different zones. The chapter then goes into greater detail about each zone type, describing the key features of the zone, key management issues, and detailed zonal prescriptions for the five major forms of land-use occurring in the AE: pastoralism, conservation, tourism, cultivation and settlement physical infrastructure.

3.2 Zonation goal and rationale

The overall goal of the AE Zoning Scheme is to optimise sustainable economic returns to the AE residents, by:

- **Delivering the plan's community livelihood and socio-economic, tourism development and conservation objectives**;
- **Promoting the optimal use of land in different parts of the AE as measured by economic returns of the different land uses in these areas; and**
- **Reducing conflict between different forms of land use.**

The zoning scheme provides a rational framework for the future sustainable development of land use in the AE which, if adhered to, will be in the best interests of the entire AE community. The scheme is derived from a consolidation of the land use zoning plans contained in the land use plans (and in the case of Olgulului-Lolarashi GR, the land subdivision plan) of the seven geographic units (six group ranches and the park), apart from Kuku Group ranch, that form the Amboseli ecosystem.

The ecosystem land use zoning plan will be the basis for planning and determining the use and management of the development of the land in the group ranches. The final land use zoning plan will be used as a basis for development control as it will be adopted by the Kajiado County Spatial Plan. It will therefore be the key reference document when applications are made for permitting building developments, requests for subdivision, change of user, dumping and to any such related matters that may modify or change the socio-ecological character of the ecosystem. As such, land use and land development relating to pastoralism, crop farming, conservation, human settlement and transportation shall be undertaken in conformity with the AE land use zoning plan.

[11] Maldonado I.O. et al. 2015. Maasai Mara Conservancies Cultural & Natural Resource Conservation Action Plan

The key feature of any zoning scheme is the definition of different types of zones for the area, each of which features a discrete combination of land-uses and is subject to specific prescriptions designed to maintain an appropriate environment for those land uses to thrive. In the case of the AE, the key current and potential land uses that have been accommodated by the zoning scheme are as shown in Table 5:

Table 5. Present and Potential land Uses in the Amboseli Ecosystem

	Olgulului/ Lolarashi	Mbirikani	Eselengei	Kuku	Rombo	Kimana	Amboseli NP
Current & Potential future land uses	i. Human settlement ii. Livestock grazing iii. Agriculture iv. Wildlife Tourism v. Social infrastructure vi. Commercial vii. Mining	ii. Human settlement iii. Livestock grazing iv. Agriculture v. Wildlife Tourism vi. Social infrastructure vii. Commercial viii. Mining	i. Human settlement ii. Livestock grazing iii. Agriculture iv. Wildlife Tourism v. Social infrastructure vi. Commercial	i. Human settlement ii. Livestock grazing iii. Agriculture iv. Wildlife Tourism v. Social infrastructure vi. Commercial	i. Human settlement ii. Livestock grazing iii. Agriculture iv. Wildlife Tourism v. Social infrastructure vi. Commercial	i. Human settlement ii. Livestock grazing iii. Agriculture iv. Wildlife Tourism v. Social infrastructure vi. Commercial	i. Wildlife conservation ii. Wildlife tourism

From Table 5, the ecosystem can be divided into the following five major zones that accommodate current and future potential land uses:

- Pastoralism (large and small livestock with nomadic and seasonal use of resources)
- Conservation and Tourism (especially protection of AE conservation targets, seasonal dispersal areas and migration routes, and development of premium permanent ecolodges and mobile camps)
- Cultivation (rain-fed and irrigated crop production and horticulture)
- Settlement (both permanent and temporary seasonal villages and commercial and industrial areas)
- Physical infrastructure (roads and utilities)

Table 6 below illustrates the degree to which these different land uses potentially complement or conflict with one another – a key aspect that has been taken into account in the group ranch Zoning Schemes. Where land uses conflict, this indicates that the land uses cannot be practiced together in the same area and need to be separated either spatially or temporal. Thus, Conservation and Tourism, and Pastoralism can potentially be practiced in the same area with limited conflict under appropriate circumstances and with certain prescriptions. However, both Conservation and Tourism are incompatible with Settlement and Cultivation, and cannot be practiced in the same area. On the other hand, Settlement is compatible with both Cultivation and Pastoralism, but Pastoralism is not compatible with Cultivation.

Table 6. Compatibility and conflict between key AE land uses

Land Use / Land Use	Pastoralism	Conservation and Tourism	Cultivation	Settlement	Physical Infrastructure
Pastoralism			✗	✗	
Conservation & Tourism			✗	✗	✗
Cultivation	✗	✗			
Settlement	✗	✗			
Physical Infrastructure		✗			

3.3 AE Land Use Zoning

The AE zone types set out in this zoning scheme take account of the compatibility of the different AE land uses as described above, and aim to promote complementarities between the different land uses, and to reduce conflict between them where these exist. Five zone types are proposed, and are illustrated in Figure 8. As mentioned above, the AE Zoning scheme including the zone prescriptions have been derived from land use plans[12] of the Amboseli Group ranches.

[12] Olgulului-Lolarashi Group Ranch Land Use & Subdivision Plan, April 2019; Olgulului-Lolarashi Conservation & Development Plan 2011-2021; Eselengei Group Ranch Land Use Plan 2018-2028 (draft); Rombo Group Ranch Tourism Development & Conservancy Plan, March, 2011; Mbirikani Group Ranch Land Use Management Plan; 2017-2027; and Amboseli Land Owners Conservancies Association Management Plan, 2016-2026

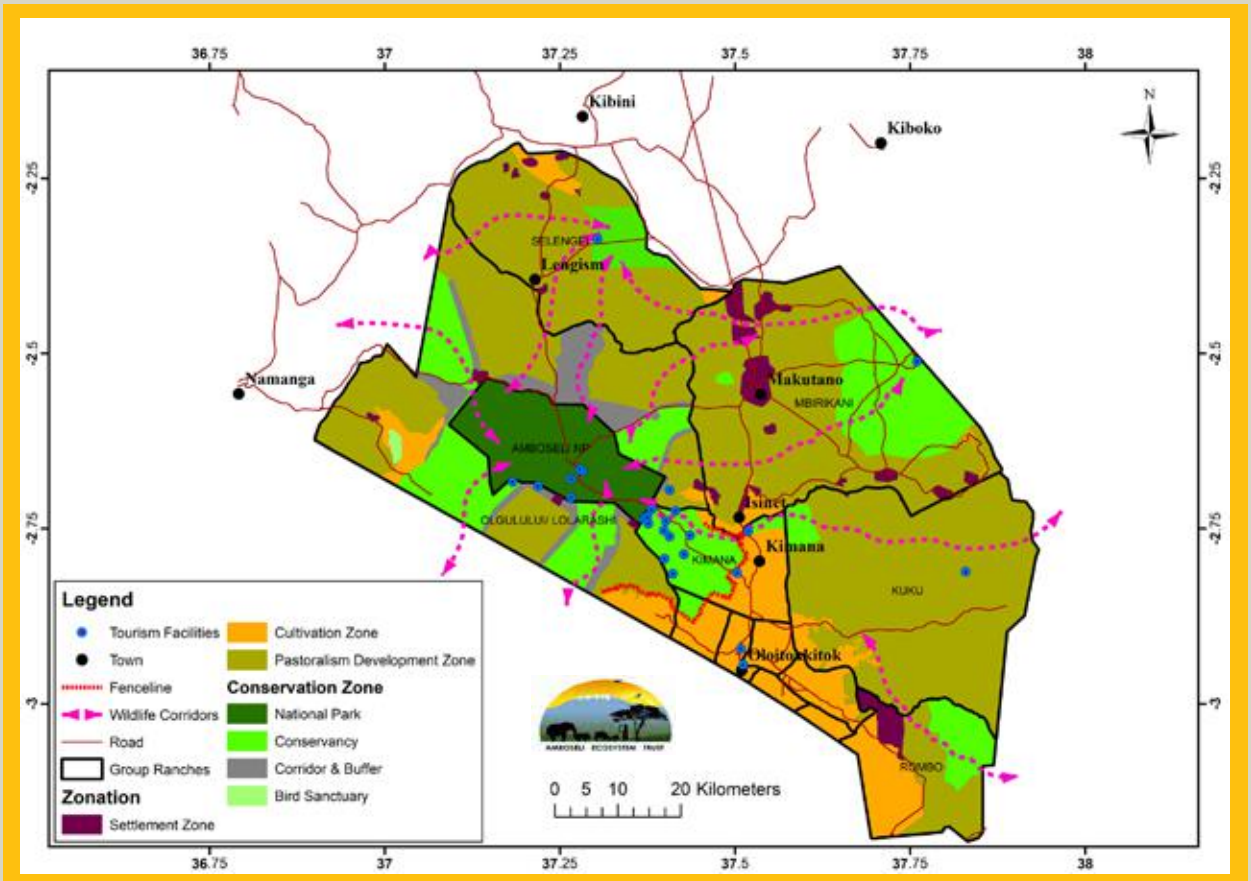


Figure 8. ***AE Land Use Zoning13***

Pastoralism Development Zone

This is the predominant zone in the AE and is the zone where the pastoralism land use will be actively promoted and developed. However, the zone is also of crucial importance for wildlife and contains key wildlife dispersal areas and migration routes that need to be actively managed and protected. The prescriptions established for this zone are therefore designed to promote both pastoralism and wildlife conservation. A significant proportion of the AE is allocated to the Pastoralism Development Zone, and the proactive development of the AE's livestock industry in this zone is an important aspect of this management plan.

One of the key prescriptions placed on pastoralism is that development should occur in a manner within the limitations of the resources (pastures and water) available. This is because any other form of livestock development is certain to be unsustainable in the medium to long term, and will inevitably place heavy pressures on the AE. Unsustainable development of pastoralism will also lead to overgrazing and environmental degradation of the Pastoralism Zone itself, which in turn will impact on the zone's second primary land use, wildlife conservation.

[13] Kuku GR zoning information is missing

Tourism is a secondary land-use within the Pastoralism Development Zone, and although it is not prohibited in the zone, the primary zonal land-use, pastoralism, take precedence. Wildlife viewing and other tourism activities, provided that these activities do not impact on the zone's primary land uses will be allowed. In particular, there is good potential for developing cultural tourism in this zone, as a tourism attraction for the neighbouring conservancies as well as Amboseli National Park, provided that this does not result in a poor standard tourism attraction and the degradation of Maasai cultural values. A summary of zone prescriptions is given in Table 7.

Table 7. Summary of zone prescriptions for pastoralism development zone

Permitted uses	Restrictions	Management standards
• Grazing of livestock • Building of traditional 'manyatta's and livestock 'bomas' • Animal watering points • Cattle dips • Fodder storage stores	• Construction of permanent 'bomas' or buildings • Fencing • Further subdivision of land • Change of user • Change of ownership • Road construction	• Controlled grazing to be encouraged in accordance with GR approved grazing plans • Establishment of communal grass banks • Sensitization on carrying capacities and modern livestock husbandry practices

Conservation & Tourism Development Zone

The primary focus of this zone is on the achievement of the AE's conservation goals, coupled with the delivery of the AE's enhanced tourism product. The primary objective for tourism in the Conservation & Tourism Development Zone will be the development of a premium tourism product, featuring low volumes of visitors but with high returns in the wildlife conservancies. This will complement the existing predominantly budget (high volume, low value) tourism product on offer in Amboseli National Park. The premium tourism product is also most appropriate considering the undeveloped nature of tourism infrastructure in the group ranches, which could not support a traditional budget tourism operation, as well as the Zone's emphasis on the preservation of fragile wildlife corridors and dispersal areas.

The zone is characterised by the Amboseli National Park and the wildlife conservancies spread across the group and individual ranches that make up the AE. The zone contains key wildlife corridors and dispersal areas linking Amboseli National Park with other parts of the Amboseli Ecosystem, and to the neighbouring Tsavo and Greater Kilimanjaro ecosystems, including the Enduimet Wildlife Management Area and other areas in Tanzania. A summary of zone prescriptions is given in Table 8.

Several of the activity prescriptions relate to the provision of "wilderness and adventure activities" such as off-road driving, walking and horseback riding, and night game drives that are not normally allowed in Kenya's national parks and reserves, despite being strongly associated with premium tourism products. The encouragement of these activities will strengthen the conservancies position in the premium tourism niche, and will be regulated by the conservancy management to minimise disturbance or other negative impacts.

The tourism accommodation prescriptions for the Conservation & Tourism Development Zone focus on the development of a relatively small number of ecolodges and ecocamps, which are associated with premium tourism, as opposed to the much larger lodges that are mainly associated with budget tourism.

Table 8. Summary of zone prescriptions for conservation and tourism development zone[14]

Permitted uses	Restrictions	Management standards
• Wildlife conservation • Wildlife viewing and associated infrastructure • Controlled construction of visitor accommodation facilities • Research • Controlled filming and photography • Controlled construction of cultural 'manyattas' in the buffer zone • Controlled grazing of livestock • Laying of underground infrastructure • Construction of water pans • Drawing water from rivers	• Location of visitor accommodation facilities restricted • Bed capacity of visitor accommodation facilities camps restricted • Human settlement or building in any form prohibited without authority • Restriction on the number of traditional livestock in the 'manyattas' • Fencing prohibited • Planting of exotic tree species prohibited • Change of user and subdivision prohibited	• Bed capacity for the conservancies will be determined by 1 bed:350acre ratio • Location of tented camps to be determined through consultation between GR management committees, conservation experts, investors and the county government. • The cultural 'manyatta' be based on Masai traditional 'manyatta' concept. • Filming rights to be granted by the relevant authority • The number and location of cultural 'manyatta' to be determined by GR board and County Government. • Prior to establishing a visitor facility, development approval shall have to be granted by the mandated authorities

Cultivation Zone

Cultivation and human settlement are the two primary land uses of this zone and are permitted throughout the area. This zone is focused on the areas set aside for rain-fed and irrigated agricultural areas in the group ranches. All forms of agriculture are permitted in this zone, but pastoralism and tourism are not encouraged. However, livestock rearing with zero grazing and other intensive farming methods carried out as part of small-holder farming systems is permitted within the zone. Aside from environmental conservation practices associated with cultivation and human settlement, wildlife conservation is a secondary land-use in the Cultivation Zone.

In cases where key wildlife corridors pass through or are adjacent to the zone, wildlife stakeholders will work with the concerned landowners to ensure that corridors are not blocked. In addition measures to reduce human-wildlife conflict in these areas will be intensified, especially since crop cultivation is certain to intensify human-wildlife conflicts.

Tourism is an entirely incompatible form of land use with either cultivation or human settlement, and tourism development is therefore not encouraged in any part of the Cultivation Zone.

[14] In the case of Amboseli National Park, the prescription will be in accordance with the Park Management Plan and the WCMA, 2013

Table 9 gives summarizes the prescriptions for the cultivation zone

Table 9. Summary of zone prescriptions for cultivation zone

Permitted uses	Restrictions	Management standards
• Cultivation of high value crops e.g. tomatoes, onions, capsicum, coriander, herbs etc. • Cultivation of subsistence crops • Farming and bulking of fodder • Perimeter fencing of the cultivation blocks	• Change of user is prohibited • Further subdivision of land prohibited • Change of ownership restricted	• Control of soil erosion and water conservation to be prioritized • No farming on riparian reserve • Organic farming and integrated pest management will be promoted

Settlement Zone

This zone includes all areas that have been set aside for human settlement. Villages, urban centres, trading centres, and industrial areas are included in this zone. This plan proposes that human settlement and related infrastructure development and service delivery should be focussed in a small number of focal areas referred to as "Community Service Centres". Linked to the development of these settlement centres, the plan stipulates that settlements, related infrastructure and other conservation incompatible land-uses should not be permitted in the defined wildlife corridor areas, as discussed in the previous section.

A summary of zone prescriptions is given in Table 10.

Table 10. Summary of zonal prescriptions settlement zone

Permitted uses	Restrictions	Management standards
• Commercial buildings • Residential buildings • Light industrial facilities • Social amenities; educational, health, community halls, play grounds, administration, churches, shops, hotels, open air markets etc. • Permanent buildings by GR members • Burial sites • Semi-detached bungalows and flats shall be encouraged. • Road construction • Street lighting • Greening the residential areas and road reserves is encouraged	• Further subdivision and change of user is prohibited • Row housing shall be prohibited • Burial will be undertaken only in the designated areas	• Management standards for urban agriculture in terms of type, location and management of wastes of activity to be provided as development conditions prior to approval • Conformity to eco-friendly standards: iron sheets, rain water harvesting, use of solar panels/renewable energy and eco-friendly waste disposal using oxidation ponds etc. • Site Master plans should be prepared for education, health, recreation and other social infrastructure prior to

Permitted uses	Restrictions	Management standards
• Nucleated settlements are protected by a wildlife fence • Urban agriculture; kitchen gardening, small scale poultry industry • ***Prior to undertaking any of the above activities, development approval shall have to be granted by the competent planning authority*** • ***Development applications seeking for approval or development permission shall be sought from the competent planning authority in a manner prescribed by the law***		construction, taking into account current and future population needs including environmental considerations to forestall haphazard development and sprawling of the nucleated settlement • The use of green energy i.e. solar and wind is recommended • Adequate water provision and reticulation is recommended for nucleated settlement • The management committee for each of the nucleated settlement shall be established including a resident association

Physical Infrastructure Zone

This zone has been established to provide corridors for installation of communication and utility infrastructure. Roads, electricity power lines, telecommunication cables, airstrips, and water supply pipelines will be installed in this zone.

A summary of zone prescriptions is given in Table 11.

Table 11. Summary of zone prescriptions for physical infrastructure zone

Permitted uses	Restrictions	Management standards
• Primary and secondary roads in the nucleated settlement shall form the backbone of transportation in the GRs • Only the classified roads in the nucleated settlement may be bituminized or graveled • The secondary roads may be graveled • Primary, secondary and nucleated settlement road reserve may be used in laying utility and services • Airstrip may be improved to bituminized surface and auxiliary utilities may be constructed including perimeter fencing	• The tertiary and access roads shall not be opened, constructed and used for transportation purposes to forestall serious degradation of the natural environment • No construction of any form shall be undertaken on the primary and secondary road reserve • Tree planting is not allowed on the primary road except in nucleated settlement • Bituminization of secondary roads is prohibited • The roads reserves provided in terms of primary, secondary and tertiary shall not interfere with any form of development	• The widths of primary and secondary roads reserve shall be maintained at 40M, 36M and 25 M • Nucleated settlement roads shall be maintained at 25M, 18m, 15M to 9 M • Selection of location of new airstrips will consider settlements, wildlife corridors and grazing reserves

Permitted uses	Restrictions	Management standards
	• Only the primary roads shall be bituminized. The rest of the roads shall be graveled • Access roads in the human settlements are exempted from these regulations	

3.4 AE Visitor Use Zoning

The AE Visitor Use Zoning Section has been carried forward from the AEMP2008-2018 with minor changes. This is because the adopted zoning has been instrumental in controlling tourism development and maintaining wildlife dispersal areas and corridors.

The value of the visitor use zoning to tourism use planning is that it identifies areas that are environmentally and ecologically suitable for different types of tourism development based on the naturalness of the area and the spatial distribution patterns of existing land uses and infrastructure. Tourism products can then be developed that conform with existing land uses and infrastructure, changing the underlying land use patterns only when the land use change is advantageous to the land users. This is especially critical with tourism planning in and around ANP, where there are many conflicting land uses.

The AE visitor use zonation scheme provides a framework aimed at regulation and promotion of visitor use across the ecosystem. To achieve this, the ecosystem has been divided into three zones (High Use Zone (HUZ), Exclusive Use Zone (EUZ) and Low Use Zone (LUZ)) each of which provides unique visitor products and is best suited to a particular type of tourism and level of use (Figure 10). The visitor use zones have also been aligned with the land use zones, hence conflicts that arise between the needs of tourism and other major land uses such as pastoralism, conservation and agriculture are minimised gaining the much needed local support for conservation.

The following descriptions of the three zones help show how it is possible to develop sustainable tourism in the entire ecosystem through effective resource planning. The distribution of existing visitor facilities in the AE is given in figure 10.

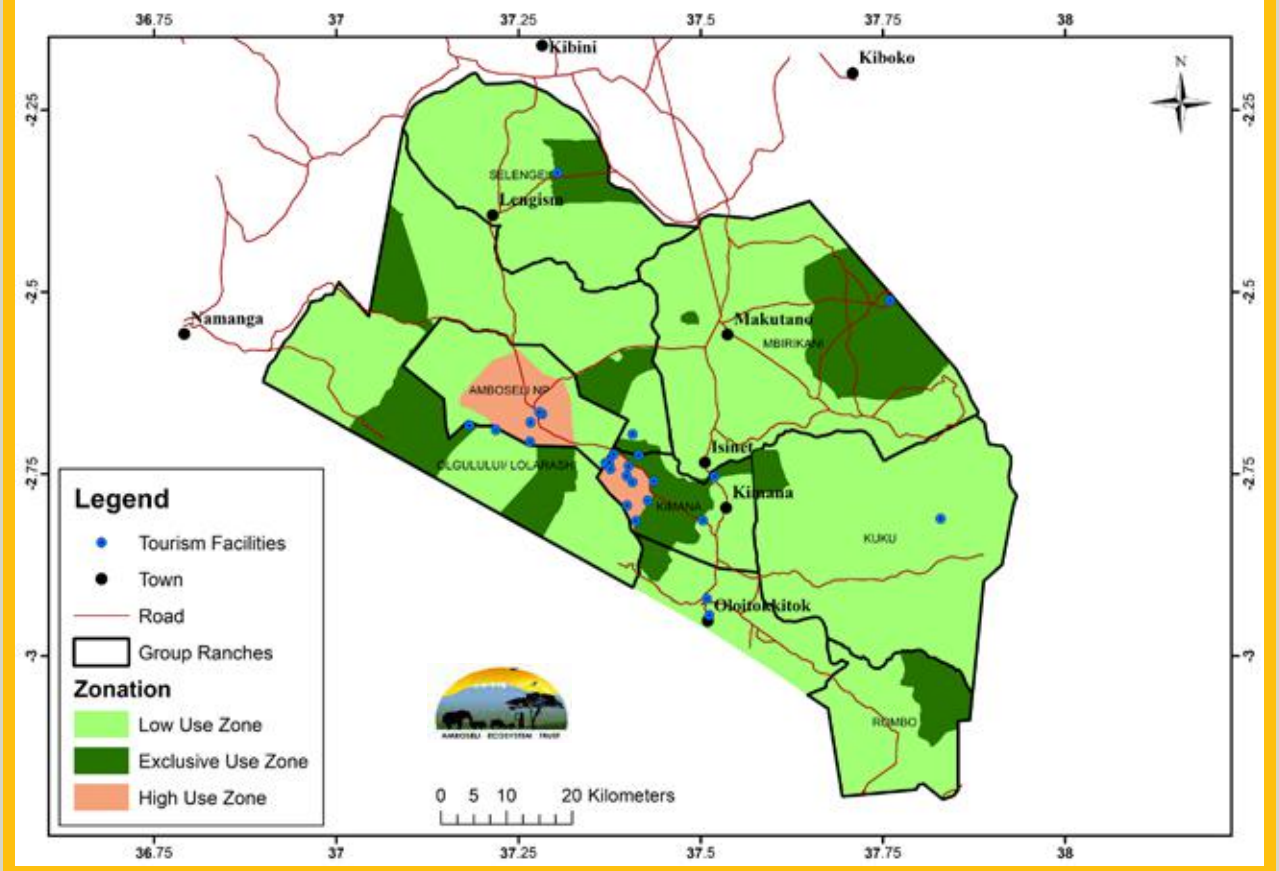
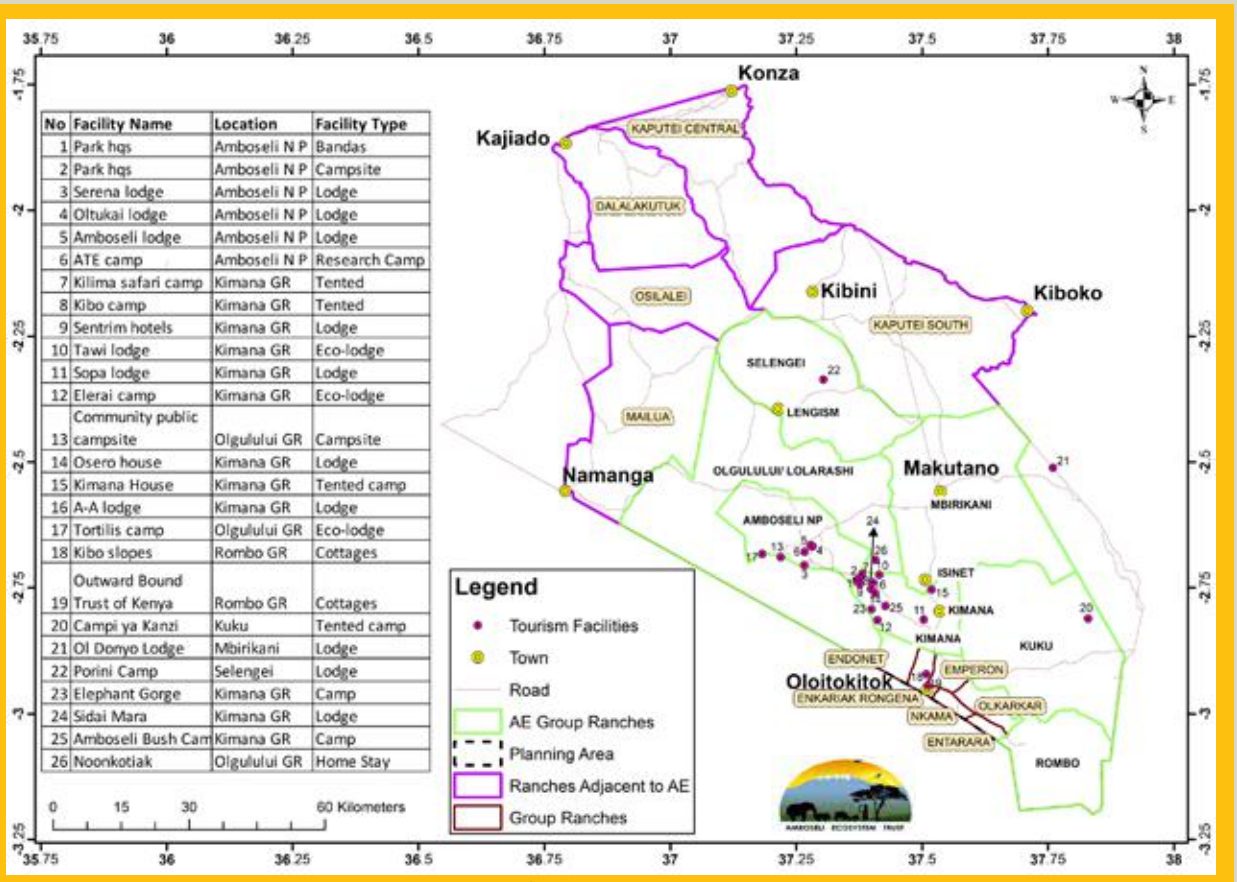


Figure 10. AE visitor use zones



No	Facility Name	Location	Facility Type
1	Park hqs	Amboseli N P	Bandas
2	Park hqs	Amboseli N P	Campsite
3	Serena lodge	Amboseli N P	Lodge
4	Oltukai lodge	Amboseli N P	Lodge
5	Amboseli lodge	Amboseli N P	Lodge
6	ATE camp	Amboseli N P	Research Camp
7	Kilima safari camp	Kimana GR	Tented
8	Kibo camp	Kimana GR	Tented
9	Sentrim hotels	Kimana GR	Lodge
10	Tawi lodge	Kimana GR	Eco-lodge
11	Sopa lodge	Kimana GR	Lodge
12	Elerai camp	Kimana GR	Eco-lodge
13	Community public campsite	Olgulului GR	Campsite
14	Osero house	Kimana GR	Lodge
15	Kimana House	Kimana GR	Tented camp
16	A-A lodge	Kimana GR	Lodge
17	Tortilis camp	Olgulului GR	Eco-lodge
18	Kibo slopes	Rombo GR	Cottages
19	Outward Bound Trust of Kenya	Rombo GR	Cottages
20	Campi ya Kanzi	Kuku	Tented camp
21	Ol Donyo Lodge	Mbirikani	Lodge
22	Porini Camp	Selengei	Lodge
23	Elephant Gorge	Kimana GR	Camp
24	Sidai Mara	Kimana GR	Lodge
25	Amboseli Bush Cam	Kimana GR	Camp
26	Noonkotiak	Olgulului GR	Home Stay

Figure 11. ***Existing Visitor Accommodation facilities in the Amboseli Ecosystem***

High Use Zone

The High Use Zone (HUZ) caters for large volumes of tourists in a naturally scenic though substantially human altered environment. Tourism in this Zone is closely linked to motorized transportation on viewing roads. Tourism infrastructure is highly developed with high densities of viewing roads and tourist beds. Tourism activities in this zone are mainly based on wildlife viewing as the zone coincides with the sections of the ecosystem that have high wildlife concentrations all year round, and hence highly suitable for wildlife viewing from vehicles.

