

STRATEGIC ENVIRONMENTAL AND SOCIAL ASSESSMENT (SESA) FOR AMBOSELI ECOSYSTEM MANAGEMENT PLAN (AEMP) 2020-2030



CERTIFICATION

This Strategic Environmental and Social Assessment (SESA) Report for the Amboseli Ecosystem Management Plan (AEMP) 2020-2030 has been prepared under the leadership of Dr. Bernard Kaaria Irigia, NEMA Lead Expert Reg. No. 0079 of Planning and Environmental Consultancy Services (PECS) Limited, NEMA Firm Reg No 7839.

The SESA report has been prepared with reasonable skills, care and diligence in accordance with the provisions of Environmental Management and Co-ordination Act Cap 387 section 57 A, the National Strategic Environmental Guidelines of 2012, the Environmental Impact Assessment and Audit Regulations of 2003 and other national and international policy Guidelines for Strategic Environmental Assessment.



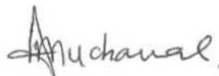

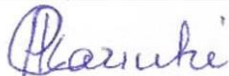

We certify that the particulars given in this report are correct to the best of our knowledge.


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This Strategic Environmental and Social Assessment (SESA) For Amboseli Ecosystem Management plan (AEMP) was prepared by AET stakeholders through a highly participatory planning process (Annex 3). The planning process was coordinated by a Core Planning Team Comprising:

 <p>AMBOSELI ECOSYSTEM TRUST</p>	<p>The Amboseli Ecosystem Trust coordinated the development of the SESA for AEMP.</p>
 <p>THE COUNTY GOVERNMENT OF KAJIADO</p>	<p>The County Government of Kajiado participated in the process and contributed towards integration of the AEMP with the Kajiado County Spatial Plan</p>
 <p>KENYA WILDLIFE SERVICE</p>	<p>Kenya Wildlife Service provided significant information that shaped up this SESA for AEMP.</p>
 <p>nema mutorogita yote shai wote wajibu wote</p>	<p>National Environmental Management Authority (NEMA) provided guidance on the appropriate planning process for development of an ecosystem plan and its subsequent Strategic Environmental and Social Assessment (SESA)</p>
 <p>KENYA WATER TOWERS AGENCY Coordinated Environmental Protection K.W.T.A</p>	<p>The Kenya Water Towers Agency (KWTA) provided significant information that shaped up this SESA for AEMP and participated in the tail end of the process and contributed immensely during the validation workshop</p>
 <p>ACC AFRICAN CONSERVATION CENTRE</p>	<p>African Conservation Center (ACC) and its affiliate African Conservation Programme (ACP) synthesized long-term ecological information of SESA for AEMP.</p>
 <p>ifaw International Fund for Animal Welfare</p>	<p>International Fund for animal welfare (IFAW) provided wildlife migratory route maps and human wildlife conflict data.</p>
 <p>JUSTDIGGIT</p>	<p>Just Dig it participated in SESA validation meetings and updated on the ecosystem restoration programmes</p>

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	Lion Guardians participated in providing significant information that shaped up this SESA for AEMP.
	School of field studies participated in providing significant information that shaped up this SESA for AEMP.
	The Water Resources Authority (WRA) participated in providing significant information that shaped up this SESA for AEMP.
	Planning and Environmental Consultancy Services provided the technical assistance for plan development

LIST OF ACRONYMS

ABR	Amboseli Biosphere Reserve
ABRP	Amboseli Baboon Research Project
ACC	African Conservation Center
AE	Amboseli Ecosystem
AEMP	Amboseli Ecosystem Management Plan
AERP	Amboseli Elephant Research Project
AET	Amboseli Ecosystem Trust
AMP	Amboseli Management Plan
ANP	Amboseli National Park
ARCP	Amboseli Research and Conservation Programme
ASALs	Arid and Semi-Arid Lands
ATE	Amboseli Trust for Elephants
ATGRCA	Amboseli/Tsavo Group Ranches Conservation Association
ATGSA	Amboseli Tsavo Game Scout Association
AWF	African Wildlife Foundation
BR	Biosphere Reserve
CBD	Convention on Biological Diversity
CBO	Community Based Organization
CDM	Clean Development Mechanism
CITES	Convention on International Trade in Endangered Species of Wild
F&A	Fauna and Flora
CMS	Convention on Migratory Species
CRC	Conflict Resolution Committee
DFZ	Disease Free Zone
EA	Environmental Audit
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
ESAs	Environmentally Significant Areas
GDP	Gross Domestic Product
GoK	Government of Kenya
GR	Group Ranch
HEC	Human Elephant Conflict
HWC	Human Wildlife Conflict
IBAs	Important Biodiversity Areas
IFAW	International Fund for Animal Welfare

IUCN	International Union for the Conservation of Nature
KFS	Kenya Forest Service
KWCA	Kenya Wildlife Conservancies Association
LAU	Limits of Acceptable Use
MDG	Millennium Development Goals
MOU	Memorandum of Understanding
MPT	Maasai land Preservation Trust
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
NRCC	Noonkotiak Resource and Cultural Center
PEIA	Plan Environmental Impact Assessment
PPPs	Policies, Plans and programs
SEA	Strategic Environmental Assessment
SESA	strategic Environmental and Social Assessment
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
WCA	Wetland Conservation Areas
WPU	Wildlife Police Unit
UNDP	United Nations Development Program
WRA	Water Resource Management Authority

NON - TECHNICAL SUMMARY

BACKGROUND

The Amboseli ecosystem, spanning approximately 5,700 km² and situated between Mt. Kilimanjaro, the Chyulu Hills, Tsavo West National Park, and the Kenya/Tanzania border, is renowned as one of Kenya's significant biodiversity hubs, celebrated for its picturesque landscapes, rich wildlife, cultural heritage, and social allure. Over the years, it has garnered international recognition as a UNESCO Biosphere Reserve, exemplifying a conservation area that fulfills the crucial functions of preservation, research, and development. However, recent years have seen mounting pressures on the ecosystem, including escalating human populations, unregulated development such as ad hoc tourism infrastructure, intensified farming activities like irrigation, land fragmentation, rapid urbanization, Maasai settlement shifts, and expansion of settlement clusters within group ranches. This necessitates comprehensive management planning under appropriate legislation, with the Environmental Management and Coordination Act (EMCA) of 1999 stipulating that significant development endeavors in vital biodiversity areas should undergo thorough evaluation and approval by the National Environment Management Authority (NEMA). Moreover, aligning with Kenya's development agenda, particularly Vision 2030 and the Sustainable Development Goals (SDGs), emphasizes the pivotal role of sustainable tourism and natural resource utilization, underscoring the need to revisit and update management plans like the 2008-2018 Amboseli Ecosystem Management Plan (AEMP) through a Strategic Environmental and Social Assessment (SESA) process.

JUSTIFICATION FOR STRATEGIC ENVIRONMENTAL ASSESSMENT

With the expiry of the 2008-2018 AEMP, Clause 3.3 for SESA in the NEMA approval conditions stipulated that the plan owner (AET) must notify NEMA to obtain authority to revise the plan. The AET notification and NEMA response letters are included in Appendix 1 for reference. In a letter dated July 31, 2018, NEMA issued a "No Objection" to the review of the 2008-2018 AEMP and the development of a new one, emphasizing that the new plan must undergo the SESA process in accordance with Section 57A of the Environmental Management and Coordination Act (EMCA) Cap 387 and the National Strategic and Social Environmental Assessment (SESA) Guidelines, 2012.

In addressing NEMA's requirements, AET sought the services of a consultant, and PECS Limited was engaged to undertake the exercise of preparing the AEMP and its SESA simultaneously, as per the Terms of Reference (TORs) developed by the client and endorsed by NEMA.

Strategic Environmental and Social Assessment (SESA) is a systematic and comprehensive process designed to evaluate the environmental consequences of policies, plans or programs (PPPs) (NEMA, 2012). It serves as a crucial tool for ensuring that environmental considerations are appropriately integrated into all PPPs, functioning as a decision-support mechanism for sustainable environmental management at all strategic levels.

The primary purpose of conducting SESAs for plans is the recognition that not all management plans are formulated sustainably, with some failing to comply with existing environmental policies, strategic plans and international obligations.

Several protected area management plans in Kenya have been developed, including the Amboseli Ecosystem Management Plan (2008-2018), Meru Conservation Area Management Plan (2007-2017), Samburu-Isiolo Conservation Area Management Plan (2010-2020), Lake Nakuru Integrated Ecosystem Management Plan (2000-2012), Aberdares Ecosystem Management Plan (2010-2020), Draft Kajiado County Government Spatial Plan, and various County Government Development and Land Use Plans, among others.

The implementation status of the AEMP drastically changed after approval and gazettment of the AEMP in 2015. The creation of the Plan Implementation Committee (PIC) eased enforcement and compliance. The absence of a strong Institution recognized by all stakeholders however, limited enforcement and compliance, but this limitation has been addressed through creation and endorsement of Amboseli Ecosystem Trust (AET) by all stakeholders. The Amboseli Ecosystem Trust (AET) has enhanced enforcement and compliance with the recommendations of the AEMP 2020-2030.

A management plan serves as a blueprint for how space, including its environment and natural resources, should be utilized and managed over a specified period. The plan acts as a reference point to assess progress in its practical implementation. It provides tools for monitoring and evaluating development activities and future environmental changes as outlined in the document. The planning process incorporates various aspects, including the management of protected areas and their ecosystems.

One of the main challenges of sustainable environmental management is ensuring that stakeholders are effectively involved in the planning and implementation process. Additionally, the process must be properly aligned with the goals of environmental sustainability at local, national, regional, and global levels. This alignment requires management plans to consider and effectively include all stakeholders, recognizing various instruments of sustainable environmental governance such as policies, legal frameworks, strategic plans, regional frameworks, and international multilateral environmental agreements (MEAs). Therefore, there is a need for SESA to scrutinize plans, policies, programs, and strategies to ensure compliance with existing environmental, legal, and governance requirements.

APPROACH AND METHODOLOGY

Screening was first undertaken to determine whether the AEMP 2020-2030 required a Strategic Environmental Assessment (SEA). Pursuant to Section 50 (d), (e) and Section 54 of the Environmental Management and Coordination Act, 1999, the National Environment Management Authority (NEMA) facilitated the development of SESA for the Amboseli Ecosystem Management Plan, considering social, cultural, economic, physical, and ecological factors.

The process also integrated a protected area planning framework and comprehensive land use planning as provided for in the National Land Act. It considered the draft Kajiado Spatial Plan developed by GEOMAP, which was carried out simultaneously with the development of the Amboseli Ecosystem Management Plan 2020-2030. The spatial plan's proposed actions and activities were reviewed through structured and extensive stakeholder consultation and participation.

As part of the screening process, the proponent prepared a SESA Brief describing the background of the AEMP 2020-2030, the necessity of the SESA, and the identification of direct and indirect impacts,

as well as outlining the process. The Brief was submitted to NEMA, which issued a letter of approval to proceed to the scoping stage (reference NEMA/SEA/5/2/080 dated December 7, 2022).

Scoping was then conducted to identify key issues for the detailed SEA study, including key receptors, impacts and project alternatives to consider, methodologies to use, major constraints, key objectives, justification for the SESA, the project's statement of work, a stakeholder consultation program and the identification of key stakeholders to consult. The scoping process also led to the development of the SESA terms of reference.

The entire study involved a comprehensive site survey of the project area, an assessment of the existing condition of the ecosystem and land uses, and baseline data collection. It also included a review of relevant policies, legislation, and institutional frameworks; an analysis of reasonable alternatives; identification, analysis, and prediction of environmental and social impacts; identification of appropriate mitigation measures and impact management strategies; the development of an Environmental and Social Management Plan (ESMP); and the drawing of conclusions and recommendations.

The EIA techniques and methodologies applied for this study have been adapted and refined from various methodologies and case studies used for projects elsewhere without losing sight and focus on the unique conditions and settings of the area. In carrying out the SEA the key tool for the identification of existing impacts was through discussions with the proponents, stakeholders and observations from site visits. Brainstorming among the study team members after careful review of the proposed program actions also aided in the identification of impacts. Impacts were identified by characterizing the impact causes and effects and their consequences on the physical, biological and the human environment.

Analysis and evaluation of adverse impacts was deemed necessary to determine whether they are significant enough to warrant mitigation. To achieve this, the study team reviewed relevant literature (comparison with laws, regulations and standards, consistency of program objectives with government policy); and comparisons of situations on the ground using collected data. Workshop proceedings and program Expert Working Groups generated useful information and data contained in this SESA report.

REGULATORY FRAMEWORK AND PPP ANALYSIS

The preparation of the AEMP 2020-2030 took cognizance of the existing Kajiado County and National Plans, Policies and Programs from initiation, development, and implementation as well as monitoring and evaluation. The AEMP 2020 and its SESA have taken into account the role of PPPs in the implementation projects as per the specific zonation plans. Where there are PPPs conflict within the Amboseli Ecosystem, mitigation measures have been suggested.

The AEMP is anchored on existing County and National Programs, Policies and Plans (PPPs) from initiation, development and implementation as well as monitoring and evaluation. The AEMP has room for the role of PPPs in the implementation of projects as per the specific zonation plans.

Relevant national and international laws concerning environmental conservation and protection were reviewed with respect to the Amboseli Ecosystem. The National policies and laws including the Kenya

Constitution (2010), Kenya Vision 2030, National Environmental Policy (2013), National Water Policy, 2012, water Act, 2016, Forest Policy, 2014, Environmental Management and Coordination Act (Amendment), 2015, County Government Act, National Land Commission Act, of 2012, Energy Act, CAP 314 of 2006, The Forest Conservation and Management Act, 2016, among others. In addition, the inter- national community recognizes the inter-relatedness of poverty and the environment, and views environmental quality as a key factor for achieving sustainable development. The United Nations Millennium development goals of 2015 have also been reviewed with a view to ensuring that their provisions and in particular goal number 7 that lays emphasis on ensuring environmental sustainability.

The various multilateral agreements ratified by Kenya including some of the following have also been reviewed.

- The Kyoto Protocol on the United Nations Framework Convention on Climate Change,
- The United Nations Convention to Combat Desertification,
- Vienna Convention for the Protection of the Ozone Layer
- Convention on Biological Diversity
- Ramsar Convention on Wetlands

SEA ALTERNATIVES

Four (4) alternative options to the plan identified by the experts and subjected to analysis were; No Amboseli plan option, Amboseli spatial plan option, Amboseli National Park Plan option, and Amboseli Ecosystem Management plan option. The most preferred option was the Amboseli Ecosystem Management Plan which encompasses the entire land uses in details taking care of all stakeholders within the larger Amboseli area. This option also ensures social, economic and ecological benefits to the present and future generations. It ensures enforcement and compliance with the recommendations of the plan and its SEA through a well-structured governance system (AET). Options 2, 3 and 4 will however, contribute towards the overall sustainability of the AE.

SEA FINDINGS

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 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 whose back- ground spots the snow-capped Mt. Kilimanjaro. The Park also 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. It is prudent to mention that poaching which was once a threat to the wildlife has been reduced to manageable levels since the introduction of a well-managed community ranger force.

The park is surrounded by ranches which are ecologically connected to the national park, and which also host high populations of migratory and resident wildlife. This implies there are also numerous opportunities for tourism outside the park and is the foundation of the thriving private and community tourism enterprises in the ecosystem. The ecosystem is mainly inhabited by the Maasai

community whose authentic culture remains an enduring attraction to the ecosystem and to the rest of the country.

Other factors that make Amboseli ecosystem attractive for visitation include proximity to other important destinations. For instance, it's only about 2 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 also is 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's regarded as the best viewing site for the 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 has 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 threats which are of great interest to stakeholders and whose resolution calls for long term planning and management. A stakeholder consultation meeting was then organized in Amboseli (Ol Tukai) and Machakos, leading to the development of four major programs: Community Livelihoods and Socio-Economic Programme, Tourism Development and Management Programme, Natural Resource Management Programme, and Institutions and Governance Programme. The activities proposed in these programs were analyzed for impacts, with mitigation measures and a strategic environmental management and monitoring plan (SEMMP) suggested to address the identified challenges.

The SEA study team through consultations with the communities and key stakeholders observed the following challenges:

Grazing Pressure and Habitat Loss

The Amboseli rangelands and national park are experiencing increasing grazing and browsing pressure due to activities like dry land farming, wetland irrigated farming, sedentary pastoralism, and land use segregation. This has led to a decline in plant and animal productivity and diversity, and heightened human-wildlife conflicts. Habitat loss is also a critical issue, with the subdivision of land for farming, towns, and villages reducing the area available for wildlife and pastoralism. Key migratory patterns have collapsed, and vital drought refuges for both wildlife and livestock have been lost, significantly impacting rangeland productivity and recovery.

Climate Change

Climate change continues to pose severe challenges, with increasing frequency and severity of droughts directly affecting local pastoralist livelihoods. The 2009 and 2022 droughts had devastating impacts, causing massive wildlife and livestock deaths due to restricted space and pasture availability. The reduction in woody vegetation and grassland further exacerbates the situation, leading to habitat loss, decreased species diversity, and increased competition for dwindling resources.

Social Issues and Land Use

Land subdivision represents the biggest threat to the Amboseli ecosystem's viability, disrupting traditional pastoral practices and reducing free ranging wildlife habitats. Human-wildlife conflicts have escalated, primarily through livestock predation, crop raiding, and human casualties. Socio-economic and demographic changes are driving fundamental shifts in livelihoods, reducing mobility and resilience among pastoralists while intensifying competition for land and resources. These transformations have altered the landscape from a savannah ecosystem to one heavily influenced by human activities, necessitating integrated management strategies.

Standards Decline

The quality of tourism in the Amboseli Ecosystem (AE) is decreasing, which threatens its growth. This decline is due to rapid, unplanned development of tourism facilities around Amboseli National Park, enabled by weak regulations. Both high-end and budget accommodations rely heavily on the park for wildlife viewing but contribute little to conservation or local communities. The result is overcrowding in the park, diminishing its appeal.

Environmental Impacts

The expansion of tourism businesses in the AE is negatively affecting the environment. Developments, especially in the Kimana area, have disrupted wildlife corridors and dispersal areas, particularly for elephants. Lodges with electric fences are obstructing migration routes between Amboseli National Park, Chyulu Hills, Tsavo ecosystem, and nearby wetlands.

Land Use Changes

Rapid land use changes in the AE, driven by economic necessity, are incompatible with conservation efforts. These include the subdivision of community lands into small plots, increased settlement of previously nomadic populations, and growth in agriculture and fencing. Since tourism and conservation provide little direct income, communities turn to farming and other activities for economic survival, further impacting the ecosystem.

STAKEHOLDERS VIEWS/COMMENTS

The assessment of the Amboseli Ecosystem (AE) considered all land uses and activities that might negatively impact the ecosystem and suggested appropriate mitigation measures. Emerging enterprises will be progressively monitored and mitigated. Since 1967, the African Conservation Centre (ACC) has been researching and monitoring the AE, accumulating a wealth of data that informed the Amboseli Ecosystem Management Plan (AEMP). This plan will guide the implementation of sustainable activities, with ongoing data collection and monitoring to ensure its effectiveness.

Maintaining space, mobility, and appropriate land use within designated zones is crucial for the ecosystem's health. Effective enforcement and structured governance are necessary to support this. Initially, landowners resisted land subdivision due to fears of losing their lands, but eventually agreed to it to protect their property. Group ranches, critical for wildlife and pastoralism, require space and mobility, necessitating the creation of conservancies, protection of migratory corridors, and restoration of degraded areas.

Environmental Impact Assessments (EIAs) for individual projects are currently suspended. However, they will be reinstated once the AEMP and its Strategic Environmental Assessment (SEA) are approved by the County Government of Kajiado, in coordination with the Director General of NEMA, to ensure investor satisfaction.

The Project Implementation Committee (PIC) does not have the power to repossess land; this process is managed by Land Acquisition Committees within communities. Nature-based solutions should be promoted for restoring degraded areas, and continuous community empowerment through seminars and workshops is essential. The Amboseli Ecosystem Trust (AET) will coordinate compliance and enforcement with support from NEMA and other agencies. This approach has been accepted and included in the recommendations.

ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

The Strategic Environmental Management and Monitoring Plan (SEMMP) has been developed for the study. It aims to implement mitigation measures and recommendations from the SEA to minimize negative impacts and enhance positive effects of the Amboseli Ecosystem Management Plan (AEMP). It supports the long-term management and monitoring of environmental issues, and can be updated as new information arises. The SEMMP's strategic objectives include providing guidelines for managing environmental issues across all AEMP components (Natural Resource Management, Tourism, Community Livelihoods, and Institutions and Governance), addressing stakeholder concerns, establishing standards for mitigating negative impacts, and guiding project implementers on environmental protection procedures. The SEMMP schedule details activities, management and monitoring actions, responsible institutions, monitoring frequency, indicators, and guidelines.

CONCLUSION

In conclusion, the Amboseli Ecosystem Management Plan (AEMP) and its accompanying Strategic Environmental Assessment (SEA) have been developed with the aim of addressing the complex environmental challenges facing the Amboseli ecosystem. With its status as one of Kenya's most significant tourism destinations and its importance for both local communities and wildlife, sustainable management is imperative. The SEA process, guided by the Environmental Management and Coordination Act (EMCA), ensured comprehensive evaluation of the plan's impacts, considerations of national and international policies, and stakeholder engagement. Key challenges identified include grazing pressure, habitat loss, climate change impacts, declining standards in tourism, and land use changes. Mitigation measures and a Strategic Environmental Management and Monitoring Plan (SEMMP) have been proposed to address these challenges and guide the implementation of the AEMP. Moving forward, effective enforcement, stakeholder collaboration, and ongoing monitoring will be essential to ensure the long-term sustainability of the Amboseli ecosystem in line with national development goals and international commitments to environmental conservation.

Based on the analysis of all the programmes contained in the AEMP 2020-2030, the SESA for the Amboseli Ecosystem Management Plan concludes that:

- i) The AEMP (2020-2030) provides a sustainable framework for the implementation of the four proposed programs, addressing key environmental and socio-economic challenges facing the Amboseli ecosystem.
- ii) It is imperative that the plan owner (AET) and all stakeholders ensure compliance with the

Strategic Environmental Management and Monitoring Plan (SEMMP) to effectively mitigate negative impacts and enhance positive outcomes.

- iii) The plan owner (AET) plays a crucial role in coordinating and establishing linkages with all interested and affected parties, including funding institutions at national, regional, and international levels, to ensure the successful implementation of all the programmes outlined in the AEMP.
- iv) Continuous research and monitoring of the programmes are essential for ongoing improvement and adaptive management, allowing for adjustments based on new information and changing environmental conditions.
- v) Recognition of the diversity and autonomy of group ranches within the Amboseli Ecosystem is vital. While members of AET share a common goal of ecosystem protection, each group ranch retains its independence in decision-making. AET serves as an administrative arm to oversee the implementation of the AEMP and provide guidance on sustainable activities within the ecosystem, respecting the autonomy of its member ranches.

RECOMMENDATIONS

Reference to the above concluding statements, the following recommendations are made:

- a. Approval of the Strategic Environmental Assessment (SESA) for the gazetted Amboseli Ecosystem Management Plan (AEMP) 2020-2030 under the Environmental Management and Coordination Act (EMCA) Amendment of 2015 by NEMA will be an essential step to ensure effective enforcement by the plan owner and stakeholders, thereby contributing to the sustainable management of the ecosystem.
- b. The Implementation Structure should be inclusive, incorporating all stakeholders, including national and county governments, group ranch owners, private sector actors, NGOs, and local communities, to ensure comprehensive and collaborative governance.
- c. The Amboseli Ecosystem Trust (AET) should be designated as the overarching authority for ecosystem governance, supported by all stakeholders, including donors and investors, to ensure effective coordination and implementation of the AEMP.
- d. The Noonkatiak Center should be promoted and upgraded to serve as a central social and scientific monitoring hub for all activities within the Amboseli Ecosystem, facilitating data collection, research, and community engagement.
- b) The recommendations outlined in the "Amboseli Ecosystem: Status, Changes, and Recommendations" report by the Amboseli Conservation Programme should be followed during the implementation period of the AEMP and its SESA, providing valuable guidance for sustainable management practices.
- c) The SESA for the AEMP 2020-2030 should serve as the foundational assessment, with individual Group Ranch Strategic Environmental Assessments (SESAs) aligned with its provisions. Conflicts should be resolved in favor of the AEMP 2020-2030 and its SESA to ensure cohesive decision-making and ecosystem management.

- d) Lead agencies and the Kajiado County Government should actively support the AET in enforcing the recommendations of the AEMP 2020-2030 and its SESA to achieve compliance and sustainability for the Amboseli Ecosystem.
- e) The Kajiado County Government Spatial Plan should be updated to include the AEMP 2020-2030 and its SESA, facilitating effective monitoring and enforcement by designated officers coordinated by the AET.
- f) The Plan Implementation Committee (PIC) should include representatives from all stakeholder groups and develop robust communication channels to disseminate information, educate stakeholders, and ensure effective and sustainable implementation of the recommendations.
- g) The plan owner, in coordination with stakeholders, should identify and map ecologically sensitive areas within the ecosystem and advocate for their gazettement as restricted or controlled zones under relevant legal instruments, strengthening the Natural Resource Management (NRM) Program and safeguarding species and habitats.
- h) The AET, supported by the PIC, should be designated as the lead institution for advising all landowners on best land use practices, enforcing compliance with the recommendations of the AEMP 2020-2030 and its SESA, and promoting sustainable ecosystem management.
- i) Developers and investors should conduct individual SESAs for respective group ranches to address unique priorities, such as land subdivision, ensuring compliance with changing circumstances and legal requirements under the Community Land Act of 2016.

Chapter 1: INTRODUCTION

1.1 Background

Kenya is endowed with diverse biodiversity and abundance of species in terms of rich wildlife and variety of plant species and diverse ecosystems. The country is rich in plant species estimated at 35,000 (NEMA 2005) with animals and insects at 21,575. Kenya has a number of endemic species in various important biodiversity areas (IBAs) but only about 8% of the country's total surface area has so far been designated as protected area (PA) for environmental conservation. Protected areas are important assets for revenue generation at the local and national levels more so from tourism which has been one of the major revenues generating sectors for the country (GoK, 2007b, GoK, 2008b, GoK, 2009f).

The Amboseli ecosystem is one of Kenya's major biodiversity centers known for its scenic, landscape, wildlife, cultural and social attractions. It is located in Kajiado District and covers approximately 5,700 km², stretching between Mt. Kilimanjaro, the Chyulu Hills and Tsavo West National Park and the Kenya/Tanzania Border (Figure 1). The ecosystem is a globally important pastoral/wildlife ecosystem that is internationally recognized as a UNESCO Biosphere Reserve because of the ecosystem's significance as an example of a conservation area that fulfils the three functions of conservation, research and development (KWS, 2008). For decades, the ecosystem was characterized by low environmental degradation, and was endowed with numerous and diverse biota types. But in the recent past, it has been under siege from; rising human population, haphazard developments such as unplanned tourism facilities, borehole drilling, expanding farming activities especially irrigated agriculture, land subdivision, unplanned urban settlements, Maasai sedentarization and expansion of settlement clusters in the group ranches.

Some of these activities have increasingly constrained the historical and traditional free movement and dispersal of wildlife in the ecosystem. They have also led to environmental degradation, destruction and encroachment of prime wildlife habitats, and competition between humans, wildlife and livestock for essential resources like pasture and water. The resultant prevalence of human-wildlife interface has precipitated all types of human-wildlife conflicts (HWC) and wildlife poaching for bush meat. Since there's insignificant compensation for losses associated with human-wildlife conflicts, most locals have a negative attitude towards wildlife and its conservation. Collectively, these problems in the ecosystem have, and continue to be a threat to preservation of wildlife and the landscapes it has historically used, and in the long-term it threatens the national, regional and international conservation role of the Amboseli region (Western et al 2018).

Vision 2030, Kenya's blue print for economic growth, aims at increasing annual GDP growth rates to an average of 10% over the vision period (GoK, 2017b) and the government has identified tourism as a leading sector in achieving this goal (GoK, 2008b). Kenya is also signatory to the Sustainable Development Goals (SDGs) comprising of 17 individual goals among which is reduction of poverty and has recently adopted the big four agenda all meant to reduce poverty and disease. To achieve this, tourism has been cited as one of the key pillars together with sustainable utilization of natural resources. This therefore demands sustainable utilization of the key conservation areas such as national parks in the country thus the need for revising the 2008-2018 AEMP and subjecting it to SEA.

Since the 2008-2018 AEMP expired, Clause 3.3 of the NEMA approval conditions for SEA required the plan owner, AET, to notify NEMA to receive authorization for revising the plan upon its expiration. The notification from AET and the response from NEMA are included in Appendix 1 for reference. In a letter dated July 31, 2018, NEMA provided a "No Objection" to the review of the 2008-2018 AEMP and the development of a new plan, emphasizing that the new plan must undergo the SEA process in accordance with Section 57A of the Environmental Management and Coordination Act (EMCA) Cap 387 and the National Strategic Environmental Assessment (SEA) Guidelines, 2012.

To comply with NEMA's requirements, AET engaged the services of PECS Limited to prepare the AEMP and its SEA simultaneously, following the Terms of Reference (TORs) developed by the client and endorsed by NEMA, as detailed below:

1. **Determining the scope of the SESA:** This entailed undertaking a scoping process to establish the content of the SEA, the relevant criteria for assessment and indicators of Limits of Acceptable Change.
2. **Establishing participatory approaches to bring in relevant stakeholders:** Ensuring effective and sustained public engagement during the SEA process. The Consultant was therefore expected to ensure a clear understanding of the power relations between different stakeholders, and how they interact with each other and the environment in order to eventually ensure ownership and a smooth implementation of the management plan.
3. **Collection of baseline information and situation analysis:** The aim of this was to provide a thorough understanding of the potential effect on environment in the Amboseli Ecosystem. The SESA was expected to undertake a comprehensive review of the international, national or regional legislative instruments which are relevant for the AEMP.
4. **Identification of alternative plans:** The rationale of this was to provide a hierarchy of alternatives that could be considered for the management plan and undertaking a comparative evaluation of the needs and impact of different options and alternatives.
5. **Identification, prediction of impacts and determination of significant impacts:** This was expected to involve assessing the significance and magnitude of the SEA effects, impacts, tradeoffs, and options or alternatives in order to determine optimum choices and eliminate unacceptable options.
6. **Identification of measures to enhance opportunities and mitigate adverse impacts:** The Consultant was expected to focus on the realization of the positive opportunities of the planned activities in the plan in line with the Sustainable Development Goals (SDGs) and recommend suitable strategies for minimizing any negative risks.
7. **Draft report on the findings of the SESA:** This was to involve preparing, compiling and presenting a draft SEA report for review once the technical analysis was completed. It was to include a non-technical summary which would be of particular use in explaining the findings to local communities, who should be well informed about the environmental implications of the management plan in order to submit their SESA comments and validate the final document.
8. **Final SEA report for submission to NEMA and decision makers:** The Consultant was expected to prepare and present the final SESA report after incorporating the comments from all stakeholders for submission to NEMA. The consultant was also expected to ensure that decision makers know the options open to them, what the likely effects of choices are, and what the consequences would be if they failed to reach a decision.

Strategic Environmental Assessment

The International Association for Impact Assessment (IAIA) defines an environmental impact assessment(EIA) as, "the process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of development proposals prior to major decisions being taken and commitments made.

Strategic Environmental and Social Assessment (SESA) on the other hand is a process of preliminary identification and consideration of the possible negative impacts into the environment and human health caused by implementation of any policy, plan or programme (PPPs). Essentially, SESA is used to integrate environmental considerations into PPPs. The goal of a SESA is to improve policies, plans or programmes in such a way as to minimize their potential negative environmental impacts, maximize positive impacts and ensure that negative impacts that cannot be avoided are properly managed and offset during implementation of the PPPs.

The National Environment Management Authority (NEMA), relevant lead agencies, the community and other stakeholders supports the development of a Management Plan for the Amboseli Ecosystem as was the case with the 2008-2018 plan. The purpose of the 2020-2030 Management Plan, which was developed through a rigorous consultative process, is to protect fragile zones and ecological processes, ensure compatible and sustainable development and harmonize the interests of development initiatives, local aspirations and conservation goals while borrowing from the experiences of the 2008-2018 plan. The Management Plan identifies land use options that are compatible with ecosystem conservation in line with the Constitution, aspirations of Vision 2030 and Sustainable Developments Goals (SDGs).

Objectives of the SESA

The broad objective of Strategic and Social Environmental Assessment is to systematically integrate environmental considerations into policy, planning and decision-making processes, such that environmental information derived from examination of the proposed policies, plans, programs or projects is used to support decision making. For this study, it is to:

- a) To ensure the AEMP is compatible with sustainable environmental planning and management;
- b) To ensure the full consideration of alternative plan options including the do nothing option, at an early time when the agency has greater flexibility;
- c) To enable consistency to be developed across different sector policies especially where trade offs need to be made between the objectives of the sectors;
- d) To guide sustainable implementation of programmes and their subproject activities and or sector policies;
- e) To identify environmental impacts and opportunities of mitigation measures during implementation of the plan to enhance environmental management plans;
- f) To ensure that the cumulative, indirect or secondary impacts of diverse multiple activities and programmes are considered, including their unintended consequences;
- g) To obviate the needless reassessment of issues and impacts at project level where such issues could have been more effectively dealt with at a strategic level, and offer time and cost savings;
- h) To provide information to decision makers by evaluating alternative options that meet

- proposal objectives based on the best practicable environmental options;
- i) To ensure that environmental principles such as sustainability, polluter pays and the precautionary principle are integrated into the development, appraisal, and selection of policy options;
 - j) To give proper place to environmental considerations in decision making as concerns economic and social issues, in view of the fact that in some contexts they may be traded off against each other.
 - k) To provide an early opportunity to check whether or not the plan complies with national and international environmental policy and consequent legislative obligations;
 - l) To contribute to the establishment of context that is more appropriate to nest future development proposals;
 - m) To provide a publicly available and accountable decision-making framework.

Guiding Principles of the SESA

There is growing interest in sustainable development that focuses on balancing environmental, community, and business interests in Kenya. The principles used to guide the study provided by the National Environmental Guidelines of 2012 are:

- 1) The sustainable use of natural resources.
- 2) The enhanced protection and conservation of biodiversity.
- 3) Inter linkages between human settlements and cultural issues.
- 4) Integration of socio-economic and environmental factors.
- 5) The protection and conservation of natural physical surroundings of scenic beauty.
- 6) The protection and conservation of the built environment of historic or cultural significance.
- 7) Public and stakeholder engagement.

1.3.1. Legal Context of the SESA

According to the Constitution of Kenya 2010, Article 42, every person has the right to a clean and healthy environment which includes the right to have the environment protected for the benefit of present and future generations through legislations and other measures particularly those contemplated in Article 69; and to have obligations relating to the environment fulfilled under article 70.

The Environmental Management and Coordination Act (Amendment), 2015 has introduced Section 57A that states that:

- (1)** All Policies, Plans and Programmes for implementation shall be subject to Strategic Environmental Assessment (SEA).
- (2)** For the avoidance of doubt, the plans, programmes and policies are those that are:
 - a) Subject to preparation or adoption by an authority at regional, national, county or local level, or which are prepared by an authority for adoption through a legislative procedure by Parliament, Government or if regional, by agreements between the governments or regional authorities, as the case may be;
 - b) Determined by the Authority as likely to have significant effects on the environment.

(3) All entities shall undertake or cause to be undertaken the preparation of strategic environmental assessments at their own expense and shall submit such assessments to the Authority for approval.

(4) The Authority shall, in consultation with lead agencies and relevant stakeholders, prescribe rules and guidelines in respect of Strategic Environmental Assessments.

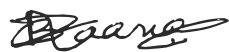

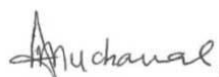

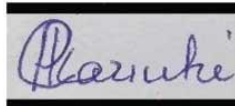

Indicative areas that need to be subjected to SEA include: Sector specific policies, plans and programmes, spatial and land use plans, regional development programmes, natural resource management strategies, legislative and regulatory bills (Acts), investment and lending activities of international aid and development assistance.


In principle, the proposed AEMP takes cognizance of multiple land uses and is considered as an integrated plan that must therefore be subjected to a Strategic Environmental Assessment.

1.3.2. SESA Study Team

This SESA for the AEMP 2020-2030 has been prepared by the PECS Limited, a consultancy firm registered under EIA/EA Regulations 2003 with expertise from various disciplines including ecologists, GIS experts, Planners, Tourism Experts, Policy analysts and Environmentalists under the guidance of a NEMA Lead Expert and Team Leader Dr. Bernard Kaaria.

The team members involved included the following:

Expert	Role	Qualification	Signature
Dr. Bernard Kaaria Irigia	Lead Expert	PhD, MSc, BSc, PG DIP	
Mr. God'swill Baraka Sewe	GIS, Tourism and Wildlife Expert	Ongoing BSc. GIS, HND AI and Robotics, Dip. BIT, Cert. Project Management	
Nicholas Bunyige	GIS and Environmental Planning Management Specialist	MA, BA, PG DIP	
Dr. Dorcas Nzasu Kalele	Climate Change and adaptation Specialist	PhD, MSc, BSc	
Dr. Patrick Chege Kariuki	Land Use, Land Cover Specialist	PhD, MSc. BSc	
Ms Lisper Njeri	Advocate, Legal Issues	LLB, BA	

Apollo Kariuki	Protected area Planning and wildlife conservation	MSc, BSc. PG DIP	
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Report Structure

The SEA report has been organized as follows: **Non-Technical Summary:** This section presents a summary of the SESA report. It broadly covers the SESA background, study methodology, study findings, baseline environmental conditions of the project area, environmental impacts, mitigation, environmental management plan, conclusions, and recommendations.

Chapter 1 - Introduction: This chapter gives a background of the project, location, objectives and the Terms of Reference

Chapter 2 - The Amboseli Ecosystem Management Plan Description: This chapter gives a detailed description of the AEMP.

Chapter 3 -Approach and Methodology: This chapter describes the approach and detailed methodology used to achieve the study objectives

Chapter 4 - Policy, Legal, Regulatory and Institutional Framework: This chapter provides an overview of the policies, legislation and institutional frameworks relevant to the SEA study and implementation of the AEMP.

Chapter 5 – Description of Baseline Conditions: This chapter describes the existing physical, biological and socioeconomic environmental conditions of the project context.

Chapter 6 - Stakeholder and Public Consultations: This chapter details the stakeholders consulted, public consultation meetings held and emerging issues.

Chapter 7: SEA Study findings: This chapter presents an analysis of the potential environmental and socioeconomic impacts and possible mitigation measures.

Chapter 8 - Impact Analysis and Alternative Options: This chapter presents an analysis of the potential environmental and socioeconomic impacts and possible mitigation measures.

Chapter 9 - Strategic Environmental Management and Monitoring Plan: This chapter describes the management plan of the environmental and socioeconomic impacts. The chapter further describes the monitoring plan that includes costs and timelines.

Chapter 10 – Conclusion and recommendations – This chapter provides the conclusion and recommendations of the SESA study.

Chapter 2: AMBOSELI ECOSYSTEM MANAGEMENT PLAN (2020-2030) DESCRIPTION

2.1. Overview

This chapter provides a detailed description of the Amboseli Ecosystem Management project. It outlines the project's location, objectives, and scope, focusing on four key programmes: Community Livelihoods and Socio-Economic Programme, Tourism Development and Management Programme, Natural Resource Management Programme, and Institutions and Governance Programme.

2.2. Amboseli Ecosystem Location

The Amboseli ecosystem is located in Kajiado District and covers approximately 5,700 km², stretching between Mt. Kilimanjaro, the Chyulu Hills and Tsavo West National Park and the Kenya/Tanzania Border (Figure 1).

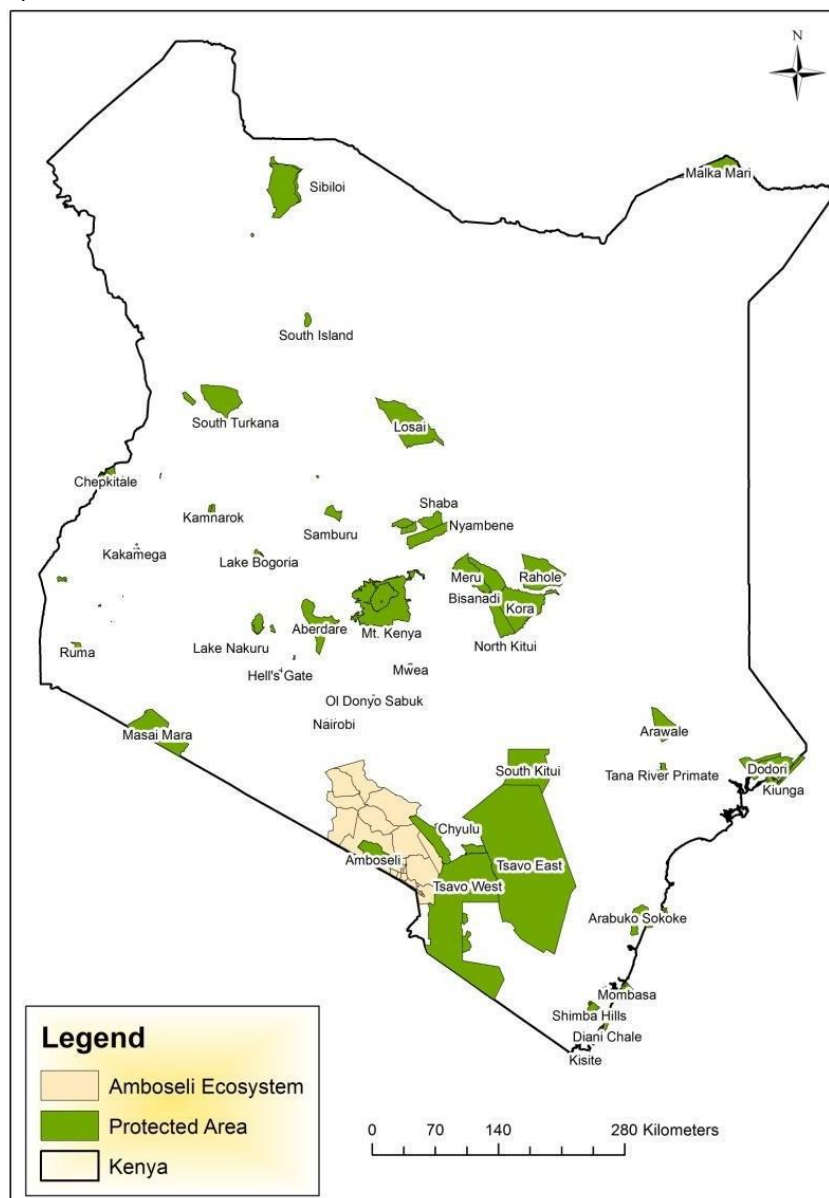


Figure 1: Amboseli Ecosystem: National Setting

2.3. SESA scope for AEMP 2020-2030

2.3.1. Spatial Dimensions

The spatial scope covers the extent of the Amboseli ecosystem and its area of influence i.e. the surrounding community and industries that rely on the ecosystem for sustenance. The Amboseli ecosystem covers an area of about 5,700 km², stretching between Mt. Kilimanjaro, the Chyulu Hills and Tsavo West National Park and the Kenya/Tanzania Border (Figure 1). Within the ecosystem are tourist facilities, human settlement, infrastructure such as roads and telecommunication network, research centres and wildlife protected areas (National Park and Conservancies). The surrounding community relies on the ecosystem for economic and social sustenance from earnings and environmental benefits of the ecosystem.