This zone has two separate sub-zones, one in Amboseli National Park and the other in the subdivided Kimana Group Ranch. These sub-zones are described in the following sections.

ANP High Use Zone

The Park's HUZ zone covers about 45% of the total park area, occupying mainly the central and southern sections of the park. This area comprises the three expansive swamps, Longinye, Ol tukai Orok and Enkongo Narok, the lifeline of Amboseli's wildlife. The zone also includes the Ol Tukai enclave at the center of the Park, which unlike the rest of the Park, is community land under the custody of County Government of Kajiado. All the tourist lodges in the park are found in this zone (table 12). Other physical features of tourist interest include the Observation Hill, the highest point in the Park.

Table 12. Accommodation prescriptions for Amboseli NP HUZ

Status	Facility Name	Type	No. of Beds	Status
Existing	Amboseli Serena	Lodge	182	Functional
	Ol Tukai	Lodge	170	Functional
	Amboseli Lodge	Lodge	240	Not functional
	Kilimanjaro Safari Camp	Lodge	160	Not Functional
	Community public campsite	Bandas	18	Functional
Proposed	Additional accommodation facilities are not permitted in this zone			

Ol Kelunyiet High Use Zone

The Ol Kelunyiet HUZ is located to the western edge of the former Kimana Group ranch and borders the ANP. The northern boundary of the zone is defined by the Amboseli Kimana Gate Road, while the eastern extent is marked by the Lemong'o springs. To the west, the zone boundary follows the Kimana-Olgulului/Olorarashi boundary. This zone is highly developed with eight tourist facilities already established here (see table 13).

Table 13. Accommodation prescriptions for Ol Kelunyiet HUZ

Status	Facility Name	Type	No. of Beds
Existing	Osero house	Lodge	Private
	Kibo Safari Camp	Permanent Tented Camp	122
	Kilima safari camp	Permanent Tented camp	134
	Kibo camp	Permanent Tented camp	194
	Sentrim hotels	Lodge	120
	A-A lodge	Lodge	80
	Ol Kanjao	Permanent Tented Camp	20
Proposed	Additional tourist accommodation facilities permitted but the investor has to purchase or lease a minimum of 300 Hectares for a lodge (Maximum 80 beds) and 150 Hectares for an ecolodge or tented camp (Maximum 40 beds)		

Summary of AE zonal activity and accommodation prescriptions

Given the high level of development of visitor facilities and high concentration of large mammals in this zone, which offers excellent opportunities for wildlife viewing, the zone will continue to have the highest level of tourism use in the Amboseli Ecosystem. However, in order to help ensure a quality experience, visitor activities in this zone will be restricted to game viewing from vehicles and guided nature walks at permanent accommodation facilities. No further development of tourist accommodation facilities will be allowed in the Park. However, in order to gain more land for wildlife-tourism outside the Park, development of tourist facilities in the Ol Kelunyiet HUZ will be allowed. The minimum land parcel size for establishing such facilities will however not be less than 300 Hectares for a lodge and 150 Hectares for ecolodges and permanent tented camps. The specific activities and facilities allowed in this zone are set out in Table 14 and 15.

Table 14. High Use Zone: Visitor activity prescriptions

▸ **Game drives**
▸ **Night game drives**
▸ **Guided nature walks**
▸ **Bird watching**
▸ **Visit to cultural centers**

Table 15. High Use Zone: Permitted visitor facility categories

Facility type	Maximum size
▸ Lodges	80 beds
▸ Ecolodges	40 beds
▸ Permanent tented camps	40 beds
▸ KWS self help Bandas	20 beds
▸ Student hostels	80 beds
▸ Public campsite	20 people
▸ Special campsites	2 people

Exclusive Use Zone

This zone comprises the existing and proposed community wildlife conservancies. The zone covers land primarily set aside for wildlife-tourism. This zone ensures that land in community land is reserved for exclusive wildlife-tourism use which ensures that viable corridors and wildlife dispersal areas are maintained. However, mechanisms need to be put in place to ensure that land zoned for wildlife-based tourism is used exclusively for this purpose otherwise the value of the land gained from this status will be eroded threatening support from private sector investors and tour/safari operators.

The zone offers a high quality visitor experience to a small generally affluent clientele. The tourism experience emphasizes personal and small group interaction within a quiet natural landscape. It is a value-added tourism product with higher prices charged per visitor day. Preserving the naturalness of the zones and maintaining the exclusiveness, so that it retains its appeal to the targeted market segment is the key management goal of this zone. In order to encourage establishment of additional conservation areas and hence maintain ecosystem connectivity, a wide variety of tourist activities are permitted in this zone (see table 16). However, to ensure that the conservation areas are large enough to accommodate viable wildlife populations the minimum contiguous land for establishment of a conservation area will be more than 2500 Hectares and to maintain a low impact, high value tourism product, the recommended tourism facility development prescription for this zone is 1 Bed: 350 acres (142 Ha). However, the AEMP Plan Implementation Committee (PIC) can approve bed densities higher than this, so long as visitor numbers and facilities do not have a detrimental impact on the environment.

Table 16. Exclusive Use Zone: Visitor activity prescriptions

- **Game drives**
- **Guided nature walks**
- **Walking safaris**
- **Camel and horseback safaris**
- **Balloon safaris**
- **Bird shooting**
- **Bird watching**
- **Bush break fast, sundowners, and dinners**

Low Use Zone

The Low Use Zone covers the rest of the ecosystem that is neither HUZ nor EUZ. In the park, this zone lies in the western (Kitirua area and the seasonal Lake Amboseli), the northern and eastern sections of the park. This zone is characterised by a very low density of viewing roads and is devoid of tourist accommodation facilities. It however gives the discerning naturalist an opportunity to enjoy the panoramic landscape from vantage viewing points such as Kitirua and Imerishari hills. The level of infrastructure development will remain as at present and no further developments will be allowed.

Outside the Park, the LUZ covers all the land that has not been set aside as either wildlife sanctuary, conservancy or concession area. Most of this zone is under pastoralism and agriculture, but it can still be used

to support special tourist niches such as cultural tourism. In addition, the zone can be used for many tourist activities that are prohibited in the High Use Zone such as balloon safaris. However, since the primary land use objective of the LUZ outside the park is livestock and crop production, tourism facilities that conflict with these two major land uses will not be allowed unless the tourist facility site is designated as EUZ first. Special campsites for overnight stay will, however, be allowed along horse back, camel and walking safari routes. Visitor accommodation and activity and prescriptions for the LUZ are given in tables 17 and 18.

Table 17. Accommodation prescriptions for Low Use Zone

Status	*Facility Name*	*Type*	*No. of Beds*
Existing	Amboseli Sopa	Lodge	188
Proposed	Accommodation facilities targeting the international market will be limited to special campsites along designated walking, camel or horseback safari routes, while accommodation facilities for the domestic market will be limited to student hostels		

Table 18. Low Use Zone: Visitor activity prescriptions

- **Game drives**
- **Walking safaris**
- **Camel and horseback safaris**
- **Balloon safaris**
- **Bird watching**
- **Visit to cultural centers**
- **Bush break fast, sundowners, and dinners**

A summary of activities/use/facilities allowed or not allowed in different visitor use zones is given in table 19.

Table 19. Summary of Allowable activities/use/facility in different visitor use zones

Activity/Use/Facility			
	HUZ	**LUZ**	**EUZ**
Activity			
1. Hiking and walking	√	√	√
2. Scientific research	√	√	√
3. Natural and cultural values appreciation (birding, photography, wildlife viewing)	√	√	√
4. Horse riding	√	√	√
5. Picnicking	√	√	√
Filming (commercial)	√	√	√

Activity/Use/Facility			
	HUZ	LUZ	EUZ
Camping	√	√	√
Facility			
Lodges	√	X	√
Eco-lodges	√	√	√
Bandas	√	√	√
Campsites	√	√	√
Interpretation signs	√	√	√
Wildlife viewing roads	√	√	√
Walking trails (associated with a tourist attraction)	√	√	√
Utility corridors	√	√	√
Administration buildings and compounds	√	X (inside the park)	√
Bird hides	√	√	√

Chapter 4. Community Livelihoods & Socio-economic Programme

4.1 Programme Purpose and Strategy

The purpose of the Community Livelihoods and Socio-economic Programme is:

To win space for livestock, and improve livestock and agricultural productivity to realise the socio-economic aspirations of the AE community within a sustainable framework

The main sources of livelihood in AE are traditional pastoralism, wildlife tourism, intensive rain fed and irrigation agriculture, trade and commerce. The predominant activity on which the large majority of the community depends on is pastoralism. Traditional pastoralism has been demonstrated to be the most economically viable and sustainable land use over the long term and has historically been the major source of income for the majority of the AE community members. This is because suitability for crop production through rainfed farming is limited by climatic conditions, since the majority of the area falls in the arid and a semi-arid zone. The area of the AE most suited for non-intensive rain fed agriculture is restricted to the agro-ecological zones, Lower- Midlands livestock- Millet zone, and Upper-Midlands sunflower-Maize zone, at the foot slopes of Kilimanjaro.

Pastoralism combined with wildlife tourism has historically been one of the major sources of income for the majority of the AE residents. The AE group ranches act as dispersal areas and provide migratory corridors for wildlife movement from Amboseli National Park to the Amboseli Group Ranches and beyond. As such most of the land is has great potential for wildlife tourism development.

Trade is also carried out in AE. Crops are grown for domestic consumption and the surplus is taken to the market to be sold. Livestock are sold to generate income at the household level.

The economic future of the local community in AE depends mainly on modernization of traditional pastoralism, diversification of tourism activities, the development of irrigation areas and adoption of modern farm irrigation methods as well as adoption of modern technology and innovation, value addition, production of animal feeds and enhancing of commerce and trade.

However, to secure and enhance the sustainable socio-economic future of the AE community, the following key existing and anticipated issues that impact the livelihoods of AE community will have to be addressed:

Pastoralism

a) Limitations of traditional animal rearing practices
b) Poor marketing of livestock and livestock products
c) Overstocking and overgrazing
d) Low yields from traditional breeds and poor husbandry
e) Inadequate livestock husbandry support services

Crop production

f) Under-exploitation of irrigation potential and mismanagement of water resources
g) Poor uptake of modern technology in agricultural production

Infrastructure

h) Unplanned settlements
i) Poor roads conditions.
j) Poor infrastructure.

The following paragraphs set out the strategic principles that are designed to guide AE stakeholders in the implementation of the Community Livelihoods & Socio-economic Programme and the achievement of the Programme Purpose.

Guiding principles

The guiding principles below are distilled from different policies at local and national level and describe key factors that influence livestock and agricultural production as well as the living standards of the local community. In implementing the Community Livelihoods and Socio-economic Programme, the AE community will strive to ensure that:

Livestock production is improved for livelihood improvement

Livestock production is the mainstay of the local Maasai community in the ecosystem. Hence, to gain community support for conservation initiatives in the ecosystem, problems affecting livestock production have to be prioritised. To maintain a minimum viable conservation area in the AE will require that stakeholders invest in improving livestock production. This will require that all group ranches zone areas for livestock grazing and implement these grazing plans; increase returns from community livestock through production of good quality livestock products for better markets; and conduct livestock production as business with sufficient investments to enable sustainable commercial livestock production practices across the group ranches. This will lead to increased ecosystem resilience, and increase value, productivity and income generated by livestock, while reducing livestock stocking rates, unsustainable land uses, and impacts on wildlife.

Livestock production depends on the same resources as wildlife conservation and the interaction between livestock and wildlife has many negative impacts ranging from disease transmission from wildlife to livestock, livestock predation by carnivores, and competition for water and forage. All these issues have to be addressed to ensure that there is co-existence between livestock and wildlife if wildlife conservation as a land use is to succeed. Through this programme, efforts will be made to enhance community livelihoods through implementation of intervention measures geared towards increased financial returns from livestock production. Towards this, livestock grazing range, local livestock husbandry and marketing will be improved to secure higher economic returns from sales and diversification of livelihoods.

Pastoralism remains an important livelihood

Pastoralism remains an important livelihood for the majority of households in Amboseli ecosystem. Pastoral herders move seasonally in much the same way as wildlife in order to maintain the productivity of their herds and minimize exposure to droughts. The restoration of herd mobility and grazing management are considered key coping strategies for sustaining livestock production in the Amboseli ecosystem.

However, land subdivision, sedentarization and the loss of seasonal grazing areas decreases livestock mobility, herd sizes and resilience to drought. The same pressures pose severe threats to wildlife in the Amboseli ecosystem and National Park and intensifies competition between people and wildlife over shrinking space and resources. Under this programme, the biggest threats to the seasonal movements of livestock and wildlife, unzoned land subdivision, sedentarization, and the breakdown of traditional grazing rotation causing land degradation and falling productivity of the rangelands, will be addressed. Efforts to restore governance of seasonal grazing practices, pasture productivity and livestock marketing will be enhanced.

Agricultural production is improved

The national government has a Policy Statement on food production that states that Government will continue to advance appropriate measures to increase quality food production to meet the needs of the citizens at all times.

The Kenya Vision 2030 identifies the agricultural sector as one of the six growth drivers of the country's economy and sets out to promote an innovative, commercially viable and modern agricultural industry by transforming key institutions in agriculture and livestock to promote agricultural growth. It also sets out to support:

- Increasing productivity of crops and livestock;
- Improving market access for the smallholders through better supply chain management;
- Value addition to farm and livestock products before they reach local and international markets.

The County government agricultural policy states that it will support expansion of horticulture and floriculture to increase production for local and international markets, while strengthening production, value addition and storage of food crops.

Hence, under this programme, AE stakeholders will strive to adopt modern technology in agricultural initiatives and set up infrastructure for value addition to agricultural produce.

Infrastructure and settlement patterns that support socio-economic development and livelihoods of the local community developed

Most of the agriculture in the ecosystem deals in crops like vegetables that are sold when ripe. Such crops are highly perishable and need to be taken to the market on time lest they rot and go to waste. Unfortunately this is common place in many areas where rural access roads are poor and become impassable during the wet season.

Poor roads also make farming less profitable as the cost of transport eats into the sale price of produce. This exposes farmers to exploitation by middlemen who negotiate extremely low prices from desperate farmers with limited marketing options, and then make large profits through their access to transport and markets.

Good roads would make transport easier and allow farmers to access to markets and therefore the ability to earn more income. Roads also improve information dissemination about markets and prices to minimize dependence on middle men who have traditionally exploited farmers throughout the country.

Given the imminent land subdivision in the Amboseli group ranches, there is need to ensure that settlement patterns do not fragment the ecosystem and hamper pastoralism. To achieve this, primary infrastructure should support enhancement of community livelihoods and social infrastructure and amenities will be provided in nucleated human settlements.

Poverty alleviation programmes that uplift the lives of communities are designed and implemented

This programme seeks to generate conservation benefits for local communities by promoting innovative and traditional livelihood opportunities based on sustainable resource use, tourism, and green enterprises for economic prosperity, equality and social justice. With rich natural capital and unique cultural heritage across the AE, there is tremendous potential to promote ecotourism, culture-based hospitality, and natural resource based on farm and off-farm livelihoods. The engagement of the private sector in green enterprise development through good governance practices that ensure gender equality and social inclusion would be pivotal for effective implementation of this programme.

Poverty alleviation strategies will be designed to make it easy for communities to engage in socioeconomic activities that reduce poverty. Such activities include securing land tenure and legal rights to property especially for women, education enrolment and completion, and access to basic services like health, water and sanitation. These will be followed by other enabling factors like use of modern and appropriate technologies in agriculture, access to low interest rate credit and access to markets.

The poverty alleviation programmes will aim at:

- Reducing the number of the poor
- Increasing school enrolment rates
- Increasing school completion rates, especially for girls
- Universal access to Primary Health Care to within 5 km of all rural households or within one hour of local transport
- Increasing access to safe drinking water by poor households
- Reduce time spent by women on fuel (wood) and water collection.

Water catchment and wetlands are conserved and restored

Water is needed for domestic use and agriculture. This water comes from rivers and streams and it is necessary to ensure their constant flow throughout the year. The only way to do this is to maintain an adequate vegetation cover in catchment areas in absence of which most of the rainwater flows downhill as runoff. This results in floods during rainy seasons and very little or no flow in the streams during the dry seasons. In addition, the presence of vegetation cover along the river valleys prevents soil erosion, siltation of rivers and control flooding.

The Amboseli swamps and river systems are the lifeline of both wildlife and livestock in the ecosystem. The major wetlands systems outside the park include Kimana-Kikarankot and Nolturesh river systems. There are also other equally important springs and swamps e.g. Namelok that are centres of horticulture production as well as critical dry season drinking points for both wildlife and livestock. However, these wetlands face apparent threats from human encroachment such that some are no longer available to wildlife as they have been fenced off to facilitate irrigated farming. This tends to limit wildlife ranging patterns and concentrate wildlife in the park with catastrophic impacts to the environment. Hence under this programme degraded water catchment areas will be rehabilitated and swamps and river systems conserved.

Water abstraction is controlled and monitored

Water abstraction is largely unregulated and there is significant water wastage at abstraction points. This has led to reduction in the volumes and availability of water throughout the year in rivers, springs and aquifers. The lack of water utilization plans has led to uncontrolled off takes from the rivers and streams and the main beneficiaries are largely unorganized. This kind of scenario poses a big problem to the eco-system, which has led to insufficient in-stream flows to sustain domestic and agricultural uses.

The upper water catchment of Kimana–Kikarankot river system, which is arguably the most extensive and reliable water source outside Amboseli National Park, has been cleared for cultivation. The lower sections of the river are fed by underground springs few of which are protected and consequently face degradation through tree felling and trampling by livestock. Water is diverted from the springs that feed Kimana River into irrigation canals or is piped for use elsewhere reducing water flow downstream. There is evidence of high level of pollution from pesticides washed off from the irrigated horticultural farms. Nolturesh river system is similarly affected and there is no longer perennial flow due to excessive water abstraction up stream.

These strategic principles are intended to guide the implementation of the Programme's four management objectives that, when taken together, achieve the Programme Purpose. These four objectives are:

- **MO 1. Livestock production through pastoralism improved**
- **MO 2. Adoption of sustainable agriculture increased**
- **MO 3. Water resource management improved**
- **MO 4. The living standard of the local community is improved through enterprises, natural resource use and planned settlements**

These objectives and management actions and activities needed to achieve each objective are discussed in the following sections.

4.2 Management Objectives and Actions

Objective 1: Livestock production through pastoralism improved

The future desired state of Amboseli Ecosystem is where livestock production continues to play a major role in providing for the livelihoods of the local people and the economic development of the region.

Pastoralism has traditionally been the main economic activity in the ecosystem and the main livestock reared in the area are cattle, sheep and goats while donkeys are kept as pack animals. The livestock production system is characterized by rotational grazing patterns, regular livestock movement, breed selection to increase chances of survival during drought periods and intensive range utilization through selective browsing and grazing.

Livestock production in the ecosystem faces many challenges one of which is increasing loss of dry season grazing areas to farming. Most of the dry season grazing areas in the ecosystem, such as swamps and riparian systems, have been converted to agriculture and settlements, leaving the pastoral community very vulnerable as the only other available drought refuge area is inside Amboseli National Park. Other challenges include: overstocking and overgrazing; unimproved breeds; poor livestock husbandry; poor marketing; lack of value addition to livestock products; and climate variability. This objective has therefore been designed to address these challenges through implementation of the following key actions: improve the livestock grazing range for sustainable livestock production; improve livestock breeding and husbandry; and improve the livestock marketing system. These actions are elaborated in the following sections.

Action 1.1: Improve the livestock grazing range for sustainable livestock production

Recurring drought is a common phenomenon in the arid and semi-arid lands that are characteristic of the Amboseli Ecosystem. However, the impact of drought on the livelihoods of pastoral communities is exacerbated by the lack of effective livestock grazing management regimes to ensure that adequate pasture is available for livestock when drought occurs. Drought has a direct negative impact on natural pasture growth, often resulting in lack of fodder and consequent economic loss for livestock owners that may reach disaster levels. This therefore calls for adoption of drought coping and mitigation strategies that will ensure that livestock loss is minimized when droughts occur.

With land privatization progressing gradually in Maasailand and Kenya at large, formerly successful traditional pastoralist drought-coping strategies, such as mass movement of livestock to less affected areas, are becoming untenable. In addition, absent or weak grazing bylaws, unplanned settlement due to weak settlement controls, degraded areas due to erosion, and poor water supply hamper an effective livestock production system. In this context, drought contingency planning involving establishment of reserves of water and pasture is needed. This management action is therefore designed to mitigate impacts of droughts and provide adequate livestock requirements during the dry and wet seasons. The major activities that will be implemented include:

- **Establishing grass banks** (Olopololi) to ensure that livestock have adequate grazing areas during droughts. These grass banks will double as wildlife conservation areas and tourism enterprises to earn revenue to the local community and have been provided for in the land use zoning scheme. Some of the areas zoned as dry season grazing areas will act as grass banks to be used in case of severe drought.

- **Developing and implementing traditional grazing plans** to regulate access to pasture using the rich traditional knowledge and elaborate community natural resource governance structures and thereby avoid the *'tragedy of the commons'* scenario. These plans will contain grazing bylaws to

regulate livestock movement as well as optimal livestock stocking rates for each grazing zone aiming for balanced stocking rates given wildlife populations. Grazing rotation will be practiced to minimize land degradation and allow reseeded grass the chance to grow and mature. Also, research on invasive species, such as *Ipomea kituensis* and *Opuntia stricta* will be conducted. An early warning system to detect new invasive species will be established[15]. All the information generated through this activity will be disseminated to group ranch members by their empowered grazing committees.

- **Rehabilitating degraded grazing areas** through controlling soil erosion, grass reseeding to improve pasture; and establishing exclosures to re-establish natural vegetation. However, information is needed on what size the exclosures should be to be viable and what level of exclusion is required and there is also need for concerted planning to ensure maximum gains for these rehabilitation projects. For instance, the size of an exclosure needs to be a balance to be large enough to make a difference, but small enough to be protectable and not an inadvertent attractant for fence-breaking elephants. Also, the pattern of how restoration needs arranging in space and time depends on the size of each exclosure.

- **Increasing water supply for livestock** to ensure that livestock have adequate drinking water. This will be accomplished by ensuring that dams and water pans, water tanks for storage of water, and boreholes are installed in the designated grazing zones. For grazing zones that are in close proximity to water supply pipelines, permission will be sought from relevant water authorities to tap water and store it in water troughs for easy supply for livestock. However, for this to be successful it is important to also ensure adequate provision of water for wildlife and protection of the water supply system from elephant damage that will erode community tolerance. It must also be noted that provision of permanent water can have a highly negative impact on range conditions, particularly in dry-season grazing refuges, and the consequences of any water supply initiatives should be carefully considered.

Action 1.2 Improve livestock breeding and husbandry

The future desired state of the AE is where livestock production is enhanced to fully meet the social and economic needs of the local pastoralist community. However, this can only be achieved if the livestock breeds are of high quality, are disease and drought resistant, and have high market value. Hence, this action seeks to improve livestock quality to produce more meat and milk and enhance animal husbandry to ensure that livestock loss from preventable diseases and controllable pests is minimised. To enhance returns from livestock production, the following activities will be implemented under this action:

- **Crossbreeding of local livestock breeds for increased production of meat and milk**. The local cattle will be crossbred with the dual-purpose Sahiwal bulls for enhanced production of high quality beef and milk. This will require provision of quality bulls, rams and bucks for crossbreeding with the traditional livestock. The breeding programme will need to consider and address how equity in access to the bulls, rams and bucks will be achieved. To ensure equity and sustainability of the breeding programme, each group ranch will develop guidelines on how individual group ranch members will participate in the breeding programme. In addition, group ranch officials will prepare and implement livestock husbandry programmes for the breeding stock to ensure that

[15] there is a new algae on the water bodies inside ANP that has recently appeared but nobody knows yet whether it could be problematic

the breeding bulls, rams and bucks remain well fed and healthy. To control inbreeding which can result in emergence of poor traits and low productivity, a rotational breeding programme will be implemented with quality breeding males being rotated in the group ranches. In addition, group ranch members will explore the use Artificial Insemination (AI) to improve livestock breeds. The community will also establish adaptation villages for certain species of livestock and support research on animal breed productivity and survival. A model breeding farm and milk processing plant to serve the entire ecosystem will also be established.

- **Control livestock diseases.** Animal husbandry interventions, diagnosis and treatment of diseases, and improved hygiene are essential in the effort to contain livestock losses. To enhance disease management and monitoring systems, local Para Vets from the group ranches will be trained in animal health care through training workshops. The Para Vets will be the front line technical staff to respond to management and treatment of livestock diseases in the group ranches and they will work closely with the Sub-county Veterinary department. In addition, they will participate in disease mapping in the ecosystem.

- **Maintain cattle dips.** Cattle dips are the most effective tools for controlling tick infestation in livestock, especially cattle, and transmission of tick-borne diseases such as East Coast Fever. However, if dips are not managed correctly, effectiveness is reduced. Hence, each group ranch will strive to ensure that all its grazing zones have functional cattle dips.

- **Conduct livestock vaccination campaigns**. Prevention of livestock diseases through vaccination against preventable diseases is an effective way of minimizing livestock loss. Routine management practices in the AE fall below the required standard for profitable livestock enterprises. Vaccinations are often done only in cases of disease outbreak, sometimes too late when significant economic damage has already been caused. To ensure that preventable livestock diseases do not cause unacceptable livestock losses, the group ranch committees will liaise with the Veterinary department at Loitokitok to implement livestock vaccination programme in the group ranches.

Action 1.3 Improve the livestock marketing system

To increase returns from livestock production, it is important that the livestock production system be focused on specific markets. Currently, the local livestock producers have little influence on livestock prices as these are mainly determined by livestock traders who often buy from the producers at prices that are way below the market prices. To combat this, this action will adopt strategies to cut-off or contain the middlemen who are currently receiving huge profits in the livestock marketing chain at the expense of the producers. Lack of value addition to livestock products further denies livestock farmers higher returns from livestock products; hence measures will be put in place to add value to livestock products. The activities that will be implemented under this action are outlined below:

- **Reclaim livestock holding grounds.** Livestock marketing infrastructure in the form of livestock holding grounds is lacking in the ecosystem. The primary purpose of livestock holding grounds is to provide a quarantine area for livestock before it is taken to the market. In Loitokitok Sub-County, a livestock holding ground was located at Rombo and served livestock from Tanzania,

Taita Taveta, and Loitokitok area. However, the holding ground has been encroached and it requires reclaiming as it is a gazetted facility. As such, under this management action, AET will work with relevant authorities to ensure that the livestock holding ground at Rombo is re-claimed.

- **Support existing livestock markets**. The existing livestock markets such as Kimana, lack basic support infrastructure to facilitate livestock, thus disadvantaging the livestock producers. Under this action, Kimana Livestock Market will therefore be upgraded and equipped with a livestock rump and weighing scales to facilitate sales based on live weight.

- **Develop livestock marketing guidelines.** Livestock marketing in the ecosystem faces many problems; topmost a lack of organized and established livestock markets, as well as inadequate market outlets, resulting in a system controlled by a livestock traders' cartel especially at the terminal markets. Conniving amongst the livestock traders coupled with high costs of trekking livestock to markets keeps livestock producer prices low.

  To increase returns to livestock producers, as well as streamline livestock marketing at the local level, AET will work closely with the Sub-County Livestock Department to develop and implement livestock marketing rules and regulations.

- **Form a livestock marketing association.** In order to enhance the livestock marketing capacity of livestock producers in the ecosystem and increase bargaining power resulting in better returns from livestock sales, livestock producers will be supported to form a livestock marketing association. The association will be the focal point for training in livestock marketing and dissemination of livestock marketing information. In addition, the association will mobilise members to establish livestock transportation means to major urban markets where they can fetch better prices. Currently, most of the slaughter stock is transported to slaughterhouses through trekking due to high transport costs. The Association will buy its own trucks and provide transport services to members at reasonable costs. This will not only enhance returns to individual members but it will also be a means of generating additional revenue for the operations of the Association.

- **Establish linkages with local and international livestock markets.** The primary victims of the cartel-type operations of middlemen and butchery owners are livestock producers and consumers. The off-take level of livestock is restricted by the cartels price control rather than by the demand and supply factors. This control of the market, in turn, deprives pastoralists from selling more livestock and an increasing number of the population from affording meat. To correct this, the Association will source other established markets for the members' livestock.

  Improve existing slaughter houses and support destocking programme. Ecological degradation in the ecosystem has partly been blamed on increasing overgrazing by livestock numbers, especially of sheep and goats, that are beyond the carrying capacity of the range. To stimulate increased livestock off take from the ecosystem and prevent overgrazing, the existing slaughter houses will be renovated and equipped. Towards this the Mbirikani Slaughter House will be operationalised and a clear business model for slaughter houses developed prior to establishment of new slaughter houses. Livestock producers will also be sensitised on need for destocking to reduce pasture degradation. Further, a livestock fattening programme will be explored.

Objective 2: Adoption of sustainable agriculture increased

Agriculture in the Amboseli ecosystem has expanded tremendously over the recent past due to a number of factors. First, the proximity to Nairobi means availability of a huge domestic market, while the international airport makes it easy to access the export market. In addition Nairobi city has also expanded rapidly and spread to the neighbouring counties, especially Kajiado, making farming in the ecosystem very attractive to "agri-business".

Historically, Kiambu was the food basket of Nairobi, but this area has seen rapid demographic and economic changes over the last few decades which have led to a steady increase in population and land subdivision. This has reduced the land available for agriculture and increased the cost of land as the little available is converted into real estate.

With vast land in comparison, Kajiado has gradually replaced Kiambu as the food basket of Nairobi, occasioning thriving crop production in areas like Isinya, Namanga, Kimana, Loitokitok etc which have become popular sources of onions, tomatoes, capsicum, traditional vegetables, French beans and fruits.

The growth of agriculture in the ecosystem has had many implications that need to be understood in the context of an ecosystem management plan. Profitable agriculture has attracted the attention of pastoral communities, who are either abandoning livestock for farming or leasing land for farming to outsiders. This is one factor behind the increasing sedentarization in the ecosystem which also fuels human-wildlife conflict due to crop damage by wildlife.

The ecosystem is generally dry and cannot support rain-fed agriculture throughout the year. This has led to irrigated farming in many areas with water being abstracted from the rivers, thereby affecting other parts and processes of the ecosystem including downstream availability of water for livestock and wildlife. Increasing agriculture, especially for fruits, vegetables and horticulture, means increased use of chemicals like pesticides and fertilizers with the associated potential for pollution whose extent and implications for the ecosystem need to be urgently understood and managed.

Agriculture continues to incur huge losses due to pests and diseases affecting crops and livestock. This is because modern transport networks facilitate fast dispersal of disease and pests from one area to another while modern agricultural practices like monoculture make crops very vulnerable to attacks. The most common responses to this threat are increasing use of chemicals and pesticides as well as greenhouses which have become very popular in some parts of the ecosystem. While adopting these methods to boost production and increase profitability, a major thrust of this programme is to closely examine interactions between agriculture and other environmental components of the ecosystem.

There is need for technology and skills transfer to local people in order to modernize agriculture and boost production. For this to happen there is need for cultural change to adopt new ideas. Concomitant with this is low mechanization is lack of value addition to crops. This means they are sold direct from the fields without any processing which would increase their economic value.

The following actions and activities will be implemented to achieve this objective.

Action 2.1: Adopt best practices in production, value addition and storage of agricultural produce to minimise waste and economic losses

The desired state under this objective is where farmers are able to produce crops with the highest market quality and store the surplus without threat of wastage and infestation. This is in line with the Government's Policy Statement on storage and agro-processing which states that it will initiate appropriate measures, including research, aimed at addressing post -harvest losses, food quality and safety. More importantly, this objective will purpose to achieve the Sustainable Development Goal (SDG2) that aims at achieving food security, improved nutrition recognizing the interlinkages among supporting sustainable agriculture, empowering small farmers, promoting gender equity, ending rural poverty and ensuring healthy lifestyles.

- **Adopt best practices in crop production technologies**. Most parts of the AE ecosystem are water deficient, while the available water tends to be saline, mostly from boreholes. This calls for adoption of modern water efficient technology to minimize water resource use conflicts between farmers themselves and pastoralists. Farmer education and sensitization on adoption of modern agricultural production technologies is therefore vital.

  One way of coping with water shortage and high evaporation rates is use of plastic mulch technology to reduce evaporation. Another much more environmentally friendly method is the planting of trees to create areas of shade, and the use of natural farm waste as mulch and fertiliser. However, the uptake of technology is low and there is therefore need for agricultural extension services.

- **Establish a horticultural canning factory.** The AE is one of the leading producers of tomatoes. But once they are ripe there is no option but to sell them because they are perishable. This means that they are often sold cheaply to avoid them going to waste and the problem is accentuated by poor access roads that delay delivery time. Tomatoes are widely processed into tomato sauce which is a highly popular consumer product. A canning factory in the ecosystem would serve the twin aims of controlling waste and value addition which would give better economic value for the produce.

  Similarly, potatoes can be processed to non-perishable products like crisps, which are also fast-moving snacks in the urban areas due to their portability and popularity with children. Other crops that are good candidates for processing and value addition are French beans and leafy vegetables. Hence, under this action AET will work with county and national governments to solicit for investments in processing and storage facilities. However, it is worth noting that there is already a failed tomato canning factory in Namelok. Hence, before establishing news food processing plants AET and other stakeholders will look at why the existing facility has failed, and if and how it could be revived.

- **Work with county and national governments to source for investors in cold storage facilities and grain dryers.** Another challenge under this objective is storage of fresh produce which would be expensive, such as cold rooms which are lacking even at national level. This leads to waste as most perishable agricultural products go to waste. In addition, poor storage increases the chances of aflatoxin infestation for maize and grains.

To ensure that farmers get better prices for their produce, it would be strategic to sell when demand for farm produce is high and supply is low. Hence, a strategic dryer for maize and grains and a cold room for vegetables like tomatoes which can prolong their shelf life before they are taken to the market will be established in the ecosystem. It is also important to train farmers in aflatoxin control and this will be carried out through extension services.

- **Work with county government in training agricultural extension officers for effective extension services.** To increase uptake of modern technology in farming there is need to equip farmers with the skills that they require to engage in profitable crop production. As such, agriculture extension services will be provided to farmers through the County government and partners. This will include provision of extension services to farmers on greenhouse management, plastic mulch technology and organic farming.

Action 2.2: Work with finance institutions to make it easy for farmers to access credit

Most of the farms in AE are run on leasehold and therefore do not make significant contribution in economic empowerment of the local communities. Part of the reason is because commercial farming requires capital outlay way beyond the reach of majority of households in the ecosystem.

Without cheap means of credit the majority of farmers in the ecosystem can only rely on mainstream commercial banks for credit but the terms in these lending institutions are not favourable to small scale farmers. Under this action, farmers will be empowered to access affordable credit from lending institutions to support their farming activities. Towards this, the farming community will be sensitized on the need to have a collective and corporate entity that champions their interests in respect of agriculture. This will be followed by the formation of cooperative societies within different parts of the ecosystem. These cooperative societies will have a better leverage to bargain for better loan terms for their members and even seek long term financing from development assistance agencies that are focused on rural communities.

Action 2.3: Empower farmers with market information and direct access to markets to minimize exploitation by middlemen

Exploitation of farmers by middlemen, who buy farm produce from the farms for sale at the consumer markets at much higher prices, is one of the biggest challenges facing the farming community in the AE. The desired state that this action aims to achieve is therefore where the farming community is in control of the whole chain of production and marketing to ensure they reap maximum returns.

Tomato and onion farmers in Kimana, Rombo and Loitokitok areas are among the largest producers of the crops in the whole country. However, farmers are frustrated by the low returns they receive because of selling farm produce to middlemen. This exploitation takes a slightly complex form as follows:

- The middlemen organize into cartels that control markets in the main outlet markets of Nairobi and Mombasa. This ensures they monopolise the markets such that only they can supply

these markets, and the farmers who attempt to take their own produce directly encounter frustrations and bureaucracy until they give up;
- They then fix purchase prices denying farmers the advantage of a free market where prices are determined by supply and demand forces;
- On top of these fixed low prices, they buy bulky produce and then repackage them thereby increasing their purchase quantity for a fixed unit bought from the farmer. This is what has brought about the notorious "Turbo package" for tomatoes – where tomatoes are packed into wooden boxes and on top, five more buckets of tomatoes are added. It has been estimated that a "Turbo package" of tomatoes carries over 150 kgs of tomatoes compared to the 60kgs packed flat into the ordinary wooden box.

To address the marketing issues, under this action, the following activities will be implemented:

- **Form a producers' association to advance farmers' interest.** It is clear from the foregoing that for farmers in the ecosystem to gain maximum returns from their work, there is need for a radical upheaval of the market dynamics to break stranglehold of the cartels of middlemen. This will democratize the market and prices which will benefit farmers in the long run as it will eliminate cost of servicing the marketing chain. But to do this the farmers will need a strong grassroots network that will be able to counter the cartels through better organization and networks. As such, under this action, an ecosystem-wide marketing or producers association will be formed. This association will be able to survey markets locally and internationally and advise farmers while negotiating for better prices. It will also seek direct markets for farmers.

- **Use standard nets and packaging and enforce the packaging regulations.** To ensure that farmers are not exploited, there is need for the producers' association to develop farm produce packaging standards for all produce in the whole ecosystem so that individual farmers are not left at the mercy of brokers and middlemen. Once these standards are developed, they will be enforced with support from the County Government.

- **Use modern communication to access market information on prices and tastes.** Modern communication technology will be used to "flatten" the market for agriculture by ensuring that prices of produce in all the major markets are known daily or weekly, thereby empowering farmers to make better decisions. This information dissemination is becoming increasingly easy as a result of the internet and social media technology. Websites like **olx.com** for instance have been very useful in sharing prices. There are also radio stations and programmes that broadcast daily the prices of different agricultural produce in different markets in the country.

Objective 3. Water resource management improved

The desired future state for the AE is where water use is regulated to ensure availability to all users, including wildlife. This objective has therefore been developed to address the following water resource management issues in the AE to improve water resource management:

- Excessive water abstraction
- Lack of Water Allocation Plans

- Ineffective Water Resource Users Associations
- Lack of rainwater harvesting structures and skills at community level
- Poor or lack of protection of critical water sources such as Springs
- Water pollution due to human activities
- Unreliable water supply due to high rates of runoff and lack of infiltration recharging groundwater.

The management actions that have been designed to achieve this objective focus on: monitoring and controlling illegal water abstraction from both surface and groundwater sources; development of water allocation plans; collaboration in monitoring water abstraction; and collaborating with Water Resource Users Associations (WRUAs) to enforce water regulations.

Action 3.1 Monitor and control illegal water abstraction from both surface and groundwater sources

Excessive water abstraction from rivers and swamps fed by the Chyulus and Kilimanjaro threatens the drought refuges vital for livestock and wildlife in the Amboseli ecosystem. Water offtake also threatens habitat diversity created in large part by gravitational water flow from Chyulus and Kilimanjaro. For instance, much of the original outflow from Nolturesh springs has been tapped into pipelines for use in Loitokitok town and about 150 km away in Machakos. The remaining water that flows into the river is used by the residents for livestock, domestic use and for irrigation agriculture leaving only 13% of its output to flow downstream. The high off take of water at Nolturesh springs combined with water abstraction by irrigation schemes along Nolturesh River has affected Esoit Pus swamp downstream, a key dry season grazing and watering point for livestock and wildlife, causing it to dry out during the dry season.

To ensure that water abstraction from the critical water bodies is regulated, AET will collaborate with NEMA and Ministry of Water and Irrigation in carrying out environmental audits of the major water bodies in the ecosystem. The audits will assess water abstraction levels, irrigation methods used, protection of riparian land, and recommend mitigation measures that will ensure that sufficient water is continuously available to various water users in the ecosystem. In addition, since a comprehensive inventory of water abstraction levels from various water sources in the ecosystem is lacking, an inventory will be carried out.

Action 3.2 Develop and implement water allocation plans

The main legal tool to guide water allocation is the Water Allocation Plan (WAP). The WAP provides the rules and procedures that govern the way in which the water is to be allocated to different uses and users to reduce conflicts, and the management controls that are required to safeguard the water Reserve. To streamline water allocation in AE and mitigate impacts of excessive abstraction from water bodies, the Water Resource Authority (WRA) will prepare WAPs for all the major rivers. The WAPs will spell out how water will be allocated to various types of users based on priority of use, measures to be taken during seasons of water stress, and ways and means of enforcement and compliance. It is recommended that first priority should be given to domestic water demand, livestock and later irrigation especially during the dry spell.

In addition, there is need to take an inventory of all valid water permits and review them with a view of making them compliant with the requirements of the Water Act 2002. In regard to this, the WRA will

create comprehensive databases of water abstractors which will be updated continuously. This information will be shared with stakeholders who are involved in the management of the AE. In addition, the WRA will collaborate with other stakeholders in carrying out inspections of water abstraction points in the AE to ensure that illegal water abstraction is stopped. Further, alternative sources of water will be promoted to prevent illegal abstraction.

Action 3.3 Catalyse and collaborate with WRUAS to manage AE water concerns

Several WRUAs have been established in the ecosystem. The WRUAs are supposed to coordinate Water resources management issues at the catchment level, advise the Catchment Area Advisory Committee (CAAC) on water allocation, and develop, monitor and reassess catchment management strategies among other functions. However, WRUAs lack the requisite capacity to carry out these actions effectively. In view of this, WRA will train WRUAs in water resource conservation and management and water quality monitoring. WRUAs will also be assisted in sourcing funds from other funding sources to support implementation of planned WRUA program.

Further, WRUAs have a role through MoUs signed between them and WRA in: Identifying members who are not compliant; sensitizing members on the need to become compliant; conducting inspections as well as patrols on compliance; recommending remedial measures and preparing proposals for funding; and embedding code of practice for water users in their various constitutions. In order to improve the sustainable use and management of water in the AE, and at the same time ensure that drought refuges are maintained, WRUAs will be strengthened to legally enforce water rules.

Action 3.4 Monitor ground and river water sources

There is only one Regular Gauging Station (RGS) within the sub catchment, Enjorai river RGS 3G004, which is manned by WRA. In addition, several boreholes have been developed in AE to supply water for domestic use and livestock as well as irrigation. Development of these boreholes is, however, not informed by sound hydrological data as this is collected erratically. In regard to this, WRA will establish a ground water monitoring network involving data collection from existing boreholes. And in order to ensure that ground water data is spatially comprehensive, new boreholes will be drilled where boreholes are far apart. And to enhance collection of ground water data, WRA will involve ground water users in data collection.

Action 3.5 Train communities in rainwater harvesting techniques and associated mitigation for wildlife interactions

Harvesting and storing rainwater can be a significant drought mitigation strategy at the local level. Rainwater is already being harvested for livestock drinking water in several dams in the ecosystem. Captured rainfall can also be stored in the soil for pasture enhancement. The building of bunds parallel to elevation contour lines, in accordance with the topography, can capture much of this runoff rainwater, which will infiltrate in the soil, thus more pasture will emerge, even in a drought year. As such, to improve pastures, the group ranches with technical assistance from stakeholders, will initiate experimental pasture improvement plots in their ranches utilizing rainwater and if these experiments prove successful in enhancing range productivity, the plots will be expanded.

Rainwater harvesting for agriculture by local farmers in the AE can immensely augment surface water use in agricultural production and address environmental problems such as soil erosion. Harvesting rainwater to support meaningful irrigated agriculture requires that simple, appropriate and affordable rain harvesting and irrigation technologies be availed to farmers. Towards this, to increase gains from the rain harvesting, it is essential that farmers are not only facilitated to harvest rain water, but they are also helped to adopt water-saving irrigation systems, and highly effective crop production systems. In view of this, to enhance rain water harvesting for irrigation and domestic use, WRA will provide training and extension services to farmers to facilitate adoption of rain water harvesting.

Limited water storage facilities limit the amount of water available for socio-economic activities. Therefore efforts will be made to increase rain water storage facilities in the ecosystem. As such, surface water storage facilities, such as tanks, pans and dams will be installed while ground water storage will be provided through artificial ground water recharge and sub-surface dams. When storage is developed from various catchments (roof, river, laga, artificial, etc) the primary aim should be to reduce water demand deficit, drought risks, and water quality degradation risks.

However there is need to carry out water storage facilities assessment in the AE in order to gather the necessary information to inform installation and distribution of water storage facilities.

Action 3.6 Collaborate with WRA to support WRUAS in water resource assessment studies to discern water availability and requirements

There is a scarcity of water in the area surrounding the Park, particularly in Olgulului/Ololarashi group ranch. The group ranch depends mostly on a series of boreholes and dams, and the 90 Km Amboseli water pipeline for water for livestock and domestic use. The water supply system is however, unreliable due to frequent break down of pumping systems. Hence, during the dry season, when water is scarce outside the Park, the Park management has no option but to allow the community to water their livestock at designated points in the Park. However, the large numbers of livestock that are brought into the Park cause severe degradation at the watering points

As such, AE stakeholders, in collaboration with the Ministry of Water officials at Loitokitok Sub-County Office, will carry out a water resource assessment study to discern status of various water sources in the ecosystem. The study will also evaluate water requirement for the local community and their livestock to understand the water deficit in community land and recommend measures to fill this deficit. The outcome of this study will then be used to draw an effective community water supply system in the Park adjacent areas to reduce not only ecological degradation, but also the human-wildlife conflicts occasioned by frequent contacts of livestock with dangerous wildlife like elephants and lions.

Action 3.7: Establish and maintain boreholes and wells

Most wells in the AE are dug mainly for subsistence irrigation and domestic water use. Similarly, boreholes are sunk to supply water for domestic use and livestock and irrigation. However, the wells are poorly constructed and may lead to contamination. Over abstraction from the wells may also lead to drying of wetlands and springs. Hence, under this action new boreholes and wells will be established and existing ones maintained. In particular, measures will be put in place to ensure that wells are not contaminated and water abstraction is controlled through legal means.

Action 3.8: Support protection and conservation of critical water sources and riparian land from degradation and initiate restoration activities in degraded riparian land

Much of the water available in the ecosystem is mainly from springs that feed the expansive swamps and the few rivers in the ecosystem. However, there is little effort to protect the rivers and spring sources; hence most are degraded through tree felling and trampling by livestock. In order to enhance the protection of the springs and avert further degradation of spring sources, all the major springs will be assessed to determine the level of protection required. Once the assessment is carried out, the spring sources will be fenced off, but livestock drinking points will be provided some distance from the spring source. The spring habitat will also be restored through planting of trees in the fenced areas. Further, the impact due to cultivation and vegetation destruction can be mitigated by restricting cultivation to at least 30 meters away from the water sources through enforcement of regulations. The problem can also be mitigated through extensive community education and awareness campaigns on environmental conservation and protection of water sources.

Action 3.9: Protect Kimana swamp from encroachment

Kimana Swamp is situated at the confluence of Kimana and Isinet Rivers and it is shared by both Kimana and Mbirikani group ranches. It is a critical dry season grazing, foraging and watering area for livestock and wildlife in the AE. However, due to rising demand for horticultural land and water, the area's streams and swamps are continuously drained and as a result, the Swamp has dwindled to less than 20 per cent of its original size[16]. Some of the impacts of increased pressure on Swamp include a declining quantity and quality of water for humans, livestock and wildlife due to excessive water abstraction for irrigated farming, and water pollution from pesticides and herbicides that are used in the irrigated plots.

The Kimana group ranch part of the swamp has already been set aside as a wildlife sanctuary, but the Mbirikani side has not and it is the part that faces extreme pressures from the aforementioned threats. In order to maintain the integrity of this wetland so that it continues to be a vital refuge for livestock and wildlife during the dry season, the two group ranches (Mbirikani and former Kimana GRs) that share the swamp will be supported to avert further encroachment on the swamp. In addition, they will be supported to develop and implement a participatory integrated management plan for the swamp.

As a start, and to provide essential planning information, an Environmental Audit (EA) will be carried out to determine the impacts of land use activities on the ecological as well as socio-economic values of the swamp. In addition, to ensure that the use of the swamp is coordinated to prevent over-exploitation, the Water Resource Users Association (WRUA) will be supported to manage the swamp by implementing management measures prescribed in the swamp management plan.

Action 3.10: Support establishment of measures to reduce water pollution in AE's water bodies

Water quality surveys carried out in the swamps located outside the Park where high intensity irrigated agriculture is taking place show that the water is polluted to an extent that it does not meet the Kenya

[16] Kenya Wetlands Atlas

Bureau of Standards (KEBS) and World Health Organization (WHO) standards for domestic consumption. Specifically, total suspended solids, concentration of iron, nitrates and phosphates are beyond the safe limits recommended by the two institutions. The high concentration of these chemicals could be attributed to horticultural farming, which uses artificial fertilizers to supplement soil minerals and pesticides to control crop pests.

To minimize water pollution in the rivers and swamps, the farming community will be supported to adopt effective soil and water conservation measures to ensure that pollutants do not enter the water bodies. This will involve training the farmers in soil conservation measures e.g. terracing and digging contour trenches to prevent water runoff from draining into the water bodies. And to ensure that the management decisions regarding AE hydrological systems are based on sound and timely information, WRA will periodically monitor the water quality from the most stressed water bodies to discern the effectiveness of the management interventions. This will be done through installation of automatic water quality systems to provide continuous observations. With appropriate sensors taking measurements once an hour and the information stored on data logger, a serious deterioration in water quality is recorded and downstream users can be for-warned. Depending on weather conditions, and season, rivers have a certain self-purification capacity in the assimilation of organic matter, and by having a continuous measurement of the water quality, the ability of a stream to take further effluents can be assessed. Thus a full knowledge of the ever changing state of the river is essential for water resources management.

And to further curb against deterioration of the water resource due to pollution, WRA will be vigilant in identifying pollution sources and taking appropriate management or legal action where necessary. Other measures to curb pollution will include encouraging livestock keepers to construct water troughs; disseminating recommended water quality standards to stakeholders; involving the local community in monitoring and reporting water pollution incidents; discouraging car washing along rivers; and establishing a procedure for water quality surveillance to ensure safe water for consumers; conducting a detailed epidemiological study related to water borne diseases.

Objective 4: The living standard of the local community is improved through enterprises, natural resource use and planned settlements

The AE ecosystem has a complex mosaic of important land uses including conservation and tourism which rely heavily on community support and goodwill. It follows that sustainability of these land uses calls for stringent planning and management of all other programmes and socio-economic activities to ensure proper integration and success of the management plan.

Hence, this objective is designed to improve the living standard of the local community through implementation of the following actions: provide adequate accommodation in the settlement areas for the current and future human population through nucleated settlements; establish infrastructure to support social development in the AE; support establishment of new enterprises and employment to improve household income; and strengthen education and health services. These actions are elaborated in the following sections.

Action 4.1: Establish nucleated human settlements

This plan acknowledges that subdivision of the Amboseli Group Ranches may be inevitable and therefore measures need to be put in place to ensure that current land uses can continue to co-exist harmoniously. When individual land parcels are allocated to members of a group ranch, the member might settle on the land and if many do this, the ecosystem will be severely fragmented. Hence, there is need to adopt land subdivision models that are not detrimental to the environment and can support long-term sustenance of pastoralism, wildlife conservation and tourism. Under this action therefore, all group ranches will be encouraged to prepare and implement land subdivision plans that provide for nucleated settlements where social amenities can be provided. Under this model, members might receive more than one land allocation, including land within a settlement area as well as land within grazing areas and conservancies, allowing each member to continue to access and benefit from land for various uses. The location of the settlement zones will be influenced by a number of factors including; transportation corridors, existing water sources, availability of services, and the nature of the land. The human settlement s will perform a number of functions i.e. residential, commercial, administration, rural service centre and education. The advantages of this form of settlement include ease of provision of services, security (including from wild-life) and freeing of land for grazing and conservation activities. The location of some of the proposed nucleated settlements is indicated in the land use zoning plan.

Action 4.2: Establish infrastructure to support social development in the AE

The main issues under infrastructure provision include the demand of current population. However it is expected that as the human population increases and more people move to nucleated settlement, there would be need to upscale infrastructure provision as a deliberate strategy to attract and retain people within the settlement and to forestall the need and desire for people to establish homesteads in the areas designated for other uses.

Regarding infrastructure, the road network is the most important component whose design and management has a significant effect on other components of the plan. Although roads occupy less relative space, they have a large effect on wildlife and people. Most of the roads are poorly maintained and are prone to erosion and flooding which leads to creation of other parallel minor roads that degrade the areas. This is even worse when these roads are used by large trucks in search of sand, ballast and other construction materials, as well as carrying water to livestock in dry season grazing areas. The roads have so far been created with little regard for people and their livestock leading to numerous accidents as livestock cross roads and highways. There is need to incorporate human activity in the design of roads by, for instance making provisions for overpasses or underpasses to allow livestock to cross highways. Further to this, road improvement will include supporting bituminization of national roads, and murraming of group ranch roads.

Action 4.3: Support establishment of new enterprises and employment to improve household income

The desired state that this action aims to achieve is ensuring presence of vibrant economic activities in the ecosystem that absorbs both skilled and manual labour to increase employment while income sources are diversified and strengthened.

A 2017 Household Baseline Survey for Kajiado County indicated that 85% of households had one income source, and only 4% had more than two sources of income. This lack of income diversity implies that the majority of the people in AE rely on crops and livestock for income making them vulnerable to the effects of weather/climate changes like droughts and floods which imply disruption of income.

This lack of income stability also leads to less net income per household which affects the ability of the household to meet its needs such as food, medical and school fees, agricultural inputs, etc.

As such, under this action the following activities will be implemented in appropriate zones: establish water bottling plant; establish nature based enterprises across the group ranches e.g. bee keeping; establish a stone crusher in Namelok, Enkongo Narok, Narok-enterit in Kuku GR; establish additional conservancies; enhance mining, sand and ballast harvesting; lease land to investors who wish to set up commercial projects that are compatible with overall AE objectives; and assess the potential of AE landscape for establishing carbon-based projects, including but not limited to REDD+.

Action 4.4: Strengthen education and health services

The desired state this action strives for is where food security, defined by FAO as a state whereby "all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life", is guaranteed in the AE. In addition it seeks to ensure that school enrolment and completion rates are brought to national average and universal health care is within reach of every member of the community within a short distance.

Food security at national level involves production, distribution and marketing, preparation, processing and storage as well as issues to do with population and health, education, employment and income. It requires involvement not just of the households but also the county and national governments and the international community. Household food security refers both to the availability and to stability of food, together with purchasing power of the household.

Strategies to boost food and nutrition security must address production and seasonality of food availability, and purchasing power. Nutrition security is directly associated with diversity of food resources, with data showing overreliance on a very narrow range of food sources which results in poor nutrition for a majority of residents in AE. Nutritionally poor people tend to be vulnerable to diseases and are less productive while children perform poorly in school and achieve low completion rates.

In addition, access to education and health services is an important predictor of the socio-economic well-being of a community. Different studies in the ecosystem have reported many challenges with school enrolment which include class availability, conditions of the classes, security in schools, water and sanitation availability. Others include availability of teachers and teaching aids like writing materials plus auxiliary services like playgrounds.

The biggest challenge with health access is availability of government hospitals and facilities, which is made worse by poor road networks. Most community members get discouraged from seeking medical help over many ailments due to large travel distances, which leads to increased disease burden and low productivity and survival.