The spatial dimensions are dependent on the sector under consideration, and for integrated management of community livelihood, tourism and natural resource management as well as environmental management of the ecosystem, it is limited to the Amboseli National Park, Ogulului/Ololarashi, Selengei, Kimana, Mbirikani, Rombo and Kuku Group Ranches.

The ecological extent of the Amboseli Ecosystem is delineated by the extent of animal movements as represented by a wildlife occupancy map generated by Amboseli Conservation Programme (ACP) from consolidated population distribution of all species and all seasons between 1973 and 2017. The wildlife occupancy map gives a good statistical measure of the areas essential for maintaining pastoralism and migratory wildlife species.

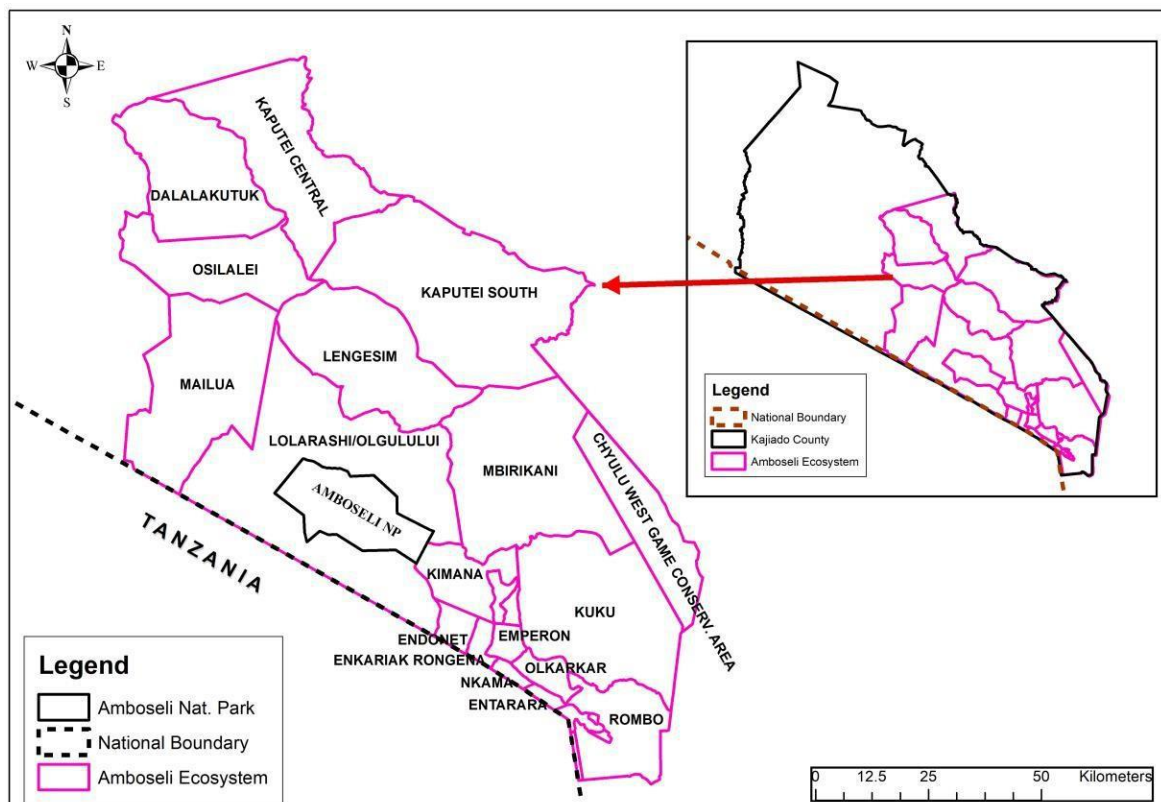


Figure 2: Amboseli Ecosystem Regional Setting

2.3.2. Institutional Dimensions

The SESA process included consultations with key institutions and the local stakeholders identified during the SESA process. These institutions include: Amboseli Ecosystem land owners, Tourism operators, KWS, County Government of Kajiado, NEMA and other government agencies and NGO agencies with interest and mandate within the AE.

2.3.3. Temporal Dimensions

This deals with the lifespan and reversibility of impacts. The SEA study covers short term, medium term and long-term environmental and socio-economic effects. Short term impacts will be mainly during the construction phase. The medium term will consist of direct impacts from the operation phase while long term will cover the implementation and monitoring phase of the programs. The exact timing is likely to vary since individual programmes may start and complete at different times. The type of impacts covered by the SESA includes positive and negative impacts, short, medium- and long-term impacts, cumulative, synergistic and secondary impacts, temporary and permanent impacts.

2.3.4. Technical Scope

The technical scope of the AEMP, SEA was mainly restricted to the physical, biological and social impacts of the four management programmes namely;

- Natural Resource Management
- Tourism Development and Management
- Community Livelihoods
- Institutions and Governance

2.4. AEMP Management Programmes

2.4.1. Community Livelihoods and Socio-Economic Programme

The purpose of this program is “to win space for livestock, and improve livestock and agricultural productivity to realize the socio-economic aspirations of the AE community within a sustainable framework”

The management objectives discussed in this program are geared towards profitable utilization of resources among which is livestock improvement, profitable pastoralism and farming to make agriculture attractive and honourable to the young and educated. This will in turn modernize agriculture as educated people will be more receptive to new ideas and technologies in farming for better food production, economic returns and food security.

Main issues relating to this programme are land subdivision and potential for unsustainable land use.

2.4.2. Tourism Development and Management Programme

The purpose of the Tourism Development and Management Programme is *“to make Amboseli Ecosystem an outstanding tourist destination offering premium visitor experience and variety while supporting conservation and communities”*.

The aim of this programme is to develop high quality and sustainable tourism that optimizes benefits locally and nationally within agreed limits of acceptable use. The primary focus 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 largely budget (high volume, low value) tourism product 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 crucial wildlife corridors and dispersal areas.

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 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 whose background spots the snow-capped Mt. Kilimanjaro. The Park also 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 which are ecologically connected to the national park, and which also host high populations of migratory and resident wildlife. This implies there are also numerous opportunities for tourism outside the park, and is the foundation of the thriving private and community tourism enterprises in the ecosystem. The ecosystem is mainly inhabited by the Maasai community whose authentic culture remains an enduring attraction to the ecosystem and to the rest of the country.

Other factors that make Amboseli ecosystem attractive for visitation include proximity to other important destinations. For instance, it’s only about 2 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 also is 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’s regarded as the best viewing site for the 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 has 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 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 tourism product of the AE is in sharp decline in quality 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 thanks to poor and weak regulations and controls. These high-end and budget tourism facilities largely depend on the Amboseli Park as they 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.
- **Environmental impacts** – The growth of tourism enterprises in the Ecosystem is having adverse impacts like 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 to the east of Amboseli National Park 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.
- **Land Use changes** – The AE has witnessed rapid land use changes over the recent past. These changes are incompatible with conservation, especially subdivision of formerly community land into small plots, growing sedentarization 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 do not 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

2.4.3. Natural Resource Management Programme

The purpose of the Natural Resource Management Programme is *“to sustainably manage natural resources in the AE to continue providing ecosystems goods and 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 bush lands and the swamps have increased by a half (Western, 2007).

Other indicator of a loss of ecological complexity includes 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.

2.4.4. Institutions and Governance Programme

The Ecosystem Institution and Governance Programme is geared towards coordination of different programs in this management plan so that it can realize 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. The Governance Program therefore targets the stakeholders, management of personnel and the support services.

Intra and inter-transboundary issues associated with the implementation of the plan are related to wildlife management policy such as hunting that is allowed in Tanzania and illegal in Kenya. Land use practices on the border could also impact negatively on the migration of wildlife, and strong partnerships at the Institutions and Governance level with the neighbouring Tanzania Wildlife authorities through regular scheduled meetings would resolve potential inter and transboundary wildlife management constraints.

2.5. AEMP Objectives

Drawing from the broad SEA objectives, the following specific objectives have been formulated to ensure sustainable environmental management of the AEMP 2020-2030

- a) Provide guidelines for sustainable implementation of the community livelihood programme;
- b) Provide guidelines for sustainable implementation of tourism programme;
- c) Incorporate environmental sustainability measures in the plan programmes;
- d) Provide guidelines for sustainable implementation of natural resource and management programme.
- e) Recommend governance and institutional arrangements for sustainable implementation of the plan.

2.6. Rationale for Undertaking a Strategic Environmental Assessment (SEA)

for the Amboseli Ecosystem Management Plan (AEMP 2019-2029)

The Amboseli Management Plan (2020-2030) was developed to ensure sustainable environmental management of the ecosystem and enhance ecological conservation efforts of the Amboseli Management Plan (2008-2018), which was faced with many challenges among them including plan development process, approval mechanism, enforcement, inadequate participation and coordination. The 2020-2030 AEMP is expected to address these challenges and ensure that it guides sustainable management of the Amboseli ecosystem by all stakeholders.

The purpose of the plan is to; protect the fragile zones in the ecosystem and control development and therefore realize harmony between multiple development initiatives, local socio-economic aspirations and environmental conservation goals. It also enables identification of future land use options that will ensure sustainable development of the ecosystem in line with Kenya's new Constitution and aspirations of Vision 2030 and other planning frameworks among which is the Sustainable Development Goals (SDGs) and the big four Agenda for the period 2017-2022.

The New plan will develop programs and it is these programs that will generate impacts during the implementation phase. The purpose of the SEA is therefore to assess the impacts of the programs (activities) and propose reliable mitigation measures. The Amboseli Ecosystem Management Planning and the Strategic Environmental Assessment processes ran concurrently.

2.7. Sustainable Development in Conservation Areas and Sensitive Environments

According to the Environmental Management and Coordination Act (EMCA, 1999), the management planning for all development activities in important biodiversity areas (IBAs) should ideally be approved under appropriate legislation. The central legislation that is the bedrock for environmental protection is the, EMCA (1999) which is the umbrella legislation that takes precedence over other sectoral environmental legislation. EMCA (1999) provides the National Environment Management Authority (NEMA) with powers to approve or disapprove major developments in wildlife conservation areas based on proper planning and assessment of environmental impacts (GoK, 1999b). NEMA is therefore the lead authority spear heading the process of assessing and approving management plans in sensitive environments such the Amboseli Ecosystem.

2.8. Area Management Plans

A management plan is a blue print for the way that space which includes its environment and natural resources should be utilized and managed within a specified period of time. The plan serves as a point of reference to assess progress in practical implementation of the plan. It provides tools in monitoring and evaluation of development activities and future environmental change as captured in the document. The planning process incorporates different aspects among which is management of protected areas and their ecosystems.

Several protected areas management plans in Kenya have been developed including the; Amboseli Ecosystem Management Plan (2008-2018); Meru Conservation Area Management Plan (2007-2017); Samburu-Isiolo Conservation (2010-2020); Lake Nakuru Integrated Ecosystem Management Plan (2000- 2012) and Aberdares Ecosystem Management Plan (2010-2020), Draft Kajiado County Government Spatial Plan, and County Government Development Plans and Land use Plans among

others.

However, the main challenges of sustainable environmental management is that of ensuring that stakeholders are effectively involved in the planning and implementation process of the plan and that the process is properly aligned and configured within the goals of environmental sustainability at all levels, namely, local, national, regional and global. This requires the management plans to consider and effectively embrace all stakeholders and take cognizance of various instruments of sustainable environmental governance such as policies, legal frameworks, strategic plans, regional frameworks and international multilateral environmental agreements (MEAs).

The main objective of Strategic Environmental and Social Assessment (SESA) is therefore to scrutinize the plans, policies, programs and strategies to ensure that they comply with the existing environmental, legal and governance requirements.

2.9. Role of Strategic Environmental and Social Assessment (SESA) in Sustainability Analysis for Management Plans

Strategic Environmental and Social Assessment (SESA) is a systematic and comprehensive process for evaluating the environmental consequences of policies, plans or programmes (PPPs) (NEMA, 2012). It is an important tool for ensuring that environmental considerations are appropriately addressed in all the PPPs and can therefore be viewed as a decision-support tool for sustainable environmental management at all strategic levels.

The major purpose of undertaking Plan SESAs is based on the realization that not all management plans will always be formulated in a sustainable manner with some not being environmentally compliant in terms of existing environmental policies, strategic plans and international obligations.

Chapter 3: APPROACH AND METHODOLOGY

3.1. Overview

A major output of the SEA process and a component of this report is the Environmental and Social Management Plan (ESMP), the benchmark for the implementation of the mitigating measures and monitoring the environmental performance of the project. The SESA did not only concentrate on establishing impacts of the management plan but also considered the surrounding environs, and the long-term effects of these activities on environmental and socio-economic conditions of the Amboseli Ecosystem. This SEA took into consideration the existing environmental regulatory framework: Environment Management and Coordination Act, cap 387 (Environmental Impact Assessment and Audit) Regulations of June 2003, Water Act (2002), environmental standards, and sustainable use of natural resources. The EIA techniques and methodologies applied in this study have been adapted and refined from various methodologies and case studies used for projects elsewhere without losing sight and focus on the unique conditions and settings of the area.

3.2. SEA Study Process

The SEA study process has focused on four programmes developed by the stakeholders as contained in the AEMP 2020-2030 and these include:

a) Community Livelihoods and Socio-economic Programme

This program aims at winning space for livestock and improving livestock and agricultural production in order to realize socio-economic aspirations of AE community within a sustainable framework.

b) Tourism Development and Management Programme

The aim of this programme is to develop high quality and sustainable tourism that optimizes benefits locally and nationally within agreed limits of acceptable use.

c) Natural Resource Management Programme

The aim of the programme is to ensure that the natural resource components and processes that shape Amboseli Ecosystem are clearly understood, sustainably managed and threats to the key natural resources processes are minimized.

d) Institutions and governance Programme

The Ecosystem institutions and governance Programme is geared towards coordination of different programs in this management plan so that it can realize 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. The Governance Program therefore targets the stakeholders, management personnel and the support services. Broadly, this SEA has followed the key steps outlined below:

3.2.1. Screening

Screening was undertaken to determine whether the AEMP 2020-2030 required a Strategic Environmental Assessment (SEA) or not. Pursuant to Section 50 (d), (e) and Section 54 of the Environmental Management and Coordination Act, 1999, the National Environment Management Authority (NEMA) facilitated the development of a Strategic Environment Assessment (SEA) for the

Amboseli ecosystem management plan, taking into account social, cultural, economic, physical, and ecological factors. The SEA process was guided by the provisions of the Environmental Management Coordination Act (Amendment), 2015 section 57A and the National SEA Guidelines, 2012. The process also took into account a protected area planning framework and integrated land use planning provided for in the National Land Act. It also took into consideration the draft Kajiado Spatial Plan as developed by GEOMAP, the process that was carried out simultaneously with the development of the Amboseli Ecosystem Management Plan 2020-2030 and reviewed each action and activities proposed by the spatial plan through structured and wide stakeholder consultation and participation. As part of screening, the proponent prepared a SESA Brief describing the background to the AEMP 2020-2030 and why SESA was necessary and identifying direct and indirect impacts as well as describing the process. The Brief was submitted to NEMA and a Brief approval to proceed to scoping stage, letter reference NEMA/SEA/5/2/080 dated 7th December, 2022 issued (Appendix 5a).

3.2.2. Scoping

The purpose of the scoping stage was to identify the key issues to be studied during the detailed SEA study, identify at an early stage what key receptors, impacts and project alternatives to consider, what methodologies to use, identify major constraints, define key objectives, state justification for the SESA, outline project statement of work, draw stakeholder consultation program and identify who to consult and finally, develop SESA terms of reference.

Scoping was done through literature review (review of existing data, review of the 2008-2018 SEA and AEMP, maps and studies in the area) and wide stakeholder and public consultation. Following the scoping process, the anticipated impacts were evaluated on each of the environmental issues to be presented and discussed with the major stakeholders (professionals, key stakeholders and the public) during the detailed survey.

The proponent prepared a SESA Scoping report describing the the key issues to be addressed by the detailed study, how they will be handled, stakeholder identification, consultation process and levels of consultation. Following submission and upon review of the scoping report for SESA for the AEMP 2020-2030, Nema outlined Nine (9) issues to be addressed by the proponent before proceeding with the detailed study vide NEMA/SEA/5/2/80 dated 27th February, 2023.

On 28th March, 2023 NEMA Headquarters convened a site verification and site meeting for the SESA process for the AEMP 2020-2030 and three other Ranches in Loitokitok, Kajiado County, attended by experts from NEMA Kajiado County, Kenya wildlife Service, Water Resources Authority, Ministry of Interior, Habitat Planners Consultants, Planning and Environmental Consultancy Services limited, Officials of Group Ranches, Big Life, Kenya Wildlife Research Institute, Survey of Kenya, Physical Planning Department and Amboseli Ecosystem Trust (List of Participants in Appendix 5a). This meeting was an opportunity for the consultants to clarify further on the 9-point issues and receive feedback from NEMA, Lead Agency Experts, NGOs and Land owners.

The 9 issues raised by NEMA were comprehensively responded to by the proponent via letter NEMA/SEA/5/2/080 dated 4th April, 2023. After review of the 9-point response, NEMA approved the scoping report for the SESA for AEMP 2020-2030, Kajiado County as per the approval letter NEMA/SEA/5/2/080 dated 13th April, 2023, (Appendix 5a), giving the leeway for the preparation of

this detailed SESA Study Report.

3.3. Methodology for Detailed SESA Study

The detailed SESA study included: site survey of the project area, assessment of existing condition of the ecosystem, land uses, baseline data collection of the area; review of relevant policies, legislation and institutional framework; analysis of reasonable alternatives; identification, analysis and prediction of environmental and social impacts; identification of appropriate mitigation measures and impact management strategies, development of Environmental and Social Management Plan (ESMP) and drawing of conclusion and recommendations

3.3.1. Consultation Meetings with the Client

The SEA scoping process started with a consultative meeting with the Client. This was specifically to get a clear background of the project, clarify the main objectives of the AEMP and establish the environmental, socio-economic, and institutional concerns that need to be addressed in the SESA process.

3.3.2. Site Visits

Site visits were done to assess the existing conditions of the ecosystem and establish issues that needed to be considered in during the SESA scoping process. The main issues included vegetation, soils, sensitive ecological features, and area land uses, blockage of migratory corridors, neighboring land uses, water resources, geology, geomorphology and observable environmental and socio-economic challenges.

3.3.3. Review of Policy, Legislative and Institutional Frameworks

Relevant national and international laws concerning environmental conservation and protection were reviewed with respect to the Amboseli Ecosystem. The National policies and laws including the Kenya Constitution (2010), Kenya Vision 2030, National Environmental Policy (2013), National Water Policy, 2012, water Act, 2016, Forest Policy, 2014, Environmental Management and Coordination Act (Amendment), 2015, County Government Act, National Land Commission Act, of 2012, Energy Act, CAP 314 of 2006, The Forest Conservation and Management Act, 2016, among others. In addition, the international community recognizes the inter-relatedness of poverty and the environment, and views environmental quality as a key factor for achieving sustainable development. The United Nations Millennium development goals of 2015 have also been reviewed with a view to ensuring that their provisions and in particular goal number 7 that lays emphasis on ensuring environmental sustainability.

The various multilateral agreements ratified by Kenya including some of the following have also been reviewed.

- The Kyoto Protocol on the United Nations Framework Convention on Climate Change,
- The United Nations Convention to Combat Desertification,
- Vienna Convention for the Protection of the Ozone Layer
- Convention on Biological Diversity
- Ramsar Convention on Wetlands

3.3.4. Review of SESA Studies and Related Information

Review of the past related SEA studies was crucial in understanding the process and possible outcomes. Some of the SESA studies reviewed includes the Report for the Strategic Environmental Assessment (SEA) for the Amboseli Ecosystem Management Plan, 2008-2018, Strategic Environmental Assessment (SEA) for Expanded Irrigation Programme and National Economic Programme in The Tana and Athi Basins (Envilead Ltd, 2016), Strategic Environmental Assessment (SEA) for the Eldoret ICDC Industrial Park Master Plan, Strategic Environmental Assessment for Nairobi Integrated Urban Plan (NIUPLAN, 2013) and the Tana-River Catchment SEA of 2012. Other reports reviewed include county development plans, draft Kajiado county spatial plan 2018-2022 and environmental impact assessment reports of projects within the Amboseli Ecosystem.

3.4. Key Stakeholder Consultation

This study will identify and compile a list of all interested and affected parties (stakeholders) in Amboseli Ecosystem, establish communication channels and stakeholder roles and contributions in the SESA process as demonstrated in the next paragraphs.

The First Core Planning Team Meeting: The first Core Planning Team (CPT) meeting that undertook (screening appendix 2a) was held at African Conservation Center (ACC). This meeting laid down the engagement between the consultants and the plan owner and outlined the key issues to be undertaken during the planning and SESA process.

A comprehensive scoping and screening stakeholder meeting was held at Ol Tukai Lodge in Amboseli and was attended by majority land owners, researchers and investors in the tourism sector. During this meeting a decision to undertake Strategic Environmental Assessment for the Amboseli Ecosystem Management Plan was endorsed and all issues affecting the Ecosystem were raised. Issues affecting the ecosystem were identified and these are captured in the proceedings report (OlTukai Stakeholder) Scoping Meeting Report in (Appendix 2b).

The second scoping stakeholder consultation forum was held at Kyaka Hotel, Machakos between 26th and 27th March 2019. Participants in the consultation consisted of key informants already interviewed and other professionals from NGOs, CBOs, Youth Groups and representatives of different groups within the ecosystem and those with a stake in the ecosystem. This meeting was facilitated by UNDP and the objective of the consultation was to present to stakeholder's opinions on key issues affecting the ecosystem and make suggestions on improvements from previous plans implemented in the ecosystem.

The stakeholders were divided into six groups representing five **(5)** Amboseli Ecosystem Group Ranches and the National Park. The issues raised through brainstorming sessions of the groups formed the basis of constituting the **FOUR programmes** of the plan, namely **Community Livelihood and Socio-Economic, Tourism Development & Management, Natural Resource Management and Institutions and Governance**.

The four programmes informed the constitution of **four specialist** working Groups to further analyze the ecosystem issues. Some of the key issues include: Migratory corridors, grazing areas and plans, social cultural connections, swamps and water systems, and sustainable resource use decisions (Appendix 3: Proceedings of Kyaka Hotel Meeting).

3.4.1. Key Informant Interviews

The major informants were identified by the study team during the scoping phase with assistance from the client. The major stakeholders form a major part of the informants and included the Kajiado County government, government Lead agencies including Kenya Forest Service (KFS), Kenya Wildlife Service (KWS) Water Resource Authority (WRA), National Land Commission (NLC), NEMA, local administration, political leaders, and local community representatives, and Kajiado Group Ranches Land Owners Association.

3.4.2. Public and Land Owners Consultations

The Stakeholder Consultation Forum was followed by a series of Public and land owners Consultation meetings at the School of Field Studies (SFS) that brought together all the group ranches. The management plan and SEA draft was presented to participants by the consultant. Participants were divided into interest groups and all issues affecting the ecosystem and possible solutions discussed.

3.4.3. Household Village Interviews

House hold village interviews were undertaken by the consultants and the plan owners guided by a structured questionnaire (Appendix 4) to capture the comments, concerns, opinions and suggestions of members of the communities not represented at the designated stakeholder consultation meeting venues.

3.4.4. Consultation with NEMA SESA Experts and Lead Agencies

The consultant prepared the **SESA** Brief describing the background to the AEMP 2020-2030 and why SESA was necessary and identifying direct and indirect impacts as well as describing the process. The Brief was submitted to NEMA and a Brief approval to proceed to scoping stage, letter reference NEMA/SEA/5/2/080 dated 7th December, 2022 issued (Appendix 5a).

3.5. Study Team Brain Storming Sessions

The consultants, plan owners (AET) and indeed all stakeholders held brain storming sessions during all stages of the planning process to synthesize the key issues to be addressed in the SEA and the Management plan. Names and photographs of stakeholders who participated in the AEMP 2020-2030 and SEA processes are attached in **appendix 5a and 5b** respectively for reference.

Chapter 4: POLICY, LEGAL, REGULATORY AND INSTITUTIONAL FRAMEWORK

4.1. Policy Legal and Regulatory Framework

There are numerous national and international policy, legal, regulatory and institutional frameworks that guide the requirements and preparation of a SEA. International policies include those ratified by the country concerning environmental issues. The national level provides the legal, regulatory and institutional frameworks for EIA and SEA studies. The following section is a summary of the international, national and sectoral policies and principles considered in the study.

4.2. Policy Framework

4.2.1. *International Conventions and Frameworks*

4.2.1.1. United Nations Framework Convention on Climate Change

The primary purpose of the convention is to establish methods to minimize global warming and in particular emission of greenhouse gases. The Convention was adopted on 9th May 1992 and came into force on 21st March 1994. Kenya ratified the Convention on 30th August 1994 thereby committing to join the international community in combating the problem of climate change. The National Environmental Management Authority is the agency acting as the national focal point for this protocol.

The objective of the Convention is; “Stabilization of the greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”. A summary of steps envisaged to implement the Convention to achieve the objectives include:

- Preparation and implementation of statement plans on climate change.
- Integration of climate change consideration into the development of environmental, social and economic policies.
- Promoting the sustainable management of sinks and GHG reservoirs.
- Promoting research and cooperation in information exchange.
- Development of education, training and public awareness raising programs.
- Promoting and developing research and systematic observation.

These activities are related to seeking and processing of information, building long-term scenarios, identification and evaluation of abatement options and strategies, climate change vulnerability evaluation of the most likely scenarios, policy design for the implementation of abatement and/or adaptation activities, evaluating the social and economic impacts of activities that are to be implemented and integrating them into the global and sector objectives, evaluating the viability of the scenarios foreseen.

The execution of these obligations implies that the implementation process of the AEMP should adopt environmentally friendly processes that sustain the ecosystem and reduce emission of greenhouse gases. Improvement and restoration of the ecosystem through afforestation will automatically reduce GHG emissions in the general area since vegetation acts like as carbon sequestration mechanism.

However, measures must be put in place to minimize emissions through appropriate technologies like gaseous emissions neutralization and ample green cover.

4.2.1.2. Country Climate and Development Report (CDDR) 2023 (WB 2023)

Environmental & Social Obligations of the SEA for AEMP is based on: Section **3.2.3.1 of the CDDR** which states: Robust plans, interinstitutional coordination, data, and capacity for climate compatible urbanization Mainstreaming national climate change goals in the land use planning agenda as potential to reinforce a deliberate focus on climate-compatible growth in AE.

By ensuring compliance with the policy and legal framework discussed, this will lead to a low carbon development of AEMP

4.2.1.3. Vienna Convention for the Protection of the Ozone Layer

Intergovernmental negotiations for an international agreement to phase out ozone depleting substances concluded in March 1985 with the adoption of the Vienna Convention for the Protection of the Ozone Layer. This Convention encourages intergovernmental cooperation on research, systematic observation of the ozone layer, monitoring of CFC production, and the exchange of information.

The convention's declaration demands a voluntary attempt at monitoring development processes, their resultant emissions and the impacts on the ozone layer for purposes of knowledge and information sharing in order to combat the same. The management plan involves steps to restore wetlands and improve the ecosystem. These and the additional measures outlined in this SEA report will go a long way to minimize the emissions that affect the ozone layer.

4.2.1.4. Convention on Biological Diversity

This convention was prepared to ensure the conservation and sustainable use of biodiversity. Kenya signed the convention on 5th June 1992 and ratified the same on 26th July 1992. NEMA is the national focal point to this Convention. The provisions of this convention have been integrated in many laws of Kenya such as Wetlands, Riverbanks, Lake Shore and Sea Shore Management Regulations, 2009 (Legal Notice No. 19).

The management plan proposes restoration of swamps, river systems and other ecological systems which will ensure direct positive implications on the natural plant biodiversity. These measures coupled with the recommendations of this SEA report will greatly improve biodiversity conservation.

4.2.1.5. Ramsar Convention on Wetlands

The Ramsar Convention on Wetlands is primarily concerned with the conservation and management of Wetlands. Parties to the convention are required to promote prudent use of wetlands within their territories and to take measures for the conservation of the same. One way to conserve the wetlands (as proposed under this convention) is establishing nature reserves whether they are included in the Ramsar list or not. The wetlands include swamps, marshes, bogs, soaks, shallow lakes, ox-bow lakes, river meanders and flood plains, as well as riverbanks, lakeshores where wetland plants grow. They also include marine and inter-tidal wetlands such as deltas, estuaries, mudflats, mangroves, salt marshes, sea grass beds, shallow coral reefs and creeks.

The main aim of the management plan is restoration and improvement of existing wetlands and river systems within the ecological system which is in line with the objectives of this convention. This SEA

proposes additional measures to improve, manage and conserve wetlands and other water bodies.

4.2.1.6. Convention on the Elimination of all Forms of Discrimination against Women

The Convention places explicit obligations on states to protect women and girls from sexual exploitation and abuse. The ecological system is located in a pastoralist area where cultural practices do not favour women rights. Additionally, tourism and related activities may infringe on human rights of women in the community. This SEA proposes measures to observe and adopt the guidelines of this convention during its implementation. The realization of a non-discriminatory environment can be realized through preventive and mitigation measures by the SEA on matters of social concerns.

4.2.1.7. Agenda 21 and Millennium Development Goals, 2015.

The agenda 21 entails a comprehensive plan of action to be undertaken globally, nationally and locally by organizations affiliated to the United Nations, governments, and other groups in every area in which human's impacts on the environment. Kenya continues to implement Agenda 21 plan of action by incorporating its principles in national policies, plans, programmes and strategies. The provisions have been incorporated in the Management Plan to promote sustainable development, which comprises of the three (3) underlying tenets of economic, social and ecology, which are well outlined in the Environmental and Social Management Plan section of this SESA. This SESA has also taken cognizance of the eight (8) Millennium development goals of 2015 namely; Eradicating extreme poverty and hunger; achieving universal primary Education; promoting Gender Equality and Empowering Women; Reducing Child Mortality; Improving Maternal Health; Combating HIV/Aids, Malaria and other Diseases; Ensuring Environmental Sustainability and Developing Global Partnerships for Development.

4.2.2. National Policy Framework

4.2.2.1. Kenya Vision 2030

As the country's development blueprint covering the period 2008-2030, Vision 2030 aims to achieve a "globally competitive and prosperous country with a high quality of life by 2030" (GOK, 2007). Specifically, Vision 2030 aims at transforming Kenya into "a newly industrializing, middle-income country providing a high quality of life to all its citizens by the year 2030 in a clean and secure environment" (Ibid). The Vision is summarized in three pillars namely economic; social, and political pillars. Environment and water sectors fall under the social pillar while the tourism sector falls under the economic pillar. Additionally, in the vision, Kenya will seek to improve the capacity for adaptation to global climatic change and harmonize environment related laws for better environmental planning and governance. Specific strategies will involve: promoting environmental conservation for better support to the economic pillar flagship projects; the application of economic incentives; and the commissioning of public-private partnerships (PPPs) for improved efficiency in water and sanitation delivery.

In this regard, the Vision cannot be achieved in the absence of a clean environment and this fits well with the management plan. The objectives of the Amboseli Ecosystem Management Plan are well aligned to the ideals of Vision 2030 as it meets objectives of the economic (tourism) and Social (environment and water) pillars through offering economic opportunities and protection of the environment. The positive impacts of improved tourism in the ecosystem will be employment,

improved income generation and sustained social and health of the people.

4.2.2.2. National Environment Policy, 2013

The National Environment Policy upholds the tenets of environment management and planning in Kenya by tracing the same to the Rio Earth Summit of 1992, which helped a great deal in raising the understanding of the link between environment and development (GOK, 2013). The policy recognizes the importance of the link between development and sustainable environment by stating the following key principles, among others;

- i) Promotion and support SMEs and other industries to adopt appropriate environmentally sound technologies through provision of appropriate incentives and disincentives,
- ii) To develop and promote use of strategic environmental assessment in development plans, policies and programmes

Overall, the government recognizes the need to integrate environmental concerns in all policy, planning and development processes. It states thus in the policy document, "Integration of environmental considerations in all national, county and relevant sectoral policies, planning and development processes is critical if this policy is to achieve its goal and objectives' (GOK, 2013). This SEA report is geared towards showing how the proposed management plan fulfils, complies and assist the provisions and objectives of the Environmental Policy. Chapter eight of this report details all the possible impacts of the implementation of the plan and shows how the negative impacts will be mitigated.

4.2.2.3. National Environment Action Plan, 2009

This Plan recognizes the environmental challenges facing industries, among others as; generation and management of solid, liquid and hazardous waste; gaseous emissions; adoption of cleaner production technologies and compliance with EIA/EA; waste and water regulations; importation of obsolete technologies; unregulated importation of toxic and hazardous chemicals; air and noise pollution; inappropriate technology in energy production; and poor planning in respect to industrial and residential areas. The National Action Plan proposes, among others, the following interventions: enhance use of cleaner production systems, finalize and implement regulations on toxic and hazardous chemicals and finalize and implement regulations on noise pollution.

This SESA report clearly shows how the above propositions are tackled by the Management Plan according to the provisions for implementation of EMCA 1999 and the associated environmental regulations. Chapter eight of this report details all the possible impacts of the implementation of the management plan especially the tourist facilities and activities and shows how the negative impacts will be mitigated.

4.2.2.4. The National Wildlife Conservation and Management Policy, 2020

The objectives of the draft Forest policy include in part; The preparation of a coordinated framework for wildlife management; Conservation of wildlife resources in national parks, national reserves and national sanctuaries in an effective and equitable manner; Ensuring maintenance and enhancement of ecological integrity of wildlife and their habitats and; Enhancement of the contribution of wildlife resources into the national economy. In relation to the conservation and management of wildlife in National Reserves and sanctuaries, the government is required in part, to;

- Develop an effective benefit-sharing mechanism between the National and County governments and communities living adjacent to Protected Areas (PAs).
- Establish clear boundaries and titling of PAs
- Ensure the highest level of protection possible to habitats containing viable representative populations of critically endangered, vulnerable or near threatened species through their declaration as a Protected Area
- Determine and enforce carrying capacities of wildlife habitats in the protected areas to maintain viable and representative populations of wildlife species.
- This plan SESA proposes the protection and conservation of wildlife in Amboseli Ecosystem for tourism purposes safeguarding their migratory corridors while ensuring that communities benefit from their land.

4.2.2.5. Sessional Paper No. 3 of 2009 on National Land Policy

The National Land Policy was formulated to provide an overall framework and define the key measures required to address among others, the critical issues on land, land use planning, environmental degradation, conflicts and unplanned proliferation of informal urban settlements, outdated legal framework, institutional framework and information management. The policy further encourages a multisectoral approach to land use, provision of social, economic and other incentives and put in place an enabling environment for investment, agriculture, livestock development and the exploitation of natural resources.

The main objective of the AEMP is to enhance and improve the ecosystem for the benefits of all stakeholders and the ecosystem and thus seeks to address and enact the principles of this policy. The ecological system is a national reserve surrounded by communal and private land and that specific land issue needs to be addressed. The SEA outlines various recommendations for land use to enhance acceptability and appropriateness of the proposed activities.

4.2.2.6. National Water Policy, 2012

The National Water Policy is informed by the gains made on implementation of reforms in the water sector as anchored on the National Water Policy of 1999 (NWP 1999) also referred to as Sessional Paper No. 1 on National Policy on Water Resources Management and Development, the Water Act 2016, existing related policy documents, and the globally recognized Integrated Water Resources Management (IWRM) approach (GOK, 2012). The policy aligns itself to the constitution in regard to creation of a system of democratic governance in which powers are devolved both vertically and horizontally in efforts to take measures to achieve the progressive realization of the cultural and socio-economic 'rights to water', an enabler of wealth creation and poverty alleviation (GOK, 2012). Most importantly, the key principle of the policy is to ensure a comprehensive framework for promoting optimal, sustainable, and equitable development and use of water resources for livelihoods of Kenyans' (GOK 2012).

In this regard the AEMP proposes various water management and conservation issues among them protection of wetlands and rivers, protection of critical water springs from degradation and promotion of rainwater harvesting technology and support establishment of Water Resource Users Associations (WRUAs) to enhance management of water sources. Addressing these issues will ensure protection of the affected water resources, supply and efficient utilization of water resources as well as the safe disposal of wastewater.

4.2.2.7. The National Forest Policy, 2014

The Forest Policy, 2014 provides a framework for improved forest governance, resource allocation, partnerships and collaboration with the state and non-state actors to enable the sector contribute in meeting the country's growth and poverty alleviation goals within a sustainable environment.

The main features of the revised policy framework for forest conservation and sustainable management include:

- a) The enactment of a revised forests law to implement this policy.
- b) The mainstreaming of forest conservation and management into national land use systems
- c) Clear division of responsibilities between public sector institutions where Ministry responsible for forestry provides an oversight role in national forest policy formulation, and regulatory function of the sector, thereby allowing Kenya Forest Service to focus on the management of forests on public land, and the role of the County governments in implementing national policies, County forest programmes including the delivery of forest extension services to communities, farmers and private land owners, and management of forests other than those under Kenya Forest Service.
- d) The devolution of community forest conservation and management, implementation of national forest policies and strategies, deepening of community participation in forest management by the strengthening of community forestry associations, and the introduction of benefit-sharing arrangements.
- e) The preparation of a national strategy to increase and maintain forest and tree cover to at least 10% of the total land area and for the rehabilitation and restoration of degraded forest ecosystems, and the establishment of a national forest resource monitoring system. Status of the Forests and Forest Resource Assessment reports will be published on a regular basis.
- f) The adoption of an ecosystem approach for the management of forests, and recognition of customary rights and user rights to support sustainable forest management and conservation.
- g) The establishment of national programmes to support community forest management and afforestation/reforestation on community and private land.
- h) The preparation of national standards for forest management and utilization, and the development of codes of conduct for professional forestry associations.
- i) The introduction of a chain-of-custody system for timber and wood products, and legal origin and compliance certificates for exporters of timber and wood products.

4.2.2.8. Draft National Livestock Policy, 2019

The Policy provides guidance to national and county governments in the development of the Livestock Industry in line with Vision 2030 and the Constitution of Kenya, 2010. The Policy interventions clearly spell out the role of each level of government while providing the necessary linkages. The Policy is

consistent with current government strategies including the Vision 2030 and its Medium Term Plans (MTP's), the Big Four Agenda and the sector wide agricultural sector development strategies that have been developed to enable the achievement of national development objectives.

The Livestock Policy covers key issues relating to: farm animal genetic resources, livestock feeds and nutrition, inputs, animal diseases and pests, livestock marketing, research and extension and food security. In developing this sub-sector policy, it is appreciated that over 80% of Kenya's land mass is arid and semi-arid and livestock is the main source of livelihood in these areas. It is further noted that even in the non-ASAL areas, the livestock sub-sector constitutes an important source of family income and food security. In addition, livestock directly contributes to the foreign exchange earnings for our nation through export of livestock products, live animals and germplasm. As such, livestock development agenda in the country will be pursued towards commercialization.

The Policy recognizes the major stakeholders in the Livestock sub Sector and proceeds to define their respective roles. It also takes cognizance of the impact of livestock activities on the environment and other natural resources such as land, water and wildlife/livestock interaction. Social inclusivity and related challenges have also been given attention due to their impact on the livestock sub sector.

This Policy recognizes the potential of the ASALs in livestock production and proposes options for the economic exploitation of these areas. The Policy takes cognizance of the contribution of the livestock value chain including non-conventional livestock species to the country's Gross Domestic Product.

The policy is expected to guarantee sustainability of livestock farming as a major economic thrust in the country. It is also expected to enhance Kenya's leadership position in livestock growth and development within the region and beyond.

One of the management programs proposed in the AEMP is the **Community Livelihoods and Socio Economic Programme** whose purpose is "to win space for livestock, and improve livestock and agricultural productivity to realize the socio-economic aspirations of the AE community within a sustainable framework". The draft National Livestock Policy will be a key guideline in the implementation of the community livelihood and socio-economic program.

4.2.2.9. National Industrialization Policy, 2012

Sessional paper no. 9 of 2012 on the National Industrialization Policy Framework for Kenya is about transforming Kenya into a globally competitive regional industrial hub.

This Sessional paper sets the base for increasing growth rates, generation of sufficient employment opportunities, and fostering Kenya's integration into the global economy.

It takes into cognizance the Vision 2030 aspirations; current status of the Kenyan economy; changes and development in the global economy; challenges of the industrial sector; and opportunities arising there from. It also takes into account some of the lessons learnt and best practices from Newly Industrialized Countries (NICs). The policy is aligned to the Kenya Vision 2030 which aspires to transform Kenya into a middle income rapidly-industrializing country, "a globally competitive and prosperous nation, offering a high quality of life to all its citizens" in a secure and healthy environment.

This policy framework focuses on value addition for both primary and high valued goods; and linkages between industrial sub-sectors and other productive sectors to drive the industrialization process and aims at providing strategic direction for the sector growth and development.

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For purpose of this policy, the industrial sector is defined as comprising the manufacturing, construction, mining and quarrying sub-sectors. The Industrialization policy will play a key role in guiding sustainable implementation of related activities proposed by programs such as tourism in the AEMP 2020- 2030.

4.2.2.10. Energy Policy, 2012

The broad objective of the national energy policy is to ensure adequate, quality, cost effective, and affordable supply of energy to meet development needs while protecting and conserving the environment. The specific objectives are to:

- Provide sustainable quality energy services for development
- Utilize energy as a tool to accelerate economic empowerment for urban and rural development
- Improve access to affordable energy services
- Provide an enabling environment for the provision of energy services
- Enhance security of energy supply
- Promote development of indigenous energy resources, and
- Promote energy efficiency and conservation as well as prudent environmental, health and safety practices

The management plan and SEA lays out strategies to monitor the range condition and develop measures to improve the poor range condition within the Amboseli Ecosystem which must involve promotion of alternative sources of energy apart from wood and charcoal.