Under this management action, intervention measures will focus on increasing food availability and reliability throughout the seasons while also increasing nutrient security through diversification of food sources. It will also aim to retain children in school through provision of bursaries and scholarships to school children; and enhance school performance through equipping schools with learning tools. Further, health centres and dispensaries will be supported to offer quality health services and the community will be sensitised by community health workers on importance of a diverse food base to improve nutrition. Mobile clinics will be used to reach as many members of the community as possible.

To improve on nutrition health extension, kitchen gardens, specifically for vegetables and fruits, will be established at health centres and schools to sensitize the community on consumption of vegetables and fruits.

Chapter 5. Tourism Development and Management Programme

5.1 Programme Purpose and Strategy

The purpose of the Tourism Development and Management Programme is:

> To make Amboseli Ecosystem an outstanding responsible tourist destination offering a variety of premium visitor experience while supporting conservation and communities

The Amboseli ecosystem is one of the most important tourism destinations in Kenya. The high visitation is attributed to the presence of many unique and diverse natural landscapes and wildlife viewing opportunities that offer correspondingly diverse holiday attractions to both local and international visitors who include Amboseli in their holiday and safari itineraries.

The core of these attractions is the Amboseli National Park, famous for its beautiful plains with a backdrop of Mt. Kilimanjaro. The Park hosts a rich assemblage of wildlife species and populations, and is famous for large herds of elephants, especially during the dry season when wildlife from around the ecosystem congregates at the swamp in search of water and forage.

The Park is surrounded by ranches that are ecologically connected to the National Park, and which cohost high populations of migratory and resident wildlife. As a result, there are also numerous opportunities for tourism outside the park, providing a foundation for the thriving private and community tourism enterprises in the ecosystem. The ecosystem is also mainly inhabited by the Maasai community whose authentic culture remains an enduring attraction to visitors to the ecosystem.

Other factors that make the Amboseli ecosystem attractive for visitation include proximity to other important destinations. For instance, its only about 4 hours drive from Nairobi, and is easily booked as a one day excursion from Nairobi by many visitors in the city whose time budget cannot allow extended travel and safaris. Amboseli National Park is also only 50km off the Nairobi – Arusha highway from the Namanga border, used by many visitors from Kenya going to safaris in Northern Tanzania. Hence, many visitors to Kenya and Tanzania include Amboseli in their itinerary because of convenience and also because it is regarded as the best viewing site for Mt Kilimanjaro.

The relatively good road network between Nairobi and Namanga on the Western side of the ecosystem, and Oloitoktok on the Eastern side makes Amboseli appealing to many local visitors who can easily access the ecosystem, including the park, by private vehicles without incurring huge costs of safari vans and guided safaris.

The high tourism potential and diverse opportunities for investments in the ecosystem have naturally attracted numerous investors at different levels of the tourism hierarchy leading to many, sometimes uncoordinated, developments. In effect then, the AE is under great pressure and experiencing threats which are of great interest to stakeholders and whose resolution calls for long-term planning and management.

The main concerns are:

- **Standards decline** – The quality of the tourism products available in the AE is in sharp decline and is likely to undermine its quantitative growth by downgrading the destination's appeal among discerning visitors. This decline is due to rapid and unplanned development of tourism facilities on the border of Amboseli National Park as a result of poor and weak regulations and controls. These tourism facilities depend largely on the Amboseli Park as the key attraction and wildlife viewing location. This leads to a sharp increase in visitor densities in Amboseli National Park, while these facilities make minimal contribution to conservation or community livelihoods in the wider ecosystem because profits are extracted by remote beneficiaries.

- **Environmental impacts** – The proliferation of tourism enterprises in the Ecosystem is having adverse impacts including disruption and closure of wildlife dispersal areas and migration corridors to the east of Amboseli National Park. For instance, the development of many lodges next to each other with elephant-proof electric fences on small plots in the Kimana area has disrupted elephant migration corridors that connect Amboseli National Park with the Chyulu Hills and Tsavo ecosystem, and with wetland areas to the east of the park. Elephants continue to move around these zones but are in increasing contact with communities which exacerbates human-wildlife coexistence challenges.

- **Land Use changes** – The AE has witnessed rapid land use changes over the recent past. These changes are incompatible with conservation and tourism, especially subdivision of formerly community land into small plots, growing sedentarisation of the previously mainly nomadic people, which leads to increase in more settlements and associated activities like agriculture and fencing. These land-use changes are mainly an economic imperative, as most of the tourism and conservation activities in the ecosystem don't generate direct income to the communities, who are forced to resort to competing land use activities like farming from which they can get direct economic benefits

This management plan spells out the guiding principles and management programmes that will seek to address these and other challenges to realize sustainable tourism development by:

- Extending the socio-economic benefits of tourism to local communities to stem adverse land use changes;
- Regulating development of tourism enterprises within an agreed framework and standards to protect the premium value of the destination;
- Protecting ecosystem processes that sustain wildlife by conserving the migratory corridors and saving the Amboseli National Park from degradation as a result of high wildlife densities. This will work in concert with diversification of activities outside the park to reduce the high visitor densities that undermine the park's wilderness value

The following section details the specific management activities that have been proposed to achieve the programme purpose.

Guiding Principles

Tourism development and management in the AE will be anchored on national policies and programmes. The latest blue print for the tourism industry is The Big 4 Tourism Plan, which has identified the following four agendas:

- Product diversification to cope with modern and evolving customer needs
- Marketing modernisation and intensification at ecosystem level
- Investment regulation and control to conform with overall ecosystem plans and national standards and,
- Infrastructure development to promote tourism outside the National Park

These big agendas will inform proposals for tourism management in the AE in respect of new products, investments and marketing

Product diversification to cope with modern and evolving customer tastes

Historically, tourism products in AE have centred around wildlife viewing, making Amboseli National Park the focal point for tourist activities in the ecosystem. The immediate effect of this is that most investments, product packaging and marketing are oriented towards the national park with visitors having little else to do once in the ecosystem. This creates congestion in the park, with its attendant environmental impacts as well as product fatigue among the visitors. With Amboseli Park being relatively small and easily motorable, visitors to Amboseli exhaust the product offering within just a few hours game drive. Hence, Amboseli is still regarded by many visitors as a "quick" destination for one or two nights, which limits the ability of the destination to encourage more spending and boost earnings from tourism.

This management plan requires stakeholders to be cognizant of the rapid changes in tourism dynamics throughout the world where safari enthusiasts seek diversity and new activities and experiences. The advent of new communication mediums means that many people across the world can now view videos and pictures of wildlife in our national parks taken by other people on safari or by institutions like KWS and conservation NGOs. Hotels and lodges use these images in their marketing websites such that wildlife is no longer the mystery it used to be a few decades ago. While every visitor desires to see animals, especially the big five, in the natural world, the curiosity and excitement is much less after seeing them in many marketing platforms. With a diverse landscape, cultural and land use tenures, AE has great potential for development of tourism products outside wildlife viewing like nature and cultural expeditions, cycling, walking, horse-riding and other products that are unique to the ecosystem

The Amboseli ecosystem tourism stakeholders should be guided by the principles of comparative advantage and seek to differentiate Amboseli tourism from the other ecosystems like Maasai Mara and Mt Kenya/Meru/Samburu which are able to better leverage wildlife as an attraction. To be competitive, AE needs to explore products that capitalise on its uniqueness and history, while of course preserving the wildlife product, especially the elephant viewing opportunities for which it is world famous.

Another popular tourism product is the Maasai Manyatta (homestead), which showcase the Maasai way of life. This involves a group of visitors being received by a select leader of the Manyatta who gives them a tour of the Manyatta, including entertainment by community members, especially young men doing demonstrations of the popular Maasai jump. There has been serious concern in the industry that this

'Cultural Manyatta' product needs repackaging to save it from product fatigue and abuse. There are concerns that it lacks authenticity and that members in some Manyattas exaggerate poverty to seek sympathy from tourists, or that undue pressure is put on tourists to buy curios even when they are not interested. Information about travel spreads fast nowadays due to many forums like www.tripadvisor.com where travellers share experiences (especially negative ones). In this way negative perceptions about the Manyattas have been spreading within tourism circles, including comparative pricing information showing that what is offered at the Manyattas is more expensive than what they can buy elsewhere, when indeed it should be the other way round, the assumption being that Manyattas are the "source." All this has gradually worked to undermine the product value of the cultural Manyattas, to the point that many tourists opt not to visit.

Another consequence of Amboseli Park being the main product in the ecosystem is the mushrooming of lodges and camps in the immediate vicinity of the park, especially the ex-Kimana Group Ranch. This is undermining the Amboseli National Park tourism product.

Marketing modernisation and intensification at ecosystem level

Tourism is a very competitive business globally and locally and there is need for aggressive and innovative marketing in the AE to compete effectively with other leading destinations.

Since marketing is an expensive undertaking, there is need for different stakeholders under this management plan to form a united marketing unit, within AET, which can monitor trends in marketing and consumer trends and update the current marketing literature and strategies, with special focus on modern technology.

Investment regulation and control to conform with overall ecosystem plan

The Sessional Paper number 1 of 2010 on "Enhancing Sustainable Tourism in Kenya" has laid great emphasis on code of practice and sustainability. Over a very long time, development of tourism facilities within the Amboseli Ecosystem has mainly been investor driven and therefore not coordinated with each other or with the wider interest of conservation and sustainability, with many facilities being developed without due regard to their potential impact on the environment.

In Amboseli National Park, for instance, there is the long-standing case of the Ol Tukai Enclave. This is a 162-hectare area located in the centre of the Park, which, since the park was gazetted, has been managed directly by Olkajiado County Council rather than by KWS. In recent years the Enclave has been badly mismanaged, with two derelict lodges, haphazard development of a variety of facilities throughout the area (such as kiosks, bars and petrol stations), and poorly maintained and shabby buildings. The end result is that, rather than the attractive ecological oasis that the Enclave once represented, it is now an eyesore and an embarrassment to Amboseli National Park as well as the reputation of Kenya's tourism product.

Furthermore, if the two derelict lodges in the Enclave were to be re-opened at their previous capacities (240 beds for Amboseli Lodge, and 160 beds for Kilimanjaro Safari Club), the addition of an extra 400 beds at the heart of the ANP to the nearly 1,500 beds that already exist in the ecosystem would exacerbate the extremely high levels of use that already characterise the parks tourism product. This would also place additional pressure on the areas' environment as the small size of the Enclave is insufficient for three lodge facilities.

The management plan recommends that both derelict lodges in the Ol Tukai Enclave should be demolished and replaced by a premium, high-end eco-lodge.

On the other hand, in the subdivided Kimana Ranch, tourist facilities are being developed on wildlife routes blocking free movement of wildlife to their dispersal areas. Hence the challenge for the tourism programme in the ecosystem is to design a high value, low impact tourism product that balances conservation and development. This demands a common tourism vision and strategy among competent landowners in order to ensure that tourist facility development does not impinge on tourism resources degrading and consequently devaluing the tourism product.

Infrastructure development to encourage tourism outside the national park

Currently, the destination of the bulk of visitors to the AE is the Park as tourism facilities such as viewing roads are not developed in the Amboseli group ranches. This has led to continued congestion in the Park, which is likely to worsen if development of accommodation facilities continues outside the Park without the development of corresponding viewing circuits to support more vehicles.

To disperse visitors widely in the ecosystem, and forestall further tourist-related ecological degradation of the park and ecosystem, tourism developments need institutional coordination with all facilities, existing and proposed, being subjected to environmental impact assessment or audit in line with the requirement of the Environmental Management and Coordination Act (1999). In addition, development of tourism accommodation facilities will be guided by the limits of acceptable use set out in the ecosystem zoning scheme.

Several of the recent tourism developments in Kimana Group Ranch have erected wildlife-unfriendly fences around their entire plots, hence blocking migration routes for large mammals, especially elephants, which is ecologically hazardous. Where necessary, the lodge owners should be required to modify their fences to reduce their size and also alter the design to minimise damage to ecosystem processes like seasonal movement of wildlife.

These guiding principles are intended to guide the implementation of the four tourism management and development objectives. These objectives focus on minimizing adverse impacts of tourism, enhancing equity in sharing benefits accruing from tourism, enhancing visitor satisfaction by improving and diversifying the tourism product, and marketing the tourism resources in the AE. The four objectives are:

- **MO 1. Tourism developments are coordinated to ensure proper standards, distribution and sustainability**
- **MO 2. Local communities are adequately engaged to ensure optimum benefits from tourism**
- **MO 3. Tourism products in AE are diversified to give visitors greater experience and variety**
- **MO 4. Marketing of AE as tourist destination is devolved and modernised to attract high end local and international tourists to different attractions within the ecosystem**

The following sections describe these management objectives the management actions needed to achieve them. Under each management objective there is a brief description of the relevant management issues and opportunities providing the justification for the actions.

5.2 Management Objectives and Actions

Objective 1: Tourism developments in the AE are coordinated to ensure proper standards, distribution and sustainability

Management of tourism developments in the AE has been weak or lacking and this needs to change in line with the guiding principles to ensure spatial coordination and sustainability. Hence there is need for development of an integrated tourism plan that adequately addresses the challenges of poor planning and regulation.

While encouraging private and public investments, there is need to have a form of control and regulation to avoid visitor congestion that dilutes the product and also ensure that all investments conform to the ecosystem plan and standards. For instance, many unsightly tin-shack markets near the gates of Amboseli Park not only degrade the aesthetic appeal of the area but also pose a security threat. However, KWS is unable to control such developments because they are outside their jurisdiction. A well-coordinated management plan for the entire ecosystem will ensure that all developments are in harmony with the whole plan.

One of the immediate threats to development of sustainable tourism in the AE is potential degradation of the key tourism resources in the area, the wildlife diversity, through congestion in the Park after wildlife movements are curtailed by tourism developments and agricultural expansion in the ecosystem. The ongoing land subdivision makes matters even worse as the majority of investors want to invest in tourism.

The following actions will be implemented to achieve this objective.

Action 1.1: Control and regulate infrastructure growth

There is need for collaboration by all stakeholders to control and regulate infrastructure development in the ecosystem to ensure conformity with standards and spatial distribution.

Action 1.2: Provide incentives for investments

There is need to lobby the government to provide incentives to communities and investors to establish tourism facilities outside the park. This will support the overall objective of the management plan to encourage diversity of tourism attractions and facilities in the entire ecosystem.

Action 1.3: Open connecting circuits between ecosystems adjacent to AE

AET will work with stakeholders to open up a connecting circuit between Maasai Mara and Amboseli and Tsavo West. The connecting circuits will serve the direct role of diversifying tourism by opening up new experiences and opportunities for communities and visitors while boosting the tourism experience. It also provides the added benefit of saving costs of large distances around these circuits.

Action 1.4: Develop designated entry points and information centres for the conservancies

The group ranches are currently poorly served by tourism support infrastructure, including gates and signage that ease visitation and provide necessary information, which is a handicap on visitation and the visitor experience. There is need for development of suitable and easily identifiable entry points to the conservancies which will also need to be equipped with information panels and associated facilities, and clearly marked notices regarding littering, off-road driving and other undesirable behaviours (and associated penalties).

Action 1.5: Develop tourism accommodation and recreation facilities

Develop an eatery and entertainment business at a strategic location to meet the demands of visitors to Amboseli. There is need to explore suitable areas to set up both high end and budget facilities to cater for diverse interests and tastes of visitors. Modern student hostels and private bandas should be developed to tap the study tours market.

Action 1.6: Provide incentives to tourism investors to facilitate establishment of private wildlife conservation areas in the land bordering the park

One of the immediate threats to development of sustainable tourism in the AE is potential degradation of the key tourism resources in the area, the wildlife diversity, through congestion in the Park after wildlife movements are curtailed by tourism developments and agricultural expansion in wildlife dispersal areas. The ongoing land subdivision is not helping since once a group ranch is subdivided; individuals sell it to investors for development of tourist facilities. The land bordering the Park is currently being sold at a premium because of proximity to the Park, but despite this the big investors are still leasing or purchasing it. In order to ensure that this land is not converted to land use that is incompatible with conservation e.g. settlement, KWS will give incentives to tourism investors and tour operators who lease or purchase land and consolidate it to create large conservation areas that offer critical connectivity between the Park and the rest of the ecosystem. Suitable and agreeable incentives will be negotiated through the tourism stakeholder forum to be established under action 1.11 of this programme.

Action 1.7: Identify high tourism potential areas

Tourism planning within the group ranches is critical so that it does not endanger its own interest through uncoordinated expansion. Currently tourism development is threatened by the imminent subdivision of the group ranches into small private plots that cannot support viable wildlife tourism individually. Good tourism facilities require a feel of wilderness and hence need isolation from each other especially in areas that are rich in wildlife, and minimal human activities. It is important then that areas with high tourism potential be identified and set aside for tourism development before subdivision occurs.

Action 1.8: Establish a tourism monitoring programme

In order to understand the nature, extent and trends of tourism impacts, and consequently intervene promptly to avert major negative environmental and social impacts arising from tourism activities, AE

management under AET will establish a tourism monitoring programme in collaboration with the tourist facilities and resident research NGOs in the ecosystem.

Action 1.9: Monitor tourism activities in the ecosystem

Visitor satisfaction in the AE will be monitored to determine the factors likely to affect the desirability of the ecosystem by visitors. Frequent interviews and visitor surveys, will be carried out and results used to improve the tourism product in the AE. The results will also be disseminated to the tourism stakeholders through regular briefings and reports to facilitate them to take corrective action. Some of the data to be collected through the tourism monitoring programme will include bed occupancy, resource use by the facilities, amount of solid waste disposed at campsites and picnic sites, AE visitation, and visitor activities.

Action 1.10: Conduct EIA/EA on tourism projects

It is a statutory requirement under the Environmental Management and Coordination Act (1999) for all tourist camps and lodges to carry out an initial environmental audit and subsequent annual audits. However, this provision is rarely followed partly because NEMA lacks the required capacity to enforce this legal requirement. In order to ensure that tourist lodges in the AE are environmentally compliant, hence minimize environmental pollution emanating from these facilities, AET will liaise with NEMA to have a qualified resident environmental researcher, appointed by NEMA as an Environmental Inspector in accordance with the EMCA 1999. The Environmental Inspector will be responsible for leading quarterly inspections of facilities to assess their adherence to environmental mitigation measures outlined in Environmental Impact Assessment and Environmental Audit reports. These inspections will be impromptu to ensure that facilities are continuously compliant. The Inspection will also focus on activities that contravene park rules and regulations and the Wildlife Act, 2013, such as habituation and feeding of animals at the tourist facilities.

Action 1.11: Establish a tourism stakeholders' forum

Because of their commercial interests, tourism investors can play a positive role in influencing future tourism development in the AE, as they share a common interest of having the best customer reviews in order to build their business into profitability. It is therefore in their collective interest to accede to forge a common front to ensure there is effective self-regulation and control that will ensure that high quality tourism is developed in the AE.

Development related issues have already emerged in the areas to the east and south of the Park. Fences installed by developers are limiting animal movement by either hemming the animals in, or preventing traditional movements. It is therefore important that new entrants in the Amboseli tourism development sector find a cohesive and collaborating tourism industry to avoid chaotic development. Towards this, a tourism development and management committee consisting of the current tourism stakeholders and AET will be established for purposes of lobbying for coordinated and sustainable tourism development in the ecosystem. Issues of concern among the tourism stakeholders such as asset devaluation (due to increased overcrowding by similar facilities), reduction of the natural and aesthetic appeal of the area, blockage of wildlife corridors, and threats to visitor safety will be addressed by this forum. In addition this forum will agree on the modality of joint implementation of management actions of benefit to all stakeholders.

Objective 2: Local communities are adequately engaged to build local capacity and ensure optimum benefits from tourism

Wildlife-based tourism as a land use has been gaining popularity with the Amboseli landowners and as a result various conservancies have been established within the Amboseli Ecosystem. The first community conservancy in Amboseli, Kimana Wildlife Sanctuary, was established in 1996, while Eselengei Conservancy in Eselengei was established in 1998. Olgulului Group Ranch has set aside Kitirua Concession Area as an exclusive wildlife and tourism area, and Kitenden Conservancy has been established with support from IFAW. Mbirikani has entered into a concession with Ol Donyo Lodge. Community established and managed conservancies are very positive for development and conservation, and a clear demonstration that conservation can compete with other types of land uses in the Amboseli Ecosystem.

In spite of this remarkable progress towards integration of local communities in management of wildlife, there is still concern that benefits accruing from tourism do not trickle to the grassroots or are insufficient, compared to competing land uses such as livestock and agriculture. This is a threat to conservation and also undermines growth and development of sustainable tourism in the AE because tourism as an industry lacks full backing and goodwill from the communities.

On the other hand, better returns from tourism lead to more support for conservation and appreciation of tourism by the local people, which is a prerequisite to successful implementation of the management plan.

All efforts should be made to win community support for tourism by involving the communities in developing community tourism products for generating direct revenue and improving returns from leased enterprises.

Management actions under this management objective are elaborated in the following sections.

Action 2.1: Review leases where necessary

Tourism investors play a critical role in wildlife conservation in the Amboseli Ecosystem. They provide employment to local communities and support local entrepreneurs who provide goods and services to their clients. There are several investors who have leased land from the local community and are using it for game viewing. However, there are fears that the lease fees are generally below market rates because they were negotiated way back and do not reflect the current opportunity cost of alternative land use. Under this management action therefore, the communities will be encouraged to renegotiate lease fees for the concession areas and the tourist accommodation facilities on their land to reflect current market rates. However this can only be done within the context of current lease contracts because leases are legally binding contracts on both parties. Hence the best way to go about this is to appoint a consultant agreeable to all parties who can carry out an independent and professional review of the rates being charged against the market rates. Where rates are found to be wide of the market rates, the communities will be encouraged to renegotiate the leases. This has potential to generate reasonable income for the community as attested by the renegotiation outcomes of the Kitirua Concession Area lease which yielded a fourfold increase in lease fees.

Action 2.2: Empower the community and create systems for effective tourism management

The other concern related to the above is that communities lack competent administrative offices to manage revenue from tourism democratically and transparently on behalf of the community. There are reports of officials of group ranches and other community enterprises misappropriating funds due to the community or investing them in projects that are not priority to their people. There is urgent need to strengthen community management offices that receive and manage lease fees and other income. An important management action will be regular training of community officials on management and financial accounting.

Action 2.3: Promote and facilitate development of cultural tourism

The Maasai community is one of the few ethnic groups internationally reputed for their unique and authentic culture, which has been preserved for generations. This cultural distinction has over time evolved into a tourism product in its own right and has been used for branding Kenyan tourism. In spite of this heritage, culture related tourism is currently low and heavily exploited by the tourism industry as it remains at the mercy of tour operators and driver guides.

However this cultural tourism needs to be repackaged in order to reap maximum benefits from its potential. Activities like 'home stays' need to be developed and marketed as packages of cultural tourism. Also, events such as circumcision and wedding ceremonies in which cultural enthusiasts can book to participate or film need to be developed into marketable activities.

Third, the management of the existing cultural centres will be revamped through training of cultural centre operators in management and governance issues to ensure that the beneficiaries of these facilities are not exploited by visitors through acts that demean the community and its culture. These operators will also be trained in basic ways of interpreting the cultural aspect of the ecosystem to visitors to make the experience rewarding for visitors.

Currently, cultural centres' only way of marketing themselves is through tour drivers who decide which of these facilities to include in the visitor itinerary. These centres need to be empowered to market themselves directly to the larger market rather than depend on the discretion of tour drivers who take advantage of their influence to demand huge commissions. Also, due to the increasing number of these facilities, there is need for coordination among the facilities with a view to achieving some form of standardization on minimum standards of design and presentation so as not to dilute or expose the Maasai culture for abuse by unscrupulous traders.

Under this management objective therefore, an Amboseli Cultural Centre Association consisting of representatives from the existing cultural centres will be established to set up standards and brand the cultural centres in terms of design, construction and operation, and liaise with tour operators regarding issues on cultural centres. One of the issues that will be addressed through this association concerns the small fraction of tourism revenue received from visitors who enter these facilities. Since these facilities rely entirely on the good will of tour drivers to have visitors, the management of these facilities are forced to part with huge commissions for the tour drivers which eat into the community revenue.

The association will be encouraged to work with institutions like KATO and AET for sale of pre-booked tickets to minimise leakage of revenue or exploitation by tour drivers. The money can be paid directly to the bank accounts of the association of individual cultural centres.

In order to strengthen the capacity of this association and make it effective in developing and managing cultural tourism in the ecosystem, cultural centre operators will be trained in various aspects of enhancing cultural tourism including tourism product development, display of culture, and delivery of quality service.

There is need to standardise different parameters like pricing, packaging, training etc to make cultural tourism a dignified product of the safari experience within AE. AET will develop a framework to guide development of cultural tourism in the ecosystem

Action 2.4: Establish community curio shops

Curios are an important part of cultural tourism and part and parcel of tourism the world over, as visitors always want to purchase souvenirs unique to the places they visit.

But just like cultural centres, curio shops need to be streamlined to maintain integrity and standards of their operations and boost revenue collection. Local communities will be supported to establish well designed, large and environmentally friendly curio shops at strategic locations within the AE, preferably away from the park gates. These curio shops can have stalls that can be leased to individual traders and they need to be well stocked and provided with essential services, such as water, so that they become important tourism products in their own right where visitors go for souvenirs, information and refreshments.

Action 2.5: Develop guidelines for human resource services at ecosystem level

There has been persistent concern among the local communities that some local tourism facilities fail to extend the natural advantage of investments in the area by employing local people**.** While accepting that investors may want to employ external workforce for some specialised jobs that can hardly be filled locally, there is need for some guidelines to be shared with investors as a way to encourage them to be sensitive to the demands of the local people that they get priority in employment. The guidelines may need to prescribe the minimum proportion of local people in the workforce in a given investment.

Objective 3: Tourism products in AE are diversified to give visitors greater variety and better experience

Amboseli is currently marketed as a premium wildlife safari destination where the Big Five can be viewed with the backdrop of Kilimanjaro. Hence most of the tourist activities revolve around wildlife viewing. Tourism activities in Amboseli Park are limited to wildlife and scenery viewing and only limited walking at the Noomotiak Observation Hill.

One of the best ways to decongest Amboseli Park is to take advantage of the many opportunities for tourism activities outside the park that cannot be carried out inside due to rigid management and regulations.

The ranches and conservancies should exploit these opportunities and provide visitors with better experiences beyond motorised wildlife viewing by taking advantage of their management flexibility. Such activities include walking and hiking adventures, night game drives and horse and camel safaris which provide new and fascinating experiences. Tourism demographics are changing towards younger people who are desirous of more adventures and fun beyond the conventional offers in the market.

This objective is therefore designed to enhance visitor experience by providing a range of additional tourist activities and attractions that are based on the ecosystem's tourism resources such as the hills and wilderness areas. In addition, the objective aims to increase visitor appreciation of the ecosystem's exceptional values by offering information to visitors through a Visitor Centre and tourist information centres that will be developed under this objective. Management actions that will be implemented to achieve this action are elaborated in the following sections.

Action 3.1: Establish a Visitor Centre at Noonkotiak Resource Centre

A Community Resource and Cultural Centre called Noonkotiak is being established on land donated by Olgulului/Lolarashi Group Ranch near Kimana Gate. This will be a centre for environmental education, storage of knowledge and data, as well as research on various aspects of the ecosystem. It will also host a visitor centre which will be providing visitors with information on the Amboseli ecosystem. Details on the visitor centre are given under Objective 4, Action 4.3 of the Institutions and Governance Programme.

Action 3.2: Promote adventure tourism

The AE provides vast wilderness areas that are ideal for development of alternative nature-based tourism products such as walking, horse and camel safaris to cater for adventure tourists. The areas that have potential for walking, horse and camel safaris include the El Mau plains in Mbirikani group ranch, the foothills of the Chyulu range in Kuku and Mbirikani group ranches, Ol Kejuado River course in Eselengei Group Ranch, and Naiperra/Lemomo Hill area in Olgulului/lolarashi Group Ranch. As such, tour operators will be encouraged to establish safaris as an additional tourist activity in the group ranches.

Action 3.3: Train local tour guides

Such safaris stand a better chance of providing high quality and memorable experience to visitors and entrench the reputation of the ecosystem as a popular safari destination. Success of this will depend on knowledgeable safari guides working in the ecosystem. AET will be encouraged to work with different stakeholders to support education and training of more guides from the local community who should be assisted to get KPSGA certification to boost standards of tour guiding in the ecosystem.

Action 3.4: Develop nature trails

The volcanic hills dotting the Amboseli ecosystem offer vantage scenery viewing points, and are thus prime areas for location of tourist facilities such as walking trails and picnic sites that can be tapped to increase visitor activities in the ecosystem in a bid to diversify the product and enhance visitor experience.

Conservancies and ranches can borrow the principle from the walking nature trail and picnic site in the park and develop similar products and enrich them with extra activities like rock climbing and gliding where possible. Places like Lemomo Hill in Olgulului/Lolarashi Group Ranch are suitable for such ideas.

Action 3.5: Promote regulated Balloon safaris

Balloon safaris are popular with upmarket clients and Amboseli ecosystem offers spectacular scenery for it. There is need to support potential investors who may want to exploit this market potential as it would boost the image of the destination on the tourism map internationally.

Action 3.6: Promote voluntourism

Amboseli ecosystem is a perfect destination for volunteer tourism, where people visit and support noble community or national projects with their labour, skills or knowledge. Major themes of interest here would be the many research programmes, management of a world renowned Park, and socioeconomic challenges in the ecosystem like health issues, water supply, education and land-use.

Under this management objective, AET is encouraged to forge partnerships with the community and other stakeholders to design a volunteer programme. This can be modelled into a CSR campaign and packaged in the form of a brochure with specific guidelines on what volunteers and donors can support for every sector.

For instance, those who want to support in the park can volunteer in activities like vehicle and plant maintenance, visitor education and park interpretation, construction and rehabilitation of Park infrastructure, and wildlife research. In areas outside the Park, volunteer opportunities exist in teaching and health institutions, contributing to bursary programmes, supporting specific projects like water projects, construction of health clinics and school dormitories etc.

Experience with similar initiatives elsewhere shows that people like supporting specific projects rather than general projects. These projects should then be described in their specific details and objectives. For instance: “Construction of classrooms and toilet block at Kimana Primary School.” Hence, for this to be successful, the stakeholders will need to identify specific projects to be supported within the planning period and specifically channel resources and attention to them until they are complete before embarking on others.

Action 3.7: Conduct night game drives in the group ranches and conservancies

The group ranches and conservancies in the ecosystem can exploit their flexible operational environment and conduct night game drives for visitors who wish to see nocturnal animals as an added wildlife experience.

Action 3.8: Promote Horse riding, hiking, filming and photography

The ecosystem has an array of landscapes and scenery that would be suitable for nature walks, horse riding, hiking, filming and photography. Horse riding is a popular and mythical sport and safari in many parts of Kenya and appeals to a special clientele who love adventure. As such, horse riding and these other activities will be promoted in the AE.

Action 3.9: Promote Research tourism

The best way to promote research tourism is to offer supporting infrastructures like suitable accommodation, libraries and information centres. AE has a wealth of research information and data which is very attractive to researchers. Complimentary facilities should be developed to make it a competitive destination for researchers and learning institutions seeking bases for “study abroad” programmes locally.

Action 3.10 Promote Mountain biking/outdoor sports

There is an emerging local market for adventure tourism, especially among the youth who are seeking sporting safari opportunities. Investments targeting this demographic group are attracting many visitors on weekends and holidays and AE would greatly benefit by exploiting this market.

Objective 4: Marketing of tourism in the AE is devolved and modernised to attract high end local and international tourists to different attractions in the ecosystem

The future desired state for the AE is where tourism marketing is done at the ecosystem level. Marketing of the ecosystem as a tourist destination is constrained by the product offering which is focused mainly on wildlife and the national park. This means marketing is mainly undertaken by KWS through its website and brochures. But, as a large national institution with a mandate over many other national parks and whose core mandate is conservation, KWS's marketing ability is limited by many factors and cannot evolve fast enough to catch up with rapidly evolving technology and industry trends. Other marketers are the private sector, especially the lodges and camps in the ecosystem that do it individually and to promote their individual businesses. Hence, to ensure that effective marketing of the AE is conducted, the following management actions will be implemented.

Action 4.1: Develop a brand identity for AE

There is need to develop a common ecosystem wide marketing strategy to complement the current approach where stakeholders market themselves individually and independent of each other.

To effectively carry out this marketing, the primary objective is to develop a single brand identity for the Amboseli Ecosystem. This can be spearheaded by AET in conjunction with key stakeholders who will be called upon to develop ideas and themes. The final brand identity for the ecosystem can be developed through a consultancy to come up with an image and marketing tagline.

Action 4.2: Form a single marketing secretariat

The second management action is to develop a common marketing secretariat under the auspices of AET to spearhead marketing of tourism in the ecosystem to enable stakeholders reap the benefits of economies of scale.

The next step is to devise ways of marketing the ecosystem locally and internationally on the principles of direct marketing where visitors to Kenya and local holiday consumers can acquire direct loyalty to the ecosystem, as opposed to being "connected" to the destination through travel agents and tour operators.

Action 4.3: Adopt latest marketing technology

Modern tourism marketing calls for intimate engagement with customers as consumers today are more demanding, more stringent and have a huge scope of choice opened by the digital technology. It is important for the AET marketing programme to open an interactive platform where potential visitors to Amboseli make inquiries that go direct to the secretariat for timely response and assistance. In this they can borrow the KATO model where potential visitors to Kenya send their inquiries to the KATO website and the members interested respond to the inquiries with all members having an equal chance.

The advantage with such a platform is that it also keeps important data on visitor preferences, countries of origin, etc. Over time, such data can be used to inform future marketing and management priorities.

Action 4.4 Develop products for domestic market

Over the last decade or so, the domestic constituency has evolved into an important market for tourism which the AE is advised to take seriously in its marketing campaign. The advantage with this market is that it is less prone to perturbations that typify international tourism. Research has also shown that local travellers tend to spend more per bed night than external counterparts which implies a huge potential.

To make significant inroads in this market, AE stakeholders will collaborate in developing tourism products specifically targeting local visitors with strategies and incentives like low season discounts. Secondly, there is need to develop decent but budget accommodations like self-catering bandas and tented camps, and campsites. These can be established in different parts of the ecosystem and some can be owned and operated by the communities, and they have potential to open up other business opportunities like hiring of tents, bicycles etc.

The other market segment of domestic tourism that will be exploited is the study tours. This is currently hampered by lack of suitable accommodation facilities for students within the AE, and development of strategic hostels would go a long way in addressing this shortage. These hostels would also be used by other organised groups like churches and community organisations when they are out on business retreats. A model for comparison is that of the YMCA which pioneered management of budget hostels that are very popular with institutions. KWS has also had popular education centres in Nakuru, Tsavo East and Meru and their set up is worth looking at.

Action 4.5: Market through local and international media

The Amboseli ecosystem has in the past been covered by many local and international media outlets. The main focus of the media coverage has revolved around the Maasai culture and the rich wildlife and biodiversity, particularly the famous long-studied Amboseli elephants. Tourist facilities have also been advertising in the media.

To give AE more publicity it is important to develop strategies for regular local and international media coverage targeting specific activities in the ecosystem such as cultural ceremonies and wildlife censuses, animal. This is cheap way of advertising by packaging the content as news rather than commercial advertising which would be expensive.

The marketing secretariat will seek a closer working relationship with media houses and get them on their mailing list to receive media briefings on all activities in the ecosystem. They can also lobby to have prominent leaders and visitors in the ecosystem being interviewed by both print and broadcasting media. It is also good to have a database of travel and leisure writers locally and internationally and the ecosystem stakeholders can devise ways of subsidising travel and accommodation of such writers into the ecosystem to have first-hand experiences.

As part of the common marketing platform for the whole ecosystem, the marketing secretariat will develop a website for the ecosystem that will showcase all other activities and programmes in the ecosystem besides tourism.

Guidebooks and tourist maps are very important in promoting tourism resources in a tourism destination. They provide the much needed information on what is on offer, where it can be found, and how to get there. This information helps a visitor to understand the tourism products, enhancing visitor experience and satisfaction. They are commonly used by budget and adventure travellers who like arranging their own itineraries and being alone on safari without services of travel agents or safari operators or guides.

Action 4.6: Develop guide books and maps

Management action here will be development of a high quality guidebook and tourist map for the Amboseli Ecosystem[17]. A good model to borrow here is *Lonely Planet* and *Footprint* travel guides. They are very popular with travellers because they give an objective guide to their area of focus without giving preferential coverage to any destination or property. They are also designed in a manner that is easy to package and read while on safari. AET can take a lead role in this and bring on board other stakeholders including KWS, Hoteliers and NGOS. The guidebooks and maps can allow advertisements to raise funds for their publication, but they will list all areas of interest and also all tourist facilities within the ecosystem with information on capacity, facilities and their standards, their pricing, their management and an image.

Action 4.7: Start an annual event

Another effective way of marketing AE is by organising special events that generate their own publicity through participation by many people locally and internationally. Amboseli stakeholders can deliberate on possible events. Important models to borrow include Lewa Safaricom Marathon in Laikipia, Camel Derby in Marsabit, Lamu/Turkana cultural festivals etc.

A quick way to test this is to start a marathon or cultural event in partnership with an institution that has capacity to generate publicity or has a medium of its own publicity. For a rally to succeed and sustain its momentum, it needs to be anchored on a noble national or community cause like saving a species or supporting a community project. There are the models of Rhino Charge, which raises money to fence conservation areas, or the Ndakaini marathon for conservation of the Ndakaini Dam water catchment, and Mater Heart Run to support treatment of heart ailments.

Action 4.8: Design innovative packages

[17] the current map on sale in ANP lodges is not accurate for roads, and has caused confusion for self-drive visitors.

AET will work closely with the tourism sector, specifically tour operators, to design innovative packages within the AE or combining the ecosystem with others. This will make it easy for visitors to choose Amboseli when booking safaris and also easy for safari operators to include AE in their options.

Action 4.9: Explore use of loyalty programmes

Loyalty programmes can be used to attract repeat visitors as well as extend length of stay within the destination. AET can work with leading stakeholders who have established booking technology to accommodate such operations. Visitors can earn more points, and rewards, when they stay longer within the ecosystem and when they make repeat visits.

Chapter 6. Natural Resource Management Programme

6.1 Programme Purpose and Strategy

The purpose of the Natural Resource Management Programme is to:

To sustainably manage natural resources in the AE to maintain ecological processes that continue providing ecosystem services to the local community

Over the last four decades, the AE has undergone major ecological changes. Rangeland degradation mainly fueled by land subdivision, increasing sedentarization and heavy grazing has been observed across the entire ecosystem. The degradation has intensified impacts of persistent droughts, precipitating losses of livestock and wildlife and intensifying human-wildlife conflicts when extreme droughts occur.

The woodlands in the Amboseli basin have shrunk from covering 30% of the Amboseli Basin to a few scattered remnants covering less than 5%, mainly in fenced enclosures. The woodlands have been replaced by grasslands and bushlands and the swamps have increased by a half.

Other indicators of a loss of ecological complexity include plant and large herbivore diversity and dominance. The decrease in the relative abundance of grasses and rising dominance of a few species reflects a three-fold increase in grazing pressure. The decrease in the diversity of large herbivores reflects the heavy browsing pressure in the Amboseli National Park and a reduction in habitat diversity.

The viability of the carnivore populations, and the extent of human-wildlife conflict, hinge on the productivity of the plant community and large ungulate populations. The steady decline in wildebeest and zebra populations since the 1990s, culminating in the precipitous drops in the 2009 drought, saw a steep rise in livestock predation and reprisals.

The major water resource management challenges in AE include water scarcity. This is due to increasing demand from uses such as irrigation and subsequent over abstraction from the main water sources (rivers and swamps), particularly in the dry season. Another cause is vegetation clearance of wetlands to pave way for irrigated agriculture; pollution due to use of agro-chemicals in the farmlands; and siltation of rivers from sediments and silt from erosion process due to poor farming methods and loss of forest cover in the catchment areas.

The following sections set out the strategic principles that are designed to guide AE stakeholders in the implementation of the Natural Resource Management Program. These principles are:

Guiding Principles

In the implementation of this programme AE stakeholders will strive to ensure that:

Ecological connectivity is maintained

A stable and sustainable ecosystem depends on ecological connectivity within the smaller components of the ecosystem. Due to the semi-arid nature of the Amboseli ecosystem, water availability is limited and wildlife mainly concentrates within wetlands in and out of the park in the dry season. During the wet season, wildlife disperses widely within the ecosystem. Hence, under this management programme, AE stakeholders will aim to ensure that critical habitat connectivity in the ecosystem is maintained by securing wildlife dispersal areas and corridors and particularly, the swamps that act as 'stepping stones' between corridors, to safeguard against biodiversity loss that could arise if wildlife access to areas adjacent to the Park and beyond to adjacent ecosystems is hindered.

Figure 12 shows critical movement routes of a few collared Amboseli elephants.

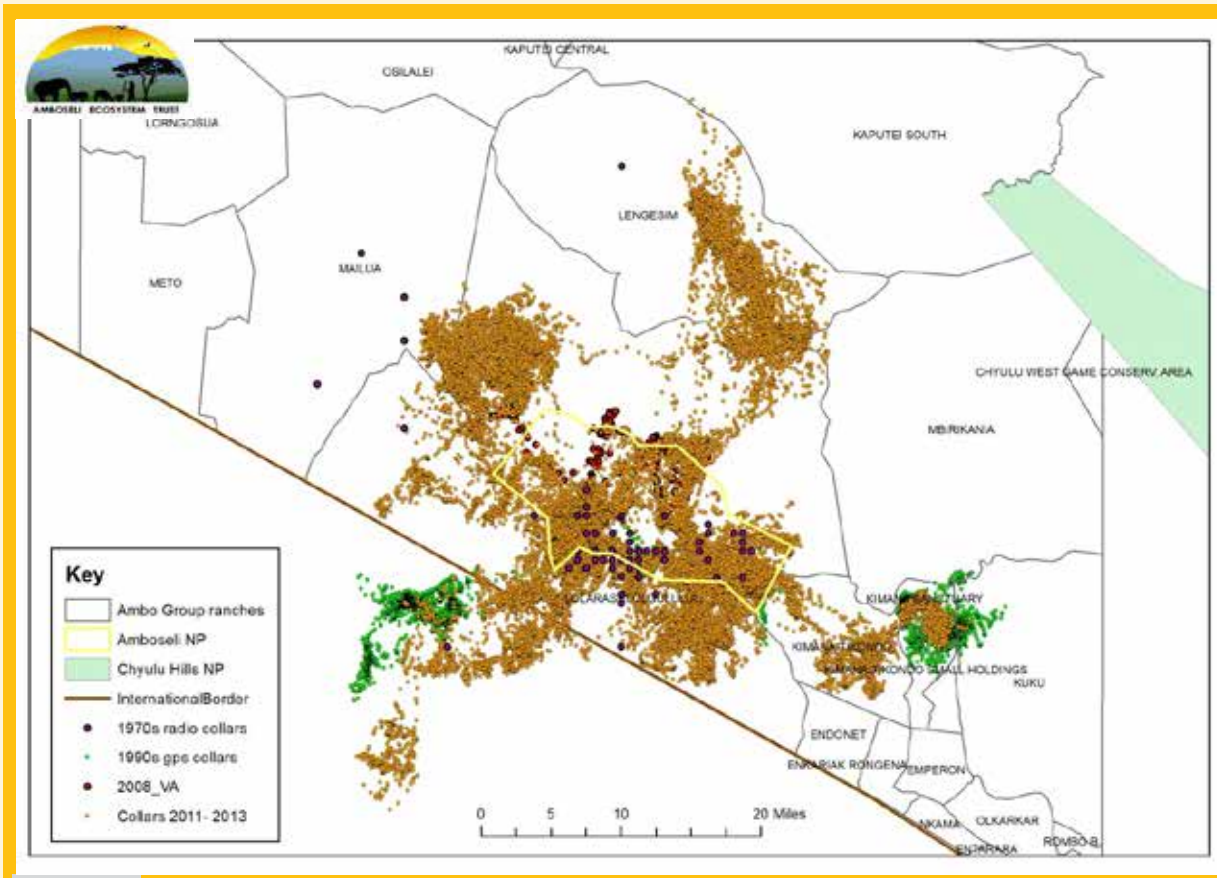


Figure 12. ***Movement of collared elephants in the Amboseli Ecosystem***

Source: ATE

Degraded habitats are rehabilitated and restored

Reduction in woody vegetation in the park and the ecosystem in general has continued and includes an extensive loss of shrub and herb cover (Figure 13). The reduction in woody vegetation has caused loss of habitat and species diversity in Amboseli National Park and a reduction in the diversity of large herbivores. The most conspicuous loss has been in the browsing species associated with the woodlands—impala, giraffe, bushbuck and lesser kudu.

Ol Tukai, Serena, Tortilis Camp and other tourist lodges have set up woodland recovery plots around their lodges. KWS, is also supporting a woodlands restoration program. *Justdiggit* in collaboration with ACC, AET and KWS has constructed a number of restoration plots in and around the National Park and is currently embarking on a long-term woodland restoration plan. These restoration programmes underscore the role of elephants in the loss of tree cover and the ample prospects for restoring woodland patches and species diversity in the Amboseli Basin. As such, under this management programme the existing habitat restoration programmes will be expanded and distributed widely in the ecosystem.

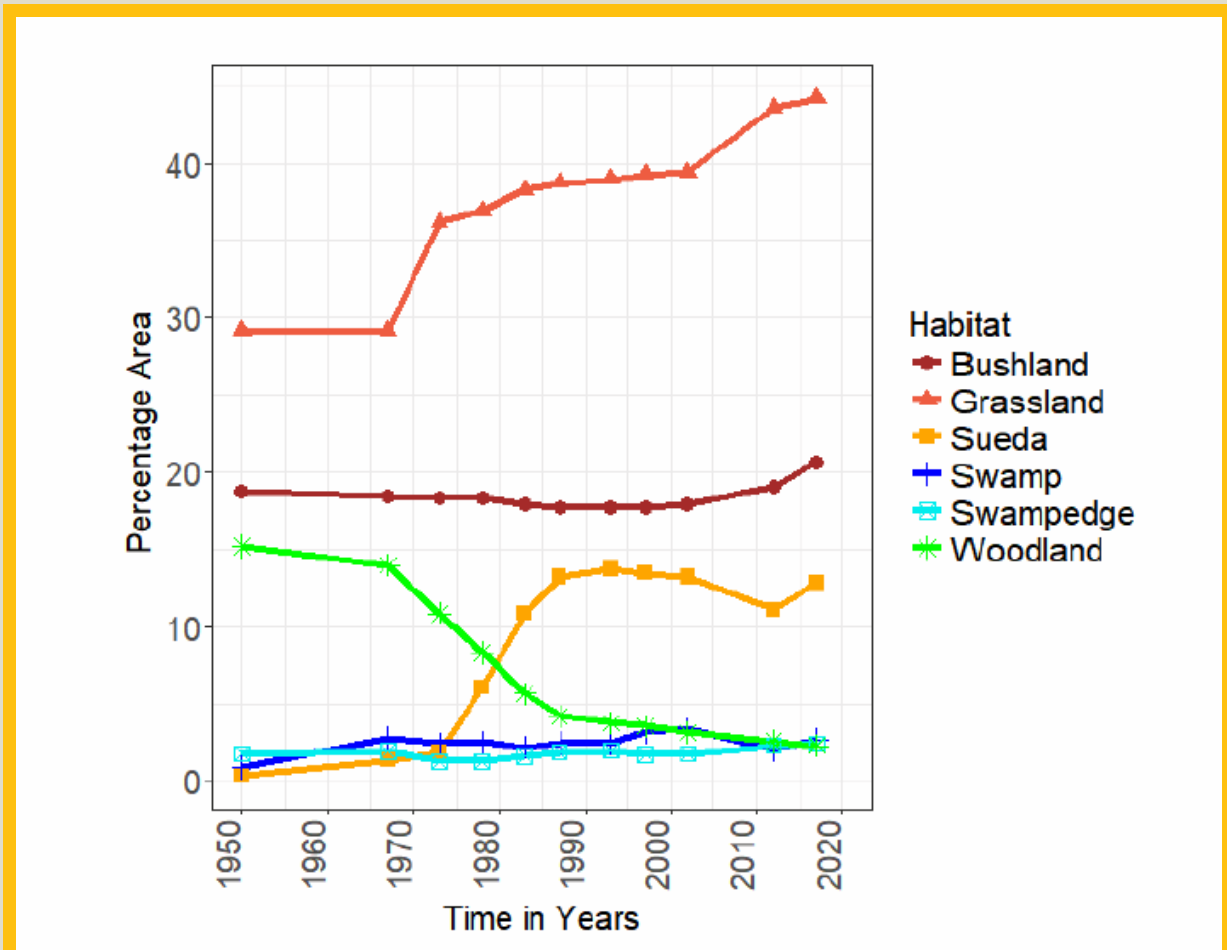


Figure 13. ***Changing proportion of five major Amboseli habitats from 1950 to 201718***

[18] Western D., et al. 2018

Viable populations of threatened wildlife species are maintained

The AE is home to many threatened mammal species including the elephant, black rhino and large carnivores such as lions. Elephants exert heavy influence on the ecological dynamics of the ecosystem and their numbers, mobility and interactions play a large role in shaping habitats and habitat mosaics. Although most of the elephant movements of the Amboseli population fall within the Minimum Viable Area, satellite tracking shows elephants ranging into Tanzania and across to the Rift Valley. Given this extensive movement, the Amboseli elephant population will be planned within the national elephant strategies for Kenya and Tanzania, aimed at sustaining a viable meta-population.

Management actions under this programme will therefore focus on providing adequate habitat for threatened species and minimizing threats, especially human-wildlife conflicts.

Natural resources protection is enhanced

Currently, AE security network is able to comfortably confront wildlife security challenges in the AE as attested by the low poaching levels and negligible visitor security incidents. The network of Amboseli community rangers stationed in every group ranch has been effective in minimizing illegal natural resource extraction. To ensure that the entire AE natural resource protection is enhanced, stakeholder participation and support in security activities will be encouraged.

Community developed plans to regulate access to natural resources are supported and promoted

The National Park and the group ranches that constitute the AE are all in the process of finalising their site specific land use plans. The group ranch land use plans are vital as they will guide future subdivision plans in the group ranches as well as control developments. The plans have provided for current and potential land uses with pastoralism remaining the key mode of livestock production. The plans include restoring degraded lands through *Olopololi* (grass banks), resting and rotation of pasture use, soil erosion control measures and designated wildlife conservancies. These integrated group ranch land use plans offer the best hope of avoiding a Kimana-like loss of pastoral lands and finding space and a place for wildlife in the pastoral rangelands. All the group ranches in the Amboseli ecosystem have agreed to integrate and coordinate their land use, grazing and restoration plans through the Rangelands Division of AET.

Under this programme, AET and stakeholders will support communities to implement the integrated land use plans.

Human-Wildlife coexistence Promoted and Conflicts proactively minimized

Although poaching has declined to manageable levels since 2008 due to the formation of a large well-managed community ranger force, human-wildlife conflict has, however, risen sharply to the point of undercutting gains in community-based conservation. Wildlife continues to affect the AE community negatively through incessant crop raiding, human injury and livestock predation. Crop raiding is rampant in irrigated areas around wetlands, and in the rain-fed agricultural areas at the foot of Kilimanjaro. Wildlife (especially elephants) continues to expand their range to cover new areas, creating new HWC fronts in community areas. Despite implementation of HWC mitigation measures such as wildlife barriers being

installed in HWC prone areas, HWC seems to be increasing particularly in the cultivated areas leading to increased resentment of wildlife. To gain support for conservation in the ecosystem, effective collaborative measures to curb HWC will be put in place. These will include rehabilitation of conflict-mitigation electric fences which have broken down, implementation of the Human Wildlife Coexistence protocols and educating newcomers to the ecosystem who may be inexperienced with wildlife, among other measures.

These guiding principles are intended to guide the implementation of the Programme's two management objectives that, when taken together, achieve the Programme Purpose. These two objectives are:

MO 1. Habitat conservation improved
MO 2. Wildlife conservation enhanced

The following sections describe these management objectives and the management actions needed to achieve them.

6.2 Management Objectives and Actions

Objective 1: Habitat conservation improved

The future desired state in the Amboseli Ecosystem is where healthy habitats for people, livestock and wildlife are maintained in the ecosystem. However, the ecosystem faces many challenges that impede realization of this condition. There is decline in livestock and wildlife productivity caused mainly by a three-fold increase in grazing pressure. A large increase in browsing pressure has also been the main cause of the loss of habitat, plant and herbivore diversity in Amboseli National Park. The increase in grazing and browsing pressure is causing the loss of land available to pastoral livestock and wildlife, and to persistent year-round use of the remaining open lands.

The factors contributing to the increasing grazing and browsing pressure on the Amboseli rangelands and national park, the decline in plant and animal production and diversity, and to an increase in human-wildlife conflict are:

- Dry land farming
- Wetland irrigated farming
- Sedentary pastoralism
- Land use segregation effects
- Loss of drought refuges
- Loss of rangeland productivity and recovery due to invasive species, tree cutting and charcoal burning, mining of resources, unplanned human settlements and developments, and fire outbreaks
- Rising drought frequency and intensity
- Poaching and elephant range compression
- Habitat change
- Sand harvesting

Other habitat degradation related issues include infestation by invasive species, tree cutting and charcoal burning, mining of resources, unplanned human settlements and developments, and fire outbreaks.

Land subdivision, farming, towns and villages have greatly reduced the area available for wildlife and pastoralism. The Kaputei area is heavily settled and fenced and the migratory wildlife populations have collapsed. Namelok and Kimana swamps, the Noolturesh River down through the Soit Pus Swamp and areas around Iltilal has also been subdivided, settled and farmed. These developments have substantially reduced the areas in eastern Kajiado still open to wildlife and mobile pastoral herds.

The decline in plant production due to increased grazing pressure has intensified the seasonal cycle and apparent frequency of droughts. Based on pasture availability, the dry seasons and droughts have intensified and deepened, most strikingly after the mid-1980s change point for herbivore production. The intensified grazing pressure and seasonality is reflected in livestock condition, milk yield and market prices of cattle. The fluctuations are becoming more pronounced as heavy grazing exaggerates rainfall seasonality, causing a boom and bust cycle in market prices of cattle and a concomitant switch to sheep and goat flocks.

Fortunately, most of the areas used by the migratory wildlife populations of Amboseli lie in the rain shadow of Kilimanjaro and the Chyulu Hills and are ill-suited to farming. Hence to conserve and manage the AE habitats for people, their livestock and wildlife, AE stakeholders will implement the following actions:

Action 1.1: Secure wildlife corridors

ANP wildlife and sustainability of the ecosystem at large depend on the connectivity of the park and surrounding communal land. Due to the semi-arid nature of the ecosystem, water availability is limited and wildlife mainly concentrates within wetlands in and out of the park in the dry season. During the wet season, wildlife disperses widely within the ecosystem. It is therefore critical that habitat connectivity is maintained by securing wildlife dispersal areas and corridors to safeguard against biodiversity loss that could arise if wildlife access to areas adjacent to the Park is inhibited. Moreover, there are about 1600 elephants in Amboseli ecosystem giving a density of more than 4 elephants/km² if they were to be confined in Amboseli National park. This density is far beyond the threshold of one (1) elephant/Km², which has been shown to result in decline in woody vegetation cover through elephant destruction. Similarly, the large wildebeest and zebra populations in Amboseli require extra range for survival. It is during their wet season migration to the Amboseli ranches that the vegetation in the Park rejuvenates, at the same time that their ecological engineering and nutrient recycling capabilities moves into the wider ecosystem. It has been observed that over 95% of the Amboseli fauna may disperse from the Park to the group ranches during the wet season. El Mau area, in Mbirikani is the primary dispersal area for plain game and Eselengei/Kiboko river junction is also important. However, during the dry season, 95% of the water dependent species is within a radius of 8Km to water and within an area of 450Km² in and around the Park. Hence isolation of the park from the rest of the ecosystem would have adverse impacts on wildlife populations and tourism in the area. If the park is isolated, there would be less wildlife species diversity, and 15% biomass potential of wildlife in the ranches could be lost. Also, extensive flooding in the park limits wildlife occupancy all year round.