4.2.2.11. Public Health Policy, 1994

The Kenya Health Policy Framework set out the policy agenda for the health sector up to the year 2010. The policy includes strengthening of the central policy role of the Ministry of Health (MOH), adoption of an explicit strategy to reduce the burden of disease, and definition of an essential cost-effective healthcare package. To operationalize the health policy framework, the paper on National Health Sector Strategic Plan (NHSSP, 1999-2004) was developed in 1994. The plan focused on the essential priority packages based on the burden of disease and the required support systems to deliver services. Major players in the health sector include the government represented by the Ministry of health and the local government, private sector, and non-governmental (NGOs). The implementation of the devolved system of government has led to the active involvement of the lower levels of government albeit with major challenges. The role of the county governments includes implementation of the health policies, maintaining quality standards, and coordinating and controlling all county public health activities. Public health challenges in urban areas revolve around poor sanitation, unhygienic environment, and non-adherence to planning and building regulations.

The AEMP and SEA guidelines to equitable sharing of water resources, management of solid and liquid waste which ensures improved cleanliness and health of the local community, tourists and workers.

4.2.2.12. Economic Recovery for Wealth and Employment Creation Strategy, 2006

The overall goal of the strategy is to ensure clear improvement in the social and economic well-being of all Kenyans; thereby giving Kenyans a better deal in their lives, and in their struggle to build a modern and prosperous nation (GOK, 2006). This strategy paper has commanded a great deal of attention in recent years and essentially subsumes the Poverty Reduction Strategy Paper (PRSP). The key areas covered in the strategy include, among others; reforms in trade and industry and safeguarding the environment and natural resources.

Some of the main management objectives of the AEMP that improve the welfare of the community include enhancing tourism returns to local communities, diversification, promotion and marketing of tourism and visitor experience, reduction of human-wildlife conflict, community benefits from natural resource use diversified and equity in benefit sharing ensured, improved livestock productivity and improved livestock production and marketing. These among others, will result in improvement of infrastructure, livelihoods and the economic status of the local community and investors through equitable and environmentally friendly exploitation of the ecological system. The SEA also outlines the mitigation measures for any adverse environmental impact that may result in the exploitation of the ecosystem.

4.3. Legal and PPP Framework for AEMP SESA

The aim of this section is to review relevant international, national, and county frameworks against which the AEMP was interrogated. The aim of this is to ensure compliance with relevant environmental and social obligations in policies, laws, guidelines and standards.

Table 1: provides a summary of the PPP framework used in the AEMP SEA.

Framework category	Relevant instruments
International Level	<ul style="list-style-type: none"> • Unesco Man and Biosphere Reserve • Conventional on Migratory Species • The Kyoto Protocol on the United Nations Framework Convention on Climate Change, • The United Nations Convention to Combat Desertification, • Vienna Convention for the Protection of the Ozone Layer • Convention on Biological Diversity • Ramsar Convention on Wetlands
Regional	East African Community Transboundary EIA
National	<ul style="list-style-type: none"> • Constitution of Kenya 2010 • National Environment Policy, 2014 • EMCA Cap 387 • National Landuse Policy, 2017 • Integrated National Landuse Guidelines, 2011 • National Wildlife Policy, 2020 WCMA 2013 • National Climate Change Framework Policy, 2016 • Kenya Vision 2030 • National Wildlife Strategy 2030

	<ul style="list-style-type: none"> • Kenya National Spatial Plan 2015-2045 • National Water Master Plan 2030 • National Biodiversity Strategy and Action Plan (NBSAP 2021-2030) • National Climate Change Response Strategy (NCCRS) 2010
County	Kajiado County Land Sub-Division Guidelines 2018 Kajiado County Spatial Plan 2019-2029

4.3.1. *Constitution of Kenya, 2010*

The Constitution is the supreme law of the land. It lays the foundation on which the wellbeing of Kenyans is founded. The constitution's provisions are specific to ensuring sustainable and productive management of land resources; transparent and cost effective administration of land; and sound conservation and protection of ecologically sensitive areas. Specifically, Chapter 2 Part 4, on the Bill of Rights, section 42 provides that every person has the right to a clean and healthy environment, which includes the right: (a) to have the environment protected for the benefit of present and future generations through legislative and other measures. Article 69 outlines specific provisions on the environment; subsections (d) Encourage public participation in the management, protection and conservation of the environment, and g) provides for elimination of processes and activities that are likely to endanger the environment.

The AEMP has made provisions to ensure a clean and healthy environment through the environmental and social management plan. Provisions for optimal utilization of natural resources particularly forests, water and energy through promotion of efficiency and conservation measures are well outlined in the plan and SEA. The SEA further provides for the management of solid and liquid wastes, reduced pollution and management of the natural resources including water, land and wildlife.

4.3.2. *Environment Management and Coordination Act, CAP 387 of 1999*

Environmental Management and Coordination Act, 1999 describes the legal and institutional framework for environmental management. General principles of the act are that every person in Kenya is entitled to a clean and healthy environment and has the duty to safeguard and enhance the environment. The entitlement to a clean and healthy environment includes the access by any person in Kenya to various public elements or segments of the environment for recreational, educational, health, spiritual and cultural purposes. Reference to this act is made together with other relevant regulations that form the environmental legal framework namely, the Environment (Impact Assessment and Audit) Regulations formulated in 2003. Based on these laws and regulations, relevant rules and a series of environmental criteria were developed to facilitate enforcement of the law. These are discussed below:

4.3.3. *Environmental (Impact Assessment and Audit) Regulations, 2003*

The Environmental (Impact Assessment and Audit) Regulations, state in Regulation 3 that "the Regulations shall apply to all policies, plans, programmes, projects and activities specified in Part IV, Part V and the Second Schedule of the Act" (EIA, 2003). Section 42 and 43 address Strategic Environment Assessments; section 42(1) requires lead agencies in consultation with NEMA to subject all policy, plans and programmes for implementation to a Strategic Environment Assessments while

regulation 42 (3) commits the government and all lead agencies to incorporate principles of SEA in the development of sector or national policy.

4.3.4. Air Quality Regulations, 2014 (Legal Notice No. 34)

These regulations spell out levels of ambient air quality standards that should not to be exceeded. Part II prohibits an individual from causing immediate or subsequent air pollution. Section 6 states that “no person shall cause or allow emission of the priority air pollutants prescribed in the Second Schedule of the regulations to cause the ambient air quality limits prescribed in the First Schedule to be exceeded” .

4.3.5. Waste Management Regulations, 2006 (Legal Notice 121)

These regulations provide for the management of waste. Part II regulation 4 (1) provides that no person shall dispose of any waste on a public highway, street, road, recreational area or in any public place except in a designated receptacle; regulation 4 (2) further states that a waste generator shall collect, segregate and dispose such waste in the manner provided for under these regulations and finally; and regulation 5 (1) provides for cleaner production methods. It states that a waste generator shall minimize the waste generated by adopting the following cleaner production methods:

- i. Improvement of production process through; conserving raw materials and energy; Eliminating the use of toxic raw materials; and Reducing toxic emissions and wastes;
- ii. Monitoring the product cycle from beginning to end by: Identifying and eliminating potential negative impacts of the product; enabling the recovery and reuse of the product where possible; and incorporating environmental concerns in the design and disposal of a product.

This SEA report has incorporated the Environmental and Social Management Plan and Environmental Monitoring Plan to ensure that the waste management regulations are complied.

4.3.6. Water Quality Regulations, 2016

This regulation has provisions for ensuring water quality standards by actors and players in the water sector. Regulation 8 provides for all operators and suppliers of treated water, containerized water and all water vendors to comply with the relevant quality standards in force. Regulation 9 provides for water quality monitoring and states that the Authority in consultation with the relevant lead agency, shall maintain water quality monitoring for sources of domestic water at least twice every calendar year.

4.3.7. Controlled Substances Regulations, 2007 (Legal Notice No.73)

According to these regulations, producers and/or importers of controlled substances are required to include a material safety data sheet. Persons are prohibited from storing, distributing, transporting or otherwise handling a controlled substance unless the controlled substance is accompanied by a material safety data sheet. Manufacturers, exporters or importers of controlled substances must be licensed by NEMA. Further, any person wishing to dispose of a controlled substance must be authorized by NEMA. The licensee should ensure that the controlled substance is disposed of in an environmentally sound manner. These regulations also apply to any person transporting such controlled substances through Kenya. Such a person is required to obtain a Prior Informed Consent (PIC) permit from NEMA. Persons handling controlled substances are required to apply for a permit

from NEMA. Any licensee who imports or produces any controlled substances is required to ensure that all persons who receive or buy such substances sign a declaration form. Where an imported controlled substance does not meet set specifications, NEMA shall require the licensee to return the controlled substance to the country of origin at his/her cost or pay to NEMA the cost of disposing of the controlled substance. The EEIP Master Plan and this SEA report and specifically the Environmental and Social Management and Monitoring Plans have incorporated the handling of controlled substances to ensure safety of all the actors reduced harm and/or injury is caused to the people working in the sector and to the environment.

4.3.8. Wetlands, Riverbanks, Lake Shore and Sea Shore Management Regulations, 2009-Legal Notice No. 19

Management of wetlands is guided by the following principles:

- Resources on the river banks, lake shores and the sea shore shall be utilized in a sustainable manner;
- Environmental impact assessment as required under the Act shall be mandatory for all major activities on river banks, lake shores and the seashore; and
- Special measures, including prevention of soil erosion, siltation and water pollution will be enforced.

Section 9 clause 2(c) provides that a strategic environmental assessment be conducted for specific wetlands management plans. On use of wetlands, section 11 (1 and 2) details the activities permitted and environmentally sound to ensure sustainable management of the wetlands.

In this regard the AEMP proposes various water management and conservation issues among them protection of wetlands and rivers, protection of critical water springs from degradation and promotion of rainwater harvesting technology and support of establishment of Water Resource Users Associations (WRUAs) to enhance management of water sources.

4.3.9. Noise and Excessive Vibration Pollution (Control) Regulations, 2009 (Legal Notice No. 25)

These rules provide for the noise regulations that apply to every factory, premises, place, process and operations to which the provisions of the Factories and Other Places of Work Act (Cap 514) apply. Section 1.4 of the legislation details the permissible levels of noise in a work place; section 5 and 6 elaborate on the recommended noise prevention programme as well as measurement and records to be undertaken by the contracted company during construction and operational phases of the project.

A great amount of noise and vibrations are expected in the activities proposed in the AEMP such as construction of roads and tourist infrastructure and these regulations will serve as guidelines to the investors. Specifically, the SEA has incorporated the Environmental and Social Management Plan that will ensure the tolerable Limits of Noise and Vibrations are not exceeded and that the recommendations in the regulations are adhered to.

4.3.10. County Government Act, No 17 of 2012

The County Government Act aims at giving effect to Chapter 11 (Devolution) of the constitution and provides for the county government powers, functions and responsibilities in the delivery of

services and for connected purposes. The act emphasizes the need for a consultative and participatory approach where the principles of planning and development facilitation in a county serve as a basis for engagement between the county government and the citizenry, other stakeholders and interest groups (Article 102 (i)).

The SEA study involved a participatory process whose hallmarks are public participation and stakeholder consultations to ensure that all their environmental and social concerns are incorporated. Therefore, individuals and institutions directly or indirectly affected by implementation of the AEMP are entitled to express their interests and have them respectively taken into consideration in the decision-making process. Additionally, County Governments must be involved in matters of public land, water, health and infrastructure development in their respective areas of jurisdiction to avoid conflicts with county development plans.

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4.3.12. The Physical and Land Use Planning ACT, 2019

An ACT of Parliament to make provision for the planning, use, regulation and development of land and for connected purposes enacted by the Parliament of Kenya. This Law provides for the principles, procedures and standards for the preparation and implementation of physical and land use development plans at the national, county, urban, rural and cities level; and the administration and management of physical and land use planning in Kenya, amongst other things. The Law mandates that any person engaged in the physical and land use shall foster principles for the overall public good. Section 5 a and b calls for sustainable land use land integrating economic, social and environmental needs of present and future generations.

Section 6 (1) and 14 provides for National Physical and Land Use Planning Consultative Forum to perform the following functions:

- provide a forum for consultation on the national physical and land use development plan; promote effective co-ordination and integration of physical and land use development planning and sector planning;

- advise on the mobilization of adequate resources for the preparation and implementation of physical and land use development plans and strategies;
- and consider national security and advise on strategic physical and land use development projects of national, inter-county, county, or transnational importance.

In the same vein, the Law establishes a County Physical and Land Use Planning Consultative Forum in each county.

Section 71 (1) provides that a county government may preserve a heritage site by serving the owner or occupier of such building which in the opinion of the county government is of special architectural value or historic interest, an order prohibiting the demolition, alteration or extension of such building. Section 18 (1) establishes the office of the Director General of Physical and Land Use Planning and the National Physical and Land Use Planning Liaison Committee. The Committee shall advise the Cabinet Secretary on broad physical and land use planning policies, strategies and standards; and hear and determine appeals such as appeals against decisions from the National Planning Authority.

- The government, at both national and county level, is tasked with the preparation of physical and land use plans. The national, county, inter-county and local plans are required to be integrated, and these plans shall collectively form the basis of how land is to be used in Kenya.
- All applications for development permission are made in the relevant county.
- Development permission must be sought prior to undertaking any development. A developer who does not obtain such prior permission risks criminal sanctions and demolition of the unapproved works.

Key provisions of the **Planning Act 2019**

- **Increased public participation:** Members of the public have the opportunity to give their views and raise objections to various matters e.g. the suitability of the national and county plans.
- **List of development requiring development permission:** This includes subdivisions such as Olgulgululi Olorashe Group Ranch (OGR), Imbirikani Group Ranch, amalgamation, change of user, extension of user, extension of lease and approval of building plans will still require development permission to be issued by the relevant county government.
- **Additional developments requiring approvals:** Processing of easements and wayleaves will now require express development permission, as will siting of educational institutions, base transmission stations, petrol stations, eco lodges, campsites, power generation plants and factories.

Timelines

The 2019 Planning Act has also set timelines in relation to various matters, significantly:

- **years:** Period within which to commence a project before the development permission lapses.
- **2 years:** Period within which the national plan should be completed.
- **90 days:** Time allowed for land to be restored by the developer where development permission was not sought in advance, failing which the county shall restore the land at the cost of such developer.

- **60 days:** If an applicant does not receive a response to their application for development permission after this period, such application will be deemed to have been approved.
- **Every 10 years:** Counties are required to prepare their respective county plans. The provisions are crucial in the AEMP as they give some guidelines and controls since some of the issues of the plan includes alteration of use and sub-division in the case of ranches. This will give guidelines to the stakeholders in implementation of the various actions.

4.3.13. National Land Commission Act, CAP 5D of 2012

This is an act of parliament that provides for the functions and powers of the National Land Commission, which among others gives effect to the Constitution, the objects and principles of devolved government in land management and administration, and for connected purposes. In relation to the SEA study, this Act provides for:

- a) The management and administration of land in accordance with the principles of set out in Article 60 of the Constitution and the national land policy,
- b) A linkage between the National Land Commission, county governments and other institutions dealing with land and land related resources

Section 19 (1) provides that the commission shall, subject to the physical planning and survey requirements, process applications for allocation of land, change and extension of user, subdivision of public land and renewal of leases.

4.3.14. Energy Act, 2019

Energy Act was enacted to amend and consolidate the laws relating to energy, to provide for the establishment, powers and functions of the Energy Regulatory Commission (ERC) and the Rural Electrification Authority (REA), and for connected purposes. Sections 46, 47, 48, 49, 50, 51, 52, 53 and 54 provide for procedures for acquisition (whether through willing surrender or compulsorily) of and the use of way leaves. Specifically, section 53(1) provides that for the purpose of the conveyance, transmission, or supply of electrical energy, a licensee may erect, fix, install or lay any poles, wires, electric supply lines, power or other apparatus in, upon, under, over or across any public streets, roads, railways, tramways, rivers, canals, harbours or government property, in the manner and on the conditions as provided in this Act.

The most crucial provision for this SEA study is the environmental, safety and health standards compliance for electrical installations such as electrical fences proposed for the national reserve. The AEMP and this SEA study re-emphasize the provisions of this act through analyses of any possible negative and positive impacts and respective mitigation measures for the negative impacts.

4.3.15. The Forest Conservation and Management Act, 2016 (No. 34 of 2016).

This is an Act of Parliament to give effect to Article 69 of the Constitution with regard to forest resources; to provide for the development and sustainable management, including conservation and rational utilization of all forest resources for the socioeconomic development of the country and for connected purposes.

This Act makes provision for the conservation and management of public, community and private forests and areas of forest land that require special protection, defines the rights in forests and prescribes rules for the use of forest land. It also makes provision for community participation of forest lands by community forest association, the trade in forest products, the protection of indigenous forests and the protection of water resources.

Sec 74 -Cooperation Regarding Cross border Forest Resources: The Director General may, with the approval of the Board, develop management plans for purposes of sustainable management of cross-border forest resources. 75. (1) where a provision of this Act requires a person to conserve or protect the environment, the relevant provisions of the Environmental Management and Coordination Act, 1999, shall also apply with respect to the manner in which the conservation or protection shall proceed. (2) No user rights or other licence or permit granted under this Act shall exempt a person from complying with the relevant provisions of the Environmental Management and Co-ordination Act, 1999, or any other written law concerning the conservation and protection of the environment. (3) A user or other related right shall not be granted under this Act where the requirement for a strategic environmental, Cultural, economic and social impact assessment licence under the Environmental Management and Coordination Act, 1999, has not been complied with.

The Forests Act provides for the establishment, development and sustainable management including conservation and rational utilization of forest resources for the socio-economic development of the country. The Act provides for the creation of the Kenya Forest Service with the responsibility to: Provide forest extension services by assisting forest owners, farmers, and associations in the sustainable management of forests; Promote the empowerment of associations and communities in the control and management of forests, and; Manage forests on water catchment areas primarily for purposes of water and soil conservation, carbon sequestration, and other environmental services. The Kenya Forest Service is a key stakeholder in the management of the natural resources and will play major role in the implementation of the AEMP.

4.3.16. Wildlife Conservation Act 2013

This Act may be cited as the Wildlife Conservation and Management Act, 2013. 2. This Act shall apply to all wildlife resources on public, community and private land, and Kenya territorial waters. 3. (1) In this Act, unless the context otherwise requires— "aircraft" means any type of aeroplane, airship, balloon or kite, whether captive, navigable or free, and whether controlled or directed by human agency or not; "alien species" means a species that is not indigenous to Kenya or an indigenous species translocated to a place outside its natural distribution range in nature and which in its natural habitat is usually found in nature; "animal" means any species or the young or egg thereof, but does not include a human being or any animal which is commonly considered to be a domestic animal or the young or egg thereof; "authorized officer" includes a member of, the Service, a forest officer, a fisheries officer, a police officer, a customs officer, an administrative officer, or any person so designated under this Act; "biodiversity" means the variability among living organisms from all sources including ecosystems and the 1243 2013 Wildlife Conservation and Management No. 47 ecological complexes of which they are a part, encompassing ecosystem, species and genetic diversity;

4.3.17. Community Land Act 2016

AN ACT of Parliament to give effect to Article 63 (5) of the Constitution; to provide for the recognition, protection and registration of community land rights; management and administration of community land; to provide for the role of county governments in relation to unregistered community land and for connected purposes [Act No. 27 of 2016.]

4.3.18. The Land Act 2012 No. 6 of 2012 Revised 2019

An ACT of Parliament to give effect to Article 68 of the Constitution, to revise, consolidate and rationalize land laws; to provide for the sustainable administration and management of land and land-based resources, and for connected purposes.

Section 9 on Conversion of land (1) provides that any land may be converted from one category to another in accordance with the provisions of this Act or any other written law. (

- a) Public land may be converted to private land by allocation;
- b) Subject to public needs or in the interest of defence, public safety, public order, public morality, public health, or land use planning, public land may be converted to community land;
- c) Private land may be converted to public land by— (i) compulsory acquisition; (ii) reversion of leasehold interest to Government after the expiry of a lease; and (iii) transfers; or (iv) surrender.
- d) Community land may be converted to either private or public land in accordance with the law relating to community land enacted pursuant to Article 63(5) of the Constitution.

Any substantial transaction involving the conversion of public land to private land shall require approval by the National Assembly or county assembly as the case may be.

Section 11 (1) of the Act provides for Conservation of ecologically sensitive public land, and taking appropriate action to maintain public land that has endangered or endemic species of flora and fauna, critical habitats or protected areas. Section (2) provides for identification of ecologically sensitive areas that are within public lands and demarcation or taking any other justified action on those areas and act to prevent environmental degradation and climate change. (3) Notwithstanding subsection (2) the Commission shall consult existing institutions dealing with conservation

Section 19 on Conservation of land based natural resources empowers the commission to make rules and regulations for the sustainable conservation of land based natural resources in the following manner:

- a) Protecting critical ecosystems and habitats;
- b) Providing incentives for communities and individuals to invest in income generating natural resource conservation programmes;
- c) Facilitating access, use and co-management of forests, water and other resources by communities who have customary rights to these resources;
- d) Putting in place procedures for the registration of natural resources in an appropriate register;
- e) Putting in place procedures on the involvement of stakeholders in the management and utilization of land-based natural resources; and
- f) Putting in place measures to ensure benefit sharing to the affected communities

4.3.19. Tourism Act

[Date of commencement: 1st September, 2012.] An Act of Parliament to provide for the development, management, marketing and regulation of sustainable tourism and tourism-related activities and

services, and for connected purposes

4.3.20. The Building Code of 1997

The Code states that prior to erection of buildings an application, submission of plans and payment of fees are to be made to the municipal/county council. It also contains requirements relating to certificates for occupation of premises. These are adoptive bylaws under the now repealed Local Government Act and are under revision. These will be sought by respective investors in development of tourist structures. The SEA has provided for adequate mitigation measures against any potential environmental impacts of the developments in the EMMP Section.

4.3.21. KS Code (2009): Building Code of the Republic of Kenya (2009 Edition)

These Regulations cover provisions for national, regional and local physical planning, siting, site operations, building design, building and infrastructure services, disaster risk management on construction sites and maintenance of all buildings as contained in these Regulations.

4.3.22. Water Act, Cap 372 of 2007

The act provides regulations for the management and development of water resources, water supply and sewerage development in all parts of the country with the objective of conserving, protecting and allocating such resources in order to meet the various needs while ensuring safe disposal of wastes. Part II, section 18, of the act provides for national monitoring and information system on water resources while sub-section 3 allows the Water Resources Authority (WRA) to demand from any person or institution, specified information, documents, samples or materials on water resources. Furthermore, the act vests the rights of all water to the state, and the power for the control of all bodies of water with the Minister, in consultation with the water catchments boards, it aims at among others: (i) provision of and conservation of water; and, (ii) apportionment and use of water resources.

The AEMP has made provisions for conservation, monitoring and sharing of available water resources in the ecosystem. The AEMP proposes various water management and conservation issues among them protection of wetlands and rivers, protection of critical water springs from degradation and promotion of rainwater harvesting technology and support establishment of Water Resource Users Associations (WRUAs) to enhance management of water sources. This SEA report contains an Environmental and Social Management Plan to ensure efficient utilization of the water resources in the area.

4.3.23. Occupational Health and Safety Act (OSHA), 2007

This is an Act of Parliament, which provides for the safety, health and welfare of all workers and all persons lawfully present at workplaces. The act further provides for the establishment of the National Council for Occupational Safety and Health and for connected purposes. The act repealed the Factories and Other Places of Work Act. It applies to all workplaces where any person is at work, whether temporarily or permanently and therefore will apply to the project during implementation of objectives that involve construction.

4.4. Institutional Framework

4.4.1. National Environment Management Authority (NEMA)

The authority is the key agency in charge of coordination of environment management activities, ensure compliance environmental guidelines and advise government on legislative and measures concerning environment management. NEMA is also the national focal point for enforcement of the principals of international policies on environment. EMCA (1999) provides NEMA with powers to approve or disapprove major developments in wildlife conservation areas based on proper planning and assessment of environmental impacts outlined in SEA studies (GoK, 1999b).

The authority has to ensure compliance of the AEMP based on an approved SEA study by the project proponent. This is done with a view to ensuring the proper management and rational utilization of environmental resources. NEMA a key player in all environmental matters in the country, and is the approving authority of the SEA and EIA studies/reports prepared under this project.

4.4.2. National Environment Council

The National Environment Council (NEC) is established under Section 4(1) of the Environmental Management and Coordination Act no. 8 of 1999. The key functions of the Council, among others, include;

- a) Set national goals and objectives and determine policies and priorities for the protection of the environment;
- b) Promote cooperation among public departments, local authorities, private sector, non-governmental organizations and such other organizations engaged in environmental protection programmes

4.4.3. National Environmental Complaints Committee

The functions of the Complaints committee are to:

- a) Investigate any allegations or complaints against any person or against the Authority in relation to condition of the environment in Kenya; or on its own motion, any suspected case of environmental degradation, and to make a report of its findings together with its recommendations thereon to the Council;
- b) Prepare and submit to the Council, periodic reports of its activities, which report shall form part of the annual report on the state of the environment under section 9(3); and
- c) Perform such other functions and exercise such powers as may be assigned to it by the Council.

4.4.4. Ministry of Water and Irrigation

The ministry is responsible for the establishment, coordination and operationalization of the water service boards in Kenya. Thus, all the service boards through the relevant acts are expected to effectively and efficiently provide services related to water resources management and water projects' development. The realization of the water sector in the AEDP will involve this ministry through the Water Management Authority.

4.4.5. County Environment Committee

Under the Environmental Management and Co-Ordination (Amendment) Act, 2015 No. 5 of 2015, County Environment Committee is constituted by the Governor in consultation with the relevant county organs. The role of the committee includes the proper management of the environment within the county and developing a county strategic environmental action plan every five years. For purposes of this plan and SEA study, apart from being a key stakeholder, the county government shall provide an oversight role on environmental issues.

4.4.6. Water Service Providers

These are corporate entities established under Cap 486 of the laws of Kenya. The entities are fully owned by the county government. The companies are in charge of water supply in their defined area of service and is therefore expected to be a major stakeholder in the AEMP.

4.5. Linkage with other reports

4.5.1. Wildlife Migratory Corridors and Dispersal Areas 2017

The report takes note of the study which was undertaken by the Department for Resources Survey and Remote Sensing in 2017 as part of Vision 2030. The report details wildlife migratory corridors and connectivity within the Amboseli Ecosystem particularly for elephants as they migrate from Tanzania into Kenya and vice versa, Maasai Mara Game Reserve and Amboseli and within conservancies.

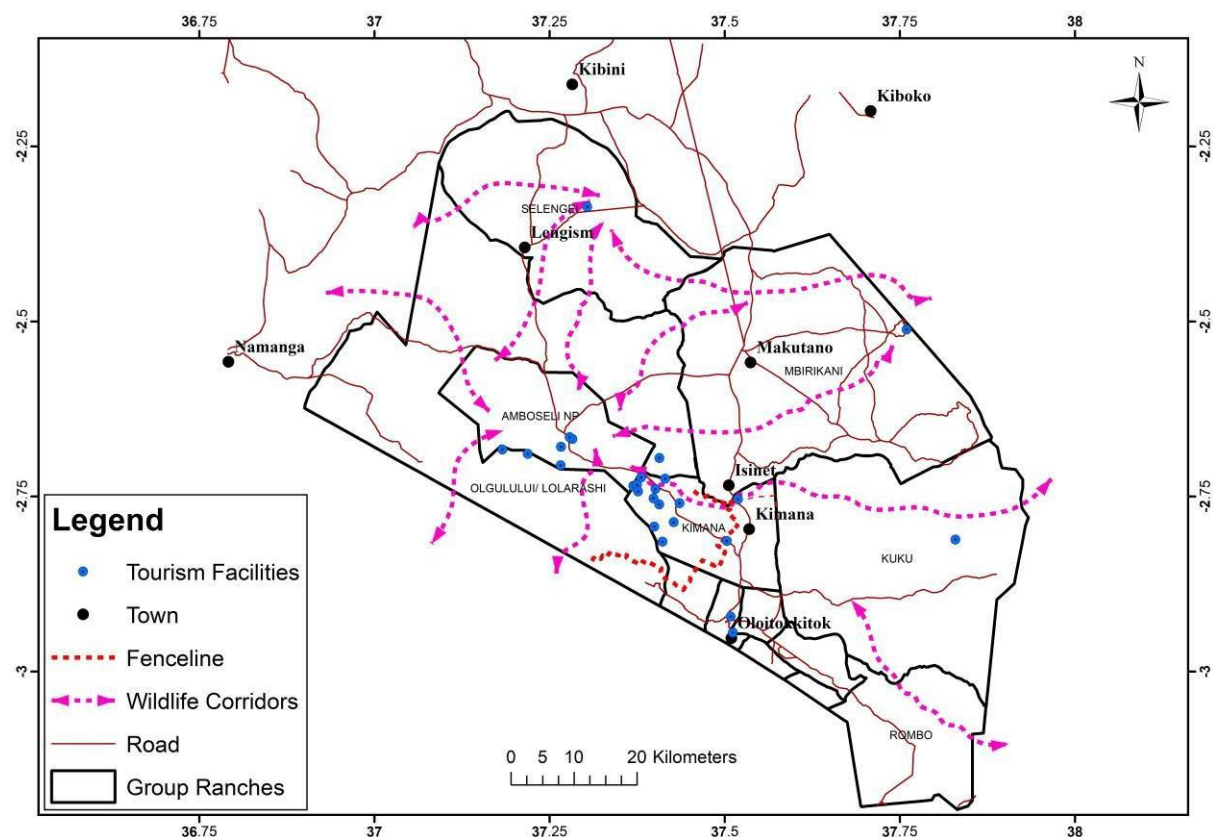


Figure 3: Key Wildlife Corridors in the Amboseli Ecosystem

4.6. Institutional Roles and Responsibility

Clear institutional roles and responsibilities in the implementation of Strategic Environmental and Social Management Plan (SESMP) is crucial for effective implementation of the SESMP. It is necessary to identify the relevant institutions, agencies, authorities or persons and their respective roles in the process. Thus, the following identified entities among others ought to be involved in the implementation of the SESMP throughout the project cycle or as AET deems fit.

For environmental sustainability of the Amboseli Ecosystem, there is need for close and committed monitoring of all the activities. The study therefore proposes that AET establishes an Environmental Management Unit (EMU) to take responsibility of overseeing the implementation activities. Such a unit can be run by a team of three officers consisting of an Environmental Manager and two assistants. Their main responsibilities will be to understand the environmental requirements of the ecosystem, ensure full implementation of the recommended actions, monitor the performance of the environment, ensure compliance by all agencies, generate and keep records of the trends and write reports. The unit personnel will be expected to understand all the environmental laws and by-laws relevant to implementation of the SESMP and all the equipment required to monitor environmental parameters using the appropriate indicators.

Secondly, the unit will be expected to liaise with the departments responsible for environmental matters at the Kajiado County Office, national government agencies and the implementing agencies to ensure effective implementation of the SESMP.

Key implementing agencies include Kenya Wildlife Service, ACC, ATE, AWF, SFS, WARMA, IFAW, Big Life and Lion Guardians.

The National Environment Management Authority (NEMA) is the key institution of the Government overseeing implementation of environmental policy and laws in Kenya.

The authority will take responsibility for general supervision and coordination of all environmental matters. In addition to reviewing environmental reports on the progress of the Ecosystem Plan, the authority's inspectors will be expected to visit any of the projects on routine basis during implementation period to ensure compliance with the recommendations of this SEMMP.

AET may wish to look for a way of mobilizing resources from the investors within Kenya and outside to support sustainable management of the ecosystem. The Institutional arrangement for implementing the Ecosystem Plan is summarized in Table 2 below:

Table 2: Institutions and responsibilities

INSTITUTIONS	KEY RESPONSIBILITIES
AET	-AET being the plan owners to participate in the entire SEMMP process and take up the administration role.
Environment Management Unit (EMU)	-EMU to oversee implementation of the EIA and ESIA of all developments within the Ecosystem.
Kajiado County Government	-Provide oversight and advisory services during the implementation by volunteering information and services if needed by AET, undertake gazettment of all county development plans and

	ensure alignment with the County Spatial Plan, ensure all county spatial programs(immediate, short term and long term) are aligned to the gazzeted County Spatial Plan.
All relevant State Departments	
National Government	
Ministry of Industrialization and Enterprise Development	-Policy direction on industries and trade -Provide funding, -Facilitate in coordination of trade and associated matters
Ministry of Agriculture, Livestock and Fisheries Development	-Capacity building and technical assistance to livestock and cropfarmers (farm level value addition).
Ministry of Environment and Natural Resources	-Capacity in enhancing tree cover within the ecosystem and policy guidance on issues of climate change and mitigation strategies.
National Land Commission	-Land and land tenure Issues -Approval of land use plans for other developments with potential to degrade the ecosystem.
Implementing Agencies	
Kenya Urban Roads Authority	-Overseeing construction of the roads, foot paths, storm water, and drainage in the ecosystem.
WRA	-Supply of clean water -Regular monitoring of water quality within the ecosystem -Monitoring of water abstraction rates. -Monitoring of water quality - pollution of water sources –rivers and boreholes.
National Environment Management Authority	-Review Environmental Impact Assessment (EIA) reports for proposed projects -Review environmental audit (EA) reports. -Approve EIA and EA reports. -Deal with cases of non-compliance.
AET	Overall coordination and marketing of the Amboseli Ecosystem
Kenya Wildlife Service	Coordination of Amboseli Park Activities and human/ wildlife interactions
ACC	Long term Research and Monitoring studies in partnership with others
ATE	Elephant movement and behavioral studies
AWF	Cross border/AE studies
Big Life	Tourism and community ranger support (Mbirikani)
Lion Guardians	Lion studies within the ecosystem
SFS	Monitoring land use changes, generating scientific and social information and Capacity Building
Investors	-Construct and invest according to the ecosystem zones and environmental guidelines and regulations.

NEMA	-Ensuring compliance with county, national and international quality Standards.
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The AEMP 2020-2030 has proposed that Noonkotiak Community Resource and Cultural Centre become the focal point for research and monitoring, visitor interpretation, environmental education and AE administration headquarters.

The six actions proposed under the establishment of Noonkotiak Resource and Cultural Centre (NRCC) are to:

- i) Establish an Environmental Education Centre (Associated infrastructure, library, community conference halls, meeting rooms, exhibition rooms);
- ii) Establish a Research and Monitoring Centre (computer labs, staff houses, science analytical labs, student hostels, kitchen, guest houses, incinerator);
- iii) Establish 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, an amphitheatre where introductory lectures will be delivered;
- iv) Provide and maintain traditional Maasai homestays (16 manyattas already in place, build more cultural manyattas, water supply, boma fencing, boma security, high end cottages, classrooms for teaching culture, wildlife, environment and how they integrate);
- v) Manage the NRCC sustainably (the NRCC will be a complex development housing several thematic Sub-Centres Culture, tourism, and Research). As such, for the NRCC to be sustainable it will require high-level managers for various components (Research, Hospitality, Museum and Education programs).

Noonkotiak Centre will also purpose to generate its own revenue by charging fees for use of its facilities and services by visitors and researchers. Furthermore, staff and the cultural manyatta community members will be trained in visitor handling so that they can ensure that visitors to the NRCC have memorable experiences.

A NRCC 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 NRCC will also be produced and disseminated through the internet and it will also be available at visitor outlets in the ecosystem such as park entry gates and tourist accommodation facilities.

It is important to note that at the time of finalizing this Ex-Post SESA, at least three of the above six actions had been implemented by AET and partners, and implementation of others are in progress.

Chapter 5: DESCRIPTION OF BASELINE CONDITIONS

5.1 Overview

The Amboseli Ecosystem is dedicated to biodiversity conservation and is endowed with considerable natural and wildlife tourism resources and attractions. The Amboseli Ecosystem is approximately 5,700km², stretching between Mt. Kilimanjaro along the Kenya-Tanzania border to the south, the Chyulu Hills to the east, Tsavo West National Park to the south east, the Namanga area to the west and the Mbirikani area to the north. The specific areas in the scope included Amboseli National Park and the surrounding six group ranches namely; Olgulului/Olararashi, former Kimana/Tikondo group ranch, Eselengei, Mbirikani, Kuku, and Rombo as shown in the figure below. It also included the former 48 individual group ranches located at the foot slopes of Kilimanjaro that are subdivided and mostly under rainfed agriculture. The area is generally arid to semi-arid with a very small variation in its agroecological zones and is more suitable for pastoralism rather than cultivation with a high potential for conservation of wildlife and tourism enterprises. The proceeding text provides a summary of the landscape with detailed program specific conditions discussed in the next section.

5.2. Physical Environment

5.2.1. Topography

The main topographic features of the ecosystem are the flat and dry, arid plains/savannah making up the main ecosystem. Outside Amboseli National Park are a number of geomorphologic features that stand out and are of tourism interest. These include Mount Kilimanjaro, Chyulu, Losoito, Lemipoti, Ilng'arunyoni, and Lemomo among others. In Amboseli National Park, the Observation and Ilmerisher hills are of special interest. The Observation hill is the highest point in the Park and is commonly used by tourists as a picnic site. One is able to get a synoptic view of the Amboseli National Park from the top of Observation Hill.

5.2.2. Ground and Surface Water Characteristics

a) Groundwater Characteristics

The groundwater resources of an area are normally dependent on the nature of the parent rock, structural features, weathering processes, recharge mechanism and the form and frequency of precipitation. The Amboseli area is located in a hydrogeological zone characterized by low to medium groundwater potential. The area to the southeast towards Mt. Kilimanjaro covered by volcanic rocks has a good potential for groundwater due to recharge from the high rainfall around the mountain. The rest of the area is covered by metamorphic rocks of the Mozambique Belt and is characterized by low groundwater potential. Within the metamorphic rock area, groundwater can be encountered in alluvial deposits and within weathered and fractured zones of the underlying rocks. The recharge for the aquifers though is enhanced by the local streams/ river drainage system (seasonal streams) and fractured rock masses.

b) Surface Water Characteristics

Surface water resources are mainly from Mt. Kilimanjaro which receives high annual rainfall. The resources comprise springs, streams and swamps. These are the main water sources for the wildlife, local community and tourist facilities in the ecosystem.

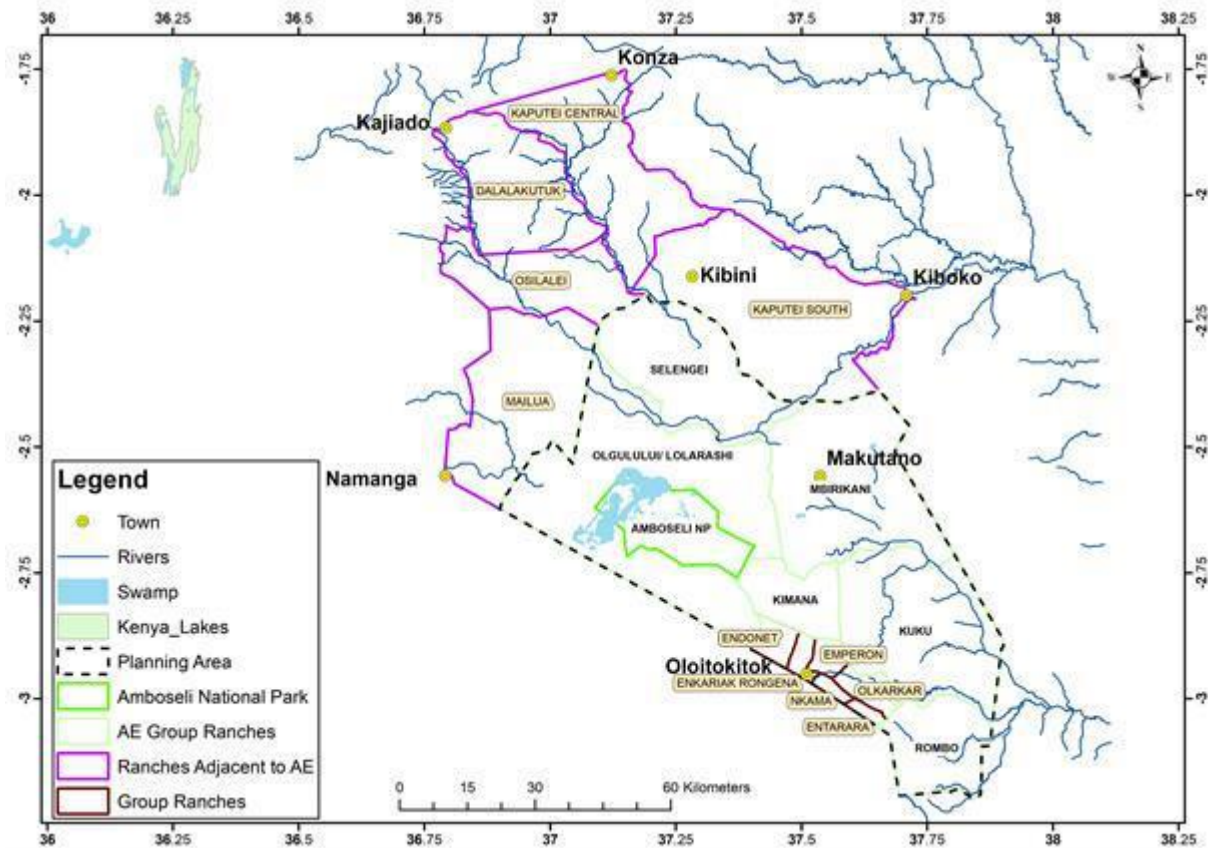


Figure 4: Drainage System of Project Area

5.2.3. Climate and Weather Patterns

The Amboseli Ecosystem lies in an arid to semi-arid area characterized by low annual rainfall and high temperatures. Rainfall is concentrated in the months of March to May and October to December. Average annual rainfall around Amboseli is 700mm (<https://en.climatedata.org/>). However rainfall increases toward Mt. Kilimanjaro. Temperatures are highest in the months January to March; Annual mean temperatures are 23° C. Potential evaporation is between 1,600 and 2,200 mm per year and these losses are exacerbated by frequent high winds in the area.

5.2.4. Land Uses

The ecosystem is divided into three main zones—arable agriculture, livestock production, and wildlife tourism—based on environmental and socio-economic factors. The AEMP aims to integrate the management of community livelihoods, tourism, natural resources, and environmental conservation, focusing on Amboseli National Park and the Ogulului/Ololarashi, Selengei, Kimana, Mbirikani, Rombo, and Kuku Group Ranches. The table 3 below outlines the assigned land uses within these group ranches.