To ensure that wildlife corridors remain open in the long term, stakeholders will work closely with the National Wildlife Corridors and Dispersal Area Taskforce to identify viable interventions to secure critical

ecological connections in the ecosystem. This will include engaging the County Government of Kajiado and NEMA to recognize corridors as environmentally sensitive areas in the County Spatial Plan and protecting these corridors through adoption of appropriate land use regulations. In addition, land owners will be encouraged to establish conservancies in wildlife dispersal areas and corridors through long -term leases entered between tourism investors and land owners. To ensure that the status of corridors in the ecosystem is always up to date, AET will initiate a corridors surveillance programme which will be collecting information on the land use and land tenure status along corridors and disseminate this information to stakeholders for timely intervention. Also, an annual corridors status report will be compiled and shared with partners.

Further, to ensure that the desired future AE land use patterns are promoted, AET will work closely with the County Government of Kajiado in the development of a physical and land use development plan for the AE in accordance with Section 52 of the Physical and Land Use Development Planning Act, 2019. This will require that the AE is declared a special planning area by the County Government of Kajiado based on the ongoing or planned land subdivision in the group ranches and the environmental challenges that this might pose in the future. Once a physical and land use development plan is prepared it shall undergo the process of approval outlined in Section 49 of the Physical and Land Use Development Planning Act, 2019. The approved AE physical and land use development plan will be the key tool for development control in the AE.

Action 1.2 Support establishment of community wildlife conservancies in the group ranches to safeguard wildlife corridors

Enhancing benefits from conservation is one of the incentives that can make communities to set aside land for conservation purposes saving wildlife corridors. Under this action, efforts will be made to support land owners to establish wildlife conservancies. Towards this, stakeholders will work with AET and individual group ranches in providing support to operationalize the existing conservancies and establishment of new ones. Support to these conservancies will be in form of capacity building for community scouts, establishing conservancy infrastructure such as roads, outposts, water supply, and tourist facilities, among others.

Action 1.3: Initiate new and support existing habitat, protection, restoration and rehabilitation measures

Habitat restoration and rehabilitation programmes will aim at ensuring that significant areas of the AE remain open and they are reserved for rotational livestock use. By doing this, it will be possible to restore the Amboseli pastures and habitats and conserve a viable large herbivore and carnivore ecosystem. Habitat restoration and rehabilitation measures will be focused on the Minimum Viable Area between Kilimanjaro and Chyullu Hills and will include: re-seeding degraded areas with indigenous plant species; controlling soil erosion; maintain existing and establishing new well-managed exclosures, with well-defined exit strategies, to allow regeneration of woody vegetation; controlling invasive species; controlling and monitoring quarrying activities; conducting mining activities in an eco-friendly manner; controlling charcoal burning; and controlling off road driving in the conservancies. In this MVA, mining and other commercial enterprises that impede livestock and wildlife migrations will be excluded.

Action 1.4: Develop and implement pasture management and livestock grazing plans

As mentioned under the Community Livelihoods and Socio-economic Management Programme, restoration of traditional nomadic grazing patterns can help to restore livestock herds and also secure dispersal area for wildlife. As such, in addition to the other actions under the community programme, the AE community will be encouraged and supported in development of pasture management and livestock grazing plans. This will be done through provision of long-term scientific information on AE ecology that has been collected by various stakeholders over the years as well as encouraging the community to adopt tried and tested pasture management techniques

Action 1.5: Develop and implement a climate change adaptation and mitigation action plan

Climate-associated impacts such as drought and wildfire are increasingly becoming more frequent in the AE. It is therefore critical that climate monitoring is maintained to generate data that can be used to discern trends in climate as well as inform climate adaptation and mitigation action plans. In regard to this, AET will collaborate with Kenya Meteorological Department (KMD) to acquire climatic information generated from the meteorological stations in Loitokitok Sub-County. This data together with data that has been collected over the years by other partners in the Amboseli Basin will be analysed and the results used to inform the development of AE climate change adaptation and mitigation action plans.

Action 1.6: Promote use of sustainable energy sources to curb habitat degradation

Majority of the rural community in the AE are dependent on fuel wood for cooking, while those in the urban areas use charcoal. To reduce fuel wood off take and curb habitat degradation, alternative cooking methods and materials (e.g. fuel-efficient stoves) will be promoted in the AE.

Action 1.7: Develop a fire preparedness and response strategy

The AE lacks an ecosystem-wide fire preparedness strategy to guide stakeholders in fire prevention and suppression. To ensure that livestock pastures are not ravaged by wildfires, a fire management plan will be developed. This will clearly spell out fire prevention and suppression protocols to be followed by AET members. It will also identify fire prone areas and recommend appropriate intervention measures (e.g. fire breaks) to prevent fire from spreading. Fire fighting equipment will also be provided to first responders (community rangers) to effectively fight wildfires.

Objective 2: Wildlife conservation enhanced

The future desired state at the AE is where viable wildlife populations of all species in the ecosystem are maintained. However, attainment of this desired state is hampered by persistent human-wildlife conflicts that erode tolerance for coexistence; constriction and loss of wildlife dispersal areas to settlement and cultivation, wildlife diseases, poaching, and changing traditional practices and loss of ecological knowledge which increase negative human wildlife interactions (e.g. poor livestock husbandry which leads

to an increase in predation or disease such as malignant catarrh fever). To achieve the future desired state regarding wildlife conservation in the AE, stakeholders have developed management actions under two sub-objectives, focusing on minimising negative Human-Wildlife Interactions, and protecting wildlife. These sub-objectives and their corresponding management actions are set out in the following sections.

Sub-objective 2.1: Negative Human-Wildlife Interactions minimised

Wildlife continues to affect the AE community negatively through incessant crop raiding, human injury and livestock predation. Crop raiding is rampant in irrigated areas around wetlands, and in the rain-fed agricultural areas at the foot of Mt. Kilimanjaro. Wildlife (especially elephants) continue to expand their range to cover areas (around Namanga and Maparasha Hills) abandoned in the 1980s due to high levels of poaching, creating new Human Wildlife Conflict (HWC) fronts in community areas. Conflict mitigation measures adopted by KWS and other stakeholders include: raising the wildlife tolerance threshold of affected people by paying some form of compensation, problem animal control through scaring or shooting culprit wildlife, improving the habitat by providing water outside the Park, and using physical barriers to keep wildlife out of farms. Despite implementation of these measures, HWC seems to be increasing particularly in the cultivated areas leading to increased resentment of wildlife. This is partly attributable to the increasing pressure on the limited space available for wildlife by the continued transformation of natural habitats to meet livelihood needs of the growing human population. Hence, if wildlife is to thrive in the AE, there is need to reduce the cost of living with wildlife through implementing prudent measures to manage the escalating HWC in the ecosystem.

This sub-objective has therefore been designed to address the perpetual human-wildlife conflicts in the AE. The actions that have been designed to realize this sub-objective are elaborated in the following sections.

Action 2.1.1: Support the Amboseli Human-Wildlife Co-existence Committee

To promote positive coexistence between the AE community and wildlife, KWS and the Amboseli Ecosystem Trust (AET) facilitated the establishment of a Human Wildlife Coexistence Committee (HWCC) in November 2016. The purpose of this committee is to coordinate and support implementation of measures geared towards promoting human-wildlife coexistence that are being implemented by diverse stakeholders operating in the ecosystem. The ultimate aim of this committee is to ensure that the local community is given adequate and timely support to mitigate HWC. The HWCC comprises representatives from government Ministries, Departments and Agencies (MDAs), the local community and NGOs that are engaged in addressing human-wildlife conflicts and their attendant effects. To ensure that the HWCC is effective, AET will work with stakeholders to facilitate the activities of the HWCC. This will include providing support to the committee to enable it to hold regular meetings to deliberate on the HWC status in the ecosystem and intervene with effective measures when conflicts arise.

Action 2.1.2: Implement the AE wide Human-Wildlife Interactions protocols to reduce HWC and prevent retaliatory wildlife killing

The HWCC has developed protocols for Human Wildlife Interactions in the ecosystem, in close collaboration with community members. The protocols set out the guidelines for emergency response to conflicts,

the mandates and responsibilities of stakeholders, and minimum standards for responses and the identification and management of problem animals. Hence, under this management action, AET and stakeholders will work closely to ensure that the HWI protocols are implemented.

Action 2.1.3: Rehabilitate and maintain wildlife barriers

Wildlife barriers such as electric fences, if well maintained, can be very effective at preventing elephants from entering farms and crop-raiding. In the AE, old electric fences have been rehabilitated in the Namelok and Kimana farming areas, and a new fence constructed to prevent crop-raiding wildlife from entering high-potential farming zones on the slopes of Kilimanjaro (from Kitenden to Elerai to Kimana). These fences require regular maintenance to ensure that they effective in keeping wildlife out of farms. As such, under this management action, AET will work with partners and the local community to ensure that the fences are properly maintained, with financial contributions from relevant stakeholders (including local communities). This will require strengthening of the fence management committees through training in project management as well as ensuring that fence attendants are deployed to maintain the fences

Action 2.1.4: Establish an ecosystem-wide consolation fund

Although compensation for human injury and death, crop destruction and livestock predation caused by specific species is provided under the Wildlife Conservation and Management Act, 2013, compensation takes a long time to be effected, causing disillusionment among the affected people. To promote positive coexistence between the community and specific threatened species such as elephants and lions, stakeholders (ATE[19], BLF, Olgulului/Ololarashi management) have set aside consolation funds that are used to pay local community members whose livestock is killed by lions or elephants. However, this consolation payment is not paid to all members of the ecosystem. Consolation payment has been effective in reducing retaliatory attacks on elephants and lions where the consolation scheme is being implemented and it is important that the scheme is supported and expanded. As such, under this management action, the goal will be to extend consolation coverage across the entire ecosystem, working through partners where necessary. AET will be available to guide consolation strategy and interactions with affected communities, and assist partners with development of consolation funds. Partners that are operating consolation funds will report back to AET on operations. One means of making consolation sustainable would be to establish an endowment fund, and use interest accruing to settle consolation payments.

Action 2.1.5: Create awareness on Human-Wildlife conflict mitigation strategies

There are tried and tested effective methods of mitigating HWC that are used elsewhere in the Country. These methods include construction of lion proof bomas, improving herding strategies, using beehives to prevent elephants from accessing farms and planting pepper, which is not preferred by elephants. Hence, this action aims to create awareness among the local community on the HWC mitigation options that can be adopted to minimize conflicts. The community will be supported to develop improved herding strategies and trained in construction of predator proof bomas. The community will also be taken on study tours to learn from other communities that have successfully implemented HWC mitigation measures.

[19] The ATE consolation programme is only for OOGR livestock losses attributable to elephants outside the National Park.

Sub-Objective 2.2: Wildlife protection enhanced

Although trophy poaching is currently not a major issue in the ecosystem, bushmeat poaching is a threat to the wildlife populations. Hence, this sub-objective is designed to enhance wildlife protection in the ecosystem. The management actions that will be implemented to achieve this sub-objective are outlined in the following sections.

Action 2.2.1: Strengthen the Community Wildlife Scouts units to effectively carry out their functions

Community Wildlife Scouts in the AE operate under an umbrella body called the Amboseli/Tsavo Community Wildlife Rangers Association (ATCWRA), and are funded by various partners according to geographical area. The scouts are equipped with vehicles and surveillance equipment to assist them in monitoring illegal activities in the ranches. They have a well-established communication protocol with KWS to facilitate timely reporting of wildlife-related incidents.

The scouts are effective in preventing wildlife crimes, particularly poaching, in the ranches. Hence, it is important that the capacity of community rangers be strengthened to ensure they can effectively execute their mandate of conserving wildlife and its habitats. As such, under this action, community rangers will be trained in paramilitary skills and equipped with relevant tools to support patrol work. This will include paramilitary training at the KWS Law Enforcement Academy and providing adequate and appropriate vehicles, and field equipment for patrol work. Scouts will also be trained at the Amboseli Conservation Academy, a non-paramilitary training centre in the ecosystem that conducts basic skills refresher ranger training to complement the training done at KWS Law Enforcement Academy. To ensure that the community rangers' needs are prioritized, an annual needs assessment for different community ranger units will be conducted. The communication protocols with KWS will also be maintained and improved.

Action 2.2.2: Intensify patrols

Poaching for bushmeat and trophies takes place in the AE. In order to curb poaching and trafficking of wildlife products, community rangers will be supported to intensify patrols in the ranches to deter poaching and other illegal activities. Regular foot, vehicle, and aerial patrols will be carried out across the AE, and relevant data collected and analysed to identify poaching hotspots. Moreover, the scouts will conduct regular joint patrols with KWS and other security agencies in the ecosystem to deter wildlife crime.

Action 2.2.3: Work closely with KWS and other security agencies

The WCMA, 2013 requires KWS to coordinate and control all wildlife security issues in all the national parks, national reserves, wildlife conservancies and sanctuaries in collaboration with other law enforcement agencies, counties and community wildlife scouts. Hence, under this action the Community Wildlife Scouts deployed in the ecosystem will work closely with KWS to enhance the security of wildlife in the AE. Towards this, KWS and the Community Wildlife Scouts will share information on wildlife security to ensure timely response to wildlife threats. Furthermore, Community Wildlife Scouts will share their monthly reports with KWS so that the Service is kept abreast of wildlife-related activities being implemented by the Scouts.

Action 2.2.4: Liaise with Tanzania's wildlife authorities on cross-border natural resource protection

AE's wildlife move to Tanzania during the dry season and this is of concern as the wildlife is often poached along the way. The Amboseli elephants cross over to Tanzania through the Amboseli – Kitenden - Kilimanjaro corridor and the Longido Game Controlled area where Amboseli elephants move some 25 km south of the border and need protection while on transit. There is therefore need for enhanced cross-border collaboration between Kenya and Tanzania with respect to anti-poaching operations to curb poaching in the greater Amboseli-Kilimanjaro ecosystem.

In order to address cross border security issues, KWS has been holding cross border meetings and conducting synchronized security operations with its Tanzanian counterparts along the common border. Under this management action, KWS will continue with these initiatives and develop additional activities aimed at strengthening cross border partnerships for effective wildlife security at the Kenya-Tanzania borderland region. This will include holding joint security seminars and meetings semi-annually to discuss cross-border natural resource management issues. In addition to this, wildlife authorities from both countries will share wildlife intelligence to enhance security patrols along the border.

Chapter 7. Institutions and Governance Programme

7.1 Programme Purpose and strategy

The purpose of the Institutions and Governance programme is:

> To strengthen the institutions, governance and collaboration mechanisms to enhance natural resource management and promote equitable sharing of benefits accruing from communally managed land

The Institutions and Governance Programme focuses on building and maintaining ecosystem as well as group ranch level institutional and governance structures to ensue land owners receive tangible economic and other benefits that derive from the ecosystem. Without strong and accountable institutions to oversee social and natural resource governance, the vision for the ecosystem cannot be attained. This is in view of the ongoing trend to subdivide the group ranches into individually owned land parcels which implies that land use decisions will be made by individual land owners. Hence, for individuals to subscribe to collective land use decisions they need to receive tangible incentives, otherwise some of them might decide to act individually.

Land owners in the AE still support traditional natural resource governance institutions as livestock production through pastoralism is favoured by the majority. As such, although group ranches have decided to subdivide, subdivision will be mainly on paper to give land owners security of tenure but land use will be largely guided and controlled through the agreed Land Use Zoning Scheme developed for the ecosystem. This will ensure that the preferred major land uses, pastoralism and wildlife tourism, that require extensive land will continue to thrive. Implementation of this Zonation scheme therefore requires strong, effective and efficient institutions that will ensure equitable access to resources and benefits accruing from them.

This Programme is geared towards coordination of different programmes in this management plan so that it can realise its purpose of conserving the ecosystem values and resources while delivering optimum benefits to the communities and stakeholders.

The AE management challenges can only be managed through a rationalized process that promotes active engagement and partnership with all key stakeholders including KWS, landowners, investors and NGOs under central leadership of AET.

Guiding Principles

The Institutions and Governance Programme is guided by three strategic principles that AE stakeholders believe should be pursued to achieve AE's vision.

Strengthen the existing institutions and their operations and create new institutions if necessary to ensure sound management and use of natural resources

The existing group ranch institutional arrangements are suitable where land is communally owned and where institutions dictate that land management decisions are made communally. This will have to change with subdivision of the group ranches into individually owned land parcels. Hence, this calls for replacement of existing institutional and governance systems with other innovative institutions that fully recognize the new private land tenure system that is taking over from communal land ownership. Further, implementation of the management actions contained in this plan requires establishment of strong institutions.

Conservancies and other areas set aside for conservation can generate significant tourism revenues to land owners

Although the Group ranches are subdividing, the areas set aside for conservation will not be converted to other conservation-incompatible land uses. The conservation zone includes conservancies, wildlife corridors and buffer zones, and bird sanctuaries. These zones will be the epicentres for tourism in the ecosystem. Hence, the conservancies will adopt institutional and governance models that will ensure that land set aside for conservation is a major source of tourism revenue to the ecosystem's land owners.

Enlist support for the delivery of this management plan from the key institutional partners and other stakeholders

The success of institutions frequently depends on the support that these institutions receive from their stakeholders. The same is true for the proposed AE institutional mechanisms, albeit it has been agreed it will be AET, so the strengthening of collaboration mechanisms to enable the AE's key institutional partners and other key stakeholders to engage with AET to support the delivery of this management plan is an important strategy in ensuring the success of these mechanisms in the implementation of this new ten year AEMP.

Develop a community resource and cultural centre

A lot of information has been published on the natural and cultural aspects of the AE. However, the AE lacks a central point where this wealth of information can be easily accessed. The Ecosystem also lacks a facility where visitors can get tourist information to enhance their experience when touring the ecosystem. Further, there is no education facility dedicated to educating and creating awareness among the local community on environmental conservation. As such, under this management programme, a community resource and cultural centre will be established in the ecosystem.

7.2 Management objectives and actions

The Institutions and Governance Programme has four management objectives, which have been designed to respond to the overall programme purpose and strategic principles outlined above. The five objectives are:

1. **Institutional and governance mechanisms operationalised and strengthened**
2. **Conservancies supporting tourism development and conservation objectives established**
3. **Revenue sharing mechanisms supporting the appropriate and effective management and distribution of tourism and other revenues established**
4. **Collaboration mechanisms established**
5. **Noonkotiak Community Resource and Cultural Centre developed**

These objectives and the related actions designed to deliver each objective are described in more detail in the following sections.

Objective 1: New institutional and governance mechanisms established and operationalised and existing ones strengthened

The future desired state for the AE is one where there are strong and effective working relationships between stakeholders in the ecosystem. This is in view of the fact that natural resource management challenges cuts across many disciplines, necessitating interventions by diverse players. Challenges that can be addressed effectively through structured collaboration with stakeholders include conservation of wildlife corridors, control of pollution from poor waste disposal and use of pesticides in agriculture, haphazard development of tourism facilities etc. Moreover, wildlife and visitor security can be enhanced markedly through liaison between KWS, community rangers, Kenya Police and the local community.

The land tenure trends from communal to private land ownership calls for a rethink of the existing land and natural resource governance systems. Currently, the AET is the platform through which natural resource management issues are addressed at the ecosystem level. All the Amboseli group ranches are members of AET. However, with subdivision of group ranches, the AET institutional framework will have to be modified to accommodate private land tenure system and other natural resource governance mechanisms that may be established by individual land owners.

This objective has therefore been designed to address needed adjustments to the existing institutional arrangements and governance mechanisms at the ecosystem and group ranch levels, as well as enhance supportive stakeholder relations aimed at minimizing resource use conflicts and enhancing natural resource management in the ecosystem. The management actions that will be implemented include: *strengthening the institutional and governance capacity of AET; working closely with South Rift Association of Land Owners (SORALO) and other conservation stakeholders to develop a conservation model for Southern Rangelands;* and *establishing effective mechanisms for plan monitoring and implementation.*

Action 1.1: Strengthen the institutional and governance capacity of AET

The AET will have to coordinate implementation of the collective decisions of AET members that have been included in this plan. It will have to ensure that land owners respect the ecosystem level zoning scheme and zone prescriptions collectively agreed upon if pastoralism and wildlife tourism are to thrive as viable land uses in the ecosystem. It will therefore have to engage land owners to restore community governance structures of seasonal grazing practices, pasture productivity and livestock marketing. Also, it

will have to ensure that land owners invest in alternative community livelihoods to reduce pressure on land.

To ensure that the ecosystem continues to support multiple land uses sustainably, AET's institutions and governance structures will be strengthened. Towards this, the Community Land Assemblies, subcommittees of the AET Governing Council, which hold land in trust for individual group ranches will be trained in rangeland management. AET will be supported to ensure that it can engage County and National Government agencies in matters of land sales and environmental conservation. The activities of NGOs, KWS, the tourism industry and group ranches will be integrated and consolidated under AET and coordinated by various committees to ensure effective delivery of the management objectives contained in this plan. To achieve the plan's aims, AET will work through committees including the Amboseli Tsavo Community Wildlife Rangers Association, the Human-Wildlife Coexistence Committee, the AE Tourism Board, and the Rangeland Division. The Tourism Board (to be established) will be an autonomous body under AET comprising representatives from the tourism industry including hotel and conservancy associations, among others. It will be directly advising AET on tourism matters including setting tourism standards and tourism planning needs. The Rangeland Division will coordinate integration of group ranch land use, grazing and restoration plans. AET will also be capacitated in management and executive functions to act as the representative of the Amboseli ecosystem nationally and internationally.

Stakeholder forums will also be organised to create awareness and understanding of environmental laws, and especially the Wildlife Conservation and Management Act, 2013 so that land owners can exploit the wildlife conservation incentives contained in the Act such as establishment of wildlife conservancies.

Action 1.2: Work closely with relevant conservation entities to develop a viable conservation model

Threats to community livelihoods and natural resource management in the southern rangelands are different from those in the Northern rangelands of the country. While the main anthropogenic challenges to community livelihoods in the northern rangelands is insecurity, in the southern rangelands it is land conversion from livestock grazing system to cultivation and settlement. As such, there is need to develop and adopt a conservation model that addresses the conservation challenges in the Southern rangelands. Hence, AET will work with SORALO and other stakeholders in developing a County level conservation model that will promote integrated land use development and recognise conservation as a key land use in Kajiado County.

Action 1.3: Establish effective mechanisms for plan implementation and monitoring

The central institutional mechanism for implementation of the management plan is the Amboseli Ecosystem Trust. To ensure effectiveness of the management plan, there is need for a strong regulatory framework to guide developments and ensure they are all compatible with the plan. There is the current Project Implementation Committee (PIC) which vets projects and developments. This committee has worked well so far by applying peer pressure to get many stakeholders to abide by its recommendations. The management plan is looking to build on this framework of PIC to see how its operations can be enshrined in legal structures to make it legally binding to all stakeholders.

For AET to coordinate implementation of the Amboseli Ecosystem Management Plan (AEMP) effectively, it will be important to build the capacity of AET so that it is capable to coordinate activities of AET's most important partners and stakeholders. Consequently, under this action the human, financial and infrastructural capacity of AET need to be enhanced to enable it to be a leader and to organise stakeholder meetings to review progress in plan implementation, as well as meetings to rally stakeholders to support priority ecosystem projects or address emerging threats to the ecosystem's integrity.

In addition, to ensure that the AEMP is well anchored in law, AET will work closely with the County Government of Kajiado to ensure that the AEMP Zonation Scheme and zone prescriptions are incorporated in the Kajiado County Spatial Plan.

Objective 2: Conservancies operational model strengthened

One of the key conservation intervention measures in the Amboseli ecosystem is the establishment of wildlife conservancies and sanctuaries in wildlife corridors and dispersal areas. Each of the group ranches that constitute the ecosystem has set aside at least one area where conservancies have been established or will be established in the future. However, due to the current communal and private land tenure mix in the ecosystem, there is need to develop conservancy institutional models that will cater for private as well as communal land ownership. These institutional models are still evolving, and work is needed to develop models that can address immediate challenges while incorporating design elements that allow for long-term sustainability.

This objective has therefore been designed to develop the institutions that are needed to establish viable AE conservancies that generate tangible economic benefits to owners of these conservancies. The management actions that will be implemented to realize this objective include: e*stablishing functional conservancies to support tourism development, conservation and livestock production; establishing tourism concessions with suitable tourism investors; and* e*stablishing Land Trusts to take the lead in buying land on sale and fund-raising for implementation of social development and conservation projects.* These actions are elaborated in the following sections.

Action 2.1: Strengthen conservancies to support tourism development, conservation and livestock production

There are many conservancies within the ecosystem at different stages of conception and operations. But currently, many are not operational and there is need to lay a strong foundation to encourage a conservancy model of conservation and tourism. Under this management action, AET will mobilise its partners to support the existing conservancies and establishment of new ones by lobbying for facilitative conservancy regulations as required under WCMA, 2013. Currently conservancies rely on weak legal framework like Societies Act Cap 108 or the Companies Act (CAP 486).

Action 2.2: Explore possibility of establishing conservation companies

Conservancies are important entities both at local and national levels and this calls for comprehensive governance structures that are clearly understood by all stakeholders and that are easy to enforce. This action proposes establishment of a management companies limited by shares for existing conservancies to oversee conservancy management.

Landowners will have ownership over the company through their respective shareholdings in the company, with shares being issued in accordance with the size of the respective land areas that are placed under the management of the company.

Establishment of a conservation company will follow laid down procedures to develop appropriate Articles and Memorandum of Association and subsequent incorporation through the Registrar of Companies, followed by the development of the company's shareholding structure designed to ensure that individual landowners (communal or individual) that commit their land to the conservancies are appropriately catered for. This action will also involve the development of suitable leases between the Conservation Company and the concerned landowners. There is need to explore the options available to learn from before adopting the models that are still in experiment.

The proposed conservation company model as shown in Figure 14 below:

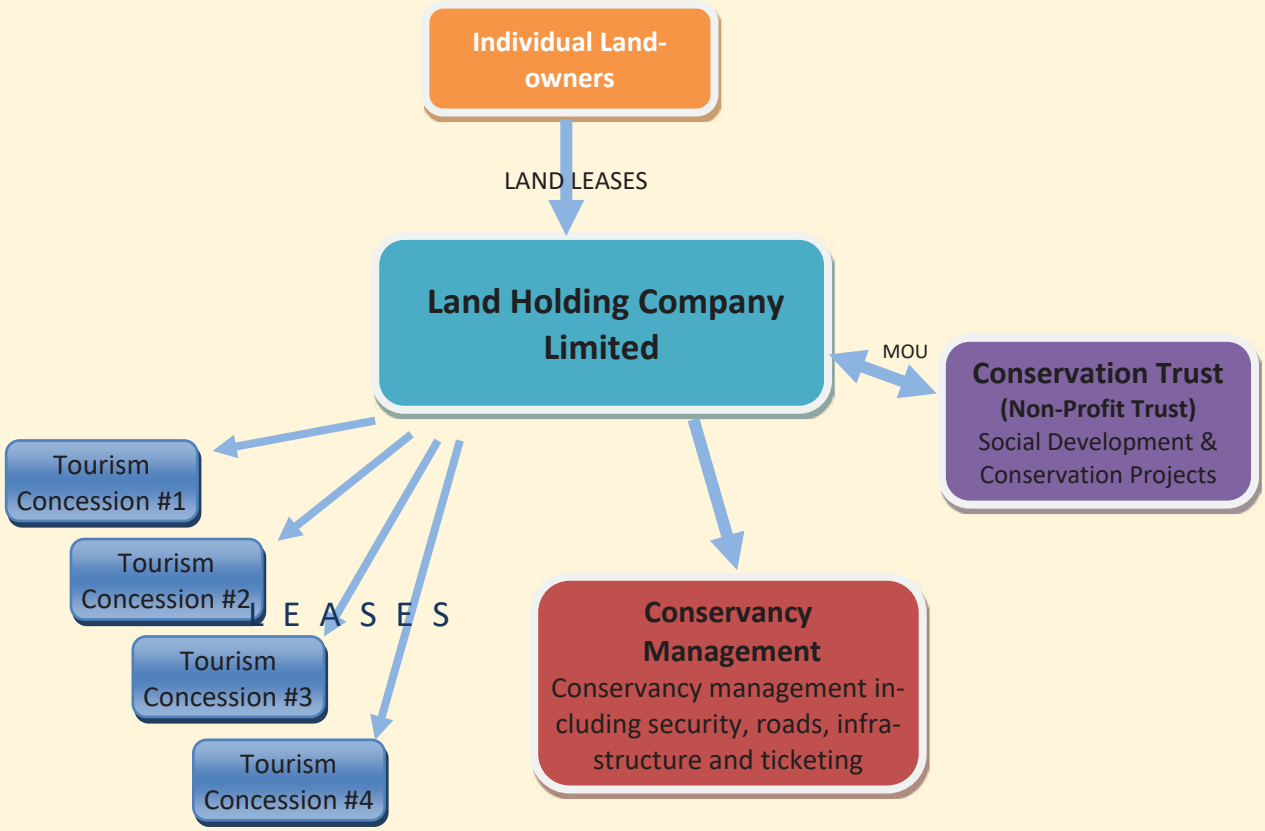


Figure 14. ***Proposed Institutional Model, showing legal arrangements***

Action 2.3: Establish tourism concessions with suitable tourism investors

Provision and management of tourism services is a complex undertaking, requiring significant capital in the establishment phase, and well-developed marketing strategies and networks thereafter. These attributes tend to lack in many community organisations and this explains why many such tourism projects hardly flourish. This management action proposes that tourism concessions are discussed with interested and well-placed individuals and institutions that are capable of mobilising resources and setting high quality tourism services with potential to earn good income to the communities. Suitable candidates for concession can be reached through institutions like AET, KWS, KTB etc. then interested investors can contact the respective group ranches through the Conservation Company or AET.

Action 2.4: Establish a Land Trust to take the lead in buying land on sale, fund-raising and implementation of social development and conservation projects

The management plan proposes setting up of a Land Trust under management of AET to develop and support social development and conservation programmes in the Amboseli Ecosystem. The Trust will take the lead in buying and banking land on sale, such that the land can be conserved for livestock grazing (at a fee) and wildlife conservation.

Action 2.5: Establish financial mechanisms for distributing economic benefits to conservancy members

It is expected that when fully operational, the conservancies will generate revenue through easements and tourism concession annual lease fee which are paid directly to the Conservancy Conservation Company; visitor bed night and conservancy fees, collected on behalf of the Conservation Company by the tourism concession holders as a component of the total accommodation rate charged; and conservancy entry fees charged to independent visitors who are not residing in the accommodation facilities in the conservancy concerned. To ensure that cash accruing from the tourism revenue is shared appropriately between a conservancy's shareholders, Conservation Company, Management Company, and Conservation Trust this action proposes establishment of a financial distribution mechanism as illustrated in Figure 15.

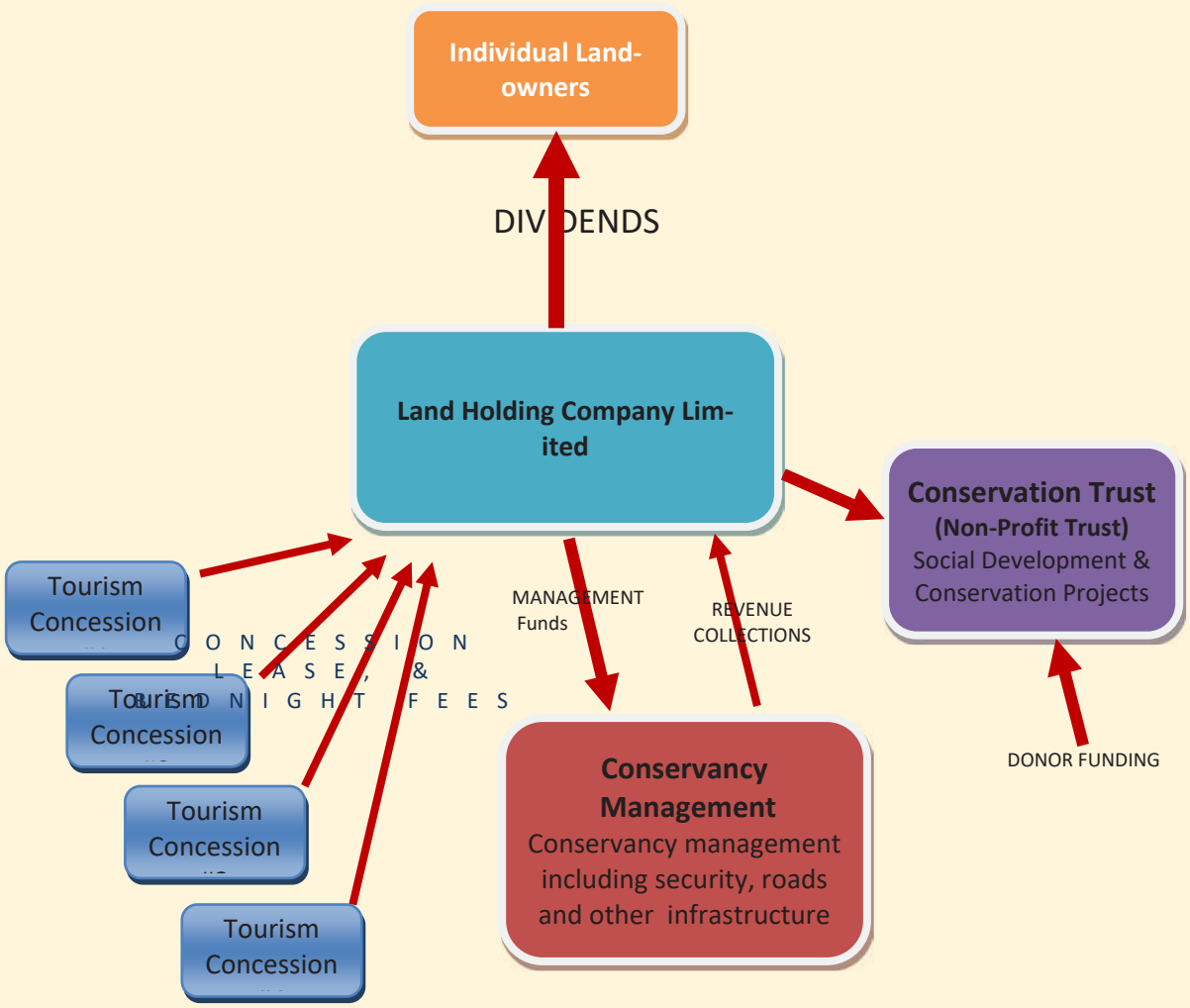


Figure 15. ***Proposed Conservancy Institutional Model, showing anticipated financial flows***

Objective 3: Collaboration mechanisms established

Natural resource governance in social-ecological systems involves diverse actors who cooperate based on formal or informal mechanisms. This ensures that stakeholders involved in the management of a particular resource work towards the same goals, with minimal conflicts or duplication of efforts.

Hence, for productive collaboration between stakeholders in the long-term sustainable management and use of natural resources, rules of engagement between different actors in the ecosystem are crucial across scales and levels.

This management plan envisages a comprehensive and ambitious programme of land management and institutional changes designed to bring about the optimal and sustainable management and economic use of natural resources for the direct benefit of the AE community, and simultaneous conservation of its natural resources. To achieve this requires the support and engagement of a variety of institutions and

stakeholders who have the technical, financial and policy capabilities to help the AE community achieve the plan's objectives. This objective aims to address some of the key opportunities for establishing institutional collaborations through the following actions: *establish MoUs with key partners; benchmarking lessons for best practices; develop and formalize a mechanism for payment of opportunity costs of coexisting with wildlife in the group ranches; and integrate the AEMP with the Kajiado County plans.*

Action 3.1: Establish MoUs with key partners

At the commencement of this planning process, AE stakeholders emphasised the importance of continuing support of key partners to ensure that this management plan is successfully implemented. They expressed the desire that engagement of key partners should not end with the completion of the management plan itself, but rather should continue into the implementation phase of the plan. Therefore, in addition to the inclusion of key partners on the Board of AET, this action addresses the need to establish a MoU with key partners to cement their continuing support in the implementation of the management plan, and to define the specific roles and responsibilities of the partner institutions. These partners are likely to include the organisations that have supported the planning process – in particular the KWS, Big Life Foundation, ATE, IFAW, ACC, ACP, Lion Guardians, School for Field Studies, among others.

Action 3.2: Develop and formalize a mechanism for payment of opportunity costs of coexisting with wildlife in the group ranches

As has been emphasised at several points in this management plan, the group ranches currently play a critical role in the sustainability of Amboseli National Park, one of KWS' key protected areas and major revenue sources, through the maintenance of critical wildlife dispersal areas and migration corridors that are essential to the survival of a number of ANP's large mammal species, in particular its world-renowned elephant population. Since the early 1980s KWS and its predecessor, Wildlife Conservation Management Department (WCMD), have been sharing revenue accruing from the Park with the six Amboseli group ranches because of their tolerance of wildlife. This has mainly been disbursed through community projects as well as bursaries to students from the surrounding ranches. Under this management action KWS and AET will develop and formalize a payment mechanism that is proportional to the opportunity cost of the community's coexistence with wildlife in the ranches.

Action 3.3: Integrate the AEMP with the Kajiado County plans

The Amboseli Ecosystem covers a large proportion of Loitokitok Sub-County. The AE plan is therefore a vital tool for sustainable management of natural resources in the sub-county, and if adopted and implemented with support from the County Government of Kajiado, can transform the lives of a large population residing in Kajiado South. As such, under this management action, efforts will be made to ensure that the plan is integrated with the Kajiado County Spatial Plan as well as the County Integrated Development Plans so that funds for its implementation can be availed by the County Government.

Objective 4: Noonkotiak Community Resource and Cultural Centre is developed into a focal point for research and monitoring, visitor interpretation, environmental education and AE administration

The future desired state in the AE is where a Resource Centre is established to facilitate knowledge-sharing through dissemination of educational and AE interpretation information to the local community and visitors, as well as showcasing the rich Maasai Culture and facilitating research and monitoring in the ecosystem. To achieve this desired state a Resource Centre, Noonkotiak Community Resource Centre (NCRCC), is being established on a 100-acre parcel of land which was set aside for development of the Centre by Olgulului-Ololarashi Group Ranch in 2013 and launched by African Conservation Centre (ACC) and partners in March 2016. Once complete, it will be a Centre for conservation in the Amboseli ecosystem that serves community needs, showcases culture (museum/educational programs), provides community and tourist educational opportunities, supports eco/cultural tourism, sustains enterprise and becomes a home for scientific research and monitoring, as well as being an administration centre for AET.

Currently, the AET's base of operations has been established at the NCRCC. AET and ACC have also worked with women near Noonkotiak to develop a cultural homestay.

To ensure that the NCRCC is developed into an elaborate facility that is a “must visit” facility for visitors and the local community, the following actions will be implemented.

Action 4.1: Establish an Environmental Education Centre

Among the key facilities to be developed at the NCRCC is an Environmental Education Centre. This facility will aim to promote the environmental values of the Amboseli Ecosystem and Kenya in general through its educational programmes targeting different groups. The Centre will offer educational programmes to school groups from the Amboseli Ecosystem and other visiting organised groups (schools and visitors), who seek to learn about the environment. It will have specialist staff to deliver educational programmes through lectures as well as field excursions.

To support the education programmes, the education centre will have large and small halls for environmental conservation lectures. These halls will also be used as venues for community meetings/workshops when needed. It will also have a library with books and publications that cater for the needs of different ages and literacy levels. A digital library, where one will be able to access digitised information such as published scientific papers on Amboseli Ecosystem, will also be available. In addition, adult training workshops will be provided at the centre. Other associated educational tools at the centre will include wildlife exhibits and a botanical garden.

The Education Centre will work with Amboseli National Park Management to organise park visits for school children from local schools as well as local community members for, to provide an opportunity for these groups to see wildlife in new ways.

Action 4.2: Establish a Research and Monitoring Centre

Scientific research and monitoring is a basis for policy development at the ecosystem level and is an essential tool for biodiversity conservation. It helps ecosystem managers to make informed decisions with the participation of local communities.

Threats like habitat loss, for both livestock and wildlife, due to increasing land conversion from livestock grazing to agriculture calls for a strong emphasis on research and monitoring of the Amboseli Ecosystem. Research and monitoring activities generate information that gives insights into ecological trends and factors affecting observed trends, and this information helps ecosystem managers and policy makers to develop and implement adequate responses to counter threats to the integrity of socio-ecological systems. For instance, the long-term ecological monitoring programme conducted by Amboseli Conservation Programme (ACP) has been providing information on ecological dynamics in the Amboseli Ecosystem for the last 50 years. This information has been used to support the establishment of Amboseli National Park, as well as the development of management plans for the ecosystem, Group Ranches and National Park over this time.

To ensure that management of the AE is science-driven, AET will coordinate research and monitoring activities in the ecosystem and ensure that information generated by research studies and monitoring activities informs resource planning and decision making. To facilitate this, a Research and Monitoring Centre will be established at the NCRCC. This Research Centre will undertake research in various fields in collaboration with other research partners. It will have Resource Assessors, researchers, and long-term research students conducting research and monitoring on diverse ecological and sociological thematic areas. The Resource Assessors will be recruited from the local youth to enhance the capacity of the local youth in research and monitoring. Further, the Centre will provide research internships to local youth by linking them with visiting or resident scientists, as well as provide scholarships to bright and needy students from the community to give them an opportunity to pursue their education.

To facilitate research work, researchers, students and staff will be provided with permanent, comfortable, quality housing that blends with the environment and is in line with the cultural theme of the NCRCC. In addition, the Centre will coordinate research at the Ecosystem level by providing a forum where researchers can regularly disseminate their research findings and by being a repository for all research outputs.

Action 4.3: Establish a Visitor Centre

To communicate the biodiversity and social significance of the Amboseli Ecosystem to visitors, there is need for a Visitor Centre. The Visitor Centre will be a focal point for Ecosystem interpretation and visitor information on the Amboseli Ecosystem. It will be developed and equipped to provide visitor information in a welcoming and friendly way. As such, it will have an amphitheatre where introductory lectures will be given, and films and videos on conservation and cultural values of the ecosystem will be shown. Associated with this Visitor Centre will be a Maasai Museum exhibiting Maasai cultural artefacts. The ecosystem interpretation will be carried out in such a way that visitors are inspired to learn more and gain an appreciation of the Amboseli Ecosystem.

Action 4.4: Provide and maintain traditional Maasai homestays

A homestay tourism product, that provides visitors with an opportunity for experiential cultural tourism that integrates wildlife viewing with the Maasai way of life, has been developed at the NCRCC. Sixteen cultural manyattas are already in place including special guest rooms for homestays. Water supply has been provided and fencing of the boma has been done. However, there is need to review the accommodation fee for the homestays to ensure that they become the accommodation of choice for visitors seeking a cultural experience. In addition there is need to provide a few high-end cottages or houses for individuals and groups (families, student groups) to cater for visitors seeking comfort. A school that integrates traditional culture with wildlife will also be established to cater for children of families at the cultural manyatta.

Action 4.5: Manage the NCRCC sustainably

The NCRCC will be a complex development housing several thematic Sub-Centres (culture, tourism, education, and research). As such, for the NCRCC to be sustainable it will require high-level managers for various components – Research, Hospitality, Museum and Education programs. It will also have to aim for financial sustainability by charging fees for use of its facilities and services by visitors and researchers. Furthermore, facility staff and the cultural manyatta community members will be trained in visitor handling so that they can ensure that visitors to the NCRCC have memorable experiences.

The NCRCC will also be marketed locally and internationally to attract visitors. Towards this, a NCRCC website will be created and it will be linked to websites of tourism and research partners in the ecosystem. Marketing materials, such as brochures and leaflets giving information on facilities and services provided at the NCRCC, will also be produced and disseminated through the internet and availed at visitor outlets in the ecosystem (e.g. park entry gates and tourist accommodation facilities).

Chapter 8. Plan Implementation Strategy

8.1 Plan Implementation Strategy

The plan implementation strategy has the following key elements:

Ecosystem approach. The core underlying strategy of the AEMP is the ecosystem approach to environmental conservation and management. This calls for the plan area to be managed as a single ecological unit. In reality, management of various sub-systems is sectoral but there is need for harmonization and integration since environmental issues are crosscutting.

Stakeholder collaboration. The basis of this integrated management plan is the networking and linkages between various stakeholders in addressing various issues and challenges. This aspect of linkages and networks can be achieved through collaboration at various levels that includes; inter-agency linkages to management, interdisciplinary teams to address challenges, inter-sectoral teams to address implementation strategies, and stakeholder support to ensure effectiveness.

The AEMP recognises that to achieve the objectives of the Plan, institutions operating within the Amboseli Ecosystem must consult and collaborate on issues relating to environmental management and socio-economic development. To achieve effective collaboration, this management plan proposes institutionalisation of a multidisciplinary committee to implement the proposed activities.

Plan Implementation Structure

The success of the Plan hinges on stakeholders' commitment to follow through with plan implementation. It is for this reason that a Plan Implementation Committee will be established to coordinate and advise on implementation of the Plan. In this role, this committee will be an advisory body, functioning as a sub-committee of the Amboseli Ecosystem Trust and therefore will not override or substitute for management agencies, nor have responsibility for carrying out specific actions described in this Plan. The Committee will meet regularly and communicate with Plan implementers and other relevant stakeholders with enough frequency to ensure that the Plan remains a living document.

The Plan Implementation Committee will comprise of representatives from Kenya Wildlife Service, Amboseli Ecosystem Trust and other government and nongovernmental agencies co-opted by these two organizations.

The Plan Implementation Committee will:

a) co-ordinate the implementation of the Plan;
b) mobilize resources for Plan implementation;
c) monitor and evaluate the progress of activities;
d) identify constraints in plan implementation;
e) produce annual progress reports on plan implementation;
f) recommend review of the management plan; and
g) oversee the implementation of the plan

The PIC will form four standing technical committees and other *ad hoc* technical committees as the need arises (Figure 17). The proposed terms of reference for the standing committees of the PIC are:

Research and Monitoring committee:

- Conduct research on areas identified by the management plan and the work plans.
- Collect and maintain environmental data in the plan area.
- Write proposals for funding.
- Conduct ecological monitoring and produce status reports on trends in the ecosystem.
- Interpret and disseminate scientific information and new technologies.
- Conduct socio-economic surveys.

Education, awareness and extension services committee:

- Develop networks and co-ordinate education and awareness programme.
- Write proposals for mobilization of resources for education and awareness creation.
- Identify issues for education and awareness.
- Identify key players in education and awareness in the AE.
- Develop education and awareness strategies.
- Improve capacity of existing resource centres.
- Develop education and awareness materials for different categories of people.
- Organize seminars for leaders to sensitize them on environmental conservation and the plan.
- Organize and participate in celebrations on international environmental related days.
- Organize relevant education tours and benchmarking visits

Tourism Development and Management committee

- Develop tourism development standards
- Develop an ecosystem-wide marketing strategy
- Develop ecosystem-wide tourism marketing materials
- Advise AET on tourism development and management issues in the AE

Finance and resource mobilization committee:

- Identify development partners for resource mobilization.
- Monitor financial activities of the implementation committee and prepare annual budgets.
- Develop mechanism to harmonize resource utilization among stakeholders with a view to optimize resource utilization.
- Prepare annual financial report.

Enterprise Development committee:

- Identify income generating and development projects in the plan area.
- Identify and initiate dialogue with development partners.
- Harmonize development projects with the management plan to ensure compliance with environmental standards.
- Monitor success of enterprise projects in the plan area.
- Develop mechanisms for benefit sharing of the enterprise projects.

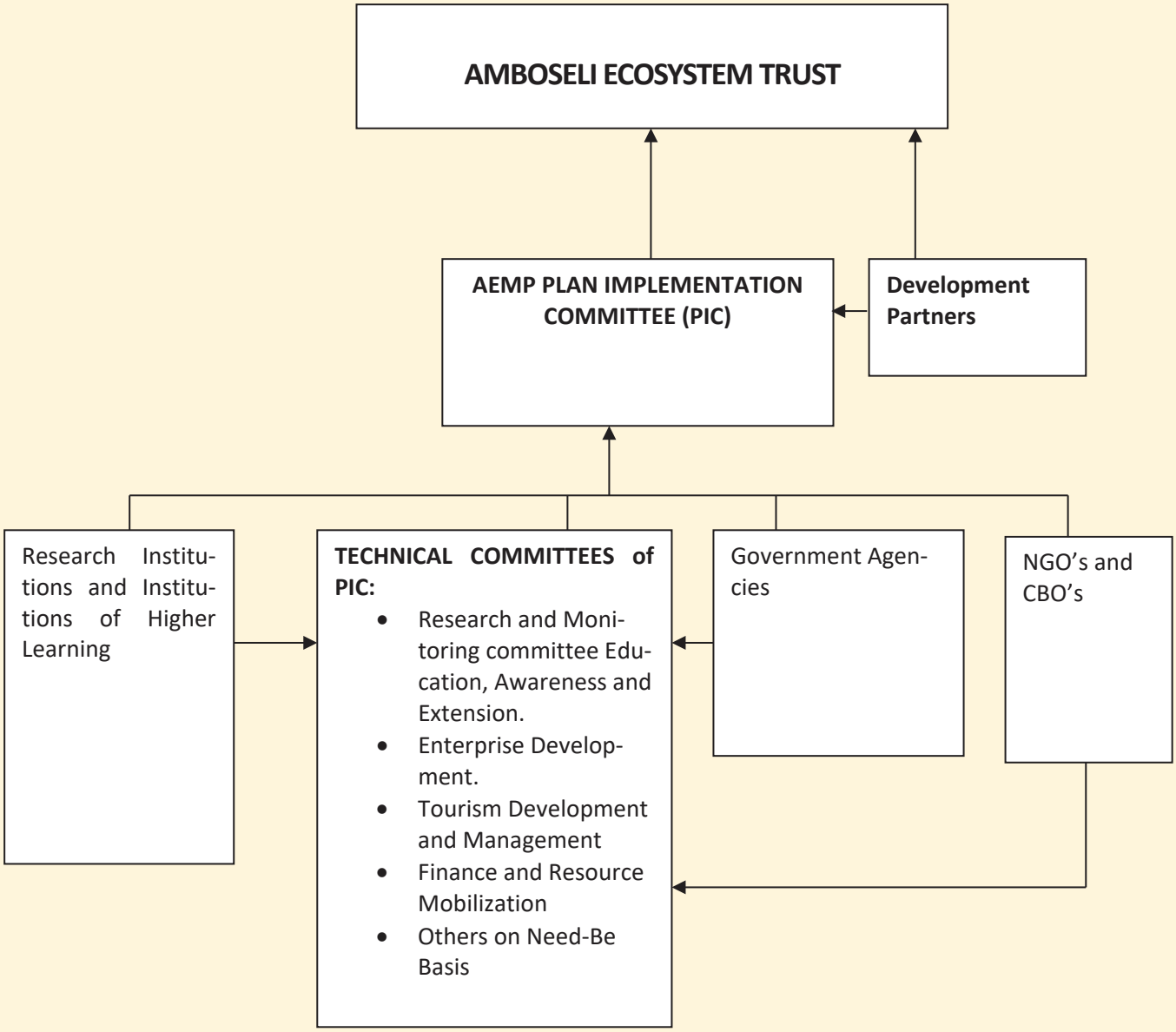


Figure 16. AEMP *Implementation Structure*

Plan Annexes

ANNEX 1

CAUSES OF ECOLOGICAL CHANGES IN THE AMBOSELI ECOSYSTEM

The loss of the woodlands in Amboseli documented in earlier publications was shown through long-term exclosure experiments to stem from elephant browsing pressure (Western and Maitumo, 2004), accelerated by heavy ivory poaching in the 1970s (Western and Lindsay, Western, 2007). Ol Tukai, Serena, Tortilis and other tourist lodges have set up woodland recovery plots around their lodges. KWS, funded by the Canadian Government, has also launched a woodlands restoration program. Just Diggit in collaboration with ACC, AET and KWS has constructed a number of restoration plots in and around the National Park and is currently embarking on a long-term woodland restoration plan. These restoration programs underscore the role of elephants in the loss of tree cover and the ample prospects for restoring woodland patches and species diversity in the Amboseli Basin.

This report shows that reduction in woody vegetation documented in earlier publications has continued and includes an extensive loss of shrub and herb cover. The reduction in woody vegetation has caused loss of habitat and species diversity in Amboseli National Park and a reduction in the diversity of large herbivores (Figure 13). The most conspicuous loss has been in the browsing species associated with the woodlands—impala, giraffe, bushbuck and lesser kudu.

The far greater threat to the Amboseli ecosystem is the loss of grassland productivity. Although the loss of productivity was highlighted in the ACP 2007 report, work published since then shows an accelerating loss of pasture production due to heavy grazing pressure (Western et al, 2009). The loss of productivity has caused intensified “droughts” (measured by lack of pasture) and a heavy loss of livestock and wildlife in 2009. ACP is in the process of publishing the results of the long-term counts of livestock and wildlife to show that heavy sustained grazing is primary cause of livestock and wildlife losses in the Amboseli ecosystem. In the following analysis we give synopsis of the findings. The results do show, however, that the losses can be reversed through an ecosystem-wide integrated AEMP.

Across African savanna ecosystem large herbivore biomass has been shown to correlate closely with annual rainfall as a proxy for plant production (Coe et all, 1976). The rainfall records for the for the Amboseli basin (Figure 18) do not, however show any overall trend since the 1970s (τ = -0.0025, p = 0.9287), no differences in the number of months with rainfall (τ = -0.058, p = 0.5881), or in the bimodal pattern of rainfall (F (11,11) = 0.76906, p= 0.6708) that explain the sharp drop in herbivore production after the 1986 change point.

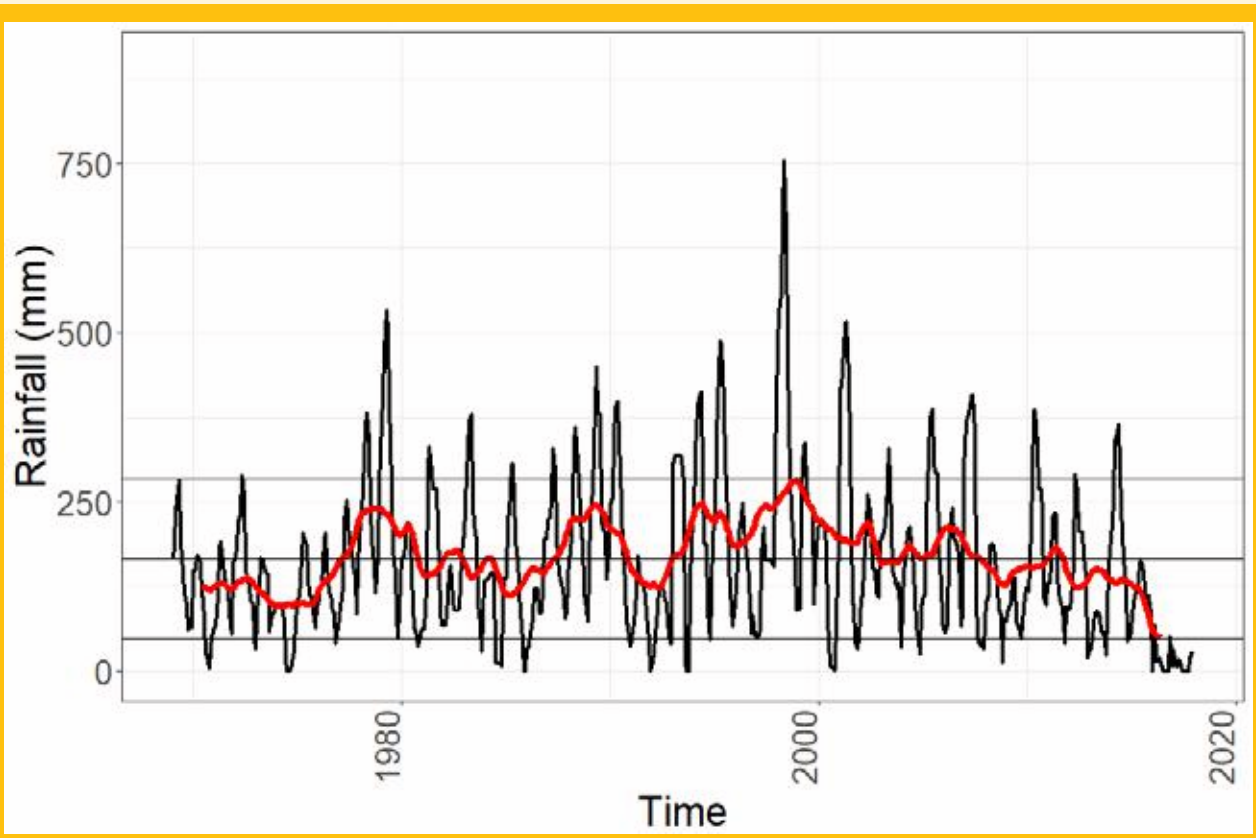


Figure 18: Annual rainfall for the 1970s to 2017 showing the mean (middle line) and standard deviations above and below. The red line is a one-year running mean over time.