Table 3: Present and Potential land Uses in the Amboseli Ecosystem

	Olgulului/ Lolarashi	Mbirikani	Eselengei	Kuku	Rombo	Kimana	Amboseli NP
Current & Potential future land uses	<ul style="list-style-type: none"> • Human settlement • Livestock grazing • Agriculture • Wildlife Tourism • Social infrastructure • Commercial • Mining 	<ul style="list-style-type: none"> • Human settlement • Livestock grazing • Agriculture • Wildlife Tourism • Social infrastructure • Commercial • Mining 	<ul style="list-style-type: none"> • Human settlement • Livestock grazing • Agriculture • Wildlife Tourism • Social infrastructure • Commercial 	<ul style="list-style-type: none"> • Human settlement • Livestock grazing • Agriculture • Wildlife Tourism • Social infrastructure • Commercial 	<ul style="list-style-type: none"> • Human settlement • Livestock grazing • Agriculture • Wildlife Tourism • Social infrastructure • Commercial 	<ul style="list-style-type: none"> • Human settlement • Livestock grazing • Agriculture • Wildlife Tourism • Social infrastructure • Commercial 	<ul style="list-style-type: none"> • Wildlife conservation • Wildlife tourism

From the table, the ecosystem can be divided into the following four major zones that accommodate current and potential future 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 eco-lodges 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)

Figure 5 below gives a visual presentation of the land use in the area

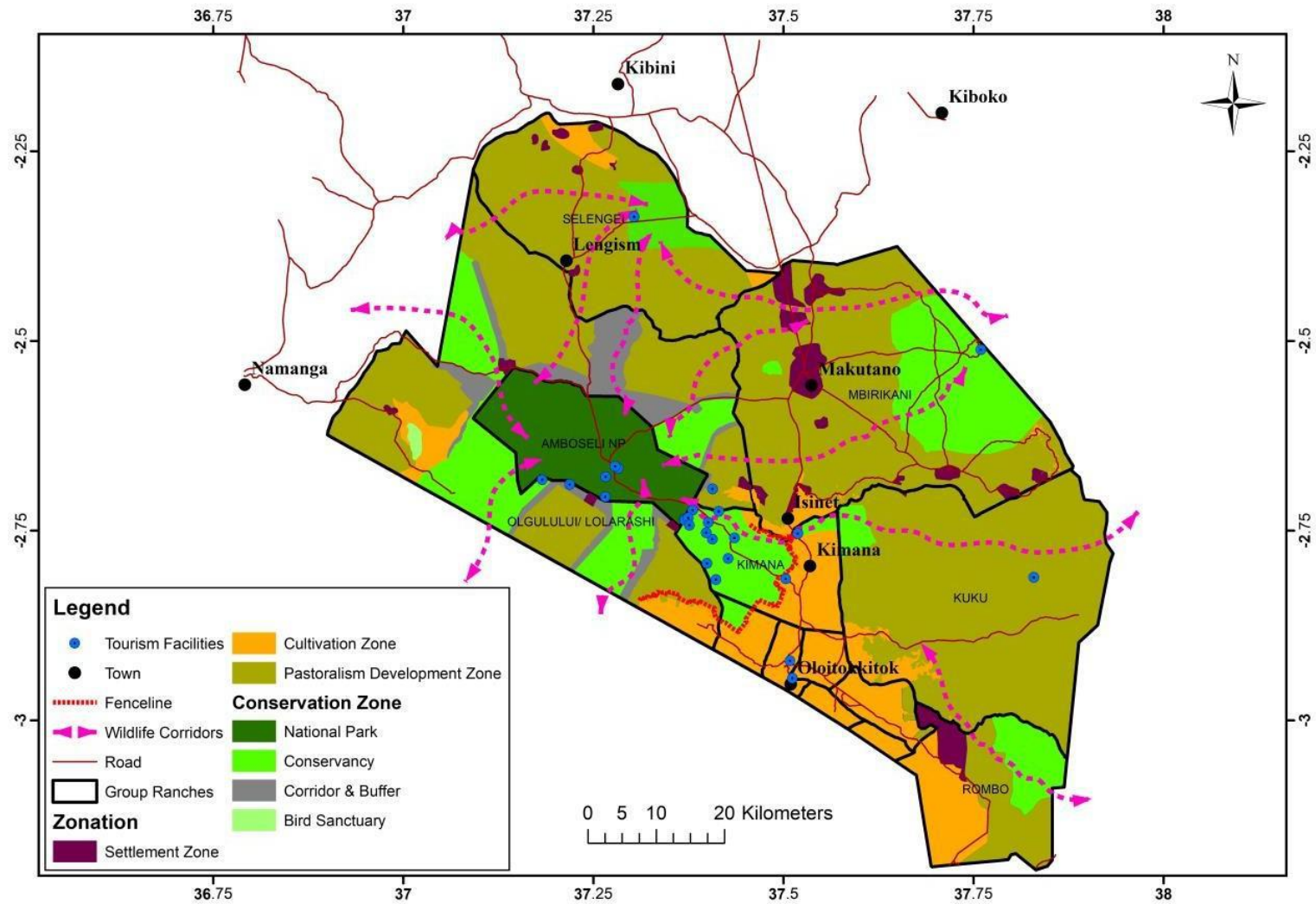


Figure 5: Land use Zones in the Amboseli Ecosystem

5.3. Program Specific Baseline Conditions

Detailed baseline situation analysis was undertaken in accordance with each of the four programmes in the management plan with an aim of establishing current state of environment, key environmental challenges, and potential future ecosystem scenarios. The findings are presented in accordance to the programmes objectives.

5.3.1. Community Livelihoods and Social Economic Programme

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 rain fed farming is limited by climatic conditions since 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 Amboseli Group ranches and beyond. As such most of the land is under conservation and has great potential for wildlife tourism development.

Trade is also carried out in AE. The trade involves the sale of goods and services. Crops grown are used for domestic purposes and the surplus taken to the market to be sold. Cattle are also sold in order to get money for use.

The economic future of the local community in AE depends mainly on modernization of traditional pastoralism, diversification of tourism activities, the development of irrigation area 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 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) Traditional animal rearing practices.
- b) Poor marketing of livestock and livestock products.
- c) Overstocking and overgrazing.
- d) Unimproved breeds and poor husbandry.
- e) Inadequate livestock husbandry support services.

Crop production

- f) Under exploitation of irrigation potential.
- g) Poor uptake of modern technology in agricultural production

Infrastructure

- h) Unplanned settlements
- i) Poor roads conditions, poor infrastructure and climate variability.

5.3.2. *Tourism Development and Management Programme*

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 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 whose background spots the snow-capped Mt. Kilimanjaro. The Park also 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 which are ecologically connected to the national park, and which also host high populations of migratory and resident wildlife. This implies there are also numerous opportunities for tourism outside the park, and is the foundation of the thriving private and community tourism enterprises in the ecosystem. The ecosystem is mainly inhabited by the Maasai community whose authentic culture remains an enduring attraction to the ecosystem and to the rest of the country.

Other factors that make Amboseli ecosystem attractive for visitation include proximity to other important destinations. For instance, it's only about 2 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 also is 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's regarded as the best viewing site for the 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 has 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 threats which are of great interest to stakeholders and whose resolution calls for long term planning and management.

The main challenges observed include:

Standards decline – The tourism product of the AE is in sharp decline in quality 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 thanks to poor and weak regulations and controls. These high end and budget tourism facilities largely depend on the Amboseli Park as their 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.

Environmental impacts – The growth of tourism enterprises in the Ecosystem is having adverse impacts like 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 to the east of Amboseli National Park 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.

Land Use changes – The AE has witnessed rapid land use changes over the recent past. These changes are incompatible with conservation, especially subdivision of formerly community land into small plots, growing sedentarization 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 do not 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.

5.3.3. *Natural Resource Management Programme*

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 bush lands and 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.

Maintaining a Minimum Viable Area for sustaining wildlife and pastoral herd. The AEMP 2008-2018 defined a Minimum Viable Area (MVA) for sustaining wildlife and pastoral herds, 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 due to increased threats necessitating a revision and definition of a new MVA for the new ecosystem plan. The new MVA is shown in figure 6

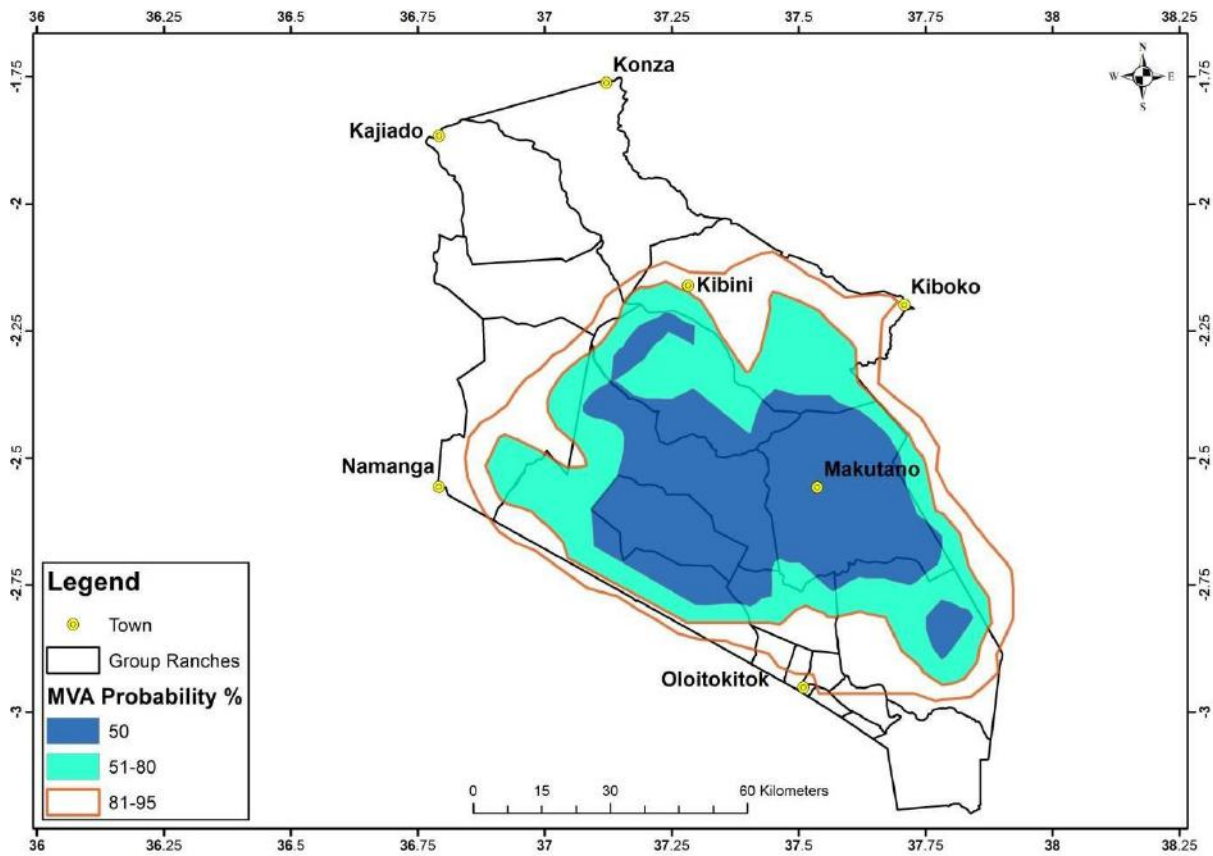


Figure 6: AE's Redefined Minimum Viable Area

Table 5.1 provides a summary of the state of environment in key wildlife dispersal and corridors in AE as observed currently.

Table 4: State of the environment in key wildlife dispersal and corridors in Amboseli Ecosystem

Wildlife dispersal and corridor	General state of environment	Key environmental challenges
Kimana-Kuku	Bad and deteriorating	<p>Overstocking</p> <p>Land subdivision and sale especially in the former Kimana/Tikondo Group Ranch</p> <p>Restoration of the collapsed Kimana and Namelok electric wildlife barrier fences in order for them to sustainably reduce human-wildlife conflicts in the two critical farming zones</p> <p>Expansion of Maasai cluster settlements coupled by mushrooming urban centres e.g. Namelok and Inkisanjani</p> <p>Prevalence of soil erosion</p> <p>Loss of important grasses species which affects availability of grazing good resources</p> <p>Prevalence and expansion of farming activities</p>
Elerai-Kilimanjaro	Average	<p>Observations in the neighbourhood of Elerai conservancy towards the Kenya-TZ border revealed a high concentration of human settlements and farming activities</p> <p>Environmental degradation in water zones such as boreholes and livestock watering points</p> <p>Expansion of human cluster settlements</p> <p>Prevalence and expansion of farming</p>
Kitenden-Longido	Average but deteriorating	<p>Overstocking in some areas</p> <p>Environmental degradation in water zones such as boreholes and livestock watering points</p> <p>Expansion of human cluster settlements</p> <p>Prevalence and expansion of farming</p> <p>Land sub-division (this is one of the key concerns AWF is trying to address including the prevalence of farming activities especially near the TZ border)</p> <p>Loss of important grasses species which affects availability of grazing good resources</p>
Mbirikani-Chyulu	Poor	<p>Overgrazing and soil erosion especially along the water pipeline. SEA enquiries revealed that soil erosion is actually quite prevalent in most parts of the group ranch</p> <p>Increased land sub division</p> <p>Loss of important grasses species which affects availability of grazing good resources</p> <p>Environmental degradation in water zones such as boreholes and live-stock watering points</p> <p>Expansion of human cluster settlements</p> <p>Recent mushrooming irrigated agriculture farms especially along the pipeline and its environs</p>
Rombo-Tsavo	Average	Overgrazing in some areas

Human-Wildlife Conflicts. 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 rainfed agricultural areas at the foot of Mt. 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 measures to curb HWC need to be put in place.

Controlling and monitoring water abstraction from rivers and swamps. 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 ecosystem, 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 used to control crop pests in the irrigated horticultural farms. These pesticides are washed into the rivers through run-off. Table 5 provides a summary of the status of water in AE.

Table 5 State of environment in key rivers and wetlands in the Amboseli Ecosystem:

River/Swamp	General state of environment	Key environmental challenges
Amboseli swamps	Poor	<i>Declining swamp area</i> <i>Widespread loss of swamp vegetation due to heavy use by wildlife and livestock</i> <i>Reduction in available water</i> <i>Given that all the swamps and rivers in the ecosystem get their water from Mt. Kilimanjaro, climate change and variability is therefore a key environmental challenge</i>
Nolturesh River	Poor	<i>Most of the river has been diverted into the Emali-Sultan Hamud-EPZ water pipeline</i> <i>Severe riverbank degradation coupled by prevalence of soil erosion and loss of riparian vegetation</i> <i>Emergence of irrigated agriculture coupled by high levels of water abstraction</i> <i>Loss of wildlife habitats through agricultural encroachment</i> <i>Heavy use of agro-chemicals along the river in the farms</i> <i>River no longer perennial</i>
Ilkisonko River	Poor	<i>Unsustainable dryland irrigation and massive water abstraction</i> <i>Severe river bank degradation coupled by prevalence of soil erosion and</i>

		<i>loss of riparian vegetation</i>
Rombo River	Poor	<i>Widespread encroachment especially near the Illasit Trading Centre</i> <i>Widespread abstraction of water for irrigation</i> <i>Unsustainable furrow irrigation methods</i>
Isinet River & Swamps	Deteriorating	<i>Widespread diversion of river water for irrigation with cases of water abstraction using pumps even at the source</i> <i>Unsustainable furrow irrigation methods</i> <i>Loss of wildlife habitats through agricultural encroachment</i> <i>Heavy use of agro-chemicals along the river in the farms</i>
Kimana River & Swamps	Deteriorating	<i>Widespread diversion of river water for irrigation</i> <i>Numerous water pumps especially between our camp and the entrance to Kimana sanctuary near the bridge to Isinet</i> <i>Unsustainable furrow irrigation methods</i> <i>Loss of wildlife habitats through agricultural encroachment</i> <i>Heavy use of agro-chemicals along the river in the farms</i> <i>Prevalence of sheet erosion along the river bank</i>
Namelok Swamps	Poor	<i>Widespread water abstraction and diversion for dryland irrigation</i> <i>Destruction of the papyrus swamp vegetation</i> <i>Unsustainable furrow irrigation methods</i> <i>Loss of wildlife habitats through agricultural encroachment</i>

5.3.4. Institutions and Governance

The Institutions and Governance Programme focuses on building and maintaining ecosystem as well as group ranch level institutional and governance structures to ensure 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 programs in the management plan so that it can realize 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.

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 the plan requires establishment of strong institutions.

5.4. Efficacy of the AEMP SESA in Amboseli Ecosystem Management

The AEMP provides management tools within the various programmes in which emerging issues can be addressed and streamlined in the Amboseli Ecosystem. In addition, this SESA report for AEMP will ensure that the various activities within the ecosystem are subjected to strategic environmental assessment and where applicable environmental impact assessment. The AET who are the custodians of the AEMP and its respective SESA will ensure that its recommendations are implemented and enforced. ET has a comprehensive grievance redress mechanism which is implemented through various community committees such as Human wildlife interaction committee, Rangelands Committee, the AEMP Plan Implementation Committee (PIC), and Zone Grazing Committees. Different Group ranches have also purposed to install suggestion boxes outside their offices where complaints are received and addressed accordingly.

5.5. Climate Change Risk and Vulnerability Assessment Mainstreaming

Kenya is highly exposed to climate change, ranking 41st in the world's most vulnerable countries, according to the Notre Dame Global Adaptation Initiative (ND-GAIN) (2021)¹. Amboseli Ecosystem is highly dependent on the natural resource base, and thus is highly vulnerable to climate variability and change. Rising temperatures and changing rainfall patterns, resulting in increased frequency and intensity of extreme weather events such as droughts and flooding, threaten the sustainability of the Amboseli Ecosystem's development.

The response to climate change, AE must adhere to the constitutional governance framework {National Climate Change Response Strategy (2010), NCCAP (2013–18), NDMA Act (2016), National CCA (2016)—rare among its peers—Green Economy Strategy and Implementation Plan (2016–30), National Adaptation Plan (2017), and NCCAP (2018–22)} and commitment to sustainable development, while addressing the goal of attaining low carbon climate resilient development.

To attain the latter, this SESA for AEMP focuses on appropriate mechanisms to enhance climate resilience and adaptive capacity, and the transition to low carbon growth.

5.6. Weather Change and Trends

Change in altitude, and seasonal variation in surface area and water temperature between wet and dry periods in major wetlands of Kajiado County reflects the seasonality of the availability of moisture (MoALF. 2017). Assessment of historical temperature trends over 25 years (1981 to 2005), indicate that mean first season temperatures have increased by approximately 0.5°C, while second season

¹ Notre Dame Global Adaptation Initiative (ND-GAIN) (2021)

temperatures decreased slightly $\leq 0.1^{\circ}\text{C}$. Analysis of precipitation trends over a 35-year period (1981-2015) showed that average long seasonal rainfall had decreased moderately, while that of the second season had increased by more than 50mm particularly since 2000². Because of these changes in temperature and rainfall, the first season has experienced a large increase in the number of heat stress days affecting water resources and livestock productivity, while flood risk in both seasons has increased (MoALF. 2017)³.

² Kajiado County Spatial plan 2019 - 2029

³ MoALF 2017

Chapter 6: STAKEHOLDERS AND PUBLIC ENGAGEMENT

6.1 Overview

The key tool for the identification of existing impacts was through discussions with the proponents and stakeholders and observations from site visits. Brainstorming among the study team members after careful review of the proposed activities also aided in the identification of impacts. Impacts were identified by characterizing the impact causes and effects and their consequences on the physical, biological and the human environment.

Analysis and evaluation of adverse impacts was deemed necessary to determine whether they are significant enough to warrant mitigation. To achieve this, the study team reviewed relevant literature (comparison with laws, regulations and standards, consistency of project objectives with government policy); and brainstorming sessions among the study team guided by the collected data. Consultations and disclosures with key stakeholders were also held. The analysis of impacts was based on a criterion that took into account the following parameters:

- Magnitude- refers to the absolute or relative change in the size or value of an environmental feature
- Direction- will the impact generate a beneficial or negative change?
- Extent- will the impact affect a small, medium or large area?
- Duration- the period over which an impact will be felt. Is it short-term or long-term?
- Reversibility- the permanence of the impact. Is the impact reversible particularly for negative ones?
- Likelihood of occurrence- the possibility of the impact occurring as predicted.

6.2. Stakeholder Identification and Analysis

Stakeholders were identified on the basis of whether they will affect the implementation of the management plan or they will be affected by it. Identification of stakeholders was informed by a desk study, recommendations made by the project proponent and expert judgment of the SEA team.

Table 6. Summary of the stakeholders consulted during the SEA process

Table 6: List of Consulted Stakeholders during the SEA process

Stakeholder category	Stakeholder identity	Justification
Local community	Amboseli Ecosystem Trust (AET)	This is the cross-sectoral institutional structure which was created by the Amboseli Ecosystem Management Plan to coordinate and provide leadership for the implementation of the plan.

Stakeholder category	Stakeholder identity	Justification
	Amboseli Tsavo Group Ranches Association (AT-GRA)	is the umbrella framework which coordinates the affairs of the local people in the six group ranches in the Amboseli ecosystem. The association forms the key structure for tourism revenue sharing. In addition, they represent the interest of the main stakeholders who have the biggest contribution of land in the ecosystem which is used by wildlife and the truth is that the future of the ecosystem and its wildlife depends on securing and protecting the key changes in the group ranches. Further, the community they represent should be worn now and in future if they are to continue to allow wildlife to freely use their land and associated resources
	Conservancy Landowners Committee	The conservancies are located within the group ranches in the ecosystem and are critical in sustaining the wildlife dispersal and migratory corridors which are seriously threatened by the ongoing land subdivision, sale of land, farming activities and expansion of human settlements and associated infrastructure development
	Amboseli Tsavo Game Scout Association (ATGSA)	This is the umbrella association coordinating the operations of the wildlife game scouts and water scouts in all the group ranches. It provides an important avenue for linkages with KWS, Kenya Police and other conservation organizations such as Big Life Foundation
	Water Resource Users Associations	These are associations of local communities located in a number of areas within the ecosystem especially along rivers and around critical springs and wetlands. They provide an avenue for collaborative water resources management at grass root level and easy partnership with WRMA
	Amboseli Cultural Villages	The villages are operated by local communities around the Amboseli National Park and provide a window for tourism revenue trickle down to the local people in the ecosystem
	Amboseli Curio Traders	The curio shops are operated by local communities around the Amboseli National Park and provide a window for tourism revenue trickle down to the local people in the ecosystem
	African Conservation Centre and Amboseli Conservation programme (ACP)	This is a regional conservation NGO which is working in the area. Started in 1967, the Amboseli Conservation Programme (ACP) aims to explain the factors that govern the structure, dynamics, and changes of the ecosystem and the interactions between wildlife and people. ACP is also dedicated to the conservation of Amboseli ecosystem and its biodiversity endowments. The programme was directly involved in the planning, establishment, and development of Amboseli National Park. It has played a continuing role in the conservation of the park and ecosystem over the years since. It is championed by Dr. David Western

Stakeholder category	Stakeholder identity	Justification
	Big Life Foundation	Big Life was founded in Sept. 2010 by photographer Nick Brandt and conservationist Richard Bonham as a non-profit organization dedicated to the preservation of Africa's wildlife and ecosystems. It has now expanded to employ 315 rangers, with 31 outposts and 15 vehicles protecting 2 million acres of wilderness in the Amboseli-Tsavo ecosystem of East Africa. It is the only organization in East Africa with co-ordinated cross-border anti-poaching operations especially in the Amboseli region
	School for Field Studies	is an affiliate of Boston University USA which is located in the ecosystem. It trains students and undertakes research on the steady shift in land use from purely pastoral to mixed agro pastoral systems in the Maasai group ranches that occupy the land between Amboseli and Tsavo West National Parks in southern Kenya. It has been in the region since 1999, and has managed to generate substantial socio- ecological data especially in the former Kimana/Tikondo group ranch, Kuku, Mbirikani and Olgulului-ololorashi. These findings have consistently been shared with diverse stakeholders including local leaders and communities
	IFAW	The IFAW Amboseli Elephant project was launched in 2010 to protect elephants in Kenya called the Amboseli Elephant Project. The Amboseli Elephant Project focuses on three elements critical to the survival of the Amboseli ecosystem and the elephants that depend on it for survival: <ul style="list-style-type: none"> • Helping the Kenya Wildlife Service (KWS) better protect the core area of Amboseli National Park • Assisting the world-famous Amboseli Elephant Research Project with ground-breaking scientific research on elephants • Partnering with a community group ranch outside the park to help secure land vital to migrating elephants and local Maasai people
		•

Stakeholder category	Stakeholder identity	Justification
National Government Officers	Local Administration	The government officers are playing the role of implementing government policies, plans and programmes in the Amboseli ecosystem including the enforcement of various legal frameworks on environment and natural resources. Government institutions and especially the Lead Agencies and NEMA have the overall mandate of enforcement to ensure compliance with the recommendations of the AEMP 2020-2030 and its SESA.
	Senior Warden, KWS Amboseli National Park and Team	
	KWS Regional Warden, Director General, NEMA and NEMA County Director	
	Sub-Regional Manager, WRMA	
	Livestock Development	
	Agriculture	
	Education	
	Health	
Olkejuado County Government Officers	County Governor	The county government is in charge of all governance issues within the ecosystem and is expected to support the implementation of the Amboseli Ecosystem Management Plan
	Deputy County Governor	
Tourism Investors	Mada Camp	The investors are involved in a wide range of tourism businesses in the Amboseli ecosystem thereby earning the country vital revenue as well as creating employment
	Amboseli Serena Lodge	
	Oltukai Lodge	
	Tawi Lodge	
	Oi Donyo Wuas Lodge	

The issues identified through public and key stakeholders' consultations broadly touched on environmental and socio-economic issues in the proposed AEMP. These were considered in order to provide a high level of protection of the environment and to contribute to the integration of environmental considerations in the implementation of the AEMP. The concerns and suggestions from stakeholders were broadly categorized as stakeholder workshop, Key informant interviews and household survey.

Chapter 7: SEA STUDY FINDINGS

7.1. Major Environmental and Social Issues of Concern Identified by the 2020-2030 AEMP

7.1.2. Environmental Issues

7.1.2.1. 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 increase in human wildlife conflict. This is mainly as result of Dry land farming, wetland irrigated farming, sedentary pastoralism and land use segregation effects.

7.1.2.2. 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 Iltalil 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.

7.1.2.3. Issue 3: Poaching

Poaching has declined to manageable levels since 2008 due to the formation of a large well-managed community ranger force.

7.1.2.4. Issue 4: Climate Change and Climate change mainstreaming

Climate change effects have continued to manifest themselves through rising frequency and severity of drought, which 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. Recent drought 2022 had a devastating impact on livestock and wildlife in Amboseli Ecosystem. It resulted in death of livestock and wildlife due to lack of pasture, as wildlife migrated into community land and livestock moved into wildlife zones in search of pasture. There is need to incorporate climate change issues in the various programmes in order to ensure that the matters are addressed at the earliest possible time.

7.1.2.5. Issue 5: 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.

7.1.2.6. Issue 6: 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 caused intensified “droughts” (measured by lack of pasture) and a 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.

7.1.3. Social Issues

7.1.3.1. Issue 7: Land subdivision

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. The threat grew with the clamor for subdivision on the group ranches across the Amboseli ecosystem. Fortunately, the large fallout from the resale of Maasai lands resulting from the subdivision of Kimana Group Ranch led Maasai leaders to call a halt and take stock of other land use options. In addition, the Community Land Act, 2016 halts all further subdivision of group ranches, pending registration of all members, including women. Further, the Act calls for all group ranches to draw up land use plans.

7.1.3.2. Issue 8: 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.

7.1.3.3. Issue 9: 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.

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

The issues above have been discussed in stakeholders meetings in Amboseli (Ol Tukai) and Machakos to inform development of four (4) major programs discussed below. It is the activities envisaged in these programs which were analyzed for impacts, mitigation measures proposed and strategic environmental management and monitoring plan (SEMMP) suggested.

7.1.4. Impact Analysis

Boxes 1-4 below are the four programmes of the Amboseli Ecosystem Management Plan with their objectives, actions and activities that will be analysed for impacts and mitigation measures suggested.

The analysis was carried out through brainstorming exercises by the SEA Experts.

7.1.4.1. BOX 1: Community Livelihoods& Socio-economic Programme

Objective 1: Livestock production through pastoralism improved

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

- Activities*
- Establish grass banks (Olopololi)
 - Develop and implementing traditional grazing plans
 - Rehabilitate degraded grazing areas
 - Increase water supply for livestock

Action 1.2 Improve livestock breeding and husbandry

- Activities*
- Crossbreeding the local livestock breeds for increased production of meat and milk.
 - Control livestock diseases.
 - Maintain cattle dips.
 - Conduct livestock vaccination campaigns.
 - Establish a model breeding farm to serve the entire ecosystem

Action 1.3 Improve the livestock marketing system

- Activities*
- Reclaim livestock holding grounds Support existing livestock markets.
 - Develop livestock marketing guidelines.
 - Form a livestock marketing association.
 - Establish linkages with local and international livestock market
 - .Improve existing slaughter houses.
 - Implement a livestock fattening programme and establish a milk processing plant

Objective 2: Adoption of sustainable agriculture is improved

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

- Activities*
- Adopt modern crop production technologies.
 - Establish a horticultural canning factory.
 - Work with county and national governments to source for investors in cold storage facilities and grain dryers.
 - Work with county government in training agricultural extension officers for effective extension services.

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

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

- Activities*
- Form a producer's association to advance farmers' interest.
 - Use standard nets and packaging and enforce the packaging regulations.
 - Use modern communication to access market information on prices and tastes.

Objective 3: The living standard of the local community is improved through enterprises, natural resource use and planned settlements

Action 3.1: Establish nucleated human settlements

Action 3.2: Establish infrastructure to support social development in the AE

Action 3.3: Support establishment of new enterprises and employment to improve household income

Action 3.4: Strengthen education and health services

1.1.1.1 BOX 2: Tourism Development and Management Programme

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

Action 1.1 Control and regulate infrastructure growth

Action 1.2 Provide incentives for investments

Action 1.3 Open connecting circuit between ecosystems

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

Action 1.5 Develop tourism accommodation and recreation facilities

Action 1.6 Create large conservation areas

Action 1.7 Identify high tourism potential areas

Action 1.8 Establish a tourism monitoring programme

Action 1.9 Monitor tourism activities in the ecosystem

Action 1.10 Conduct EIA/EA on tourism projects

Action 1.11 Establish a tourism stakeholders' forum

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

Action 2.1 Review leases where necessary

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

Action 2.3 Promote and facilitate development of cultural tourism

Action 2.4 Establish community curios

Action 2.5 Develop guidelines for human resource services at ecosystem level

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

Action 3.1 Establish a Visitor Centre at Nonkotiak Resource Centre

Action 3.2 Promote adventure tourism

Action 3.3 Train local tour guides

Action 3.4 Develop nature trails

Action 3.5 Promote regulated Balloon safaris

Action 3.6 Promote volunteerism

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

Action 3.8 Promote Horse riding, hiking, filming and photography

Action 3.9 Promote Research tourism

Action 3.10 Promote Mountain biking/outdoor sports

Action 3.11 Develop a framework of cultural tourism

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

Action 4.1 Develop a brand identity for AE

Action 4.2 Form a single marketing secretariat

Action 4.3 Adopt latest marketing technology

Action 4.4 Develop products for domestic market

Action 4.5 Market through local and international media

Action 4.6 Develop guide books and maps

Action 4.7 Start an annual event

Action 4.8 Design innovative packages

Action 4.9 Explore use of royalty programmes

7.1.4.2. BOX 3: Natural Resource Management Programme

Objective 1: Habitat conservation improved

Action 1.1 Secure wildlife corridors

Action 1.2 Initiate new and support existing habitat, protection, restoration and rehabilitation measures

Action 1.3 Develop and implement pasture management and livestock grazing plans

Action 1.4 Develop and implement a climate change adaptation and mitigation action plan

Action 1.5 Promote use of sustainable energy sources to curb habitat degradation

Action 1.6 Develop a fire preparedness and response strategy

Objective 2: Wildlife conservation enhanced

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

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

Action 2.1.3 Rehabilitate and maintain wildlife barriers

Action 2.1.4 establish an ecosystem-wide consolation fund

Action 2.1.5 Create awareness on Human-Wildlife conflict mitigation strategies

Action 2.2.6 Strengthen the Community Wildlife Scouts units to effectively carry out their functions

Action 2.2.7 Intensify patrols

Action 2.2.8 Work closely with KWS and other security agencies

Action 2.2.9 Liaise with Tanzania's wildlife authorities on cross-border natural resource protection

Objective 3. Water resource management improved

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

Action 3.2 Develop and implement water allocation plans

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

Action 3.4 Monitor ground and river water sources

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

Action 3.6 Train communities in rainwater harvesting techniques and associated mitigation for wildlife interactions

Action 3.7 Collaborate with WRA to support WRUAS in water resource assessment studies to discern water availability and requirements

Action 3.8 Establish and maintain boreholes and wells

Action 3.9 Support protection and conservation of critical water sources and riparian land from degradation and initiate restoration activities in degraded riparian land

Action 3.10 Protect Kimana swamp from encroachment

Action 3.11 Support establishment of measures to reduce water pollution in AE's water bodies

1.1.1.2 BOX 4: Institutions and Governance Programme

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

Action 1.1: Strengthen the institutional and governance capacity of AET

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

Action 1.3: Establish effective mechanisms for plan implementation and monitoring

Objective 2: Conservancies Operational Model Strengthened

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

productionAction 2.2: Explore possibility of establishing conservation companies

Action 2.3: Explore possibility of outsourcing management of conservancies to an appropriate conservation ManagementCompany

Action 2.4: Establish tourism concessions with suitable tourism investors

Action 2.5: Establish Conservation Trusts to take the lead in fund-raising and implementation of social development and con-servation projects

Action 2.6: Establish financial mechanisms for distributing economic benefits to conservancy members

Action 2.7: Carry out research on ecological, economic and social status of conservation in the Amboseli Ecosystem

Objective 3: Collaboration mechanisms established

Action 3.1: Establish MoUs with key partners

Action 3.2: Identify Amboseli Ecosystem Services with a view to developing a scheme for payment of opportunity costs

Action 3.3: Integrate the AEMP with the Kajiado County plans

Chapter 8: IMPACT ANALYSIS AND ALTERNATIVE OPTIONS

8.1. Overview

Under each of the **FOUR** programs in the Amboseli ecosystem management plan, there are objectives, actions and activities. These activities are the drivers of impacts whose mitigation measures are suggested in the matrices. Details of the four programs are contained in boxes 1-4 below for ease of reference and detailed analysis of the potential impacts from the plan activities are provided in the tables as per each program. Suggested mitigation measures to potential negative impacts are also provided in the tables under section 8 for all the proposed activities.

Four (4) alternative options to the plan identified by the experts and subjected to analysis were: No Amboseli plan option, Amboseli spatial plan option, Amboseli National Park Plan option, and Amboseli Ecosystem Management plan option.

In order to agree on the best option, the four options were subjected to analysis through subjective rating based on the comments generated on each option by experts as presented below.

Table 7: Options and rating

No	Plan Option	Expert Rating	Explanation
1	No Plan	1-Not preferred	This option means maintenance of status quo. This is bad option for sustainability
2	Spatial Plan	2-Least preferred	This option is global and not very specific on sustainable land use but good for administrative and jurisdiction purposes. Kajiado Spatial Plan is awaiting launching and gazette. All other County development and other plans including the AEMP 2020-2030 are anchored on it for effective enforcement. Generally, the Kajiado Spatial Plan is the framework for other plans in the county.
3	Park Management Plan	3-Preferred	This option though preferred, it only restricts itself to the land uses within the Amboseli National Park. The National Park Plan will be part of the Amboseli Ecosystem Management Plan and was separately prepared by KWS. It is effective in enforcing compliance at the National Park level BUT Not at the Amboseli Ecosystem level.
4	Amboseli Ecosystem Management Plan	4-Most preferred	This option encompasses the entire land uses in details taking care of all stakeholders within the larger Amboseli area. This option also ensures social, economic and ecological benefits to the present and future generations. It ensures enforcement and compliance with the recommendations of the plan and its SEA through a well-structured governance system (AET). Options 2,3 and 4 will however, contribute towards the overall sustainability of the AE

Chapter 9: POTENTIAL POSITIVE AND NEGATIVE IMPACTS

8.1. Overview

Impacts identification was done through discussions with proponents and stakeholders, as well as observations from site visits. Brainstorming sessions among the study team members, following a careful review of the proposed program actions, also contributed to identifying impacts. These impacts were characterized by analyzing their causes and effects, and their consequences on the physical, biological, and human environments.

Evaluating the adverse impacts was essential to determine if they were significant enough to require mitigation. To do this, the study team reviewed relevant literature, including laws, regulations, and standards, and assessed the consistency of program objectives with government policy. Comparisons of ground situations using collected data were also made. Workshop proceedings and inputs from program Expert Working Groups provided valuable information and data, which are included in this SESA report. The identified positive and negative impacts per programme are presented below:

8.2. Impact Characterization for the Potential Positive and Negative Impacts

Table 8: Community Livelihood and Social Economic Programme

Potential negative impact	Probability and risk of occurrence	Duration of impact	Magnitude	Reversibility	Importance
Impact of establishing grass banks (Olopololi)	Low	Long term	Big	Reversible	High
Impact developing and implementing traditional grazing plans	Low	Long term	Medium	Reversible	Moderate
Impact of rehabilitating degraded grazing areas	Low	Long term	Big	Reversible	Moderate
Impact of increasing water supply for livestock	Medium	Long term	Big	Reversible	Moderate
Impact of establishing a livestock disease free zone	Low	Medium term	Big	Reversible	Moderate
Impact of Crossbreeding the local livestock breeds for increased production of meat and milk	Low	Medium term	Big	Reversible	Moderate
Impact of reclaiming livestock holding grounds and supporting existing livestock markets	Low	Medium term	Big	Reversible	Moderate
Impact of establishing linkages with local and international livestock markets	Low	Medium term	Big	Reversible	Moderate

Impact of Improving existing slaughter houses	Low	Medium term	Big	Reversible	Moderate
Impact of adopt modern crop production technologies.	Medium	Long term	Big	Reversible	Moderate
Impact of establishing a horticultural canning factory	High	Medium term	Big	Irreversible	Moderate
Impact of land subdivision with nucleated settlements where social amenities can be provided	High	Medium term	Big	Irreversible	Moderate
Impact of improved infrastructure (especially roads)	High	Medium term	Big	Irreversible	Moderate
Impact of strengthening education and health services	Low	Medium term	Big	Irreversible	Moderate

Table 9: Tourism Development and Management Programme

Potential impact	Probability and risk of occurrence	Duration of impact	Magnitude	Reversibility	Importance
Impact of control and regulation of infrastructure development	Low	Long term	Small scale	Reversible	Moderate
Impact of diversity of tourism attractions and facilities	Low	Long term	Small scale	Reversible	Moderate
Impact of opening up a connecting circuit with Maasai Mara	Low	Long term	Small scale	Reversible	Moderate
Impact of the construction of the Visitor Centre on range environment	Low	Long term	Small scale	Irreversible	High
Impact of development of eatery and entertainment facilities	Low	Long term	Small scale	Irreversible	High
Impact of establishing a tourism monitoring programme	Low	Long term	Small scale	Reversible	High
Impact of quarterly inspections of facilities to assess their adherence to environmental mitigation measures	Low	Long term	Small scale	Reversible	High
Impact of strengthening community lease funds management offices	Low	Long term	Small scale	Irreversible	High
Impact of establishing well designed, large and environmentally friendly curio shops	Low	Long term	Small scale	Irreversible	High
Impact of development of nature trails	Low	Long term	Small scale	Reversible	High

Impact of developing a common ecosystem wide marketing strategy	Low	Long term	Small scale	Reversible	High
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Table 10: Natural Resource Management Programme

Potential impact	Probability and risk of occurrence	Duration of impact	Magnitude	Reversibility	Importance
Impact of securing wildlife dispersal areas and corridors	Low	Long	Small scale	Reversible	High
Impact of ban on charcoal trade on poverty reduction	Low	Short	Small scale	Reversible	Moderate
Impact of restriction of quarrying activities	Low	Long	Small scale	Reversible	Moderate
Impact of off road driving in the conservancies	Low	Long	Small scale	Irreversible	High
Impact of development of pasture management and livestock grazing plans	Low	Long	Big	Reversible	High
Impact of climate change mitigation adaptation action plans	Low	Long	Small scale	Irreversible	High
Impact of promotion of alternative cooking methods and materials	Low	Long	Small scale	Reversible	High
Impact of implementing prudent measures to manage the escalating HWC	Low	Long	Big	Reversible	High
Impact of ensuring that the fences are rehabilitated and maintained	High	Medium	Big	Reversible	Moderate
Impact of the establishment of an ecosystem wide consolation fund	High	Medium	Big	Reversible	Moderate
Impact of creating awareness on HWC mitigation strategies among the community	High	Medium	Big	Reversible	Moderate
Impact of strengthening community wildlife scouts	High	Medium	Big	Reversible	Moderate
Impact of water allocation enforcement	High	Medium	Big	Reversible	Moderate
Impact of establishment of a ground water monitoring network	High	Medium	Big	Reversible	Moderate
Impact of training on rainwater harvesting technologies	High	Medium	Big	Reversible	Moderate
Impact of securing critical water sources	High	Medium	Big	Reversible	Moderate

Impact of implementation of water pollution control	High	Medium	Big	Reversible	Moderate
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Table 11: Institutions and Governance Programme

Potential negative impact	Probability and risk of occurrence	Duration of impact	Magnitude	Reversibility	Importance
Impact of consolidation of activities of NGOs, KWS, the tourism industry and group ranches under AET	Low	Long term	Big	Reversible	High
Impact of promoting integrated land use development and recognizing conservation as a key land use in Kajiado County	Medium	Long term	Medium	Reversible	Moderate
Impact of AET mobilizing its partners to support the existing conservancies and establishing new ones	Low	Long term	Big	Reversible	Moderate
Impact of outsourcing management of conservancies	Medium	Long term	Big	Reversible	Moderate
Impact of integration of AEMP with county spatial plan	Low	Long term	Big	Irreversible	Moderate

8.2.1. Impact Mitigation

Table 12: Community Livelihood and Social Economic Programme

Activities and Potential impact	Potential Nature of impact (+/-)	Proposed Mitigation	Comments
Impact of establishing grass banks (Olopololi)	Overharvesting and degradation in harvesting areas (-)	Ensure controlled harvesting and carrying out EIA and follow up EA on potential impacts	Increased availability of animal feed and strong livestock.
Impact of developing and implementing traditional grazing plans	Disagreements(-)	Proper engagement of the community for ownership of the program. Carry out an EIA prior to implementation	Better management of pasture within AE
Impact of rehabilitating degraded grazing areas	Lack of grazing plans Potential conflict with community on restricted grazing during rehabilitation	Develop grazing plans and adhere to them Carry out an EIA prior implementation Enlighten community on potential benefits of rehabilitation	Improved pasture
Impact of increasing water supply for livestock	Soil erosion and removal of vegetation while laying pipes, potential increase in animal population due to increased water availability	Carry out EIAs before laying water pipes and comply with the recommendations, Assign quotas to water use among the community	Improved livestock
Impact of establishing a livestock Disease Free Zone	Community Disagreements	Ensure community meetings under competent leadership. Put in place proper dispute resolution mechanisms	Community cohesiveness leading to Improved livestock health Community ownership of program
Impact of Crossbreeding the local livestock breeds for increased production of meat and milk	Lack of Veterinary services, lack of market for improved breeds products	Engagement with potential markets for the improved production of meat and milk Engagement of county government for provision of AI improved breed services	Improved livelihood among resident community and revenue stream
Impact of reclaiming livestock holding grounds and supporting existing livestock markets	Low marketing capacity, degradation of holding grounds and increased demands from community on county government to support marketing infrastructure	Establishment of proper strategies to engage community on the need for holding grounds. Involve county government in planning for the marketing infrastructure	Improved management of livestock market

Activities and Potential impact	Potential Nature of impact (+/-)	Proposed Mitigation	Comments
		to allow allocation of funds in their budget	
Impact of establishing linkages with local and in-ternational livestock markets	Low networkingcapacity, potential strain to ecosystemdue to increased demands and thus animal numbers,	Need to carry out potential market analysis and EIA of potential impact on ecosystem due to increased demand resulting from the created linkages	Increased alternative markets for livestock products
Impact of improving existing slaughter houses	Limited knowledge, Increased effluents from slaughterhouses and pollution	EIA/EA on the potential impact of slaughterhouses on environment	Increased safety of the meat products
Impact of adopting modern crop productiontechnologies.	Increased agro-chemical impacts, Increased and fragmentation and pressure on land	Mitigate against negative effects from improved technologies such as use of chemi cals in crop production, work with county government to control land fragmentation	Increased crop production
Impact of establishing a horticultural canning factory	Waste disposal and air pollution	Implementation of EMP for the proposed facility	Increased traffic around facility
Impact of land subdivision with nucleated set- tlements where social amenities can be provided	Reduced space for livestock and wildlife movements, Increased pressure on land due to fragmentation	Implementation of EMP for the proposed settlements	Increased degradation around settlements
Impact of improved infrastructure (especially roads)	Dust and loss of biodiversity, Increased traffic and noise pollution affecting the animals	Implementation of EMP for the proposed roads	Increased degradation around the road network
Impact of strengthening education and health services	Improved health and literacy,	None	Improved health and literacy

Table 13: Tourism Development and Management Programme

Activities and potential impacts	Nature of Impact	Proposed Mitigation	Comments
Impact of control and regulation of infrastructure development	Potential for conflicts and litigations, Loss of employment opportunities due to restricted infrastructural development	Ensure Environmental and Social Impact Assessment (ESIA) Studies are undertaken to guide sustainable developments.	AET to develop data base of all potential developments within the Ecosystem and ensure compliance.
Impact of diversity of tourism attractions and facilities	Potential for off-road driving biodiversity loss, Increased noise pollution and disturbance to animals, Destabilisation of ecosystem in areas previously not disturbed	Tourism activities and facilities to be undertaken in designated areas as per the zonation maps.	Placement of facilities to be guided by project EIAs and Conservancy management regulations developed by AET.
Impact of opening up a connecting circuit with other ecosystems such as Maasai Mara	Potential for increased traffic leading to ecosystem degradation, Potential conflict between stakeholders due to reduced revenue within their circuits	AET and other stakeholders to recruit and mobilize adequate community ranger patrols.	There is need for proper entry points to all conservancies in the Ecosystem to maximize on increased revenue streams.
Impact of the construction of the Visitor Centre on range environment	Potential for biodiversity loss, soil erosion and land degradation among others.	Carry out project Environmental impact assessment	The visitor centre will lead to increased knowledge among visitors and enhanced revenue for the local economy
Impact of development of eatery and entertainment facilities	Increased traffic, noise and littering leading to environmental pollution, Potential health hazards due to increased waste and scavengers around the eateries	AET with stakeholders in the tourism sector to develop rules for Such activities within ecosystem and ensure compliance with individual project EMPs and conservancy rules.	Compliance with the EMPs and ecosystem rules as well as individual conservancy rules/guidelines will ensure a holistic healthy AE.
Impact of establishing a tourism monitoring programme	Better management of the ecosystem	None	Better management of the ecosystem

Activities and potential impacts	Nature of Impact	Proposed Mitigation	Comments
Impact of quarterly inspections of facilities to assess their adherence to environmental mitigation measures	Better protection of the AE, Potential conflicts and litigation with facility owners who do not adhere to set standards	Establishment of proper dispute resolution mechanisms among the stakeholders	Better protection of the AE
Impact of strengthening community lease fund management offices	Improved welfare among community members and appreciation of the AEMP	Need for establishment of proper structures of fund management to for the benefit of all stakeholders	Improved welfare among community members and appreciation of the AEMP
Impact of establishing well designed, large and environmentally friendly curio shops	Potential degradation of the ecosystem from increased human traffic	Ensuring strict implementation of the EMPs of the developed facilities	Potential negative impact on the AE
Impact of development of nature trails	Potential degradation of the ecosystem	Ensuring strict implementation of the EMPs of the developed trails	Potential degradation of the ecosystem
Impact of developing a common ecosystem wide marketing strategy	Increased revenue stream, Potential destabilization of the social structures within the community due to increased incomes	Sensitization of community on proper usage of generated revenue in uplifting the living standards among families.	Increased revenue stream

Table 14: Natural Resource Management Programme

Activities and Potential Impact	Nature of Impact	Proposed Mitigation	Comments
Impact of securing wildlife dispersal areas and corridors	Restriction of fencing by land owners and possibility of HWC, Increased loss of pasture for livestock and animals from predators	Proper engagement of community for ownership of the process and adequate compensation in cases of injury and loss	Restriction of fencing by land owners and possibility of HWC
Impact of ban on charcoal trade on poverty reduction	Loss of livelihood for traders, potential increase in insecurity due to loss of income stream	Establishment of alternative sources of livelihood by the project	Loss of livelihood for traders
Impact of restriction of quarrying activities	Loss of livelihood income by employees and revenue by quarry owners, Loss of supporting businesses due to loss of market	Training on environmental friendly quarrying and proposal for alternative sources of income for the employees	Loss of livelihood income by employees and revenue by quarry owners
Impact of off road driving in the conservancies	Degradation of the ecosystem, Increased dust and noise pollution and animal disturbance	Restriction of off-road driving to specified areas. Establishment of rotational off-road driving to allow for healing	Degradation of the ecosystem
Impact of development of pasture management and livestock grazing plans	Restriction of community activities and movement within the AE, potential for increased conflicts due to restricted animal movement	Community sensitization on the importance of the proposed program for ownership and reducing conflicts with the project	Restriction of community activities and movement within the AE
Impact of climate change mitigation adaptation action plans	Reduced degradation of the ecosystem and leading to positive impact,	None	Reduced degradation of the ecosystem resulting in positive impacts
Impact of promotion of alternative cooking methods and materials	Improved ecosystem due to reduced use of wood and charcoal, Loss of revenue	Provision of alternative sources of energy to community through subsidized	Improved ecosystem due to reduced use of wood, charcoal and reduced carbon emissions contributing to reduced potential global warming

Activities and Potential Impact	Nature of Impact	Proposed Mitigation	Comments
	stream among charcoal and firewood merchants	purchase and alternative sources of revenue for affected traders	and climate change related disasters
Impact of implementing prudent measures to manage the escalating HWC	Reduced HWC and better community engagement in conservation	None	Reduced HWC and better community engagement in conservation
Impact of ensuring that the fences are rehabilitated and maintained	Improved security and reduced HWC	None	Improved security and reduced HWC
Impact of the establishment of an ecosystem wide consolation fund	Improved source of livelihood among the local community	Sourcing of resources from donors and other stakeholders for sustainability of the fund	Improved source of livelihood among the local community
Impact of creating awareness on HWC mitigation strategies among the community	Reduced HWC	Continued community engagement for sustainable reduction in HWC	Reduced HWC
Impact of strengthening community wildlife scouts	Probability of harassment of the local community	Proper training of the scouts on civil engagement with the community and proper handling of those in the wrong	Probability of harassment of the local community by the scouts
Impact of water allocation enforcement	Reduced availability of water for farming and likely water conflicts among users	Proper engagement and sensitization of the affected users prior to enforcement	Reduced availability of water for farming and likely conflicts
Impact of establishment of a ground water monitoring network	better management of the ground water and reduced depletion rate	None	better management of the ground water and reduced depletion rate
Impact of training on rainwater harvesting technologies	Increased availability of water for domestic use and	None	Increased availability of water for domestic use and reduced pressure on existing sources

Activities and Potential Impact	Nature of Impact	Proposed Mitigation	Comments
	reduced pressure on existing sources		
Impact of securing critical water sources	Better management of the sources and reduced accidents	None	Better management of the sources and reduced accidents
Impact of implementation of water pollution control	Conflict with the farmers	Sensitization of the farmers and community in general on the advantages of reduced water pollution	Conflict with the farmers

Table 15: Institutions and Governance Programme

Activities and Potential Impact	Nature of Impact	Proposed Mitigation	Comments
Impact of consolidation of activities of NGOs, KWS, the tourism industry and group ranches under AET	Better management of AE and reduction of duplication, Potential conflicts among the stakeholders due to variation of priorities	Proper engagement of all stakeholders to avoid conflict over territories	Better management of AE and reduction of duplication
Impact of promoting integrated land use development and recognizing conservation as a key land use in Kajiado County	Sustainability of the AE, Potential conflict with various alternative land users due to lost opportunities	Proper engagement with County planners at early stage of implementation	Sustainability of the AE
Impact of AET in mobilizing its partners to support the existing conservancies and establishing new ones	Increased conservation of habitat	Engagement of community and other stakeholders for ownership	Increased conservation of habitat
Impact of outsourcing management of conservancies	Better management of conservancies	Engagement of community at early stage to avoid conflict	Better management of conservancies
Impact of integration of AEMP with county spatial plan,	Better managed Ecosystem	None	Better managed ecosystem
Impact of Effective Coordination and strong linkages amongst stakeholders under by AET	Better managed ecosystem	None	Better managed ecosystem

8.3. Impacts of Climate Change

AE which is part of the ASALs, is a fragile ecosystem and the lack of investment in public goods and services in this ASAL area increases the vulnerability to climate change.

The impacts of climate change cut across diverse aspects of society, the economy and the environment. The adverse impacts of climate change have the potential to significantly inhibit the sustainable development of the ecosystem in key priority areas:

8.3.1. *Environment, Water and Forestry*

Amboseli Ecosystem has been adversely affected by climate change, including through variations of temperature and precipitation. The decline in environmental quality brings social and economic hardship to the communities who depend it, and increases contestation and the likelihood of conflict over diminishing natural resources. It also creates a window for invasive species and, new pests and diseases. AE being an ASAL is particularly vulnerable to climate change impacts especially in the absence of sufficient investments in mechanisms to build resilience. The AE is currently under threat from land degradation and desertification caused by climatic variations and human impacts such as overgrazing of livestock, smallholder farming on poor soils, and the creation of small cities or towns.

Impacts include loss of biodiversity, threats to animal and plant species, change in vegetation composition and structure, decrease in forest coverage, rapid deterioration of land cover, and depletion of water quality and quantity through the destruction of catchments and underground aquifers. Increased scarcity of water resources is a core concern, making resource management more difficult and increasing the likelihood of conflict.

Potential impacts include declining forest coverage, reduced water quality and quantity for domestic and industrial use, high water pricing and increases in water borne diseases.

Forest degradation and deforestation, exacerbated by climate change, have led to reduced canopy cover and altered biodiversity composition. This affects the ecosystem services that forests provide, such as reducing soil erosion, natural pest control, preserving water availability and maintaining water quality. Deforestation and forest degradation also increase GHG emissions.

8.3.2. *Pastoralism*

AE being an ASAL needs an efficient Pastoralism/Livestock management which rely extensively on natural systems such as rain fed pasture. These livestock systems are very climate sensitive, being vulnerable to the impacts of changing and irregular rainfall patterns and droughts. Greater drought frequency in this ASAL increases livestock morbidity and mortality because of reduced availability of forage, increased disease incidences and a breakdown of marketing infrastructure.

8.3.3. *Trade*

A robust, diversified and climate resilient trade sector is imperative for AE to attain low carbon climate resilient development. The trade sector depends on products and services developed by other sectors of the economy, and therefore any adverse climate change impacts of such sectors, will likely impact trade. The agriculture, manufacturing and transportation sectors, which are key cogs for internal trade, are highly vulnerable to climate variability and extreme weather events. A successful trade sector will therefore require building resilience across AE.

8.3.4. Physical Infrastructure

An improved and expanded physical infrastructure is an important and necessary enabler of socio-economic development. Vision 2030 aspires to develop best infrastructure facilities and services by focusing on quality, aesthetics and functionality of the infrastructure services. The target is increased investments in the road network; water and sanitation services; rail, sea and air transport; and energy supply services. The adverse impacts of climate change need to be identified and addressed when developing these infrastructure facilities. One approach is to climate proof infrastructure, which refers to the integration of climate change risks and opportunities in the design, operation and management of infrastructure. Another consideration is the promotion of investment in infrastructure that supports transformation to a low carbon economy while creating employment and reducing poverty.

8.3.5. Extractive Industries

The extractive industry Amboseli Ecosystem is rapidly developing into a potentially high contributor to economic growth. High value resources such as limestone in Mbirikani have been discovered and extracted. Natural resource extraction contributes to and is vulnerable to climate change. Extraction of these resources utilises copious quantities of water and energy, and releases GHG emissions. Infrastructure investments by extractive industries have to internalise climate proofing in order to protect value for money. Amboseli Ecosystem Trust (AET) with relevant stakeholders form the national and County Governments needs to put in place regulatory mechanisms that ensure resource extraction contributes to low carbon climate resilience development.

8.3.6. Energy

Energy production and utilization has a close connection with climate change. Biomass energy, such as charcoal and firewood, continues to be used in the AE's households. Security in access to biomass energy is important for building resilience. However, it is equally critical to ensure efficient production and use of this biomass energy, including through sustainable plantation forests, sustainable tree harvesting techniques for charcoal production, and efficient charcoal kilns and cook stoves.

8.3.7. Tourism

Tourism is highly climate sensitive because of its close connection to the natural environment. A large proportion of tourism depends directly on natural resources and much is focused on protected areas. In addition, the tourism sector, which accounts for about 10 per cent of GDP, is important for human development in Kenya because of its potential to reduce poverty and create employment. However, climate variability is causing negative impacts that could inhibit the positive contribution of tourism to the Amboseli Ecosystem. Increasingly warmer temperatures are reducing plant and vegetation productivity in this semi-arid environment, affecting wildlife diversity and distribution. This results in wildlife competing with domestic livestock and human beings for both food and water.

To mitigate this, AET with relevant stakeholders will require consideration of climate change impacts and commencement of appropriate response and intervention measures.

8.3.8. Health

Human health has been affected adversely by climate change impacts in AE. AE has a high degree of risk from climate-sensitive infectious diseases such as food or waterborne diseases like diarrhoea, hepatitis A, and typhoid fever. Vector-borne diseases such as malaria, dengue fever, and Rift Valley Fever are also common. High temperatures and intense rainfall, which are some of the effects of climate change, are known to be critical factors in initiating malaria epidemics.

8.4. Adaptation and mitigation measures on effects of climate change

Climate change related issue	Impact	Adaptation/mitigation action to be taken	Responsibility
Variation of temperature and precipitation /Drought	<ul style="list-style-type: none"> -Loss of biodiversity -Invasive species -Change in vegetation composition and structure -Decrease in forest coverage -Increased scarcity of water resources -Increased Water Borne Diseases -Reduces Pasture -Loss of livestock and Wildlife -Uneven distribution of wildlife. -climate-sensitive infectious diseases 	<ul style="list-style-type: none"> -Conservation of natural vegetation -Build capacity on rainwater harvesting techniques and associated mitigation for wildlife interactions -Development of Dams, Water Pans and Boreholes -Improve livestock breeding and husbandry -Develop and implement a climate change adaptation and mitigation action plan -Control Invasive Species 	Plan Owners, PIC, Investors, Kajiado County Government, stakeholders and Scientists.
Absence of sufficient investments in mechanisms to build resilience	<ul style="list-style-type: none"> - Deforestation - Loss of critical Wildlife habitat - Decrease in land coverage 	<ul style="list-style-type: none"> -Develop Carbon Credit Projects -Develop and implement a climate change adaptation and mitigation action plan 	Plan Owner, Investors, Kajiado County Government, stakeholders and Scientists
land degradation and Forest Encroachment	<ul style="list-style-type: none"> -Decrease in land coverage - loss of critical wildlife habitat - Reduces Pastures 	<ul style="list-style-type: none"> -Restoration of degraded areas -Appropriate rangelands management practices - Reforestation Projects -Develop and implement a climate change adaptation and mitigation action plan 	Plan Owner, Investors, County Government, KWS, NEMA and Scientists
Increased Grazing and browsing pressure	<ul style="list-style-type: none"> -Loss of grazing areas -Human wildlife conflict -Livestock Diseases - Reduced Pasture 	<ul style="list-style-type: none"> -Appropriate rangelands management practices -Develop and implement pasture management and livestock grazing plans - 	Plan Owner, Communities
Destruction of catchments and underground aquifers	<ul style="list-style-type: none"> -Decrease in land coverage -Loss of critical wildlife habitat - Loss of biodiversity 	<ul style="list-style-type: none"> -Initiate new and support existing habitat, protection, restoration and rehabilitation measures -Forestry development projects -Monitor and control illegal water abstraction from both surface and groundwater sources -Develop and implement water allocation plans 	Plan Owner, Ministry of Water, WARMA
Poor methods of developing infrastructure	<ul style="list-style-type: none"> - Increase in degraded areas - Loss of critical wildlife habitat - Loss of biodiversity 	<ul style="list-style-type: none"> -Establish climate proof infrastructure design to support social and Economic development -Control and regulate infrastructure growth -Conduct EIA/EA on Infrastructure projects 	Plan Owner, Kajiado County Government and stakeholders
GHG Emission through Industrialization and	<ul style="list-style-type: none"> -Increased air pollution -Decrease in land 	<ul style="list-style-type: none"> -Develop and implement a climate change adaptation and mitigation action plan 	Plan Owner

mining	coverage - loss of critical wildlife habitat		
Use of Biomass Energy	-Deforestation -Loss of critical wildlife habitat - Decrease in land coverage	-Promote use of sustainable energy sources to curb habitat degradation -green energy development and awareness creation	Plan Owner and Stakeholders

Chapter 9: STRATEGIC ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN (SEMMP)

9.1. Overview

The aim of the Strategic Environmental Management and Monitoring Plan (SEMMP) is to detail the actions required to effectively implement the mitigation measures and recommendations in the SEA. These actions are necessary in order to minimize the negative impacts which might originate from the plan implementation and instead enhance positive impacts of the AEMP. It is also important in order to support the long-term management and monitoring of the environmental issues during plan implementation. The SEMMP is dynamic in that it can be updated and amended as new information is realized in the period of implementation.

9.2. Strategic Objectives

The specific objectives of this Strategic Environmental Management and Monitoring Plan are to:

- i. Provide guidelines for appropriate management of environmental issues resulting from all activities associated with implementation of all the AEMP Master Plan components that include the: Natural Resource Management, Tourism, community livelihoods and Institutions and governance programs.
- ii. Highlight the environmental concerns of the stakeholders and appropriate protection measures.
- iii. Provide detailed standards and specifications for the management and mitigation of activities that have the potential to impact negatively on the physical and social environment.
- iv. Provide guidelines to project implementers regarding procedures for protecting the environment and minimizing negative environmental effects, thereby supporting the Master

9.3. SEMMP Schedule

The SEMMP schedule below outlines the plan activities, environmental management and monitoring actions to be undertaken, institutions responsible, monitoring frequency, monitoring indicators and standard guideline where applicable as shown in the table 16 below.

9.4. Strategic Environmental Management and Monitoring Plan (SEMMP).

Table 16: The SEMMP for Implementation of AEMP

Mitigation Measures and Alternative	Management and Monitoring Actions	Institution Responsible	Monitoring Frequency	Monitoring Indicators	Standard Guidelines
Establishing grass banks	Capacity building	AET	Annually	No of banks	AEMP
Developing and implementing traditional grazing plans	Engagement of the community	AET/MoA	Annually	Implemented plans	AEMP/Ministry of Agriculture
Rehabilitating degraded grazing areas	Assess status and implement rehabilitation plans	AET	Annually	Rehabilitated area	AEMP
Increasing water supply for livestock	Establish alternative water supplies	AET	Monthly	Identified water supplies	Water Act 2012
Establishing a livestock Disease Free Zone	Establish suitable locations	AET	Annually	No of DFZ	-
Crossbreeding livestock breeds for increased production	Engagement with potential markets	AET	Annually	No of new markets	
Reclaiming livestock holding grounds and supporting existing livestock markets	Engage community	AET	Annually	No of new holding areas	-
Establishing linkages with local and international livestock markets	Engagement with potential markets	AET	Quarterly	No of new markets	
Improving existing slaughter houses	Engage relevant stakeholders	AET	Annually	No rehabilitated	
Adopting modern crop production technologies.	Capacity build on new crop production technologies	AET/MoA	Annually	No adopted	
Establishing a horticultural canning factory	Feasibility study of the facility	AET/KCG	Annually	Study report	

Mitigation Measures and Alternative	Management and Monitoring Actions	Institution Responsible	Monitoring Frequency	Monitoring Indicators	Standard Guidelines
Land subdivision with nucleated settlements where social amenities can be provided	Baseline survey and EIA studies	AET/KCG	Annually	New sub divisions	
Improved infrastructure (especially Roads)	Feasibility study	AET/KCG	Annually	No of new infrastructure	-
Strengthening education and health services education and	Baseline survey on current infrastructure	AET/MoH/MoE	Annually	No of new facilities	MoE/MoH
Control and regulation of infrastructure development in AE	Establishment of management committees for infrastructure development	AET/KCG	Annually	No. of new facilities	AEMP/KCG Spatial Plan
Diversification of tourism attractions and facilities	Promotion of new attractions and establishment of facilities	AET/MoTAET/KCG	QuarterlyAnnually	No. of new attractions and facilitiesNo. of new facilities	Wildlife ActAEMP/KCG Plan Spatial
Control and regulation of infrastructure development in AE	Establishment of management committees for infrastructure development				
Opening up a connecting circuit with Maasai Mara	Establishment of proper mechanism to mitigate effects of increased traffic	AET/KCGAET/MoT	AnnuallyQuarterly	No. of visitorsusing the corridorNo. of new attractions and facilities	-Wildlife Act
Diversification of tourism attractions and facilities	Promotion of new attractions and establishment of facilities				
Construction of a Visitor Centre on range environment	Capacity building on environment	AETAET/KCG	MonthlyAnnually	No of visitorsNo. of visitorsusing the corridor	AEMP-
Opening up a connecting circuit with Maasai Mara	Establishment of proper mechanism to mitigate effects of increased traffic				
Development of eatery and entertainment facilities	Ensuring strict implementation of the EMPs of the developed facilities	AET/NEMAAET	AnnuallyMonthly	No of facilitiesNo of visitors	EMCA (1999) AEMP

Mitigation Measures and Alternative	Management and Monitoring Actions	Institution Responsible	Monitoring Frequency	Monitoring Indicators	Standard Guidelines
Construction of a Visitor Centre on range environment	Capacity building on environment				
Establishing a tourism monitoring programme	Establishment of necessary infrastructure	AETAET/NEMA	Annually	Monitoring reports No of facilities	AEMP, EMCA (1999)
Development of eatery and entertainment facilities	Ensuring strict implementation of the EMPs of the developed facilities				
Quarterly inspections of facilities to assess their adherence to environmental mitigation measures	Establishment of inspection unit	AET/NEMA	Monthly	No of inspections Monitoring reports	EMCA AEMP
Establishing a tourism monitoring programme	Establishment of necessary infrastructure				
Strengthening community lease funds management offices	Capacity building Establishment of inspection unit	AET/KCGAET/NEMA	Annually	No of new leases No of inspections	AEMP EMCA
Quarterly inspections of facilities to assess their adherence to environmental mitigation measures					
Establishing well designed, large and environmentally friendly curio shops	Ensuring strict implementation of the EMPs of the developed facilities	AET/NEMA/KCGAET/KCG	Annually	No of shops No of new leases	EMCA AEMP
Strengthening community lease funds management offices	Capacity building				
Development of nature trails	Ensuring implementation of the EMPs	AET/NEMA	Annually	Level of implementation	EMCA
Developing a common ecosystem-wide marketing strategy	Establishment of implementation committee	AET	Quarterly	Level of engagement	-
Evaluate the impact of securing wildlife	Carry out EIA/EA of the proposed	AET	Annually	EA	-

Mitigation Measures and Alternative	Management and Monitoring Actions	Institution Responsible	Monitoring Frequency	Monitoring Indicators	Standard Guidelines
dispersal areas and corridors	activity				
Enforce charcoal ban regulations	Establish a baseline survey of current status	AET/KFS	Monthly	Number of kilns	KFS act (2002)
Enforce environmental friendly Quarrying	Carry out regular EIA/EA of mining activities	AET	Annually	Number of Quarries	Mining Act
Implement restriction of off-road driving to specified areas. Establishment of rotational off-road driving to allow for healing	Assess extent of off-road driving in the conservancies	AET	Annually	No of off-road tracks	-
Enforce restriction on pasture and livestock grazing to established plans	Implement pasture management and livestock grazing plans	AET	Annually	No of management plans	-
None	Impact of climate change mitigation adaptation action plans				
Provision of alternative sources of energy to community through subsidized purchase	Assess the effect of alternative cooking methods and materials	AET	Annually	No of adopted alternatives	Energy Act
Implementing prudent measures to manage the escalating HWC	Assess the effect of HWC management	AET/KWS	Annually	No. of Conflicts	Wildlife Act
Ensuring that the fences are rehabilitated and maintained	Map the fencing, rehabilitation and maintenance	AET/KWS	Monthly	Length covered	AEMP
Establishment of an ecosystem wide consolation fund	Audit availability of resources and use	AET	Annually	Amount collected	AEMP
Continued community engagement for sustainable reduction in HWC	Awareness creation on HWC mitigation strategies among the community	AET	Monthly	No of meetings	-
Proper training of scouts on civil engagement with the community and proper handling of suspects	Strengthening capacity of community wildlife scouts	AET/KWS	Annually	No. of capacity building workshops	Wildlife Act

Mitigation Measures and Alternative	Management and Monitoring Actions	Institution Responsible	Monitoring Frequency	Monitoring Indicators	Standard Guidelines
Engagement and sensitization of the affected in enforcement of water allocation	Regular engagement of waterusers through meetings	AET/WRA	Monthly	No. of meetings	-
Establishment of a ground water monitoring network	Establishment of infrastructure for regular ground water monitoring	AET/WRA	Annually	Quality and Quantity	-
Training on rainwater harvesting technologies	Carrying out regular training workshops on rainwater harvesting	AET/MoW	Quarterly	No. trained	Water Act
Securing critical water sources	Establishing protection infrastructure for water sources	AET/MoW	Annually	No. secured	Water Act
Sensitization of the farmers and community in general on the advantages of reduced water pollution	Baseline survey on water pollution awareness	AET/WRA	Annually	Water quality	Water quality act
Consolidation of activities of NGOs, KWS, the tourism industry and group ranches under AET	Proper engagement of all stakeholders	AET		Consolidated activities	-
Promoting integrated land use development and recognizing conservation	Engage with County planners	AET/KCG	Annually	Integrated regions	AEMP
Support of existing conservancies and establishing new ones	Feasibility study	AET/KWS	Annually	New conservancies	AEMP
Outsourcing management of conservancies	Consult stakeholders	AET	-	Outsourced managers	-
Integration of AEMP with county spatial plan	Engage KCG	AET/KCG	-	Integrated document	-

9.5. Amboseli Ecosystem Environmental Management Plan (AEEMP).

The AEMP 2020-2030 has identified ten (10) major issues of concern to be addressed by the SESA. These issues (impacts), their suggested mitigation measures, responsibilities for implementing the measures, time frame/ frequency and implementation costs are depicted in the matrix below.

Table 17: Major issues of concern and their mitigation measures

	Activity	Impact	Mitigation Measure	Responsibility	Timeframe/Frequency	Cost where applicable
1	Pastoralism and conservation	Decreasing range, human/wildlife conflicts	Prepare grazing management plans and comply with them, capacitate ranger response teams	Group ranch/conservancy management, grazing committees, KWS	Annually	Management to work out
2	Land subdivision	Loss of habitat, blockage of livestock and wildlife routes	Ensure land use activities of the subdivided lands are compatible with pastoralism and environmental conservation	AET, MOA, WRA, KWS	Routine	Management to work out
3	Bush meat poaching	Loss of Species	Enhance community ranger monitoring and educate communities	KWS, AET and partners	Routine	Management to work out
4	Reduction in woody species	Loss of browsing species associated with woodlands	Undertake habitat restoration measures	AET, SFS, KWS, ATE	Routine	Management to work out
5	Overgrazing	Loss of grassland, livestock and wildlife	Establish grass banks, undertake counts	Grazing Committees, KWS, AET	During rainy season and annually	Management to work out

	Activity	Impact	Mitigation Measure	Responsibility	Timeframe/Frequency	Cost where applicable
6	Unsustainable land use	Climate Change (draughts)	Promote tree planting programmes within the ecosystem	AET, KWS, KFS, SFS and partners	During rainy periods	Management to work out
7	Increasing agricultural activities in marginal areas	Blockage of wildlife and livestock corridors	Open up closed corridors	AET, KWS, NEMA and land owners		Management to work out
8	Land sale outside the Maasai community	Conversion of pastoralism land to cultivation and tourism use, Loss of landscape and pastoralism mode of livestock production	Promote land use that ensures viable minimum area for wildlife and pastoralism.	AET, Group Ranch Management Committees.	When necessary	Management to work out
9	Reduction of rangelands	Human/wildlife conflicts	Increase ranger patrols, install fences, compensate, consolation programmes.	KWS, AET, partners	Throughout the year	Management to work out
10	Socio-economic and demographic changes	Highly transformed landscape shaped by human activities, competition between wildlife, livestock and people, shrinking space and resources, increased infrastructure.	Restrict human activities to the provisions of the integrated land use plan prescribed by the AEMP	AET in collaboration with all stakeholders	Immediately	Management to work out

9.6. Wildlife Corridor Environmental Management Plan

The AEMP 2020-2030 has also identified six (6) Key Wildlife Corridors that are likely to be lost and the table 18 below has outlined the corridor, impact, suggested mitigation measure, mitigation responsibility and timeframe.

Table 18: Mitigation Measures for AE key Wildlife corridors

Wildlife Corridor	Impact	Mitigation Measure	Responsibility	Timeframe
1. Amboseli NP-OlgululuiSouth-Kitenden- Kilimanjaro NP Corridor	Potential for agricultural expansion into Olgulului-Ololarashi GR part of the corridor	Encourage compatible land use by developing a conservation lease programmes.	AET, Group Ranches and Partners	Immediately
2. Amboseli NP-Kimana- Kuku-Chyulu West Corridor	Irrigated farming through borehole drilling, proliferation of tourism developments, settlements and fencing along the corridor.	Ensure that Osupuko, Nailepu, Kilitome and Kimana Sanctuary in former Kimana Group ranch and Motikanju in Kuku Group ranch conservancies remain intact.	AET, GR Committees	Immediately
3. Amboseli NP-OlgululuiNorth-Selengei Corridor	Increasing population and settlements	Maintain the corridor to facilitate wildlife access to the wet season grazing areas in Selengei and beyond	AET	Immediately
4. Amboseli NP-Olgulului North-Mbirikani Corridor	Road kills along Emali-Loitokitok tarroad; Uncontrolled expansion of farming along the Mbirikani pipeline,	Mobilize road use patrols, educate road users, install signage and bumps Control farming along the Mbiri-kani pipeline and maintain the Olgulului section as a dry season livestock grazing area.	AET AET	As is practicable
5. Amboseli NP-OlgululuiWest-Ilangarun- yoni Hill	Increasing human activities including charcoal burning, settlements and irrigation	Set aside land around Ilangarun- yoni Hills, in both Olgulului and Mailua, as conservancies to enhance protection of ecological linkages and to protect this important pastoralism and wildlife zone.	AET/GR Committees	Immediately

Wildlife Corridor	Impact	Mitigation Measure	Responsibility	Timeframe
6. Amboseli NP-Olgulului South-Enduimet Wildlife Management Area (Tanzania) Corridor	Human development activities	Promote establishment of conservancies such as Kitirua in Olgulului to salvage this important wildlife and livestock dispersal area. Engage the relevant Tanzanian Authorities	AET, WWF and KWS	Immediately

Chapter 10: CONCLUSION AND RECOMMENDATIONS

10.1. Conclusion

In conclusion, the Amboseli Ecosystem Management Plan (AEMP) and its accompanying Strategic Environmental Assessment (SEA) have been developed with the aim of addressing the complex environmental challenges facing the Amboseli ecosystem. With its status as one of Kenya's most significant tourism destinations and its importance for both local communities and wildlife, sustainable management is imperative. The SEA process, guided by the Environmental Management and Coordination Act (EMCA), ensured comprehensive evaluation of the plan's impacts, considerations of national and international policies, and stakeholder engagement. Key challenges identified include grazing pressure, habitat loss, climate change impacts, declining standards in tourism, and land use changes. Mitigation measures and a Strategic Environmental Management and Monitoring Plan (SEMMP) have been proposed to address these challenges and guide the implementation of the AEMP. Moving forward, effective enforcement, stakeholder collaboration, and ongoing monitoring will be essential to ensure the long-term sustainability of the Amboseli ecosystem in line with national development goals and international commitments to environmental conservation.

Based on the analysis of all the programmes contained in the AEMP 2020-2030, the SESA for the Amboseli Ecosystem Management Plan concludes that:

- i) The AEMP (2020-2030) provides a sustainable framework for the implementation of the four proposed programs, addressing key environmental and socio-economic challenges facing the Amboseli ecosystem.
- ii) It is imperative that the plan owner (AET) and all stakeholders ensure compliance with the Strategic Environmental Management and Monitoring Plan (SEMMP) to effectively mitigate negative impacts and enhance positive outcomes.
- iii) The plan owner (AET) plays a crucial role in coordinating and establishing linkages with all interested and affected parties, including funding institutions at national, regional, and international levels, to ensure the successful implementation of all the programmes outlined in the AEMP.
- iv) Continuous research and monitoring of the programmes are essential for ongoing improvement and adaptive management, allowing for adjustments based on new information and changing environmental conditions.
- v) Recognition of the diversity and autonomy of group ranches within the Amboseli Ecosystem is vital. While members of AET share a common goal of ecosystem protection, each group ranch retains its independence in decision-making. AET serves as an administrative arm to oversee the implementation of the AEMP and provide guidance on sustainable activities within the ecosystem, respecting the autonomy of its member ranches.

10.2. Recommendations

Reference to the above concluding statements, the following recommendations are made:

- a. Approval of the Strategic Environmental Assessment (SESA) for the gazetted Amboseli Ecosystem Management Plan (AEMP) 2020-2030 under the Environmental Management and Coordination Act (EMCA) Amendment of 2015 by NEMA will be an essential step to ensure effective enforcement by the plan owner and stakeholders, thereby contributing to the sustainable management of the ecosystem.
- b. The Implementation Structure should be inclusive, incorporating all stakeholders, including national and county governments, group ranch owners, private sector actors, NGOs, and local communities, to ensure comprehensive and collaborative governance.
- c. The Amboseli Ecosystem Trust (AET) should be designated as the overarching authority for ecosystem governance, supported by all stakeholders, including donors and investors, to ensure effective coordination and implementation of the AEMP.
- d. The Noonkatiak Center should be promoted and upgraded to serve as a central social and scientific monitoring hub for all activities within the Amboseli Ecosystem, facilitating data collection, research, and community engagement.
- j) The recommendations outlined in the "Amboseli Ecosystem: Status, Changes, and Recommendations" report by the Amboseli Conservation Programme should be followed during the implementation period of the AEMP and its SESA, providing valuable guidance for sustainable management practices.
- k) The SESA for the AEMP 2020-2030 should serve as the foundational assessment, with individual Group Ranch Strategic Environmental Assessments (SESAs) aligned with its provisions. Conflicts should be resolved in favor of the AEMP 2020-2030 and its SESA to ensure cohesive decision-making and ecosystem management.
- l) Lead agencies and the Kajiado County Government should actively support the AET in enforcing the recommendations of the AEMP 2020-2030 and its SESA to achieve compliance and sustainability for the Amboseli Ecosystem.
- m) The Kajiado County Government Spatial Plan should be updated to include the AEMP 2020-2030 and its SESA, facilitating effective monitoring and enforcement by designated officers coordinated by the AET.
- n) The Plan Implementation Committee (PIC) should include representatives from all stakeholder groups and develop robust communication channels to disseminate information, educate stakeholders, and ensure effective and sustainable implementation of the recommendations.
- o) The plan owner, in coordination with stakeholders, should identify and map ecologically sensitive areas within the ecosystem and advocate for their gazettelement as restricted or controlled zones

under relevant legal instruments, strengthening the Natural Resource Management (NRM) Program and safeguarding species and habitats.

- p) The AET, supported by the PIC, should be designated as the lead institution for advising all landowners on best land use practices, enforcing compliance with the recommendations of the AEMP 2020-2030 and its SESA, and promoting sustainable ecosystem management.
- q) Developers and investors should conduct individual SESAs for respective group ranches to address unique priorities, such as land subdivision, ensuring compliance with changing circumstances and legal requirements under the Community Land Act of 2016.

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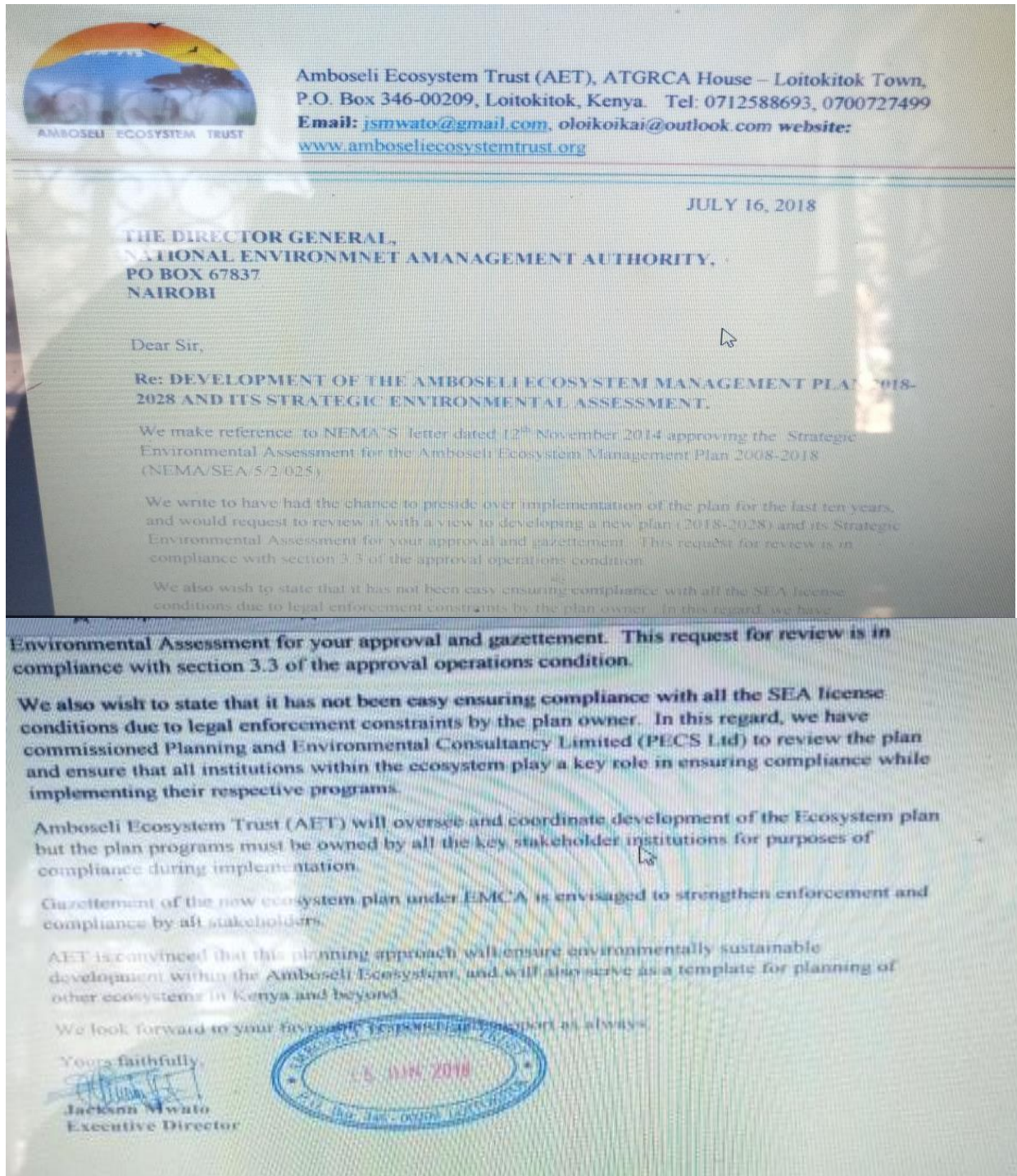
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APPENDICES

APPENDIX 1a: AMBOSELI ECOSYSTEM TRUST NOTIFICATION TO NEMA TO REVIEW THE AEMP 2008-2018 AND THE NEMA AUTHORIZATION LETTER





NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Tel: (254-020)-6005522 / 3 / 6 / 7, 6001945, 6008767
Mobile line: 0724 253 398, 0723 363 010, 0735 013 046, 0735 010 237
Telkom Wireless: 020-2101370
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Hotline: 020-8077233, 020-6006041

P. O. Box 67839 - 00200
Popo Road, Nairobi, Kenya
E-mail: dgnema@nema.go.ke
website: www.nema.go.ke

NEMA/SEA/5/2/025

31st July 2018

Managing Director,
Amboseli Ecosystem Trust,
ATGRCA House,
P.O Box 346 – 00209
Loitokitok

Att: Jackson Mwato

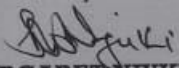
RE: DEVELOPMENT OF THE AMBOSELI ECOSYSTEM MANAGEMENT PLAN 2018 – 2028 AND ITS STRATEGIC ENVIRONMENTAL ASSESSMENT.