There is nevertheless a positive correlation between total herbivore production (Figure 2) and rainfall over the preceding year, lagged by six months ($r = 0.23$. $P<0.0001$). The relationship weakens sharply after the 1986 change point (Figure. 2) and does not explain the sustained decline in herbivore production over the 37 years from 1990 onwards. The sustained decline points to other factors than rainfall. Given that rainfall is in any event only a proxy of plant production and that the pastures of last resort in dry seasons are the permanent swamps fed by aquifers from Kilimanjaro, a more direct measures of plant production may explain the fluctuations in herbivore production (Western et al 2015). Figure 19 gives the monthly biomass records averaged for the permanent sampling plots updated to 2017.

The grass biomass records show a sharp decline in the 1970s drought, followed by a strong increase to a peak in 1980. After 1980 grass biomass declines steadily, despite periods of short-lived recovery. The temporary reversal in the steady decline corresponds to the exceptionally heavy El Nino rains in 1998 and 1999. A further and steeper decline set in after the El Nino rains abated, culminating in the extreme drought of 2009. Livestock production fell by 63% and wildlife production by 60% (Figure 3)-the heaviest losses recorded in a half century of ACP monitoring. The recovery in plant production after the 2009 failed to rebound to pre-drought levels and began falling back to 2009 levels in the 37 years from 1990 onwards. Over the past four decades, plant biomass has been declining steadily. Since 2000 biomass has rarely and only briefly reached the 1980s levels.

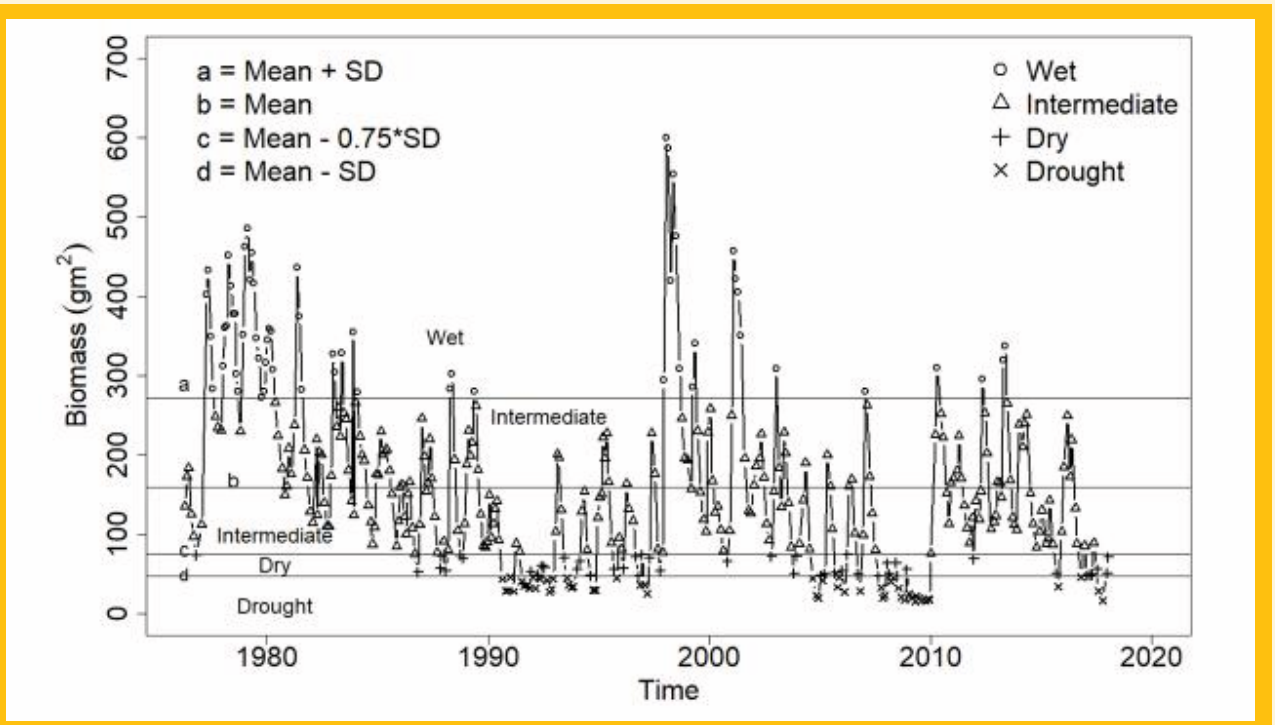


Figure 19: Monthly plant biomass records showing the mean and standard deviations averaged for 20 sampling plots in Amboseli.

The ACP records show that plant biomass has decline steadily against rainfall over the past four decades and most strongly after the 1986 change point in herbivore production. The plant production per unit of rainfall after 1986 is significantly lower than levels prior to 1986 (ANCOVA, $F = 21.86$, $p < 0.0001$).

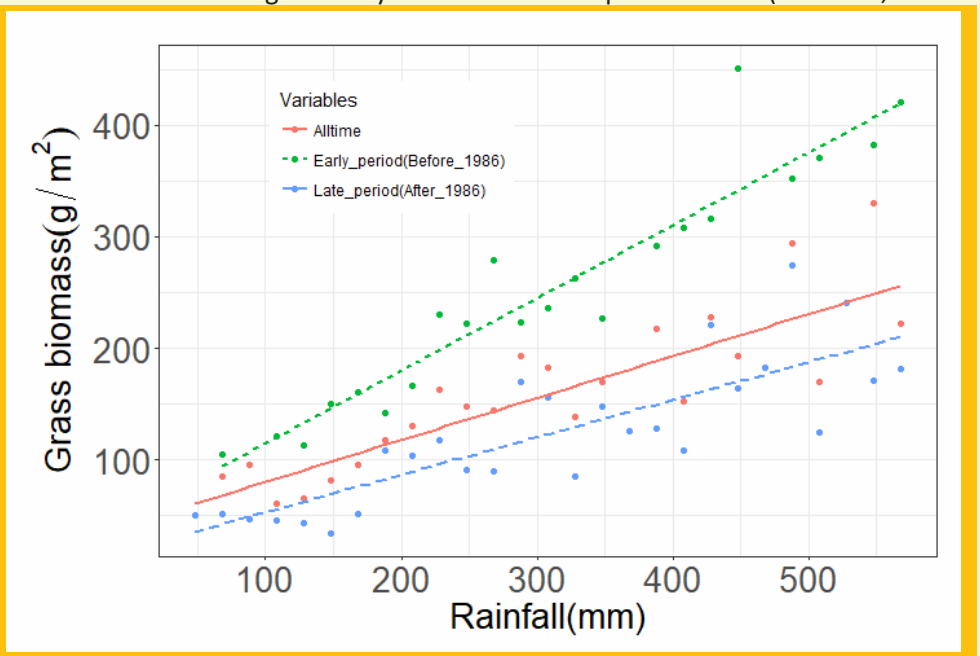


Figure 20: **Rainfall and grass biomass density in the Amboseli basin area prior to and after 1986. The sharp decline in biomass per unit of rainfall corresponds to the change point in herbivore production (Fig. 2).**

The conspicuous decline in plant biomass corresponds directly to the increased grazing pressure on the grasslands. Figure 21 shows plant biomass declining in response to a matching increase in grazing pressure. Grazing pressure has increased nearly threefold over the last forty years ($t = 5.319$, $p < 0.0001$). The decline in plant biomass is inversely related to the increase in grazing pressure ($r = -0.5$, $p = 0.0032$).

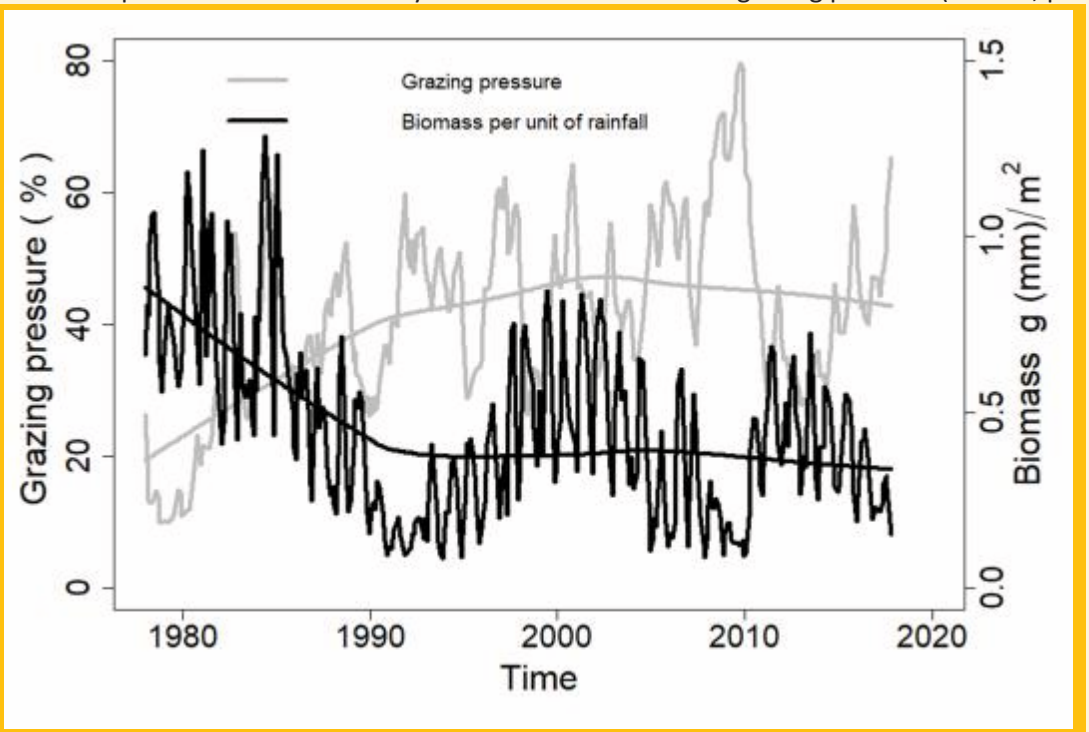


Figure 21: Increased grazing pressure in the Amboseli basin sampled in 20 permanent sampling stations monitored monthly.

The dominant impact of grazing pressure in explaining the decline in plant biomass, and in turn herbivore production, can be gauged by calculating the biomass per unit of rainfall over the last four decades (Figure 22) Grazing pressure explains 59% of the decline in grass biomass per unit of rainfall (Western et al, 2015). The trends in total herbivore production closely track the changes in biomass production per unit of rainfall ($r=0.36$, $p=0.045$**).**

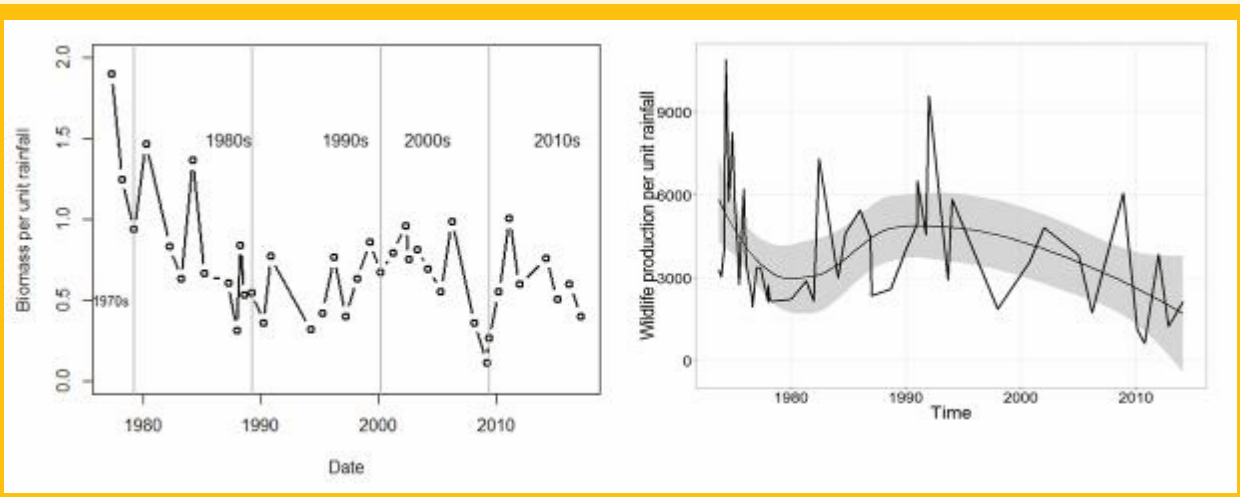


Figure 22: Decline in annualized biomass yield per unit of rainfall over four decades matched against the decline in herbivore production over the same period.

ANNEX 2

REDEFINING AEMP BOUNDARIES BASED ON LAND USE CHANGES

The loss of open free-ranging areas for pastoral herds and wildlife to farms and settlements (Figure 8 and 9) is reflected in the reduced area used by wildlife since the 1990s. The reduction in the core area shows up in the loss of wildlife populations on the subdivided Kaputei ranches (Western et al 2009; Groom and Western, 2013) and is illustrated in Figure 23. The Kaputei wildebeest and zebra populations in Kaputei were, however, separated from the Ilkisongo populations in the dry season, migrated mainly to the eastern Kaputei plains north of Eselengei and to a lesser extent to the south where they overlapped with the wet season migrants from Amboseli. The persistence of the Amboseli migrations and importance of the Mbirikani and Eselengei Group ranches as the main dispersal areas is illustrated by satellite tracking of wildebeest populations for the period 2013 to 2016 (Figure 24).

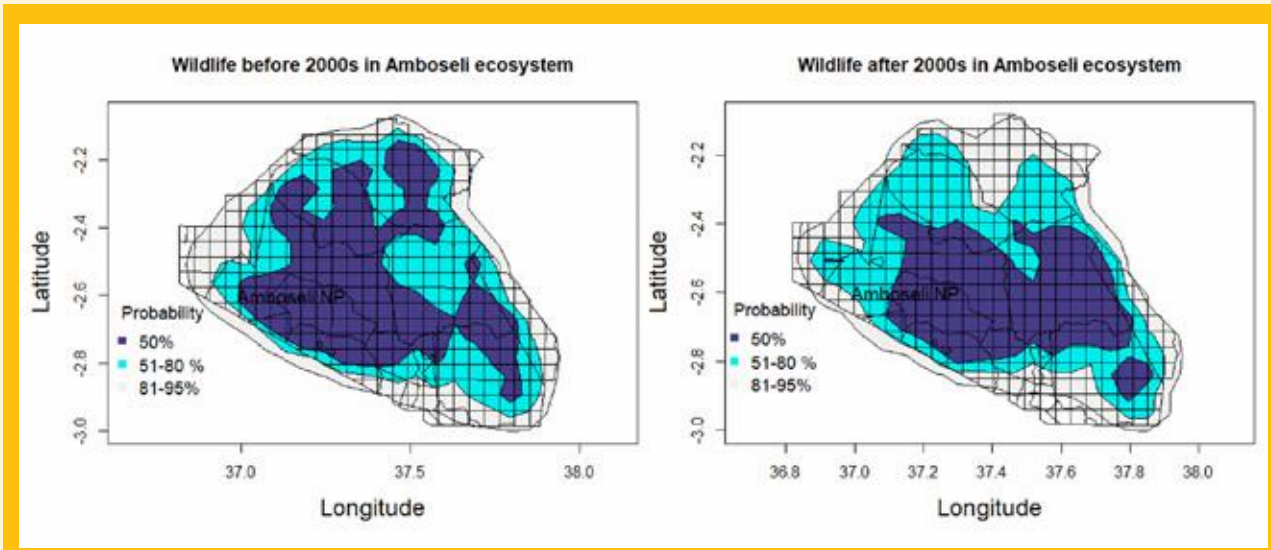


Figure 23: The contraction of core area used by wildlife migrants in Eastern Kajiado after 2000. The losses in range are largely due to the loss of wildlife populations on the Kaputei ranches to the north and settlement in the Iltilal area bordering Tsavo West in the south east.

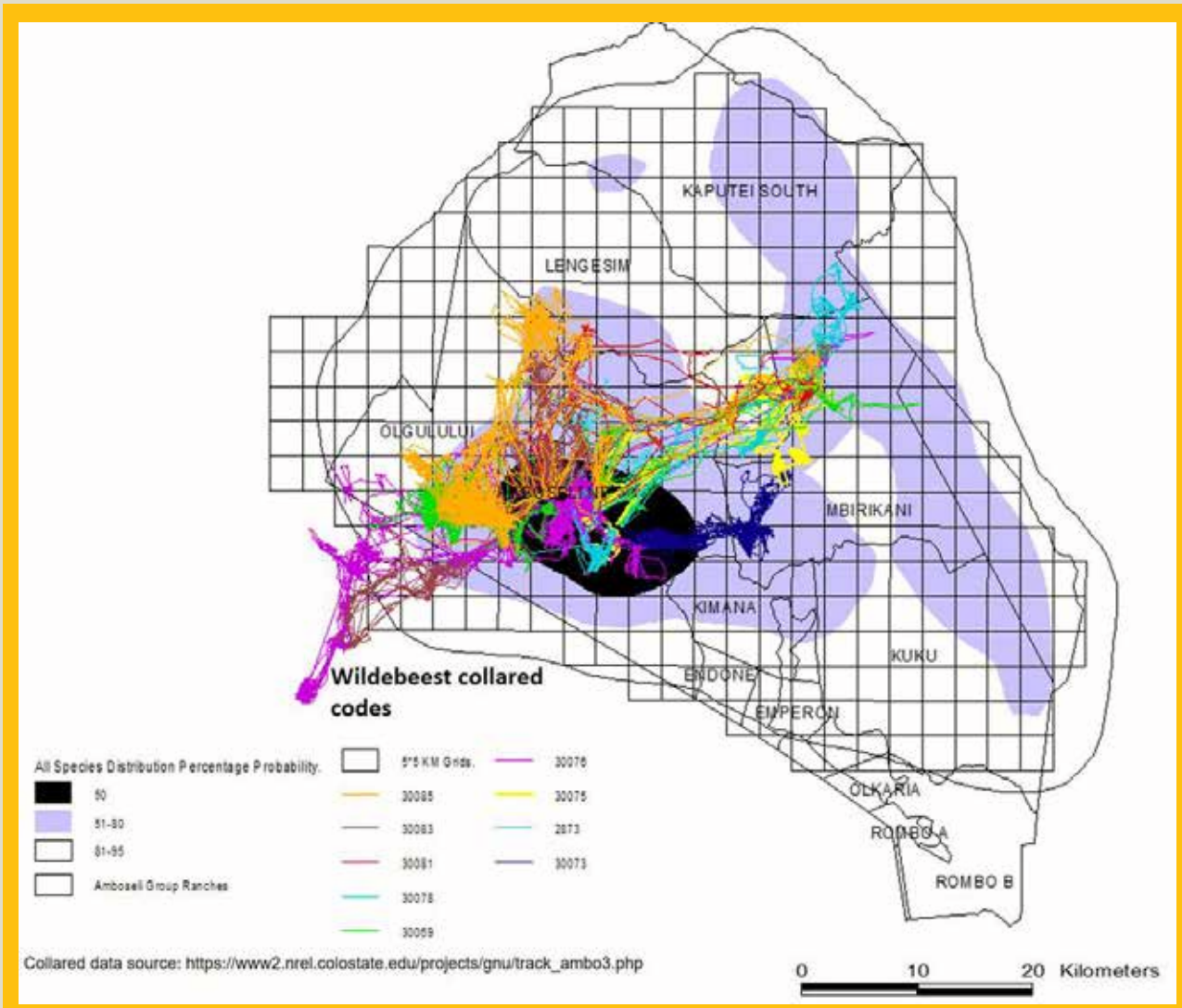


Figure 24: Satellite tracking of wildebeest migrations showing the overlap with the core areas of the MVA defined by aerial counts of wildlife populations since 1974.

Focusing on the migratory populations of Amboseli National Park and linkages to adjacent ecosystems (Figure 17) cuts the down the size of the core MVA to approximately 4,000 km2 and reduces the potential for conflict with farmers and settlers. The reduced area covers the Ilkisongo group ranches where the decline in wildlife production since the 1970s has, at 13%, been relatively small compared with the 45% loss for 8,500 km2 area of eastern Kajiado. The difference confirms wildlife losses to be heavy on the subdivided ranches of Kaputei and light on open Ilkisongo ranches (Western et al, 2009). Livestock production has, however, declined 21% in both areas, largely due to the loss of cattle.

Herbivore production and changes in Amboseli ecosystem						
Whole ecosystem				Reduced ecosystem		
	1970s	**2010s**	**% reduction**	**1970s**	**2010s**	**% reduction**
Livestock	2554270.74	2001509.26	**21.64**	1167836.12	918642.00	**21.34**
Wildlife	983469.26	538614.36	**45.23**	489450.66	424393.07	**13.29**
Total	3537740.00	2540123.62	**28.20**	1657286.79	1343035.06	**18.96**

Table 3: Herbivore production losses in the reduced Minimum Viable area recommended for AEMP 2018-2028 compared to the eastern Kajiado region (whole ecosystem). Wildlife losses in the reduced MVA are 13% compared with 45% for eastern Kajiado. Livestock loss at 21% are similar for the reduced MVA and eastern Kajiado.

Annex 3: Principal Resource Documents Used to Compile the AEMP 2020-2030

1. Western, D. Et al. 2018. The Amboseli Ecosystem: Status, Changes and Recommendations for The Amboseli Ecosystem Management Plan 2018-2028
2. MGR, 2017. Mbirikani Group Ranch land Use Management Plan 2017-2027
3. EGR, 2018. Eselengei Group Ranch Land Use Management Plan 2018-2028
4. ALOCA, 2016. Amboseli Land owners Conservancies Association 2016-2026
5. ATGRCA & KWS 2014, Amboseli Ecosystem Management Plan, 2008-2018
6. ALOCA, 2016. Amboseli Land owners Conservancies Association Management Plan, 2016-2026
7. OOGR, 2011. Olgulului-Ololarashi Conservation & Development Plan 2011-2021
8. OOGR, 2014. Kitenden Corridor and Conservation Area Conservation Plan, 2014-2018
9. RGR, 2011. Rombo Group Ranch Tourism Development & Conservancy Plan
10. OOGR, 2019. Olgulului-Ololarashi Group Ranch Land Use & Subdivision Plan
11. NLSRO,(undated). Abstraction Survey Report for Ilkisonko WRUA, Loitokitok
12. PECS, 2018. Amboseli Ecosystem Management Plan: Plan Scoping Report
13. PECS, 2019. Proceedings of the Stakeholder Planning Workshop for the Amboseli Ecosystem

Annex 4: Participation in Selected Planning Meetings

Name	*Position and Organisation*	*Stakeholder Workshops*		*Plan Scoping Meeting*
		SPW	*SPVW*	
Abraham Loomuna	AET	X	X	
Andreas Fox	K&D/ KWT			X
Anne Mugo	WWF-Kenya		X	
Apollo Kariuki	KWS	X	X	
Bernard Tulito	IFAW		X	X
Catherine Sayialel	ATE	X		
Christine Mwinzi	KWS	X	X	
Daniel Mapi	SEC - MGR	X	X	X
Daniel Kaaka	AET	X	X	
Daniel Kanchori	Amboseli		X	
Daniel Kipkosgei	KWS	X	X	
Daniel Leturesh	OOGR/AET	X	X	X
Daniel Njaga	PECS LTD	X	X	X
Danson Mositet	Amboseli		X	
Darius Kayago	KWS	X	X	
David Maitumo	ACC			X
David Mito	MGR chairman			X
David Mwanthi	KWS	X		X
Daniel Sambu	BLF			X
David Western	ACP			X
David Kayian	Imbirikani			X
David Sirinkoti	Amboseli		X	
Dickson Melita	ORT	X	X	
Dr. Bernard Kaaria	PECS	X	X	X
Dr. Winnie Mwala	KWTA		X	
Dr.Prof.Moses Okello	SFS	X		
Edward Ng'ang'a	Amboseli		X	
Elijah Keen Naini	OOGR	X	X	
Emmanuel Mpararia	EGR	X		X
Emmanuel Kanai	Kuku B chairman	X		
Eric Ole Kesoi	Lion Guardian			X
Evan M. Mkala	IFAW	X		X
Florence Mwikali	NEMA	X	X	
Henry Tola	KWS	X		
Hon. Julius Moipaai	Kajiado County		X	
Irene Amoke	KWT			X
Jackson Mwato	AET	X	X	X
Jacob Keshiki	ALOCA		X	
Jacob Leshan	Eselengei			X
James Olamayiani	AET	X	X	
Jeremy Goss	BLF	X	X	X
Joel Ketukei	Kuku A GR	X		X

Name	Position and Organisation	Stakeholder Workshops		Plan Scoping Meeting
		SPW	SPVW	
John Biko	KWS	X	X	
John Gisa	ALOCA		X	
John Ole Muii	OOGR			X
John Sitelu	AET	X		
Johnson Sipitiek	ACC	X	X	X
Jonah Ole Maai	EGR	X		X
Joneti Ayalual	ALOCA		X	
Joseph Parmuat	ALOCA			X
Joseph Kipapu	ALOCA		X	
Joseph Kipespa	OOGR	X		
Joseph Lamuuko	AEMP		X	
Joseph M. Kopeto	NEMA	X		
Joshua Suyianka	MGR Treasurer		X	X
Julius Muriuki	ACC			X
Kasaine Kareto	Kajiado County		X	
Ken Nashuu	KWS	X	X	X
Kes Smith	ACC - EU			X
Kirruti Jackson	Amboseli		X	
KoiKai Oleitiptip	AET/ATGRCA	X	X	X
Kossing'et ole Nchana	AET		X	
Lengen Victor	ACC			X
Looma Ngoreni	OOGR			X
Lucy Waruingi	ACC		X	
Luke Maamai	Lion Guardian	X		
Lydia Biri	MWCT	X		
Margaret Muriuki	UDM		X	
Martin Kirasi	Amboseli Rangers			X
Mathew Sulalu	Kajiado County Govt	X		
Melton Melita	Amboseli		X	
Michael Parts	Independent Journalist			X
Molinka	Eselengei			X
Moses Saruni	ATE			X
Nelly Palmeris	KWS	X		
Noah Ntoyai	Amboseli		X	
Patrick Kariuki	PECS	X	X	
Patrick Papatiti	OOGR			X
Peter Solonka	ACC	X	X	X
Philip Lukose	KWS	X		
Philip Mwangombe	IFAW			X
Purity Kisemei	AET	X		
Purity Ntanin Kisemi	UNDP		X	
Sadallah Korinko	ALOCA		X	X
Samson Lenjirr	Kajiado County	X		
Samuel Kaanki	ALOCA		X	X
Saruni Mulea	Kuku B treasurer	X		
Shadrack Ngene	KWS			X

Name	Position and Organisation	Stakeholder Workshops		Plan Scoping Meeting
		SPW	SPVW	
Sintoyia Nkonyoyo	CWCCC		X	
Solomon Kahenja	ALOCA		X	
Solomon Loombaa				X
Stefano Cheli	Tortilis			X
Susan Kinuthia	AET	X	X	X
Tal Manor	ATE	X		X
Victor Mose	ACP	X		
Wachira Maina	KWTA		X	
Washington Ayiemba	UNDP	X	X	
William Lemaron	OGR			X

Photo of AEMP Participants at the Stakeholder Planning Workshop

Photo of Participants at the AEMP Stakeholder Plan Validation Workshop

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