The National Environment Management Authority (NEMA) acknowledges receipt of your letter on the above subject matter and notes the contents therein.

The Authority commends you for the work you are doing to ensure compliance with the relevant environmental laws while implementing the respective programs under the Amboseli Ecosystem Management Plan. National Environment Management Authority (NEMA) has reviewed your letter in line with the SEA approval conditions issued on 12th November 2014.

In view of this, the Authority has no objection to the review of the Amboseli Ecosystem Management Plan with a view of developing a new plan (2018 – 2028). The new plan will need to be subjected to the Strategic Environment Assessment (SEA) Process in line with the provisions of section 57A of the Environment Management and Coordination Act, (EMCA) CAP, 387 and the National Strategic Environmental Assessment Guidelines, 2012.

Thanks for your willingness to comply.


MARGARET NJUKI
FOR: DIRECTOR GENERAL

CC: The Director General
Kenya Wildlife Service
P.O. Box 40241 - 00100
Nairobi



APPENDIX 1b: SESA Process Approval Letters



NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Mobile Lines: 0724-253 398, 0723-363 010, 0735-013 046
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P.O. Box 67839, 00200
P.O. Road, Nairobi, Kenya
E-mail: dgnema@nema.go.ke
Website: www.nema.go.ke

NEMA/SEA/5/2/080

13th April 2023

The Director,
Amboseli Ecosystem Trust
P.O Box 346-00209
LOITOKTOK

RE: APPROVAL OF THE SCOPING REPORT FOR THE STRATEGIC ENVIRONMENTAL AND SOCIAL ASSESSMENT (SESA) FOR AMBOSELI ECOSYSTEM MANAGEMENT PLAN (AEMP) 2020-2030, KAJIADO COUNTY

The National Environment Management Authority (NEMA) has reviewed the issues addressed to the scoping report that was submitted to the Authority on 11th April 2023.

In light of the provisions of section 57 A of the Environmental Management and Coordination Act (EMCA), Regulations 42 and 43 of the Environmental (Impact Assessment and Audit) Regulations, 2003 and the National Guidelines for Strategic Environmental Assessment 2012. The scoping report for the proposed Amboseli Ecosystem Management Plan (AEMP) 2020-2030 is hereby **APPROVED**. However, the issues raised vide our letter dated 27th February 2023 (*copy attached*) needs to be comprehensively incorporated during the SESA study.

As you prepare to undertake the SEA study, the Authority informs you that effective and sustained stakeholder's engagement and appropriate communication methods are vital for a successful SEA process.


Ensure that linkages between the Master Plan and other regional, National and local plans are taken into consideration. You are informed to engage your SESA experts (*Planning & Environmental Consultancy Services (PECS) Ltd*) who shall conduct the SESA process and prepare the draft SESA report for submission to NEMA.

Along with the prescribed fees of Kshs. 1 million (1,000,000) submit ten hard copies and one electronic copy of the draft SESA report (which should include a non-technical summary and the submission form).


MARGARET NJUKI
FOR: DIRECTOR GENERAL

APPENDIX 2: NEMA LICENSES FOR EXPERT AND FIRM

FORM 7


nema
mazingira yetu | uhai wetu | wajibu wetu

(r.15(2))

**NATIONAL ENVIRONMENT MANAGEMENT
AUTHORITY(NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING
LICENSE**

License No : NEMA/EIA/ERPL/18587
Application Reference No: NEMA/EIA/EL/24442

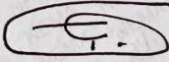
M/S **Dr. Bernard Kaaria Irigia**
(individual or firm) of address
P.O. Box 702 - 00517 Nairobi

is licensed to practice in the
capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**
General
registration number **0079**


in accordance with the provision of the Environmental Management and Coordination
Act Cap 387.

Issued Date: 1/13/2023 Expiry Date: 12/31/2023

Signature.....


(Seal)
Director General
The National Environment Management Authority

P.T.O.


ISO 9001:2015 Certified



nema
mazingira yetu | uhai wetu | wajibu wetu

FORM 7

(r.15(2))

**NATIONAL ENVIRONMENT MANAGEMENT
AUTHORITY(NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING
LICENSE**

License No : NEMA/EIA/ERPL/18586

Application Reference No: NEMA/EIA/EL/24440

M/S Planning and Environmental Consultancy Services Limited

(individual or firm) of address

P.O. Box 702 - 00517 Nairobi

is licensed to practice in the

capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Firm of Experts**

registration number **7839**

in accordance with the provision of the Environmental Management and Coordination
Act Cap 387.

Issued Date: 1/13/2023

Expiry Date: 12/31/2023

Signature.....

(Seal)

Director General

The National Environment Management Authority

P.T.O.



ISO 9001:2015 Certified

APPENDIX 3: SESA TEAM RESUME

Dr. Bernard Kaaria Irigia, PhD, HSC- Curriculum Vitae

CONTACT ADDRESS

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Nairobi, Kenya
Phone: +254 722 773 951
Email: kaariairigia@gmail.com ; pecskenya@gmail.com

CAREER PASSION

To work towards reducing rural poverty by empowering the local communities through improved sustainable livelihoods that focus on integrating environment and natural resources.

CAREER PROFILE AND COMPETENCIES

- Decorated with the Head of State Commendation (HSC) in 2009 for my commitment to sustainable environmental conservation and for empowering Kenyans with environmental sustainability skills.
- 30 solid years full employment by Kenya Wildlife Service (KWS) and retired in 2014 as the Director of Planning and Environmental Compliance responsible for environmental sustainability and climate change mitigation, adaptation and resilience within the wildlife conservation and tourism sectors.
- Exposed to design, implementation, monitoring and evaluation of projects and programs in climate change adaptation, agroforestry, sustainable policies, institutional governance, and entrepreneurship projects in agriculture, tourism and other rural development projects.
- Steered KWS towards strategies that promote sustainable tourism and minimize environmental and other hazards that trigger disasters. Disaster Risk Reduction, focusing Kenya's National Parks and Reserves in partnerships with communities living within protected areas has been my attention since 1994 after attaining a Master's degree in Environmental Impact assessment. Under my guidance KWS in partnerships with the communities developed and applied policies and strategies to minimize environmental vulnerabilities and risks such human-wildlife conflicts and climate change. Developed adaptation and restoration projects for degraded habitats and ecosystems in conservation areas.
- I was instrumental in establishment of several conservancies including among others the Kimana Wildlife Sanctuary in Loitokitok, the Malungaji Wildlife Conservation and Ecotourism Sanctuary in Kwale, the Lewa Downs Community Wildlife and Ecotourism Sanctuary, the Kakamega Forest Community Ecotourism project, the Samburu Lerogghi/Kelisia Community Wildlife and Ecotourism Sanctuary, as well as plans for conservancies in the Maasai Mara Ecosystem including Siana, Olchoro-Oiriwa, Lemek, Olkinyei, ORPUA Mara Conservancy, Enarau Conservancy, Nyekweri Kimintet Community Forest Conservation Trust, and the Kenya Wildlife Training Institute Ecotourism and Wildlife Sanctuary in Naivasha. I was also the Lead consultant engaged by the Ministry of Tourism and Wildlife to develop the EIA Guidelines for the tourism Sector adopted for implementation by all conservancies in Kenya.
- Enormous experience in the field of Tourism, Wildlife Management, environmental management, Disaster Risk Management, Climate change mitigation, adaptation and resilient mechanisms, and Sustainable Development.
- Lead expert in EIA, EA, SEA, SESA and registered by NEMA in 2003 under **(Reg No 0079)**. KWS lead expert in EIA Training from 2005. Responsible for developing policies on human-wildlife conflicts in Kenya and also appointed as Chairman of the NEMA Technical advisory committee (TAC) from 2003 - 2009 to advise the Director General of NEMA on EIA Related matters.
- Leadership and management experience in environmental policy formulation, preparation of general management plans for parks and reserves, based on the IUCN Protected Area Planning Guidelines; climate action plans, Ecosystem Management Plans, ecological assessments, assessments of tourism impacts, tourism planning and management, wildlife management strategies, tourism security and safety, management of recreational areas to inform decisions on project proposals inside ecologically sensitive areas.

Strategic Environmental and Social Assessment for AEMP 2020-2030

- Founder of Planning and Environmental Consultancy Services (PECS) Limited in 2015, a special purpose vehicle (SPV) under which we undertake Environmental consultancy on environment, tourism and wildlife conservation, environmental compliance and enforcement, capacity building in environmental and social impact assessment, project environmental assessments, strategic environmental assessment, strategic environmental and social assessment (SESA), and preparation of conservation area management plans, natural resource management, climate change mitigation and adaptation as well as community participatory resilience actions to counter environmental disasters and risks resulting from climate change challenges.
- In the teaching field I am credited for initiating and facilitating the inaugural Environmental Impact Assessment and Environmental Audit (EIA/EA) NEMA approved courses in Kenya National Cleaner Production Centre, African Nazarene University (ANU), Riara University and University of Nairobi (UON), Wangari Maathai Institute. I have also been teaching these courses on part time basis in other institutions such as Africa Waste and Environment Management Centre (AWEMAC) and Catholic University of Eastern Africa (CUEA).

PROFESSIONAL EXPERIENCE & ACCOMPLISHMENTS

DIRECTOR IN CHARGE OF PARKS PLANNING PROCESS AND ENVIRONMENTAL COMPLIANCE, KENYA WILDLIFE SERVICE (KWS)

2010 - Nov 2014 Coordinated preparation of park plans using the PAPF framework, ensured enforcement of environmental standards for sustainable wildlife conservation and maintaining cooperation with partners, strengthening institutional capacity while retaining financial stability.

Accomplishments

Laid firm foundation for improved compliance and enforcement level of environmental regulations, enhanced relationships between KWS and NEMA and ensured sustained KWS capacity in application of sustainable environmental management tools, with significant financial savings.

Application of sustainability tools and preparation of ecosystem management plans or general management plans calls for consultation and public participation which has enhanced partnerships with communities and other lead agencies, thus creating more space for wildlife through establishment of community conservation sanctuaries. Due to my efforts in ensuring compliance with the national and international environmental statutory requirements, KWS won the coveted Company of the year Award (COYA) consecutively for two years.

SENIOR SCIENTIST (EIA), KENYA WILDLIFE SERVICE (KWS)

2000 - 2009 Responsible for ensuring compliance with EMCA, 1999 regulations, and guiding the organization towards leadership in environmental management and corporate social responsibility.

Accomplishments

KWS and donor funded conflict resolution and tourism investment projects were subjected to EIA and approved for implementation. This led to significant reduction of human wildlife conflicts, improved working relations with stakeholders and enhanced livelihoods.

SENIOR BIODIVERSITY PLANNER, KENYA WILDLIFE SERVICE (KWS)

1998 - 2000 Responsible for coordinating preparation of **integrated management plans** for Parks and Reserves, implementation of EIAs and formulation of policy and wildlife conservation strategies

Accomplishments

Effective negotiations on memoranda of understanding (MOUs) between KWS and the local County Councils for managing wildlife in the national reserves. This enhanced stakeholder interest and skills for managing wildlife outside protected areas.

RESEARCH SCIENTIST, KENYA WILDLIFE SERVICE (KWS)

1985 - 1993 Responsible for ecological surveys and monitoring, animal census, community-wildlife interactions and conflicts resolution studies.

Accomplishments

Wrote research papers that justified the establishment of the Problem Animal Management Unit (PAMU), a KWS human-wildlife conflict resolution response team.

AGRO-FORESTRY RESEARCH OFFICER IN KITUI, AND AGRO-FORESTRY CENTRE MANAGER, MINISTRY OF ENERGY AND REGIONAL DEVELOPMENT, KITUI AND KISII COUNTIES

1985 - 1993 Mobilizing and coordinating rural communities in tree planting programs, renewable energy projects (making energy saving cook stoves and making of charcoal briquettes).

Accomplishments

Increased on-farm tree cover at the rural household levels, minimizing dependence on natural vegetation and containing land degradation levels in Eastern and Western parts of Kenya.

SOCIAL RESPONSIBILITIES

- Chairman Jesus Hobbs Hope Home and Children School in Kitengela Kajiado County
- Vice Chairman, Greater Ongata Rongai Residents Welfare Association (GORRWA).
- President Nominee Rotary Club of Kiserian (RCK).
- Past Chairman, PCMF Langata PCEA Church, Deacon, Mbagathi Outreach District and currently the Treasurer, PCMF Langata PCEA Church.
- Chairman Laiser Community Estate Security Committee, Ongata Rongai.
- Chairman, SMART Group Welfare Association, Rongai.

EDUCATION

- 2006 - 2008 **Doctor of Philosophy (PHD) in Arts in Hotel Management and Tourism**, Title of thesis: *"Effectiveness of EIA in Managing Tourism Generated Waste within Wildlife Conservation Areas"*, Washington International University, USA. My PhD thesis has been instrumental in guiding the development of KWS Waste Management Policy and technical guidelines for KWS.
- 2004 **International Diploma, Environmental Management**, Galilee College, Israel.
- 1993 - 1994 **Master of Science (MSc) Environmental Impact Assessment** Title of thesis: *"The role of EIA in resolving Human- elephant conflicts in Kenya"*, University of Wales, UK
- 1987 - 1988 Post Graduate **Diploma, Rural and Land Ecology Survey**, ITC, Netherlands, and several certificate courses
- 1979 - 1982 **Bachelor of Science (BSc)-Botany, Zoology & Chemistry** Punjab University, India.

OTHER PROFESSIONAL TRAINING

- 2010
- 2009
- 2000
- 2000
- 1999
- Finance Training for Non Finance Managers held at KWS between 9th and 11th February, 2010.
 - Leadership and management workshop held at PCEA Hostel, Nairobi West in December, 2009
 - Strategic Environmental Impact Assessment Course held in Hong Kong and organized by the International Association for Impact Assessment (IAIA), June 2000.
 - Environment in EC Development and Economic Cooperation workshop at Holiday Inn, Nairobi between June 13 and 16, 2000. The workshop focused on Environmental Analysis, Country Dialogue and Strategic Environmental Assessment.

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1999	<ul style="list-style-type: none"> • Environmental Decision Making workshop held in Glasgow, University of Strathclyde, UK and organized by the International Association for Impact Assessment in June, 1999. • Environmental Management Systems (EMS) Course, held in Glasgow, University of Strathclyde, UK and organized by the International Association for Impact Assessment in June, 1999.
1999	<ul style="list-style-type: none"> • Mutonga Grand Falls EIA Review workshop at Kenya College of Communications Mbagathi, Nairobi, 1998.
1998	<ul style="list-style-type: none"> • The Role of Community in Coastal Forest management Workshop at Lotus Hotel Mombasa, 1998.
1998	<ul style="list-style-type: none"> • KWS/UNESCO Workshop on Community Participation in Planning and Management of Amboseli Biosphere Reserve, Namanga River Hotel 1998.
1996	<ul style="list-style-type: none"> • Integrated Planning workshop for Mwea National Reserve and the environs held at Masinga Lodge, 1996.
1996	<ul style="list-style-type: none"> • Gender Awareness and Planning workshop held at Naivasha and facilitated by the Center for Women Studies and gender analysis, Egerton University, Njoro-Kenya, 1996.
1995	<ul style="list-style-type: none"> • Participatory Rural Appraisal (PRA) workshop at Naivasha conducted by Egerton University, 1995.
1995	<ul style="list-style-type: none"> • Integrating Research findings into Planning, Lake Nakuru National Park case study, 1995.
1992	<ul style="list-style-type: none"> • Communication Skills Course at the Agricultural Information Center-Kabete, 1992.
1992	<ul style="list-style-type: none"> • Senior Personnel Management Course by Personnel Management Consultants, 1992.
1990	<ul style="list-style-type: none"> • Protected Area Management Course by IUCN at Mweka College of Wildlife, Tanzania, 1990.
1988	<ul style="list-style-type: none"> • District Officers Course at the Administration Police Training College (APTC), 1988.
1988	<ul style="list-style-type: none"> • Wildlife Management Course at the Wildlife Management institute, Naivasha, 1988.
1984	<ul style="list-style-type: none"> • Fuel wood Conservation Workshop at Homa Bay by Kenya Energy Non-Governmental Organization (KENGO), 1984.
1984	<ul style="list-style-type: none"> • Renewable resources as alternative source of energy in the developing countries workshop held at Jacaranda hotel, Nairobi by the USAID, 1984.

RESEARCH INTERESTS

- 1) Ecological Surveys
- 2) Human Wildlife Conflicts
- 3) Habitat restoration
- 4) Agroforestry and renewable energy
- 5) Climate change
- 6) Environmental and social impact assessment
- 7) Biodiversity Conservation
- 8) Resource efficiency and pollution prevention
- 9) Environmental sustainability
- 10) Climate Risk assessment

KEY PROFESSIONAL SKILLS

- Design, implementation, monitoring and evaluation of project/programs
- Data collection and analysis
- Report writing, Review and presentation
- Team work, attention to detail and good interpersonal skills
- Organization and facilitation of stakeholders' workshops and meetings
- Proficiency with Microsoft Office Suite Applications (Word, Excel, PowerPoint, Project)
- Communication skills
- Advocacy
- Community empowerment

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- Stakeholder consultation and participation skills
- Environmental management
- Reviewing EIA reports for compliance with statutory requirements
- Disaster, risk assessment and baseline studies
- Environmental impact assessment and planning processes
- Lecturing and supervision of students

SELECTED RESEARCH PROJECTS AND CONSULTANCIES (PROJECT LEADER)

2023	Lead Consultant in the preparation of Nyekweri Kimintet community forest conservation trust Management Plan 2023 – 2028 to enhance social, environmental and climate sustainability
2023	Lead Consultant in the preparation of Enarau Coservancy Management Plan 2023 – 2028 enhance social, environmental and climate sustainability
2023	Lead Consultant in the preparation of ORPUA Mara Management Plan 2023 – 2028 enhance social, environmental and climate sustainability
2023	Environmental Impact Assessment (EIA) For Establishment of Lion Guardians Limited Research Center in Eserenkei group ranch Kajiado County, Kenya
2023	Strategic Environmental and Social Assessment (SESA) for Olgulului – Olorashi Group Ranch (OOGRL) land use and Land Sub division plan with special focus towards low carbon emission.
2023	Strategic Environment and social Assessment (SESA) for Amboseli Ecosystem Management Plan (AEMP) 2020 – 2030
2022	End term Evaluation for the Green horticulture at Lake Naivasha (GOALAN Project) Supported by WWF Kenya in collaboration with Blueprint strategic advisors Limited.
2020	Lead Wildlife Expert in the preparation of the Amboseli Ecosystem Management Plan 2020 – 2030
2020	Lead Expert in the Strategic Environmental Assessment (SEA) of the Amboseli Ecosystem Management Plan 2020 - 2030
2018	Environmental Impact Assessment (EIA) of Oloolua Community Forest Association Fencing Project Supported by Institute of Primate Research – National Museums of Kenya
2017	played a key role in initiating the ISO 26000 process that effectively enhanced the social responsibility of KWS.
2016	Wildlife and tourism expert for the Environmental and Social Impact Assessment of the Standard Rail Gauge (SGR) being carried out by AWEMAC
2015	Consultant specifically handling agriculture, livestock and wildlife sectors during the preparation of Community Development Action Plans for Shimba Hills Water Tower, commissioned by the Kenya Water Tower Agency.
2015	Standard Railway Gauge Consultant responsible for identifying and developing mitigation measures for impacts of the project on protected areas affected (Tsavo East and Nairobi National Parks).
2012 - 2015	As a member of Kenya Bureau of Standards Technical Committee involved in developing international standards in the Environment sector, have in particular contributed in the development of the ISO standard on bioenergy.
2015	EIA Lead consultant on several infrastructural development projects including (Eco lodges, roads,

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	buildings, tented camps, electric fences) in ecologically sensitive areas and proposed conservancies within National Parks, Reserves and private lands.
2013	Gazetted as an Environmental Inspector by the Director General, National Environment and Management Authority in Exercise of the powers conferred upon him by Section 117 of the Environmental Management and Co-ordination Act (Gazette Notice No, 5781 dated May 3, 2013.
2005 - 2009	Lead consultant in Strategic Environmental Impact Assessment (SEA) for the proposed AMREF, European Union funded Water, Sanitation and Hygiene Programme in Makueni, Kitui, Kilifi (Kaloleni and Bamba), Malindi and Kajiado (Loitokitok and Mashuru) Counties, Kenya
2009 - Present	As a member of the Environment Institute of Kenya (EIK) and initial founder member of the professional body, I have and continue to make significant professional contributions.
2006	Lead consultant in the development of the EIA Guidelines for the Tourism Sector, commissioned by the Ministry of Tourism and Wildlife.
2003 - Present	As a member of various committees established under EMCA, 1999 have contributed to the development of regulations, preparation of State of Environment Report, and enforcement since I am a gazetted Environmental Inspector.
2003 - Present	Participated in several NEMA task forces and committees including: National Committee on Climate Change, National State of Environment Committee, National Biodiversity Planning Committee, National Wildlife Policy Review Committee, World Environment Day Taskforce, EIA/EA Regulations Review Task force, KWS COYA Committee and National Steering Committee on the GEF Cross Border Biodiversity Project among others.
2003 - Present	Key EIA/EA and SEA facilitator in most NEMA accredited institutions where I continue to enhance capacity for ensuring a "clean and healthy environment for all" through application of environmental sustainability tools.
2002	Key Member of the NEMA task force developing the Strategic Environmental Assessment (SEA) Curriculum.
2002	Participated in the September, 1994 UNEP EIA Capacity needs assessment programme that packaged issues, trends and practice document in 1996 culminating in the final output, the UNEP EIA Training Manual, 2002.
2000	Lead EIA Consultant of all the roads in Kenya Funded by African Development Bank (ADB)
1999 - 2000	Gazetted by the Minister for Environment as a Member of the National Implementation Committee (NIC-EMCA) on Environmental Management and Coordination Act to establish NEMA, 1999-2000.

DEMONSTRATED EXPERIENCE

Task No.	Some Work Undertaken to illustrate Capability to Handle EIA/ ESIA/SEA Tasks
1	<p>Environmental Impact Assessment Study Reports (EIASR) for Mau Summit, Kisumu Road, 2004 and the EIA of Nanyuki Isiolo and Merile Road for the Government of Kenya, supported by the African Development Bank (ADB) through the Ministry of Roads, Public Works and Housing.</p> <p>Position Held-EIA Specialist</p> <p>Activities undertaken involved: Field visits, data collection, data analysis, consultation and public participation, administration of questionnaires, report drafting, inputting of stakeholder comments and final report compilation. Roads Engineers were trained on EIA and skills gained helped them to incorporate environmental concerns in the road designs. The Roads 2000 Programme supported by the ADB was a beneficiary of my EIA input in the Roads Sector in Kenya.</p>

2	<p>Community Participation and involvement in Ngare –Ndare Electric Fencing Project, 1991 for Kenya Wildlife service.</p> <p>Position Held: Stakeholder involvement and Community Expert</p> <p>Activities performed: Identifying the various communities along the proposed electric fence alignment, stakeholders</p>
3	<p>The Role of EIA in Resolving Human- Elephant Conflicts in Laikipia District, Kenya, 1994.</p> <p>This was my MSc in EIA thesis to satisfy the requirements by the University of Wales, Aberystwyth, UK under supervision of Prof Peter Wathern. My thesis formed the basis upon which KWS developed strategies for mitigating human-wildlife conflicts.</p>
4	<p>The EIA of the Proposed Kimana Community Wildlife Sanctuary, Kajiado District Kenya, 1995 commissioned by USAID through KWS.</p> <p>Activities involved: sensitizing local people on the importance of wildlife conservation, creating awareness on why conservation as a land use in dry areas is superior to agriculture, empowering communities to make informed and sustainable decisions, creating opportunities for self-reliance, sense of belonging and ownership. These activities ensured that the local people benefitted from wildlife and helped in changing their perception that wildlife belonged to the government and had no value to them.</p>
5	<p>Environmental Impact Statement of the Proposed Imenti Forest Community Project, Kenya 1995 supported by the World bank through KWS.</p> <p>Activities involved: educating local people on the provisions of the Wildlife Conservation and Management Act 1989 that had scrapped compensation for crops damaged by wildlife. Local people are farmers and elephants invaded their crops and the escalated human elephant conflicts in the area were not only contributing to food insecurity but human security as well. Erection of the fence stopped forest elephants from accessing the farms and this enhanced food production and minimized their spearing in retaliation.</p>
6	<p>The EIA of the Proposed Kimana/Namelog Community fencing Project, Kajiado District, Kenya, 1996 supported by the African Conservation Center (ACC).</p> <p>Activities involved: sensitizing local people on the importance of wildlife conservation, creating awareness on why conservation as a land use in dry areas is superior to agriculture, empowering communities to make informed and sustainable decisions, creating opportunities for self-reliance, sense of belonging and ownership. These activities ensured that the local people benefitted from wildlife and helped in changing their perception that wildlife belonged to the government and had no value to them.</p>
7	<p>Participated in the Environmental Impact Assessment Study Report (EIASR) for the proposed Electric fence and Associated Civil Works for the Mount Kenya East Pilot Project (MKEPP). The project was executed by Kamfor Co Ltd financed through KWS by Global Environment Facility (GEF).</p> <p>Role Played: Reviewed the report and submitted Lead Agency (KWS) comments to NEMA to guide decision.</p>
8	<p>Strategic Environmental Assessment (SEA) of the AMREF Kenya Water and Sanitation (WASH) Programme, 2005.</p> <p>Position Held: Lead Expert</p> <p>Activities involved: Mobilising, educating and training stakeholders and AMREF staff on the legal requirements of the newly enacted Environmental Management and Coordination Act (EMCA) of 1999, convening consultation workshops to involve stakeholders in the identification of environmental issues generated by the WASH programme activities, consultation with the National Environmental Management Authority (NEMA), drafting and reviewing the SEA report with the stakeholders and compilation of the final report for submission to NEMA for approval and certification. This SEA formed the basis upon which AMREF Kenya institutionalized environmental impact assessment and environmental audit (EIA/EA).</p>

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9	<p>Effectiveness of EIA in Managing Tourism Generated Waste within Wildlife Conservation Areas in Kenya. This was my PhD thesis project to satisfy the requirements of Washington International University, USA, 2008. This document has been instrumental in guiding the development of KWS Waste Management Policy and strategy.</p>
10	<p>Environmental and Social Impact Assessment Study Report for the Proposed Lot 3 Annuity Road Project for Rhamu-Mandera (75 Km) Road Located in Mandera County, Kenya.</p> <p>Position Held: Tourism and Wildlife Resources Lead Expert</p> <p>Activities involved: mapping out tourism and wildlife resources within the project area, identifying road project impacts on the resources and suggesting mitigation measures and developing environmental management and social impact mitigation plan (EMSIMP). Africa Waste and Environment Management Center (AWEMAC) were the main consultants and the assignment was financed by Kenya National Highway Authority (KeNHA) in May, 2017.</p>
11	<p>Environmental and Social Impact Assessment Study Report of the Proposed Lot 3 Annuity Road Project for Modogashe-Habasweini-Samatar Road (68km) located in Isiolo and Wajir Counties, Kenya</p> <p>Activities involved: mapping out tourism and wildlife resources within the project area, identifying road project impacts on the resources and suggesting mitigation measures and developing environmental management and social impact mitigation plan (EMSIMP). Africa Waste and Environment Management Center (AWEMAC) were the main consultants and the assignment was financed by Kenya National Highway Authority (KeNHA) in May, 2017.</p>
12	<p>Community Development Action Plan for Shimba Hills Water Tower, commissioned by Kenya Water Towers Authority, 2015.</p> <p>Position: Wildlife, Agriculture and Livestock Expert</p> <p>Activities involved: Identification of improved agriculture and livestock production systems that could be promoted through various inputs such as identification of markets; preparation of training materials for use by CBO's and/or government agencies concerning suitable land use, improved seed varieties, fertilizer and pest management techniques, development of water sources and irrigation systems for small scale gardens, fisheries, and poultry production systems. Other activities included consulting key stakeholders, reviewing existing data, report writing and participating in stakeholder consultation workshops. The final report made recommendations on community empowerment, poverty alleviation, and role of communities in conserving natural resources with the realization that they form the backbone of their livelihoods.</p>
13	<p>Environmental and Social Impact Assessment Study Report for the Proposed Mombasa-Nairobi Standard Gauge Railway Project The ESIA, carried out by AWEMAC in 2012 is Vision 2030 Project and was financed by Kenya Railways Corporation and China Road and Bridge Corporation.</p> <p>Role and Activities: I organized participation of KWS relevant departments during the consultation and public participation meetings, reviewed report and submitted Lead Agency comments to NEMA. Realistic mitigation measures of the project on wildlife were discussed and agreed.</p>

AWARDS

2009	Head of State Commendation (HSC) for significant contribution towards capacity building in the field of Environmental Impact Assessment (2009)
1999 - 2000	Participated in the 1999 Glasgow International Association for Impact Assessment (IAIA) Conference and awarded a certificate of recognition for outstanding contributions. Also Participated in the 2000 Hong Kong IAIA Conference and awarded a certificate of qualification in Strategic Environmental Assessment.

SELECTED PUBLICATIONS, RESEARCH PAPERS & PROJECTS

- Irigia, B.K, 1987: The Debarking effects of Giraffes on the vegetation of Lake Nakuru National Park.
- Irigia et al, 1987: The Role of Aerial Photographs in the Management of Protected Areas. (Case Study of Namnao National Park, Thailand, ITC Journal.
- Irigia B.K, 1989: The Wildlife Resources of the Nguruman, KWS, Library.
- Irigia, B.K, 1990: Effects of Elephants on Combretum molle and Acacia gerardii in ol- Arinyiro, Ranch-Laikipia.
- Irigia, B.K, 1990: Elephant Crop Raiding Assessment in Ngarua-Division of Laikipia District.
- Irigia, B.K, Thouless C. 1990: An Evaluation of the Southern Laikipia Ranches/Farms and their importance to elephants conservation.
- Irigia B. K., Hoare R. E 1990: Observations on Crop Raiding, Fence design and Elephant behaviour in Laikipia District in Panchydem, 1990.
- Irigia B.K 1991: Ngare Ndare EU supported Electric Fencing (Community Participation and Public Relations).
- Irigia B. K 1992: Elephant Crop Raiding Assessment in Laikipia District.
- Irigia B. K, 1992- The role of Laikipia Elephant Research in Community Wildlife Service.
- Irigia B. K., Kagiri, J. W, 1992: Kiamariga-Raya Fence Project in Mutara Location, Laikipia District (KWS Library).
- Irigia, B. K. 1992: Aberdare-Laikipia Elephant Movements in Relation to salt licks and their effects on human/agriculture. Will electric fencing be a solution?
- Irigia, B.K, 1994: The Role of EIA in Resolving Human-Elephant Conflicts in Kenya-The case study of Laikipia District (MSc Thesis, Wales University, UK).
- Irigia B.K. 1995: The EIA of the Proposed USAID supported Kimana Wildlife Sanctuary-Kajiado, Kenya, Ecotourism Journal, 1998.
- Irigia B.K., Wekesa C. Kagiri J., 1995: Wildlife Utilization Policy Guidelines, KWS Archives.
- Irigia B.K., Manegene S.M. 1995: Environmental Impact Statement of the proposed Imenti Forest Community Fence Project.
- Irigia B.K., Manegene S.M., 1995: Environmental Impact Assessment of the Proposed Mount Kenya Fence Project.
- Irigia B.K., et al, 1995: Community Involvement in Biodiversity Conservation in Leroghi-Kirisia Conservancy (A Feasibility Study in Samburu District- Kenya).
- Hamisi M. Irigia B.K., 1996: The EIA of the Proposed World Bank supported Kimana-Namelog Community Fencing Project.
- Irigia B.K., Kariuki J.M., 1996: KWS Strategy for Conduct and Use of Environmental Assessments.
- Irigia B.K., Koderia C. 1996: The EIA of the proposed Hell's Gate 320KV Power Line.
- Irigia B.K., Koderia C., 1996: The EIA of the Proposed Tsavo East National Park Bore Hole Drilling Project.
- Gathaara G. Irigia B.K, Mukungi F., 1996: The EIA of the Proposed Kibwezi Forest Eco tourism Development.
- Irigia, B.K., 1999- The Role of EIA in resolving conflicts relating to sustainable resource management (A paper presented at the IAIA Conference at Strachlyde University, Glasgow, UK in IAIA Journal, 1999).
- Irigia, B.K, 2000: Towards Environmental Governance and Sustainable Management in Kenya (A paper presented at the IAIA Conference in Hong Kong).
- Irigia, B.K, Kuloba, B. , 2001: EIA of the Proposed UNDP Supported Mt Kenya East Beera Community Fencing Project.
- Irigia B.K, et al., 2002: EIA of the Proposed Nanyuki-Isiolo Road Rehabilitation Project, supported by the Ministry of Roads and Public works.

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- Irigia B. K, et al., 2003: EIA Project Report of the Proposed Isecheno Bandas Eco-tourism project, Supported by Eco Tourism Society of Kenya
- Irigia B. K, et al, 2004: Environment Audit for all Cooper Motor Corporation Facilities (CMC) in Kenya.
- Irigia B.K.,et al, 2004: Role Play Simulation of Land Use change in Kenya-Climate-land Interaction project (CLIP)Working paper, Michigan State University Board of Trustees Publication.
- Irigia B.K, et al, 2005-2008: Review of Several Environmental and Social Impact Assessment Reports for KWS and other stakeholders.
- Irigia B.K, 2006: Environmental Appraisal for the proposed Fuel tank Location, a KWS internal report.
- Irigia B.K, 2006: EIA Project Report for the Proposed Mwea National Reserve Borehole, a KWS Internal Report.
- Irigia B.K, et al, 2008: Environmental Impact Assessment Project Report for the Proposed Maktau-Ndii Electric fence, a KWS Compliance report to NEMA.
- Irigia B.K, 2008: Investigations into the Effectiveness of Environmental Impact Assessment (EIA) in the Management of Tourism Generated Waste within Wildlife Conservation Areas in Kenya (PhD Thesis, Washington International University, USA).
- Washington-Ottombre, C., Irigia B. et al, 2009: Using a Role-playing game to inform the development of land-use models for the study of a complex socio-ecological system, published by Elsevier Journal

REFEREES

1. Prof. John N. Muthama , PhD
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(Wangari Maathai Institute)
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Nairobi, Kenya
Email: jmuthama@uonbi.ac.ke
2. Dr. Joseph Misati, PhD
Chairman, Department Environment and Community Development
The Cooperative University of Kenya
P.O. Box 24814-00502
Nairobi, Kenya
Email: jakuma@cuk.ac.ke
3. Prof. Jacob Kibwage
Managing Director
AWEMAC
PO Box 14365-00100
Nairobi, Kenya;
Email: kibwagejk@gmail.com
4. Mr. Francis Mwaura
Senior Environmental Planning and SESA Consultant
Haeginia Environmental Consultants
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GOD'SWILL BARAKA SEWE, - Curriculum Vitae

Updated: Jan 01, 2024

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CAREER PASSION

To work towards reducing rural poverty by empowering the local communities through improved sustainable livelihoods that focus on integrating environment and natural resources.

CAREER PROFILE AND COMPETENCIES

- In 2018 I was nominated as the best Interface and interaction Designer "A Design Awards".
- I've served as creative director and a brand strategist for busy International Technology agency with over \$8.2M a year in annual revenue and 110 employees. I've raised revenue by 40% in 14 months through winning and building unbreakable relationships with more than 15 new key clients.
- Managed all aspects of campaign design, including innovation, development, and implementation. Used agile workflow to cut process waste by 45%.
- Drove the best-in-class media strategy to gain insightful performance data across nine marketing channels within a myriad of multivariate testing to identify profitability and scalability for each channel. Directly led marketing strategies and consistently delivered dramatic efficiency increases to enable full-scale digital marketing optimization.
- Exposed to design, implementation, monitoring and evaluation of projects and programs in climate change adaptation, plant health regulations, agri-value chains, sustainable policies, institutions, and investments in agriculture and rural development.
- I was instrumental in establishment of several conservancies including among the Maasai Mara Ecosystem including Siana, Olchoro-Oiriwa, Lemek, Olkinyei, ORPUA Mara Conservancy, Enarau Conservancy, Nyekweri Kimintet Community Forest Conservation Trust, Olerai Conservancy and Pardamat Conservation Area.
- Experience in the field of Tourism, Wildlife Management, environmental management, Disaster Risk Management, Climate change mitigation, adaptation and resilient mechanisms, and Sustainable Development.
- Management experience in environmental policy formulation, preparation of general management plans for parks and reserves, based on the IUCN Protected Area Planning Guidelines; climate action plans, Ecosystem Management Plans, ecological assessments, assessments of tourism impacts, tourism planning and management, wildlife management strategies, tourism security and safety, management of recreational areas to inform decisions on project proposals inside ecologically sensitive areas.
- Demonstrated the ability to design, implement, and maintain GIS systems that meet Environmental protection, urban planning and, emergency management needs. This involve streamlining data collection processes, improving data accuracy, or enhancing decision-making through spatial analysis.

PROFESSIONAL EXPERIENCE & ACCOMPLISHMENTS

TOURISM AND WILDLIFE EXPERT, PLANNING, ENVIRONMENTAL AND CONSULTANCY SERVICES (PECS) LIMITED, KENYA

2023 Nov - Present Coordinated preparation of park plans using the PAPF framework, ensured enforcement of environmental standards for sustainable wildlife conservation and maintaining cooperation with partners, strengthening institutional capacity while retaining financial stability.

Accomplishments

Application of sustainability tools and preparation of ecosystem management plans or general management plans calls for consultation and public participation which has enhanced partnerships with communities and other lead agencies, thus creating more space for wildlife through establishment of community conservation sanctuaries.

CREATIVE DIRECTOR, PULLOVA TECHNOLOGIES INC. WA, USA

2021 – March 2023 Managed and Coordinated Pullova's brand, created and distributed marketing materials, maintained online presence, Developed Users Interface and collaborated with leadership to achieve organizational goals.

Accomplishments

Increased brand awareness by 40% and generated \$8.2 million a year in additional revenue through a comprehensive rebranding initiative.

PRODUCT DESIGNER (UI/UX), PULLOVA TECHNOLOGIES INC. WA, USA

2020 As a Product designer I wore multiple hats; conducting user research to understand application needs, crafting intuitive UIs and UXs, collaborating with cross-functional teams, iterating based on testing, and staying up-to-date with industry trends.

Accomplishments

Spearheaded the redesign of a complex feature, successfully navigating stakeholder interests and delivering a solution that met both users' needs and business objectives.

EAST AFRICA REGIONAL COORDINATOR, SWIFT ROBOTICS AI EA LIMITED, NAIROBI OFFICE

2019 As a regional AI coordinator, I fostered business development, supported sales and marketing, managed projects, engage with the local AI ecosystem, and analyze regional data to contribute to strategic decision-making.

Accomplishments

Developed and delivered a series of AI workshops for local businesses, attracting over 100 participants and fostering AI adoption within the East African region.

MULTIMEDIA DESIGNER, SUREWELLNESS HEALTH REFFERAL, WA, USA

2018 - 2019 Responsible for conceptualizing, crafting, and editing visual content across various formats while collaborating with the team and staying abreast of design trends.

Accomplishments

Developed a strong understanding of design principles and software through self-directed learning and mentorship from senior designers.

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GRAPHIC DESIGNER, PULLOVA TECHNOLOGIES INC. WA, USA

2018 Responsible for conceptualizing, crafting, and editing visual content across various formats while collaborating with the team and staying abreast of design trends.

Accomplishments

Developed a strong understanding of design principles and software through self-directed learning and mentorship from senior designers.

INTERN, SWIFT ROBOTICS AIEA LIMITED, CHENNAI OFFICE

2018 Aug – 2018 Nov Assisted with data and models, supported projects, and continuously learned new things while networking and seeking to contribute.

Accomplishments

Successfully collected, cleaned, and pre-processed a large dataset for a sentiment analysis project, enabling further analysis and model development

GRAPHIC DESIGNER, KEYDIYAH DESIGN, KENYA

2018 - 2019 Responsible for conceptualizing, crafting, and editing visual content across various formats while collaborating with the team and staying abreast of design trends.

Accomplishments

Developed a strong understanding of design principles and software through self-directed learning and mentorship from senior designers.

DESIGN TRAINEE, MEDIAMAX NETWORK LIMITED, KENYA

2015 Oct – 2016 Jan Assisted with crafting, and editing visual content across various formats while collaborating with the team and staying abreast of design trends.

Accomplishments

Contributed to a positive and collaborative work environment by actively seeking feedback and learning from colleagues.

SOCIAL RESPONSIBILITIES

- Board Member, Ghetto Evolve Community based Organization, Mathare
- Administrative Official, Ajax Rock City Football Club, Mathare
- Secretary, worthy vessels foundation.
- Board Member GREWESCOF CBO, Bungoma.
- Non-Board Member O'motherlands Committee on climate action

EDUCATION AND PROFESSIONAL TRAINING

2022	BSc in Geographic Information Science and Technology , Ongoing BSc course in Geographic Information Science, Technology and Geospatial Intelligence, University of Alaska Fairbanks, Canada.
2021	Diploma in Business Information Technology , The Management University of Africa, Nairobi, Kenya
2020	Digital Skills: Artificial Intelligence , Future Learn, Accenture

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2019	Certificate in Project Management , Kenya Institute of Management, Nairobi, Kenya
July 2018	Fundamentals of Digital Marketing , Google Digital Unlocked
2018	Introduction to Robotic Application Industry 4.0 professional Course , Swift Robotics, Nairobi, Kenya
2017 - 2020	Higher National Diploma (HND), Artificial Intelligence, Robotics and Data Science , Deep Mind Institute, Chennai, India.
2013 - 2014	Motor Vehicle Mechanics Grade iii , Grand Auto Tech Garage, Nairobi, Kenya.

RESEARCH INTERESTS

- 1) Ecological Surveys
- 2) Human-centered design (HCD)
- 3) Design for sustainability
- 4) Human Computer Interaction (HCI)
- 5) Human Wildlife Conflicts
- 6) Habitat restoration
- 7) Agroforestry and renewable energy
- 8) Ethical and Social Implications of GIS
- 9) Geospatial Data Analysis
- 10) Climate change
- 11) Environmental and social impact assessment
- 12) Biodiversity Conservation
- 13) Resource efficiency and pollution prevention
- 14) Environmental sustainability
- 15) Climate Risk assessment
- 16) Geographical Information Systems
- 17) Project Management
- 18) Robotics
- 19) Deep Learning
- 20) Sustainable Product Design
- 21) Nanotechnology

KEY PROFESSIONAL SKILLS

- Design, implementation, monitoring and evaluation of project/programs
- Proficient in GIS software like ArcGIS, QGIS, and ERDAS Imagine
- Excellent data management and visualization skills
- Strong understanding of spatial data analysis techniques
- Proficiency in Graphic Design (Adobe Creative Suite)
- Proficiency in Web development (HTML, CSS, JavaScript, PHP, CMS like WordPress)
- Photography skills
- Excellent communication and interpersonal skills
- Report writing, Review and presentation
- Team work, attention to detail and good interpersonal skills
- Organization and facilitation of stakeholders' workshops and meetings
- Proficiency with Microsoft Office Suite Applications (Word, Excel, PowerPoint, Project)

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- Communication skills
- Advocacy
- Community empowerment
- Stakeholder consultation and participation skills
- Environmental management
- Reviewing EIA reports for compliance with statutory requirements
- Disaster, risk assessment and baseline studies
- Environmental impact assessment and planning processes

SELECTED PUBLICATIONS, RESEARCH PAPERS & PROJECTS

Sewe G.B, et al, 2023: Development of Pardamat Conservation Area Management plan report

Sewe G.B, et al, 2023: Strategic Environmental Assessment (SEA) for Ogulului Olorashi Group Ranch (OGR) Land use and Subdivision Plan (LUSP) report.

Sewe G.B, et al, 2023: Strategic Environmental Assessment (SEA) for Amboseli Ecosystem Management plan (AEMP) report.

Sewe G.B, et al, 2023: Development of Olerai Conservancy Management plan report

Sewe G.B, et al, 2023: Development of Enarau Conservancy Management plan report

Sewe G.B, et al, 2023: Development of Orpua Mara Conservancy Management plan report

Sewe G.B, et al, 2023: Development of Nyekweri Kimintet Conservancy Management plan report

Dr. Elijoy Micheni, Sewe G.B, et al, 2023: Predictive Analytics and Artificial Intelligence in Blended Learning: A New Dawn for Institutions of Higher Learning

SELECTED RESEARCH PROJECTS AND CONSULTANCIES

2023	Lead tourism and wildlife expert in the preparation of Pardamat Conservation Area Management Plan 2023 – 2028 to enhance social, environmental and climate sustainability
2023	Lead tourism and wildlife expert in the preparation of Olerai Conservation trust Management Plan 2023 – 2028 to enhance social, environmental and climate sustainability
2023	Lead tourism and wildlife expert in the preparation of Nyekweri Kimintet community forest conservation trust Management Plan 2023 – 2028 to enhance social, environmental and climate sustainability
2023	Lead tourism and wildlife expert in the preparation of Enarau Coservancy Management Plan 2023 – 2028 enhance social, environmental and climate sustainability
2023	Lead tourism and wildlife expert in the preparation of ORPUA Mara Management Plan 2023 – 2028 enhance social, environmental and climate sustainability
2023	Tourism & GIS Expert Strategic Environmental and Social Assessment (SESA) for Olgulului – Oolorashi Group Ranch (OGR) land use and Land Sub division plan with special focus towards low carbon emission.
2023	Tourism and Wildlife expert Strategic Environment and social Assessment (SESA) for Amboseli Ecosystem Management Plan (AEMP) 2020 – 2030

REFEREES

1. Dr Bernard Kaaria Irigia, HSC
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CURRICULUM VITAE
Mr. Nicholas Bunyige

Nicholas Bunyige: Mr. Bunyige holds Masters Degree in Environment Planning and Management from the University of Nairobi ,and trained in Geographical Information Systems from the Regional Center for Mapping for Development (RCMRD), Remote Sensing and Food Security from FAO, REDD+ and Climate Change Training from UNFCC e-learning Center, he is also trained in Ontario Wetland Evaluation, Species at Risk Assessment, Bird Survey, and Natural Heritage Environment Impact Assessment Ontario Canada. He is also trained in Solid Waste Management, Environmental Flows Assessment and Environmental Social Framework from World Bank. He holds a Bachelor of Arts Degree in Humanities from the Catholic University of Eastern Africa, and Arrupe Jesuit University in Zimbabwe. He was involved in development of Strategic Plans for LANABLA, LANABWRUA AND MAMACOF. Mr. Bunyige was also involved in Baseline Surveys for Forestry Irrigation Climate Change and Green Energy Project for the Kenya Forest Service in Gatanga Sub-County, Ithanga, Murang'a County, and in Nyando Sub-county, Kano East as a team leader. He is also currently undertaking Socio-economic surveys for forest adjacent communities focusing on climate change and energy use in Kitunga Forest Station in Mau Complex, Tinderet, and Nandi Forest for the Green Belt Movement. He has also completed similar studies this year for Marania, Ngaya forests in Meru County, and Kiera Forest in Tharaka Nithi County. Mr. Bunyige has also been trained in GIS Mapping of Resources and Development of Maps using ArcGIS, QGIS, ENVI and ERDAS Imagine, Digitization and coding of Data collection tools on mobile platform using Kobokit, Arcgis 123, and Survey to go etc. His experience in data collection will be useful in this study as he will be able to help in questionnaire design, digitization, monitoring and quality control.

Mr. Bunyige has also worked in Tea, and Coffee farms for Sasini and KTDA in over 12 factories in various parts of the country and is conversant with Fair Trade among other certification standards. He has also had useful experience in flower farms in Bendol farm and James Finlay in Kericho.

He also have useful working experience gained from working with Development organizations in Kenya, Uganda, Tanzania, Rwanda, Ethiopia, Zimbabwe, Chad, South Sudan and Finland. Nicholas has experience in participatory development approaches both for rural and urban community based projects in development.

Education:

2019: M.A. Environmental Planning and Management, University of Nairobi

2000: BA, Upper Second Class Honors Humanities, Catholic University of Eastern Africa.

1995-98: Arrupe Jesuit University, Training in Humanities, Harare Zimbabwe

Other Training

2016: Geographical Information Management Systems, from Regional Center for Mapping of Resources for Development

2017: REDD+ and Climate Change in Health, Children, and Planning from United Nation Forum for Climate Change; UNITAR/UNFCC e-learning Center

2018: Gender and Environment, Gender Matters, Conflict and Conflict Analysis: UNITAR/UNFCC e-learning Center

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2018:	Remote Sensing and Food Security training from FAO e-learning Center/Orbital Africa
2019:	World Bank Environmental Social Framework: Environmental Social Safeguards: WorldBank
2020:	Integrated Municipal Solid Waste Management/Environmental Flows Assessment/Digital Agriculture : WorldBank

Work:

2014-2023: PECS LTD Environment and GIS

2004-2008: Kamfor Company Limited. Consultant in Environment

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Work Experience

No.	Date from to	Company Reference and Contact details	Position	Description
1	August 2022	Strategic Environmental Assessment for Olgulului Olororrashe Group Ranch in Amboseli Ecosystem	Assistant Team Leader/GIS expert	Review and Subjecting Olgulului Olororrashe Group Ranch Sub-division Scheme 2019 to Environmental Social Impact Assessment and propose mitigation measures and environmental social framework before it is gazetted for adoption. Assessing how the plan will impact on pastoralism and conservation in Amboseli National Park.
2	July 2022	Danish Refugee Council	Team Leader	Needs Assessment for Plastic Waste Pickers in Nairobi, and Refugee host counties of Machakos and Kajiado. Undertook needs assessments in Kawangware, Kabiria, Kibera, Mathare, Dandora, Mwiki, Githurai, Kayole, Eastleigh, Kitengela, and Ngong town
3	1 st July-Ongoing	LANABWRUA Naivasha	Team Leader	Development of Strategic Plan for 2021-2026, Mapping of Stakeholders, Situation analysis, SWOT and PESTEL, Strategy development using Objective Oriented Tools, Logframe, activities and costing, Finance Strategy, Monitoring and evaluation Framework
4	15 th May-30 th June 2021	Kenya Forest Service	Socio economic Survey/ Resource Mapping Specialist	Review and Development of Participatory Forest Management Programmes for Marania and Ngaya Forests in Meru County, and Kiera Hill in Tharaka Nithi County.
5	July-October 2020	Lake Naivasha Basin Landscape Association/WWF	Team Leader	Development of Strategic Plan 2020-2025, Mapping of Stakeholders, Situation analysis, SWOT and PESTEL, Strategy development using Objective Oriented Tools, Logframe, activities and costing, Finance Strategy, Monitoring and evaluation Framework
6	April-June 2020	Kenya Forest Service	GIS	Documentation of Tree Species and degraded areas in Kiambicho, Kimakia, Wanjere Forest stations in Muranga County. Identification of tree species, literature review, mapping of degraded areas, report writing.
7	January 2020	Vantage Square Development Ltd	Consultation and Public Participation	Environmental Impact Assessment for the Proposed Hotel, Apartments (150), and Supermarket on Garden City Road opposite Roasters Inn off Thika Road
8	February 2020	Feed the Children Kenya	Consultation and Public Participation	Environmental Impact Assessment for the Proposed Water Pan in Kitmany in Waso West in Samburu County
9	November -Dec 2019	Lake Naivasha Basin Landscape/WWF	GIS and Data Collection	Study on Socio-economic Impact of PELIS in Nyandarua Forest, North and South Kinangop Forest Station, and Geta Forest Station. Assessment of the socio-economic impacts of PELIS and preparation of Petition to the government to enhance the programme to improve livelihoods in the area.
10	April-June 2019	Upper Tana NRMP Project	GIS and Land cover specialist/Digitization of data collection tools in mobile kits	Assessed ecological impact and socio-economic impact of wildlife barrier in Mt. Kenya Ecosystem.

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No.	Date from to	Company Reference and Contact details	Position	Description
11	April -June 2019	Kenya Forest Service	Environment and GIS, Digitization of Social Economic Survey tool in Mobile Kits	Review of Participatory Forest Management Plans for Kiambicho, and Karua Forest Station in Murang'a County, Chehe and Zuti in Nyeri County, and Chogoria and Development of PFMP for Munguni Hill in Tharaka Nithi Count
12.	Nov 2018-January 2019	Institute of Primate Research/PECS Ltd Dr. Bernard Kaaria info@pecskenya.com	Environment/GIS	Environmental Impact of Erection of Electric Fence in Ololua Forest
13	Nov-Dec 2018	PECS Ltd/Elegant Company Limited Dr. Bernard Kaaria info@pecskenya.com S Ltd	Environment/GIS	Environmental Impact of Aloe Vera Processing in North Pokot Subcounty, West Pokot County
14	May-August 2018	Vi Agroforestry Mr. Peter Wachira pwachira@vi.agroforestry.org	Environment/GIS Specialist and Trainer Kenya/Tanzania/Designer of Data collection tools, and analysis using Mobile Apps	Baseline on Impact of Wildlife in Serengeti Mara Ecosystem (SEMA) Project in Narok, and Bomet Counties in Kenya, and Bunda, Tarime and Serengeti in Tanzania.
15	March -June 2018	KFS/UTaNRMP Contact: Mr. Paul Njuguna Land and Environment Coordinator utanrmp@gmail.com njugunapmcharia@gmail.com	Formulation of Social Economic Survey using Mobile App/GIS	Development of Participatory Management Plan for Kabage Forest Station

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No.	Date from to	Company Reference and Contact details	Position	Description
16	October 2017- December 2017	Trocaire Kenya. Contact: Mr. Japheth Muli japheth.Muli@trocaire.org	Climate Change and GIS and Trainer	Study on the Effect of Gender, Age, and Ability in Climate change adaptation in Eastern Marginal Farmer Zones in Embu, Tharaka and Kitui Counties
17.	April and May 2016	University of Nairobi/ University of Ghent Contact: Prof. Daniel Olago/ Prof. Dirk Verschuren dolago@uonbi.ac.ke Dirk.verschuren@ugent.be	Environment GIS/CPP Specialist	Environmental Impact Assessment (EIA) of the proposed Deep Challa Drilling Project in Lake Challa, which is supported by International Continental Scientific Drilling Programme (ICDP). Used IFC Environmental and Social Review Procedures.
18.	Sept. – Nov 2015	Water Service Trust Fund Contact: Mr. Kega Muthoni Monitoring and Evaluation Coordinator Isaac.kega@waterfund.go.ke	Assistant Team Leader	Undertook a baseline survey which collected both quantitative and qualitative data of water utilities in Narok County. Set benchmarks for the water utility interventions and also undertook formulation logical framework for the purposes of monitoring and evaluation.
19.	July - October 2015	KWS/IFCMIS Contact: Mr. Philip Wamahiu Integrated Forestry Consultants Forestry.consultancy@yahoo.com	GIS and Environment Specialist	Evaluation and Analysis of Alternative Sources of Energy Production and Consumption around Mt. Marsabit Forest and Design of a Sustainable Supply System. Further developed a workable operation plan and formulated a logical framework for ease of monitoring and evaluation.
20	May – July	KFS/UTaNRMP	Assistant Team Leader	Undertook the review of the Participatory Forest Management Plan for Gatare

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	2015	Contact: Mr. Paul Njuguna Land and Environment Coordinator utanrmp@gmail.com njugunapmacharia@gmail.com		Forest in the Aberdares Water Tower. Strategies included ensuring forest adjacent communities benefit from forest conservation and management, and thus ensure that they are also more responsible in protecting and managing the forest.
21	Jan- March 2015	Contact: Mr. Paul Njuguna Land and Environment Coordinator utanrmp@gmail.com njugunapmacharia@gmail.com	Data Collection and Management	Woody Biomass Survey in 29 River Basins in the upper River Tana Catchment cutting across the counties of Nyeri, Muranga, Embu, Kirinyaga, Meru and Tharaka Nithi. Collected and analysed both quantitative and qualitative data in the 29 basins and came up with recommendations on natural resources
No.	Date from to	Company Reference and Contact details	Position	Description
				management and tree growing in the basins and forests in the catchment to off-set deficits.
	22 March 2014- July 2015	Energy and Environment Partnership Programme/Ministry of Foreign Affairs, Finland Contact: Faith Odongo Deputy Director Ministry of Energy and Petroleum fahamala@yahoo.com	Assistant Project Manager	Efficiency Enhancement and Entrepreneurship Development in Sustainable Biomass Charcoaling in Kenya. The Project involved undertaking a charcoal survey and designing and installing integrated chamber wood retorts at Ministry of Energy and petroleum Energy centers in Nyeri and Meru. The kilns are made of local brick with product gas utilization and distillate removal system, which would be efficient, environmental friendly, affordable to local entrepreneurs and easy to operate and maintain. The kiln uptake will then be up-scaled so that local charcoal producers use efficient charcoal production methods.

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22	Oct – Dec 2014	UTANRMP Contact: Muthoni Livingstone – Project Coordinator Justus Makau – M&E Officer utanrmp@gmail.com	Assistant Team Leader	Baseline Survey for the Upper Tana Natural Resources Management Project (UTANRMP) covering 24 river basins cutting across the counties of Nyeri, Muranga, Embu, Kirinyaga, Meru and Tharaka Nithi. Qualitative and quantitative data collected included that on environmental management and management. Also reviewed natural resources Logical framework formulated during the design stage
23	June – Sept 2014	Green Belt Movement (Kenyan Environmental Organisation) Contact: Mercy Karunditu Deputy Director, Programmes mkarunditu@greenbeltmovement.org	Energy Devices Needs assessment Specialist	Formulation and Development of a roll-out strategy and action plan for Green Belt Movement to upscale its involvement in Energy Efficient Technologies. This off-setting pressure from forests was geared towards by having alternative technologies. The Green Belt Movement is involved in Tree Planting and Forestry Conservation and was started by Prof. Wangari Mathai, Nobel Laureate.
24	May – Aug 2014	Parsons Brinckerhoff, UK/KETRACO, Kenya Contact: Contact: Mark Fraser fraserm@pbworld.com	Environment, IS, and CPP Specialist. Review, transecting and georeferencing of project	Environmental Analysis and Feasibility Study of Transmission lines 50 km, DongoKundu - Mariakani line to evacuate 700 – 800 MW of power from the proposed Liquefied Natural Gas/Compressed Natural Gas plant at Dongo Kundu, Mombasa and the extension of Mariakani sub-station; 520 km, Lamu –
o.	Date from to	Company Reference and Contact details	Position	Description
			affected persons along the transmission line	Kitui - Nairobi East line to evacuate 900 - 1000MW of power at Lamu and 900 – 1000 MW at Mui basin, Kitui. Both Plants will be coal fired and will also include

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				the Nairobi East 400/220 kV sub-station; and Proposed Makindu 400/132 kV substation along the 400 kV Mombasa-Nairobi line. The assignment included assessments of both environmental and social impacts, including possible relocation of persons and their resettlement. AfDB and IFC safeguard policies and guidelines were used
22 May 2011 - Dec 2016	Ministry of Energy Contact person: Ms. Esther Wangombe, Deputy Director, Renewable Energy: emmwangombe@gmail.com	Community Liason		Afforestation of Upper River Tana Catchment. Undertaking forests rehabilitation of 200 ha on forest in Mt. Kenya and Aberdare Ecosystems. The project mobilized Community Forest Associations who were in turn employed to undertake the planting and maintenance of seedlings. Seedlings for the project are also sourced from local tree nurseries. The project was geared towards improving community livelihoods while at the same time improving conservation of the catchment.
23 May 2012 and July 2009	Mount Kenya East Pilot Project for Natural Resources Management Contact: Mr. Paul Njuguna Land and Environment Coordinator utanrmp@gmail.com njugunapmcharia@gmail.com	Environment Specialist		Environmental and Social Audit of Mt. Kenya East Pilot Project (MKEPP) activities. The audit looked at over 100 community based projects supporting livelihoods supported by MKEPP as the project aimed at poverty reduction targeting about 136,000 households (580,000 people) who are considered poor or on the brink of sliding to poverty in the project districts namely: Embu, Mbeere, former Meru Central (now comprising of Imenti North, Meru Central and Imenti South), Meru South Maara and Tharaka. IFC safeguard policies were used.

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24 Feb – Apr 2012	Lake Victoria Basin Commission Qureish Noordin Project Manager q.noordin@yahoo.com	Assistant Team Leader	Documentation of Best Practices in Waste Water Management in Mara River Basin. Looked at best practices in waste water management among municipalities, industries and hotels within the Mara River Basin and developed a guidebook to encourage uptake of improved waste water treatment technologies.
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No.	Date from to	Company Reference and Contact details	Position	Description
25	September 2011	Parsons Brinckerhoff, UK/KETRACO, Kenya Contact: Contact: Mark Fraser frasem@pbworld.com	Environment/GIS specialist	Environmental Analysis and Feasibility Study of Transmission lines in Garsen-Hola-Garissa (240Kms); Garissa-Wajir (330Kms); and Galu-Lungalunga (50Kms). Undertaking the environmental and social impacts scoping assessment of these lines.
26	July- Sept 2010	Natural Resources Project Ministry of Water Project Manager	Environment/GIS specialist	Environmental Audit of the Kenya Natural Resources Management Project. The assignment reviewed hundreds of community based projects and further reviewed environmental and social management Framework of the project whose activities were being implemented by the National Irrigation Board, Kenya Forests Service and Water Resources Management Authority.
27	November – December 2010	Parsons Brinckerhoff, UK/KETRACO, Kenya Contact:	Environment/GIS specialist	Environmental and Social Impact Assessment of the Nairobi Ring Power Project. The assignment looked at the social and environmental impact of putting up a 400kV transmission line between Suswa and Isinya (100Kms); 220

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		Contact: Mark Fraser fraserm@pbworld.com		KV line between Suswa and Ngong (50Kms); 220kV line between Ngong and Athi river (58Kms); 220 kV line between Athi River and Dandora (60Kms); constructing a 400/200/66kV substation at Ngong and Suswa; and a 220/66kV substation on Thika Road. The ESIA also came up with mitigation measures, a Resettlement (RAP); an Environmental and Social Management and Monitoring Plan
28 May – June 2010	Lake Victoria Basin Commission.	Qureish Noordin Project Manager q.noordin@yahoo.com	Assistant Team Leader	Mara River Basin Institutional Capacity Needs Assessment. The study evaluated capacity needs of key institutions dealing with Natural Resources Management in the Mara River Basin. Key areas of coverage were forestry, wildlife, and water resources management. The assessment then came up with a comprehensive action plan to fill capacity gaps identified. The project was funded by USAID.
29 Oct – Nov 2010	ADRA-Somalia	Doris Ouno	Trainer/Designing of Data Collection Tools	Biomass Utilization Survey in Bay and Bakol Regions in Somalia. Undertook a survey to determine biomass use and supply in the two regions in Somali and

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No.	Date from to	Company Reference and Contact details	Position	Description
		d.ouna@adrasom.org		then determined suitable interventions in both demand management and supply enhancement that would be initiated.
30.	Apr – June 2009	MKEPP/IFAD Contact: Mr. Paul Njuguna Land and Environment Coordinator utanrmp@gmail.com njugunapmacharia@gmail.com	Environmental and Socio-economic Impact Specialist	Mid-Term Review of Mount Kenya East Pilot Project (MKEPP) for Natural Resources Management. Reviewed whether the project was on its way to achieving its intended objectives, and to make recommendations on what needs to be done to meet the original goals in the remaining period. Looked at impacts, efficiency, effectiveness, relevance, and sustainability of the project and also proposed institutional arrangements for improved overall impacts.

Other assignments undertaken:

2017: On farm forestry Study for Water Tower Protection Project in Mt. Elgon and Cherangani, in West Pokot, Bungoma, Kakamega, Kisumu, Nandi, and Uasin Gishu Counties. Client ACAL Consultants/KEFRI

2017: Environmental Impact Assessment for the Proposed Dinning Hall in Kenya High School.

Client: Kenya High School

2015: Analysis of alternative Sources of Energy Production and Consumption Around Mt.

Marsabit Forest Ecosystem and Design of Suitable Supply System. Client: Kenya Wildlife Service

2015: Review and Development of Participatory Forestry Management Plan for Gatere Forest in Murang'a County 2015-2019. Client: Kenya Forest Service

2012: Environmental Audit of Sasini Tea and Coffee Factories in Sotik, Kiambu, and Nyeri. Client: Sasini Tea and Coffee

2011: Afforestation of Upper Tana Catchment Area in Lower Imenti, Aberdares, and Mt. Kenya. Client: Ministry of Energy

2011: Environmental Impact Assessment for Nairobi Pentecostal Church Parklands,

2011: Environmental Impact Assessment for Tea Research Foundation of Kenya Factory.

2010: Environmental and Social Impact Assessment for the Proposed Electricity Transmission Line from Suswa to Isinya, and Associated Substations: Client: KPLC, PB Power Uk

2010: Environmental Impact Assessment for the Proposed KTDA Olenguruone Tea Factory in Kiptagich.

2009: Development and Backstopping of the Tree Biotechnology Programme Trust. The assignment involves ensuring the Sustainable delivery of clones/seedlings at farm level through tree nursery operators' networks and development of capacity building for wider distribution of clones/seedlings and subsequent management of the planted crop. The assignment also involved developing a Clonal Tree Nursery Manual for use by nursery operators, and assisting tree growers form an association and developing an accreditation scheme for tree nurseries and products. **Client: Tree Bio-technology Programme**

2008: Study on the Nature and Extent of Environmental Crime in East Africa

Undertaking research and giving a country status report on nature and extent of environmental crime in Kenya. : The assignment involved desk study and interviews with key stakeholders on the form, and scale of environmental crimes in Kenya focusing on forestry – illegal logging; wastes – transportation and dumping of hazardous wastes; pollution; wildlife; illegal trade in flora and fauna; and other environmental crimes.

Client: The Institute for Security Studies.

2008: Environmental Impact Assessment on Erection of Wildlife Barriers in Mt. Kenya Region. The study was two fold with Phase one undertaking an EIA Project Report for rehabilitation of roads, bridges, construction of ranger outpost and extension of electricity line. Phase two undertook an EIA for construction of wildlife barriers starting with a scoping study to identify the best barrier type with key considerations being the communities preference, cost, environmental impacts, and socio-economic impacts.

Client: Kenya Wildlife Service/GEF

2008: Environmental Audit for Agricultural Development Corporation ranches, Gulana, Kulalu, and Kiswani

Assessed the environmental impacts of the ranches and proposed mitigation/improvement measures. Also developed an environmental management plan. **Client: Agricultural Development Corporation.**

2007: Small Grants Management Project for the Ministry of Energy and Mineral Development in Uganda: The assignment involves vetting and disbursing small grants to small scale minors in Uganda: **Client: Ministry of**

Energy and Mineral Development in Uganda.

2007: Communication Needs Assessment for Lake Victoria Environmental Programme. The assignment involved review the impact of LVEMP I programme among Lake Victoria Basin communities.

Client: Lake Victoria Environmental Programme.

2007: Formulation of Environmental Impact Assessment Guidelines for the Tourism Sector. Formulating sectoral guidelines for the Tourism sector to ensure sustainable and best environmental practices for the tourism industry in Kenya. **Client: Tourism Trust Fund**

2007: Feasibility Study for Nguuru Gakirwe Irrigation Scheme. **Client: Mt. Kenya East Pilot Project**

2007: Country Profile on Environment Study in Kenya. **Client: JICA**

2006: Environmental Impact Assessment for Proposed Office Block at Jumuiya Place, Hurlingham. Undertook the Environmental Impact Assessment of the proposed project, proposed mitigation and enhancement measures. **Client: NCKK**

2006: Development of River Basin Management Plans for Kapingazi and Rupingazi Rivers. Undertook development of river basin management plans for two river basins in Embu and Mbeere districts. The management plans involved looking at environmental, social, geological, hydrological, agricultural, and economic issues to ensure the sustainable management of the river basins natural resources. **Client: Mount Kenya East Pilot Project for Natural Resources Management.**

2006: Environmental Impact Assessment of Sasini Tea and Coffee Limited. Undertook the environmental impact assessment of the proposed Coffee Mill and proposed mitigation measures. **Client: Sasini Tea and Coffee Limited.**

2006: Environmental Impact Assessment of Tree Biotechnology Borehole. Undertook the environmental impact assessment of the proposed borehole and proposed mitigation measures. **Client: Tree Biotechnology.**

2006: Environmental Impact Assessment of Daystar Laboratories. Undertook the environmental impact assessment of the proposed laboratories and proposed mitigation measures. **Client: Daystar University.**

2006: Environmental Audit for Sasini Tea and Coffee Limited (Self Audit)– Coffee and Tea Factories as well as Plantations. Assessed the environmental impacts of the Tea & Coffee Estates of Sasini Tea and Coffee Limited. Proposed mitigation/improvement measures. **Client: Sasini Tea & Coffee Limited.**

2006: Environmental Audit for Kenya Meat Commission. Assessed the environmental impacts of the Kenya Meat Commission Factory. Proposed mitigation/improvement measures. **Client: Kenya Meat Commission.**

2005: Environmental Impact Assessment for Naivasha Country House Hotel. Assessed the environmental impacts of the hotel in Naivasha and proposed mitigation/improvement measures **Client: Kenvash Hotel.**

2005/6: Environmental Management of Aberdare Safari Hotels – Tree Tops and Outspan. Developed an Environmental and Social Management Plan for both hotels and undertook advisory and supervisory role in an environmental rehabilitation programme. **Client: Aberdare Safari Hotels.**

2005: Environmental Impact Assessment of four Proposed Kenya Tea Development Agency factories in Igembe – Meru; Tirgaga – Bomet; Kaptumo – Nandi South; and Kuri – Kiambu. Looked at potential environmental impacts, legal and regulatory frameworks and came up with mitigation measures for adverse impacts. **Client: KTDA.**

2005: Environmental Impact Assessment of Coral Key Luxury Cottages. Undertook the environmental impact assessment of the proposed cottages and proposed mitigation measures. **Client: Overlook Management Ltd**

2005: Formulation of Manual/Tool Kit for Tourism Trust Fund. The assignment involved looking at best practices in the field of eco-tourism and making a manual to help applicants supply TTF with enough information when applying for funds. Key aspects in the manual were: project sustainability, environmental conservation aspects,

poverty alleviation, community participation and sharing of benefits, and tourism diversification. **Client:** TTF/European union.

2005: Renewable Energy Resource Information Development And Capacity Building Assessment- Formulation of a renewable data base and preparation of investment packages in renewable energy spanning ten years. Also capacity building on ministry's staff to identify investment projects and to mobilize resources for their actualization. **Client:** Ministry of Energy and Minerals Development-Uganda/World Bank

2005: Ex-Post Evaluation of Kenya Institute of Surveying and Mapping. Evaluated the impacts and sustainability of KISM five years after project funding by JICA. Involved tracing ex-trainees and employers, administration of questionnaires, interviews, data analysis and reports writing. Recommendation on how to ensure a positive impact and institutional, technical and financial sustainability were given. **Client:** JICA

2005: Environmental Audit of Maasai Mara National Game Reserve and Maasai Mau Trust Land Forest. Assessed the Environmental Impact of the activities in Maasai Mara National Game Reserve and Maasai Mau Trust Land Forest, and proposed mitigation measures. **Client:** County Council of Narok.

2005: Environmental Audit of Kenya Tea Development Authority. Assessed the environmental impacts of the 7 KTDA factories (Kiru, Chinga, Iriqni, Gitugi, Gathuthi, Ragati, and Ndima) to assess their impacts on the environment and give mitigation/improvement measures. **Client:** KTDA.

2005: Environmental Audit of Sasini Tea And Coffee Estates and Factories. Assessed the environmental impacts of the tea and coffee growing and processing activities of sasini Company. In all visited 2 coffee factories and 5 estates in Thika; 1 factory and two coffee estates in Nyeri; and 2 tea factories and four tea estates in Nyamira/Bureti. Proposed mitigation/improvement measures and synthesized their different operation plans into an environmental management plan. **Client:** Saini Tea and Coffee.

2005: Environmental Audit of Switchgear and Controls. Assessed the environmental impacts of the electrical panels making industry in Nairobi's industrial area and proposed mitigation/improvement measures. Also developed an environmental management plan. **Client:** Switchgears and Control Ltd.

2004: Environmental Audit of Aquarius Hotel. Assessed the environmental impacts of the hotel in Watamu and proposed mitigation/improvement measures. Also developed an environmental management plan. **Client:** Boci Boci Kenya Limited.

2004: Environmental Audit of Blue Key Hotel. Assessed the environmental impacts of the hotel in Watamu and proposed mitigation/improvement measures. Also developed an environmental management plan. **Client:** Blue Key Hotel.**2004: Environmental Audit of Tsavo Buffalo Hotel.** Assessed the environmental impacts of the hotel in Watamu and proposed mitigation/improvement measures. Also developed an environmental management plan. **Client:** Katmai Investments Limited.

Certification:

I, the undersigned, certify that these data correctly describe me, my qualification, and my experience.


Date: 15th January 2024

[Signature of staff authorized representative of the staff]

Full name of Staff Member: **Mr. Nicholas Bunyige**

Full name of authorized representative: **Dr. Kaaria**

D. Kalele CV

Dorcas Nzasu Kalele

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Summary

Dorcas is a dynamic agriculture and climate change adaptation specialist with over fifteen (15) years of working experience. Her expertise includes project planning and implementation, capacity strengthening, sustainable agriculture technologies, disaster risk reduction, design, implementation and analysis of agriculture and climate change policies. She is passionate about research, and capacity building initiatives with gender equality and inclusion lens for transition to low-carbon and resilient development.

Key Professional Skills and Competencies

- Design, implementation, monitoring, and evaluation of project/programs
- Technical, analytical, and conceptual skills
- Teamwork, attention to detail and good interpersonal skills
- Ability to build effective relationships with stakeholders
- Organizing and facilitating stakeholders' engagement processes

Education Background

- Sept' 2014 – Dec' 2021, **PhD in Climate Change and Adaptation**, University of Nairobi, Kenya
- Sept' 2006 – Sept' 2007, **Master of Science in Nematology**, Ghent University, Belgium
- Sept' 1999 – Dec' 2004, **Bachelor of Science in Horticulture**, Moi University, Kenya

Professional Working Experience

- **June 2022- Current, Research Fellow in Climate Resilient Economies and Agriculture, Food and Nutrition Security Programs, African Centre for Technology Studies:** involved in development, review and tracking progress of program's workplans and performance monitoring and evaluation, resource mobilization through formulation of multidisciplinary project proposals and concept notes, coordinating implementation of research projects, development of monitoring, evaluation and learning frameworks, collection and synthesis of scientific data and information to guide policy dialogues and capacity strengthening, stimulating dialogues on technology brokerage and knowledge exchange to support climate-resilient economies, research dissemination through policy briefs, scientific reports, publications, working papers, blogs and other relevant communication materials, monitoring and management of execution of project grant agreements, consulting agreements and other contracts for delivery of goods and services.
- **March 2019 to June 2021, Research Associate, Global Challenges Research Fund (GCRF) Project¹, A collaborative project between University of Leeds, UK and University of Nairobi, Kenya, I was**

¹ 'Information in Climate Change Adaptation in rural Kenya'.

involved in designing and implementing action-based research geared to garner diffusion of weather and climate information among farming communities, engagement of stakeholders in the process (county government experts, farmers organizations' leaders) and involvement of smallholder farmers on climate policy formulation and how this intersection guides farmers' adaptation processes.

- **March 2015- November 2017, Project Assistant, IPP-GAP² Program, (Food and Agriculture Organization (FAO) project,** I was involved in developing the capacity of smallholder farmers' groups on climate-smart agriculture (CSA) practices and technologies and supporting integration and technical implementation of conservation agriculture (CA) principles and good agricultural practices (GAP) in maize smallholder farming systems for increased agricultural productivity and profitability.
- **May 2010 - January 2015, Plant Health Inspector, Kenya Plant Health Inspectorate Service (KEPHIS),** I was recruited to strengthen the Pest Risk Analysis (PRA) Unit, in the Phytosanitary Division. Was involved in several responsibilities: including conducting phytosanitary systems' audits and pest surveys, pest risk analysis, product certification and quality controls, risk assessment for bioproducts, development of project proposals and concept notes, monitoring and evaluation and reporting.
- **January 2008-May 2010, Registration Officer, Pest Control Products Board (PCPB):** was involved in evaluating pest control products' dossiers; monitoring product's efficacy trials, evaluating products' efficacy reports, farmers trainings and sensitization on safe use of pesticides, and conducting surveys on pest control products use and effectiveness.

Key Consultancy & Research Assignments

- **April to date, Associate Consultant, PlanAdapt Collaborative gUG:** 'Knowledge Brokering for the Commonwealth Futures Climate Research Cohort 2023-2025' for the Association of Commonwealth Universities (ACU). Acting as to-go-to advisor, mentor, and reviewer, accompanying Early-Career-Researcher (ECRs) and supporting the design and implementation of the stakeholder engagement plans/projects (phase II and III of the project).
- **Nov to Dec 2022, Lead Consultant, Worldwide Fund for Nature (WWF, Kenya):** supporting in end of term evaluation of the Green Horticulture at Lake Naivasha (GOALAN) project. The evaluation adopted the use of a mixed-method approach to collect both quantitative and qualitative data using primary and secondary data sources.
- **July 2021 to February 2022, International Consultant, Alliance of Bioversity International and International Centre for Tropical Agriculture (CIAT):** Development of Mongolia's Livestock and Agriculture Green Country Profile which aims to identify and inform policy actions to support adoption and implementation of sustainable, climate-smart technologies and incentives for low carbon investments.
- **July 2020 to June 2021, Consultant, Alliance of Bioversity International and CIAT:** Development of Kisii and Nyamira County climate risk profiles which are made to inform the County governments and stakeholders on climate change risks and opportunities for agriculture.

² 'Increasing Productivity and Profitability of Smallholder Farmers through the Scaling up of Good Agricultural Practice and Conservation Agriculture

- **July to Sept' 2021, Consultant, COLEACP:** Development of a Whitefly Management Strategy Dossier to support producers and national plant protection bodies to elaborate national action plans to control the presence of the whiteflies in exported agricultural products to the European Union.
- **Feb' to March 2019, Research Assistant, Solidaridad Eastern and Central Africa:** Participated in extensive stakeholder engagement processes (workshops, Key informant interviews) coupled with literature reviews to develop a climate vulnerability assessment manual for coffee value chain in Machakos County, Kenya.
- **Sept' 2015 to Nov' 2016, Associate researcher, GIZ-UNEP Project:** Pilot Study on operationalizing green economy transition in Africa.

Professional Certification

- Training of Trainers (ToT) on Crop Protection, COLEACP, Dec 2021
- Result-Based Management Thinking Tools, Centre for International Development and Training (CIDT), University of Wolverhampton, UK, March to May 2016
- Project Monitoring and Evaluation, Kenya Institute of Management, May to August 2011
- Research and Proposal Writing, Author AID, June to July 2015
- Training of Trainers (ToT) on Organizations' Social Responsibility, Pesticide Initiative Programme (PIP), April 2015
- Environmental Risk Assessment, Centre for Environmental Risk Assessment (CERA), March 2014

Scholarships, Research grants and awards

- African Women in Agricultural Research and Development (AWARD) Policy Fellow - Cohort 1 Gender Responsive Agriculture Systems Policy (GRASP) Fellowship
- Kenya's National Research Fund (NRF) Grant, 2016
- African Union (Mwalimu Nyerere) female scholarship, 2014
- Flemish Interuniversity Council (VLIR-UOS) scholarship, 2006
- A Book prize by German Academic Exchange Service (DAAD), 2007

Selected Professional Trainings and Conferences

- Enhancing Negotiations Skills for Women course by AWARD on 24th -30th September, Mombasa, Kenya
- Women's Leadership and Management Course organized by AWARD on 16th -22nd April 2023, Nairobi, Kenya
- Training of Trainers (ToT) on Crop Protection, organized by COLEACP (NExT Kenya Project), AICAD Hotel – Juja, Kenya, 17th –26th November; 29th November –4th December 2021
- Africa Climate Smart Agriculture Summit 2018, organized by AID & International Development Forum (AIDF), Trademark Hotel, Nairobi, Kenya, 15-16 May 2018 (Served as a Conference Volunteer)
- Phytosanitary Capacity Evaluation (PCE) Facilitators Training Course organized by the International Plant Protection Convention (IPPC), Ronciglione, Italy, 19-30 September 2016
- Volkswagen Foundation Summer School Course on Collecting, Processing and Presentation of Information on Bio-Geo Sciences, Ethiopia, 20th September to 11th October 2015 and in Kenya on 22nd February to 11th March 2016
- 2nd Africa Ecosystem Based Adaptation for Food Security Conference held at the United Nations, Nairobi on 30-31 July 2015

- Integrated Pest Management and Food Safety Training held at Centre for Development and Innovation of Wageningen, the Netherlands on 9-27 June 2014
- Pest Risk Analysis Training held at Hyderabad, India 3-7 September 2013

Membership and professional affiliations

- Member of the African Group of Negotiations on Gender and Climate Change
- A board member of the African Science and Technology Advisory Group (AfSTAG) of the African Union Commission on Disaster Risk Reduction
- A member of The Organization for Women in Science for the Developing World (OWSD)
- A member of the World Climate Research Programme (WCRP) Academy Steering Group

Selected Publications

- **D.N. Kalele**, W.O. Ogara, C. Oludhe, O.O. Onono. Climate change impacts and relevance of smallholder farmers' response in arid and semi-arid lands in Kenya, Scientific African, 12(2021). <https://doi.org/10.1016/j.sciaf.2021.e00814>
- **Kalele DN**, Oludhe C, Onono JO, Ogara WO. Historical Climatic Trends and Smallholder Farmers' Perceptions to Climate Variability and Change in Arid and Semi-Arid Lands, Kenya. Sci Lett 2021; 9(3):95-109. doi.org/10.47262/SL/9.3.132021020
- Motaroki L., Ouma G., **Kalele D.** (2021) "Conservation Agriculture," Possible Climate Change Adaptation Option in Taita Hills, Kenya. In: Leal Filho W., Ogugu N., Adelake L., Ayal D., da Silva I. (eds) African Handbook of Climate Change Adaptation. Springer, Cham. https://doi.org/10.1007/978-3-030-42091-8_184-1
- **Dorcas Kalele** (2016). Can conservation agriculture solve the food security crisis in Kenya? Available at <http://www.scisnack.com/blog/2016/05/10>

Certification:

I, the undersigned, certify that these data correctly describe me, my qualification, and my experience.

Signature: _____



Full Name: Dorcas Nzasu Kalele

Date: 25th March 2024

Strategic Environmental and Social Assessment for AEMP 2020-2030

A. Personal Details			
Name : Dr. Patrick Chege Kariuki			
Designation: Senior Lecturer			
Contact: +254715936997			
School/Institute: Geothermal Training and Research Institute (GeTRI)			
Email: patrick.kariuki@dkut.ac.ke or kariukipatrick011@gmail.com			
B. Academic Background			
Qualification	Institution	Year	
PhD in Remote Sensing	Technical University, Delft, Netherlands	2004	
M.Sc. (Geological Survey)	University of Twente, Netherlands	1999	
PGDip in Seismology	International Institute of Seismology & Earthquake Engineering (IIEE), Tsukuba Japan	1995	
B. Sc. (Geology),	University of Nairobi, Kenya,	1990	
C. Professional Qualifications			
Qualification	Institution	Year	
Cert. Building Geodatabase, spatial Analysis & Advanced analysis with ArcGIS	ESRI	2005	
Cert. Continuous Performance Management	InCA	2006	
Cert. Python scripts	ILRI	2006	
Cert. Change Management Processes	InCA	2007	
Cert. Management and supervisory skills	SEKU	2010	
Cert. Performance Contracting	SEKU	2011	
Cert. Grant Proposal writing skills	SEKU	2013	
Cert. Project Management	SEKU	2014	
Cert. EIA and Environmental Audit	SEKU	2015	
Cert. Community Based Monitoring System	Partnership for Economic Policy (PEP)	2015	
Cert. Competence Based Curriculum	VU University	2016	
Cert. Monitoring and Evaluation	VU University	2018	
Cert. Data Curation	Springer	2019	
Cert. Spatial Methods for Sustainable Landuse	VU University	2019	
Cert. Water Resource Management Modelling	VU University	2019	
Management and Leadership	DKuT	2020	
CBC programs preparation	TVET-CDACC	2021	
Cert. Transient Electromagnetics fo groundwater RCGW Assessments		2023	
D. Areas of Expertise			
Geosciences, Remote sensing , Geographical Information Systems (GIS), Enviromental Impact Assessment (EIA)/Environmental Audit (EA) and Database management			
E. Work Experience			
Date	Name of Employer and Position	Countries of Experience	Key-Tasks Handled

Strategic Environmental and Social Assessment for AEMP 2020-2030

07/ 2020 – to date	Dedan Kimathi University of Technology (DeKUT), Geothermal Energy Training and Research Institute(GeTRI), Senior Lecturer	Kenya	Lecturer in Geological Sciences, Remote Sensing and Geographical Information systems (GIS) at both the undergraduate and postgraduate level. Also supervises graduate students at Masters and PhD level. Involved in various research projects
09/2010 – 06/ 2020	South Eastern Kenya University (SEKU), Lecturer	Kenya	Lecturer in Geology, Remote Sensing and Geographical Information systems (GIS) at both the undergraduate and postgraduate level. Carried out various multidisciplinary research projects
09/ 2004 – 09/ 2010	International Livestock Research Institute (ILRI), Remote Sensing (RS) and GIS unit Manager	Kenya	Was in charge of spatial data management at the Institutional level where he established a centralised ArcSDE database system and was in charge of spatial data sharing across the intranet/internet via customised services. He was also in charge of capacity building in GIS, Global Positioning System (GPS) and Remote Sensing applications within the Institute. He was responsible for carrying out an average of four training sessions of between one and four weeks for external collaborators and internal staff every year. Other than the managerial and training tasks, he also participated in spatial analysis and predictive modelling using GIS/RS tools in various projects as the lead geo-information scientist.
09/1991 – 08/2004	Department of Resource Surveys and Remote Sensing (DRSRS) Nairobi, Research Officer (RO)	Kenya	Responsible for natural resources surveys; general landcover/landuse mapping, land use planning, land evaluation, crop yield estimation and mapping of natural resources using remote sensing and GIS system products. Was also involved in Disaster mitigation projects such as the Early Warning Programmes in the form of studies on natural disasters, an example being a project on study of the impact of the 1998 and 2000 droughts in Kenya for the United Nations Environmental Program (UNEP,2006). His last assignment at the station was on landslide hazards zonation mapping and risk assessment that involved establishing the triggering factors and identifying potential risk to enable develop proactive mitigative measures.
F. Other University National and International Responsibilities			
1. 2022-Present: External examiner- University of Nairobi 2. 2019-Present: Member of the Sector Skills Advisory Committee (SSAC) for TVET CDACC on Competence Based Education and Training (CBET) Curriculum Development in energy and			

extractives
3. 2007-Present: Editorial Advisory Board member of the International Journal of Applied Earth Observation and Geo-information
G. Peer review for International Journals
<ol style="list-style-type: none"> 1) Reviewer for Clays and Clay Minerals, 2) Reviewer for Journal of Environmental Management (JEM), 3) Reviewer for African Journal of Ecology (AJE), 4) Reviewer for International Journal of Remote Sensing (IJRS), 5) Reviewer for Engineering Geology Journal 6) Reviewer for International Journal of Applied Earth Observation and Geo-information (JAG). 7) Reviewer for Journal of Ecological Processes 8) Reviewer for CANTENA Soil Journal 9) Reviewer for Minerals MDPI Journal
H. Consultancies
<ol style="list-style-type: none"> 1. 2021-2023: Lead Geodatabase expert with Intercontinental Consultants and Technocrats Pvt. Ltd. (ICT), New Delhi in undertaking a countrywide road inventory and condition survey: County Roads, Kenya, a World Bank funded project 2. 2021-2023: Lead Geo-information expert and community Infrastructure development lead with Regional Development Consultants (RDC) in Development of Settlement Level Community Plans in Kisumu and Kakamega (cluster 3) for State Department for Housing and Urban Development, a World Bank funded project in informal settlements in Kenya 3. 2021-2023: Disaster risk management expert and team leader Mombasa in the development of urban resilience strategies for five selected cities in Kenya namely; Nairobi, Mombasa, Kisumu, Nakuru and Eldoret, a World Bank funded project 4. 2021-2023: Member of the National Technical team to Integrate Hazard Maps into The National Building Code Regulations (Building Code) 2020, a World Bank funded project 5. 2020-2021: Lead Geo-information expert in Environmental and Social Impact Assessment (ESIA)/Resettlement Action Plan (RAP) by AWEMAC for KETRACO high voltage powerline between Rongai Kenya and Mwanza Tanzania 6. 2020: Lead Geo-information expert in Environmental and Social Impact Assessment (ESIA) for proposed Asbestos burial site in Thika by EMATECH CONSULTANTS. 7. 2019: Lead Geo-information expert with Regional Development Consultants (RDC) in Development of slums typology in Kitui Kenya, this was research to inform World Bank's future work in informal settlements in Kenya 8. 2018-2019: Geo-information/ESIA expert in Preparation of Amboseli Ecosystem Management Plan (AEMP)-2019-2029) and its Strategic Environmental Assessment (SEA) 9. 2017-2019: Remote Sensing specialist in a Geodev project on preparation of maps for the 2019 census for Kenya National Bureau of Statistics (KNBS) 10. 2017: Geotechnical assessment and geological mapping of ballast potential in Kithimani area 11. 2016: Mapping Limestone resources in south eastern Kenya for SINOMA-Kenya 12. 2015: Feasibility Study for Endau Hill Catchment, Endau Malalani Ward, Kitui East Sub-County together with a team from Kenyatta University and Kitui County

Strategic Environmental and Social Assessment for AEMP 2020-2030

13. 2015: Lead Geo-information expert in NAWASCO sewerage extension for Nairobi County with Geodev Consulting Company
14. 2015: Lead Geo-information expert in ESIA by AWEMAC for Shimba and Chyulu Hills Water Towers
15. 2015: Lead Geo-information expert in ESIA by AWEMAC for Standard Gauge Railway (SGR) extension to Narok
16. 2015: Lead Geo-information expert in ESIA by AWEMAC for Vipingo Industrial Park Development by CENTUM
17. 2015: Consultancy in Capacity building of Monitoring and Evaluation teams from across Africa, in Arusha and Nairobi for Policy and Value Chain Program of ReSAKSS ECA-ILRI
18. 2015: Geotechnical assessment and geological mapping of ballast potential for Longonot Gate in Naivasha
19. 2014: Geotechnical assessment and geological mapping of ballast potential for Makuyu Resorts
20. 2014: Assessment of Geothermal potential for Pass Africa in Menengai area in collaboration with the Ministry of Mining and University of Nairobi
21. 2013: Assessment of ballast and dimension stone potential for Home Africa in Rongai
22. 2014: Development of hydrological models using GIS and remote sensing products to establish optimal borehole sitting for maximum ground water yields for Insta pumps in Juja and Taita Taveta
23. 2012: Lead Geoinformation expert with AWEMAC in carrying out an Environmental and Social Impact Assessment (ESIA) of the high-speed railway line from Mombasa to Embakasi for Kenya Railway services
24. 2011: Spatial Analyst consultant for ILRI on major cash and food crops production risks assessment and mapping in Kenya for development of crop insurance schemes as a way of climate risk adaptation.
25. 2010: Lead Geo-information specialist on integration of geo-information in milk shed productivity monitoring and evaluation for Land O Lakes
26. 2010: Lead expert in mapping of Maasai bomas for livestock numbers estimation from high resolution satellite imagery by use of spectral characteristics of cattle pens
27. 2010: Project leader in a close out impact assessment on integrated household survey of the Kenya Maize Development Program (KMDP) supported by USAID.
28. 2009: Lead geo-information scientist in a baseline survey on Water and Forestry Resource use in Kenya for the Ministry of Water and Irrigation.
29. 2009: Lead geoinformation expert in developing an outcome and impact monitoring and evaluation framework for ASARECA projects with an input of incorporating Geo-information science in the framework.
30. 2009: Consulted for Stockholm Environment Institute (SEI) on adapting East African ecosystems and productive systems to climate change. This was part of SEI submission to

COP 19 Copenhagen Conference.
I. Publications
<p>i) Books and Book Chapters</p> <ol style="list-style-type: none"> 1. Western D, Musyoki C, Mwangi E, Mwachala G, Said M, Wargute P, Matiku P, Landsberg F, Waruingi L.W, Kariuki P, Situma C, Ojwang G.O, Njiru L.W, Mullenkei L, Muli D, Malombe I, Marchant R.A, Platts P.J, Muchai M, Kamau P, Njoroge P, Wambuyele E, Kimeu J, Kangethe S, Malonza P, Nyingi D.W, Mbau J, Gikungu M, Kioko E, Otieno N, Baraza F, Kanga E, Chege S, Henninger N, Jeltz W, and Stickler M., 2015., Kenya's Natural Capital: A Biodiversity Atlas, Publisher: Government of Kenya, Ministry of Environment Natural Resources and Regional Development Authorities ISBN: 9966-21-178-0 2. Kariuki, P.C., Shepherd, K. and van der Meer, F.D. 2006, Spectroscopy as a tool for studying swelling soils. In: Expansive soils: recent advances in characterization and treatment. / ed. by A. A. Al-Rawas and M.F.A. Goosen. Leiden: Taylor & Francis, 2006. ISBN 0-415-39681-6. pp. 211-229
<p>ii) Peer Reviewed Journal Publications</p> <ol style="list-style-type: none"> 1. Emekwi, P.L., Manita, N.O. and Kariuki, P.C. (2024), Structural Controls Analysis and Its Correlation with Geothermal Occurrence at Barrier Volcanic Complex (BVC), Turkana, Kenya. International Journal of Geosciences, 15, 231-245. https://doi.org/10.4236/ijg.2024.153014 2. Edward James Maarifa, Patrick Chege Kariuki & Elisante Elisaimon Mshiu (2024): Mapping of surface hydrothermal mineral alterations and geological structures related to geothermal systems in the Songwe region, SW Tanzania, Geosystem Engineering, https://doi.org/10.1080/12269328.2023.2299481 3. Mutunga., E.J., Ndungu, C.K, Mwangi, M, and Kariuki, P.C., 2022, Rainfall and Temperature Trends and Variability in Arid and Semi-arid Lands of Kitui County, Kenya, Journal of Environment and Earth Science 12 (No.12, 2022) 4. Phyllis Mumia Machio, Diana Njeri Kimani, Patrick Chege Kariuki, Alice Muthoni Ng'ang'a & Michael Murigi Njoroge., 2022, Social Capital and Women's Empowerment, Forum for Social Economics, https://doi.org/10.1080/07360932.2022.2115526 5. Oduke WO, Musembi DK, Kariuki P.C., 2021, Changes in Cropland Between 1986 and 2019 in Kitui Central Sub-County, Kitui County, Kenya. J Remote Sens GIS 10: p132. 6. Mugo, J.W., Musembi, D.K., and Kariuki, P.C., 2021, Determination of the Best Planting Season for Green Grams in Kitui County, Kenya, Using the Analytic Hierarchy Process, Open Access Library Journal, 8: e8156. https://doi.org/10.4236/oalib.1108156 7. Fredrick Tom Otieno, John Gachohi, Peter Gikuma Njuru, Patrick Kariuki, Harry Oyas, Samuel A Canfield, Jason K Blackburn, M Kariuki Njenga, Bernard Bett, 2021, Modeling the spatial distribution of anthrax in southern Kenya, PLoS neglected tropical diseases, 15(3), March 2021 8. Fredrick Tom Otieno, John Gachohi, Peter Gikuma-Njuru, Patrick Kariuki, Harry Oyas, Samuel A Canfield, Bernard Bett, Moses Kariuki Njenga, Jason K Blackburn, 2021, Modeling the Potential Future Distribution of Anthrax Outbreaks under Multiple Climate Change Scenarios for Kenya, International journal of environmental research and public health 18(8), January 2021

9. C.K Ndungu, E.J Mutunga, M Mwangi, **P.C Kariuki**, 2021, Food Insecurity Coping Strategies and Determinants of Households' Choice of Specific Coping Strategies in Kitui County, Kenya, Journal of Food Security, 2021: Available online at <http://pubs.sciepub.com/jfs/9/2/1>
10. Lincoln K Githenya, Eliud M Mathu, **P C Kariuki**, J Waita, 2021, Integration of remote sensing and geological mapping for economic mineralization mapping in Mwitika-Makongo area, Kitui country, Journal of Remote Sensing & GIS, Vol.10 Iss.2 No:281
11. Mutunga., E.J., Ndungu, C.K, Mwangi, M and **Kariuki, P.C.**, 2020, Modelling Determinants of Farmers' Choice of Adaptation Strategies to Climate Variability and Extreme Events in Kitui County, Kenya, International Journal of Environment, Agriculture and Biotechnology, 5(6), Nov-Dec 2020, : <https://ijeab.com/>
12. Omasire, A.K, Kimondiu, J M, and **Kariuki P.**, 2020, Urban Sprawl Causes and Impacts on Agricultural Land in Wote Town Area of Makueni County, Kenya, International Journal of Environment, Agriculture and Biotechnology, 5(3) May-Jun, 2020 | Available: <https://ijeab.com/>
13. Nyaberi D, Barongo J, **Kariuki P**, Ogendi G and Basweti E., 2019., Groundwater Resource Mapping through the Integration of Geology, Remote Sensing, Geographical Information Systems and Borehole Data in Arid-Sub arid Lands at Turkana South Sub-County, Kenya, Journal of Geoscience and Environment Protection, 2019, 7, 53-72,
14. Mogaka D.N, Basweti E, Barongo J.O, Ogendi G.M, **Kariuki P.C.**, 2019., Mapping of Groundwater through the Integration of Remote Sensing and Vertical Electrical Sounding in ASALs: A Case Study of Turkana South Sub-County, Kenya, Journal of Geoscience and Environment Protection, 2019, 7, 229-243
15. Kiruki, H, Zanden, E.H., **Kariuki, P.C.**, and Verburg P.H., 2019. The contribution of charcoal production to rural livelihoods in a semi-arid area in Kenya, Environment, Development and Sustainability <https://doi.org/10.1007/s10668-019-00521-2>
16. Githenya L.K, **Kariuki P.C**, Waswa A.K., 2019., Application of Remote Sensing in Mapping Hydrothermal Alteration Zones and Geological Structures as Areas of Economic Mineralization in Mwitika-Makongo Area, South Eastern Kenya, Journal of Environment and Earth Sciences, Vol.9, No.11, 2019
17. Njiru, G.N., **Kariuki, P.** and Mwetu, K., 2018., Modeling Soil Erosion for Land Management in Ungauged Golole Catchment in Marsabit County, Kenya. Open Journal of Soil Science, 8, 277-302.
18. Mbithi F. M., **Kariuki, P.C.**, and Njuru P.G., 2017, Assessment of the Impact of Groundwater Fluoride on Human Health: A Case Study of Makindu District in Kenya, Journal of Earth Science & Climatic Change (2017) vol.8:4
19. Cheruto, Mercy C., Kauti, M.K., Kisangau, P.D., **Kariuki, P.C.**, 2017., Assessment of Landuse Landcover Change Using GIS and Remote Sensing Techniques: A Case Study of Makueni County, Kenya, J. of Remote Sensing & GIS (2016), vol.5:4
20. Mugo J.W., **Kariuki P.C**, and Musembi D.K., 2016., Identification of Suitable Land for Green Gram Production Using GIS Based Analytical Hierarchical Process in Kitui County, Kenya, J. of Remote Sensing & GIS (2016), vol.5:3

21. Mathu, E. M., Waswa, A. K., **Kariuki, P. C.**, Kianji, G. K., Odhiambo, M. B., & Kiprotich, K. K. (2015). The Middle Eastern Counties In Kenya: An Awakening Giant In Mining And Ideal For Mining Investment. *GEOEACE* (2015).
22. Kathumo V.M., Gachene C.K.K., Gicheru P.T., and **Kariuki P.C.**, 2012, Effects of Land-Use and Climate Changes on Hydrological Processes in the River Gucha Catchment, Kenya, *E. Afr. agric. For. J.* (2012) 78(1), 113-118
23. Iiyama, M., Kristjanson, P., Ogotu, J., Maitima J., **Kariuki, P.**, Morimoto, Y. and Baur H., 2008, Conservation, Management and Development of Natural Resources in Rural Africa. In: *Natural Resources*. / Ed. Jeanette B. Pauling, pp. Nova Science Publishers, Inc. (2008) ISBN 978-1-60456-982-7
24. Iiyama, M., **Kariuki, P.**, Kristjanson, P., Kaitibie, S. and Maitima, J. 2008, Livelihood diversification strategies, incomes and soil management strategies: A case study from Kerio Valley, Kenya. *Journal of International Development J. Int. Dev.* 20, 380-397 (2008)
25. Okwi P.O., Ndeng'e G, Kristjanson P, Arunga M, Notenbaert A, Omolo A, Henninger N, Todd Benson T, **Kariuki P.** and Owuor J 2007. Spatial determinants of poverty in rural Kenya, *PNAS* 104(43): 16769–16774
26. Iiyama, M., Maitima, J. and **Kariuki, P.** 2007. Crop-livestock diversification patterns in relation to income and manure use: A case study from a Rift Valley community, Kenya. *African Journal of Agricultural Research* 2(3) pp58–66.
27. Iiyama, M., Kaitibie, S., **Kariuki, P.**, and Morimoto, Y. 2007. The status of crop-livestock systems and evolution towards integration. *Annals of Arid Zones* Vol. 46. (3&4), pp1-23
28. Okwi P.O, Ndeng'e G, Kristjanson P, Arunga M, Notenbaert A, Omolo A, Henninger N, Todd B, **Kariuki P** and Owuor, J, 2007, Geographic Determinants of Poverty in Rural Kenya: A National and Provincial Analysis, *African Journal of Statistics*
29. Okwi P.O, Arunga M, **Kariuki P**, Kristjanson P, Ndeng'e G, Notenbaert A, and Omolo A., 2007, Poverty among Livestock Keepers in Kenya: Are Spatial Factors Important? *African Journal of Statistics*
30. **Kariuki P.C.**, Woldai, T., and Van der Meer, F.D., 2006, The role of remote sensing in mapping swelling soils. *Asian Journal of Geo-informatics*, Vol 5(1), pp.43-53
31. **Kariuki P.C.**, Woldai, T., and Van der Meer, F., 2004, Effectiveness of spectroscopy in identification of swelling indicator clay minerals. *International Journal of Remote Sensing*, 25(2), 455-469
32. **Kariuki P.C.**, and Van der Meer, F.D., 2004, Issues of effectiveness in empirical methods for describing swelling soils (*International Journal of Applied Earth Observation and Geoinformation*, 4(3), 231-241
33. **Kariuki P.C.**, and Van der Meer, F.D, 2004, A unified swelling potential index for expansive soils, *Engineering Geology*, 72, 1-8

<p>34. Kariuki P.C., Van der Meer, F.D and Verhoef, P.N.W., 2003, Cation exchange capacity determination from spectroscopy. <i>International Journal of Remote Sensing</i>, 24(1), 161-167</p> <p>35. Kariuki P.C., Van der Meer, F. and Siderius W, 2003, Classification of soils based on engineering indices and spectral data (<i>International Journal of Remote Sensing</i> 24(12), 2567-2574</p> <p>36. Kariuki P.C., and Van der Meer, F.D, 2003, Determination of soil activity from optical spectroscopy. In <i>Geoinformation for European wide Integration</i>, Edited by T. Benes (Rotterdam: Mill press), pp.587-590</p> <p>37. Kariuki P.C., T. Woldai & F.D Van der Meer, 2002, Determination of soil activity in Kenyan soils from Spectroscopy, <i>The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences</i>, Vol. XXXIV, Part 6/W6</p> <p>38. Kariuki, P.C., 1996. Zoning for ground motions in Kenya-the case of incomplete and uncertain data. <i>International Journal of Rock Mechanics and Mining Sciences and Geomechanics Abstracts</i> (Vol. 5, No. 33, p. 195A).</p>
<p>iii) Publications in conference proceedings</p> <p>1. Mugo J.W., Musembi D.K, Kariuki P.C and, Ongoma V., 2016, Determination of the best planting season for green gram in Kitui county Using AHP, <i>Proceedings of the 2nd International Conference, DeKUT, Kenya, 2nd - 4th November 2016.</i></p> <p>2. Mathu E.M., Kariuki P.C., 2016., The Potential of Maximising Geological Resources to Boost Food and Agricultural Production in Kenya, <i>Proceedings of the 2nd International Conference, DeKUT, Kenya, 2nd - 4th November 2016.</i></p> <p>3. Owuor J, Kariuki P., & Okwi P, 2007. Poverty among Livestock Keepers in Kenya: are Spatial Factors Important? <i>Proceedings of the 2nd ESRI East African User Conference, Kampala, Uganda, 13-14th September, 2007.</i></p> <p>4. Kariuki P.C., Russ Kruska, Owuor J & Arunga M, 2006. Spatial Data Infrastructure in ILRI: Status and Future Directions. <i>Proceedings of the 1st ESRI East African User Conference, Nairobi, Kenya, 5-6th October, 2006.</i></p> <p>5. Arunga M, Kariuki P., Kruska R and Owuor J, 2006., ILRI Attempt at Spatial Data Infrastructure. <i>Proceedings of the GSDI conference, Santiago, Chile, 2006</i></p> <p>6. Kariuki P.C & Siderius W, 2004. Spectroscopy Remote Sensing and Other Non-Intrusive Methods in Environmental Studies: Case Study Swelling Soil Mapping. <i>Proceedings of the 5th African Association of Remote Sensing of the Environment Conference, Nairobi, Kenya, 17-22nd October, 2004.</i></p> <p>7. Kariuki, P.C., van der Meer F. D., 2003, Swelling Clay Mapping for Characterizing Expansive Soils; Results from Laboratory Spectroscopy and HySens DAIS Analysis. <i>Proceedings of the Third EARSel Workshop on Imaging Spectroscopy, DLR, Oberpfaffenhofen, 13 - 16 May 2003.</i></p> <p>8. Kariuki P.C., T. Woldai & F.D Van der Meer, 2002, Determination of soil activity in Kenyan soils from Spectroscopy, In: <i>Proceedings of the Dar es Salaam, ISPRS workshop, 25-28 March 2002.</i></p>

9. **Kariuki P.C.**, and F.D Van der Meer, 2000. The effectiveness of spectroscopy in detecting the swelling clay minerals in soils, In: Proceedings of the Second EARSel Workshop on Imaging Spectroscopy, ITC, Enschede, 11-13 July 2000.
10. **Kariuki P.C** & Van der Meer, F., 2000. Spectroscopy to map swelling potential of soils. Proceedings Vijfde Nederlands Aardwetenschappelijk Congres, 20-21 April, Veldhoven, pp. 2-23
11. Van Dijk, P., Van der Meer, F. & **Kariuki, P.** 2000. The mapping of swelling clays with remote sensing; potential of high spectral resolution sensors. Proceedings of the 31st International Geological Congress, Rio de Janeiro, Brazil, 6-17 August, 2000 (1 page abstract).

iv) Technical Papers

1. Machio, P.M, Murigi, A.M, M.N, Nganga and **Kariuki, P.C**, 2019. SDG Profile of Gikindu Location, Murang'a County. Technical Report, Partnership for Economic Policy (PEP), Nairobi, Kenya
2. Machio, P.M, **Kariuki, P.C**, Murigi, M.N, and Nganga, A.M, 2019. Social Capital and Women's Empowerment in Kenya, A Case Study of Murang'a County. Technical Report, Partnership for Economic Policy (PEP), Nairobi, Kenya
3. Kimani, D.N., **Kariuki P.C.**, Machio, P.M., Murigi, M.N., and Mariara, J.K., 2017. Youth Employment and Entrepreneurship in Murang'a County, Kenya. Technical Report, Partnership for Economic Policy (PEP), Nairobi, Kenya
4. Kimani, D.N., **Kariuki P.C.**, Machio, P.M., Murigi, M.N., and Mariara, J.K., 2017. Development and Implementation of Community Based Monitoring System (CBMS) In Murang'a County, Kenya. Technical Report, Partnership for Economic Policy (PEP), Nairobi, Kenya
5. Kimani, D.N., **Kariuki P.C.**, Machio, P.M., Murigi, M.N., and Mariara, J.K., 2017. Poverty Profile of Muthithi Location Murang'a County, Kenya. Technical Report, Partnership for Economic Policy (PEP), Nairobi, Kenya
6. Mwetu, K., Gerard, A., Malesu, M., O'Neill, M., Muriuki, J., Oduor, A., Danga, B., **Kariuki, P.**, Otiende, V. and Baraka, P., (2014). Return on Investment of RWH technologies in dryland areas of Eastern region of Kenya. Technical Report, World Agroforestry Centre.
7. Fumi W, **Kariuki P.**, Phiri B, 2010., A new holistic approach to achieve well-being of rural people, ecosystem health, and biodiversity conservation in livestock-wildlife joint land use in dry lands of Kenya: A case study of the Lolldaiga Hills ranch. International Livestock Research Institute Technical Report, Nairobi, Kenya
8. **Kariuki, P.**, Ochungo, P, 2010, Normalized Difference Vegetation Index (NDVI) as a Tool for Rift Valley Fever Prediction. International Livestock Research Institute Technical Report, Nairobi, Kenya
9. Makihara D, Mtasiwa B, Kembo J, Bazirake B, Morimoto Y, Maundu P, **Kariuki P** and Wakhu P., 2010., Concept and Process of "Community Empowerment and Networking Program. Technical Report 1, African Institute for Capacity Development (AICAD), Nairobi, Kenya
10. Mizutani F, **Kariuki P.C**, 2009, Evaluating livestock-wildlife joint land use in dry land of Kenya

<p>by monitoring animal distributions and long-term quantitative data on epidemiology: International Livestock Research Institute Technical Report, Nairobi, Kenya</p>	
<p>11. Maitima J M, Kariuki P C, Mugatha S M, Mariene L W, 2009, Adapting East African ecosystems and productive systems to climate change, Report for the Economics of Climate Change Adaptations in Africa</p>	
<p>12. Maitima J, Kariuki P, Mugatha S, 2008, Environmental Land Use Land Cover Surveys in Lake Victoria Basin, Lake Baringo Catchment and Meru-Mwea Region. International Livestock Research Institute Technical Report, Nairobi, Kenya</p>	
<p>13. Okwi, P., Kariuki. P, Irungu P. Owuor J, Henninger, N., Landsberg F, Opio J, Muhwezi B, Emwanu T, Rutebarika C., 2008, Incorporating Poverty into Planning and Management of Livestock in Uganda: Examples and Ideas. International Livestock Research Institute Technical Report, Nairobi, Kenya</p>	
<p>14. Okwi, P., Ndeng'e, G., Kristjanson, P., Arunga, M., Notenbaert, A., Omolo, A., Henninger, N., Benson, T., Kariuki, P. C, (2006) Geographic Determinants of Poverty in Rural Kenya: A National, Provincial and Livestock-Based Analysis. Technical Report International Livestock Research Institute, Nairobi, Kenya</p>	
<p>15. Okwi, P., Arunga, M., Kariuki, P.C, Kristjanson, P., Ndenge, G., Notenbaert, A., Omolo, A. (2006) Poverty among Livestock Keepers in Kenya: Are Spatial Factors Important? International Livestock Research Institute Technical Report, Nairobi, Kenya</p>	
<p>16. Okwi, P., Ndenge, G., Kristjanson, P., Arunga, M.O., Notenbaert, A., Omolo, A., Henninger, N., Benson, T., Kariuki, P., Owuor, J. (2006) Geographic Determinants of Poverty in Rural Kenya: An ILRI-CBS brief</p>	
<p>17. DRSRS, UNEP, 2006, The Impact of Year 2000 Drought in Kenya. Technical Report Department of Resource Surveys and Remote Sensing (DRSRS), Nairobi, Kenya</p>	
<p>18. Mizutani F, Kariuki P.C, Iiyama M, Matsumoto K, Kariuki PN, Kiprono M, Cherwon K, Kristjanson P. 2005. Kerio Valley Baseline Survey: Advancing capacity of the community through the baseline survey for sustainable rural development in Marakwet and Keiyo Districts. International Livestock Research Institute Technical Report, Nairobi, Kenya</p>	
<p>J. Awards, Scholarships and Recognitions</p>	
<p>1. 2016: 3rd overall position in Partnership for Economic Policy (PEP) projects for the year at the PEP International Conference in June 2016, Manila Philippines</p>	
<p>2. 2009: Special achievement award in GIS applications at the ESRI 2009 user conference in San Diego, California, USA</p>	
<p>K. Research</p>	
<p>a) Ongoing/Completed Researches</p>	
<p>1. 2017-2020: Climate Smart Rainwater Harvesting and Conservation Technologies for Improved Food Security in Selected Parts of Kitui County (collaborative project with Machakos University and Kenyatta University): Funded by National Research Fund (NRF)</p>	
<p>2. 2017- 2020: Social Capital and Women's Empowerment in Kenya: Case Study of Murang'a County (collaboration with School of Economics University of Nairobi): Funded by IDRC Canada</p>	

3. 2016-2019: Mapping geological resources in Kitui County, a collaborative project with Kitui County Government
4. 2015-2017: Focusing Global Technology to Magnify Honey Bee Impacts on the Food System; The East African Model (Collaborative Project between Michigan State University (MSU), USA, International Centre for Insect Physiology and Ecology (ICIPE), and South Eastern Kenya University (SEKU), Kenya): Funded by USAID
5. 2015-2017: Entrepreneurship as a Mechanism to Address Youth Unemployment and Poverty in Kenya: Case Study of Murang'a County, a joint project with the School of Economics, University of Nairobi: Funded by IDRC Canada
6. 2015-Feasibility Study for sand dam water harvesting in Kitui County with a team from Kitui County Government using geoinformation tools to establish optimal locations for dam siting: Funded by Kitui County Government
7. 2014-2020: A Sustainable Approach to Livelihood Improvement (ASALI) through Innovative Agricultural Practices a collaborative project between Vrije Universiteit Amsterdam, Moi University and South Eastern Kenya University, Kenya: Funded through VU University by a Memorial Fund
8. 2013-2014: Water Harvesting and Utilization Project (WHUP) at the South Eastern Kenya University (SEKU) funded by the National Council for Science and Technology (NCST).
9. 2012-2013: Optimizing rainwater harvesting in Kitui for sustainable irrigated agriculture in collaboration with Kenyatta University, Makerere University and Global Knowledge Initiative (GKI) USA, Funded by USAID
10. 2012-2014: Preparation of a Natural Capital Atlas of Kenya in collaboration with a team of experts from various institutions led by African Conservation Centre (ACC): Funded by the ministry of Environment
11. 2007-Mapping livelihood diversification in Keiyo Valley an International Livestock Research project led by Miyuki Iiyama (University of Tokyo): Funded by JICA
12. 2007-Baseline Survey on Impact assessment of Tsetse eradication program in Kenya, an International Livestock Research Institute project: Funded by the Ministry of Livestock Development
13. 2007-Baseline Survey on advancing capacity of the community through sustainable rural development in Marakwet and Keiyo Districts, an International Livestock Research Institute. Funded by Japan International Cooperation Agency (JICA).
14. 2006-2009: Poverty Mapping in Kenya and Uganda a collaborative project between International Livestock Research Institute, Kenya National Bureau of Statistics (KNBS) and Uganda Bureau of Statistics (UBOS)

b) Research funding: (Indicate the Source, Amount & Year)

1. Funding from National Research Fund, KSh. 20,000,000, Year 2017
2. Funding from IDRC Canada: USD. 50,000, Year 2017
3. Funding from IDRC Canada: USD. 50,000, Year 2015

Strategic Environmental and Social Assessment for AEMP 2020-2030

<ol style="list-style-type: none"> 4. Funding from USAID: USD 100,000 Year 2015 5. Funding from Vrei University Memorial Fund: Euros 366,000, Year 2014 6. Funding from University of Twente: Euros 40,000, Year 2011 7. Funding from USAID: USD 100, 000 Year 2010 8. Funding from Ministry of Livestock Development of Kenya: USD 70,000, Year 2007 9. Funding from University of Twente: Euros 36,000, Year 2005
L. Postgraduate Thesis Supervision and Examination (Start with the most current, completed and then ongoing)
i) Doctorate
<ol style="list-style-type: none"> 1. 2017-2022: Supervised Jane Evelyn Mutunga in her PhD. Research at South Eastern Kenya University (SEKU) on: Farmers Vulnerability to Climate Variability and Extreme Events 2. 2017-2022: Supervised Fredrick Tom Otieno in his PhD. Research at South Eastern Kenya University (SEKU) on Environmental and Socio-economic Predictors of the Spatial Distribution of Anthrax in Kenya 3. 2017-2020: Supervised Daniel Mogaka Nyamberi, in his PhD. Research at Kisii University on: Delineation of Groundwater Potential Zones in Arid-Semi Arid Lands Using Integrated Approaches of Remote Sensing, Geophysical Techniques and Borehole Data: Case Study Turkana South Sub-County, Kenya 4. 2016-2019: Supervised Harun Kiruki in his PhD Research at VU University Amsterdam on: Charcoal burning, landcover change and Sustainable Livelihoods 5. 2009-2011: Supervised Vincent Kathumo in his PhD research at the University of Nairobi on: Applications of remote sensing and GIS in semi-arid areas water management
ii) Masters
<ol style="list-style-type: none"> 1. 2022-date: Supervising Benard Limo in his Msc. Research at Dedan Kimathi University of Technology on: Use of Reflectance Spectroscopy and Remote Sensing Studies to Evaluate Bentonite Clays Within Mui Basin Block C 2. 2022-date: Supervising Joyce Moriruku in her Msc. Research at Dedan Kimathi University of Technology on: Comparison Of Kapoeta Geothermal Prospect, South Sudan To The Olkaria System Kenya Using Remote Sensing Method 3. 2022-date: Supervising Phillip Emweki in his Msc. Research at Dedan Kimathi University of Technology on: Structural Controls analysis and its correlation with geothermal occurrence at Barrier Volcanic Complex (BVC), Turkana-Kenya 4. 2017-Present: Supervising Kenneth Ngeny Bü in his Msc. Research at South Eastern Kenya University (SEKU) on: Effects of Land Fragmentation on Food Security and Vegetation Cover in Konza Ranch Makueni County 2021-2023: Supervised Edward James Maarifa in his Msc. Research at Dedan Kimathi University of Technology on: Mapping of surface hydrothermal mineral alterations and geological structures related to geothermal systems in the Songwe region, SW Tanzania 5. 2017-2023: Supervised Alice Kwamboka in her Msc. Research at South Eastern Kenya University

(SEKU) on: Effects of Urban Sprawl on Agricultural Land in Peri-urban Areas of Wote Town, Makueni County	
6.	2017-2021: Supervised Gabriel Nyaga Njiru in his M.Sc. Research at Kenyatta University (KU) on: Modelling Soil Erosion for Land Management in un-gauged Golole Catchment in Marsabit County Kenya
7.	2018-2020: Supervised Lincoln Kanyari Githenya in his M.Sc. Research at South Eastern Kenya University (SEKU) on: Application of Remote Sensing in Mapping Hydrothermal Alteration Zones and Geological Structures as Areas of Economic Mineralization in Mwitika-Makongo Area, South Eastern Kenya
8.	2015-2016: Supervised Jane Wangui Mugo in her Msc. Research at South Eastern Kenya University (SEKU) on: Mapping Greengram Suitability Areas in Kitui County by use of Analytical Hierarchical Process (AHP) integrated with a GIS system
9.	2014-2016: Supervised Francesca Mbithi in her Msc. Research at South Eastern Kenya University (SEKU) on: Assessment of the Impact of Groundwater Fluoride on Human Health: A Case Study of Makindu District in Kenya
10.	2006-2007: Supervised Anthony Muhumuza in his Msc at the University of Nairobi on Applications of GIS in Economic Analysis
11.	
Thesis examination	
i. Doctorate	
1.	2021: Tanui Florence Jerotich PhD thesis on: The Hydrogeology of the Lodwar Alluvial Aquifer System, Turkana County, Kenya
2.	2021: Japheth Kanoti PhD thesis on: The Geometry, Hydro-geochemistry and Vulnerability of Aquifers to Pollution in Urban and Rural Settings: A Case Study of Kisumu and Mt. Elgon Aquifers
ii. Masters	
1.	2023: Ndiba Joseph Ng'ang'a Msc thesis on: Evaluation of Governance Processes on Nature-Based Solution in Mining Sector for Habitat Restoration in Kwale County, Kenya
2.	2023: Luswata Gladys Nakuya Msc thesis on: An Investigation of The Use of Nano Silica to Improve Sulphate Attack Resistance of Geothermal Well Cement
3.	2022: Nyaga John Njue Msc thesis on: Investigating the Impact of Swelling Clays on Wellbore Permeability in Geothermal Wells: A Case Study of Olkaria Geothermal Field, Kenya
4.	2021: Eriqie Otienoh Nyawir Msc thesis on: Volcanological, Petrological and Geochemical Evaluation of The Otutu Rift Segment Between Eburru Volcano and Lake Elementaita
5.	2020: Lucy Karimi Mwaniki Msc thesis on: Investigating the Effect of Lithological Characteristics and Structural Attributes on the Drilling Rate: Case Study of Olkaria Geothermal Field, Kenya
6.	2018: Kennedy Mutati Msc thesis on: Assessment of Influence of Sand Dam Gradation on Site Suitability for Sand Dams: A Case Study of Kitui South, Kenya

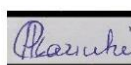
Strategic Environmental and Social Assessment for AEMP 2020-2030

7.	2018: James Kingoo Msc thesis on: Assessment of Household Waste Management Practices in Juja Sub County Kiambu County Kenya
8.	2017: Fredrick Tito Mwamati Msc thesis on: Assessment of Groundwater Quality in Yatta Plateau, Kitui County
9.	2017: Rose Mwia Msc thesis on: Assessment of effects of deforestation on spring's water production: A case study of Nuu/Mutaitho Hills Springs in Kitui County
10.	2016: Samuel Kasuni Msc thesis on: Impacts of Extension of Agriculture and Landuse Change on the flow Regime of Thiba River
M. Research Interests	
1.	Interested in multidisciplinary research in areas of geosciences, climate change, resilience, environment, natural resource management and other areas of geospatial tools application
N. Affiliation/Membership to Professional Bodies	
1.	Editorial Advisory Board member of the International Journal of Applied Earth Observation and Geo-information
2.	Member of Society of Conservation GIS (SCGIS)
3.	Member of Geological Society of Kenya (GSK)
4.	Member of Environmental Institute of Kenya (EIK)
5.	Member of the Network for African Volcanologists

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience, and I am available to undertake the Services in case of an award. I understand that any misstatement or misrepresentation described herein may lead to my disqualification or dismissal by the Client and/or sanctions by the Bank.

Patrick Chege Kariuki



24/03/2024

Name of Expert

Signature

Date

PERSONAL DETAILS

NAME: LISPER NJERI KAARIA
DATE OF BIRTH: 20TH DECEMBER, 1992
NATIONALITY: KENYAN.
TEL NUMBER: 0725-730143
ADDRESS: P. O. Box 702-00517, NAIROBI.
EMAIL: kaarialisper24@gmail.com

CAREER OBJECTIVES.

- I am an innovative and motivated Advocate of the High Court of Kenya, Commissioner for Oaths and a Certified Professional Mediator who looks forward to working with an organization that will make use of my knowledge and skills in advancing my legal profession.
- I am an ambitious individual seeking the opportunity that will enhance and utilize my legal skills to administer justice and ensure a significant contribution in the field of legal profession.
- I am keen on applying the big-picture thinking while also focusing on the details of implementation when handling various issues.

Key Skills

- Superior verbal, written and communication skills;
- Strong research and analytical skills;
- Excellent negotiation skills;
- Strong interpersonal skills; and
- Good organizing and coordinating skills
- Fluent in spoken and written English and Swahili;
- Excellent writing/ drafting, communication and analytical skills.
- Ability to work under competing priorities with strict deadlines.
- Excellent customer relations skills and ability to deal patiently with all categories of staff.
- Consistently apply openness and honesty in communicating decisions and plans to team members.
- Highly competent and well versed in computer with hands on experience in micro computer operations which include; Ms. Word, Internet/Email, Ms. Excel, Ms. Power Point, Ms. Access, Basic concepts of IT and Windows, good typing and data entry skills.
- Ability to organize, plan and prioritize activities.
- Good time management skills and ability to deliver with minimal supervision.
- Good judgement, tact, analytical and negotiation skills.
- Capacity to work simultaneously, effectively and efficiently on a variety of diverse issues and tasks, both independently and as a team with minimal supervision.
- Ability to organize work and prioritize, commitment, research skills and loyalty.
- Self-confident with an ability to work autonomously, under pressure whilst managing priorities efficiently.
- Possess impeccable integrity and personal and professional values that are consistent with the Organization's high standards and mission.
- High level of trustworthiness, commitment to service and respect for diversity and the organization's core values.

WORK EXPERIENCE

Atonga & Co Advocates;
October 2020 to date: Associate Advocate
Key Responsibilities

- Providing legal advice to clients: taking their briefs.
- Preparing pleadings and legal briefs and Court attendance on behalf of the victims.
- Drafting and reviewing of litigation documents including pleadings, notices, affidavits & correspondence;
- Furnishing legal opinions and advice on any areas of the law.
- Conducting negotiations with a view to settling potentially litigious matters.
- Draw up contracts and other commercial legal documents ensuring attention to detail
- Offering advice on the law, legal procedures and a wide range of associated issues.
- Research on diverse range of assigned issues, documents and case history to ensure accuracy of advice and procedures
- Developing and maintaining good client relationship skills, gaining clients' confidence and that of other professionals.
- Any other duty that may be assigned from time to time to further the vision and mission of the firm.

Diamond Properties Merchant
September 2019-May 2020: Legal Officer
Key Responsibilities

- Supporting the section Head in the provision of legal advice for the company;
- Maintaining data of all legal matters including cases referred to external advocates
- Conducting research and providing legal advice and interpretation of various legal matters;
- Preparing, vetting and negotiating official legal documents to protect the interests of our clients;
- Reviewing and drafting of contract agreements and ensuring that they are in compliance with all statutory and regulatory requirements;
- Conducting searches on titles, drafting transfer documents and ensuring timely registration of the same;
- Reviewing and providing advice on legal risk that the company could face in different situations;
- Participating in reviewing and advising management of our various clients on legal implications concerning internal policies and procedures; and
- Any other duty that may be assigned.

K.Mberia & Partners Advocates;
August 2018 to September 2019: Holding Over and Associate Advocate
Key Responsibilities

- Providing legal advice to clients: taking their briefs while referring distressed clients for counselling and conducting mediation between parties, Preparing pleadings and legal briefs and Court attendance on behalf of the victims.
- Drafting and reviewing of litigation documents including pleadings, notices, affidavits & correspondence;
- Furnishing legal opinions and advice on any areas of the law.
- Reviewing new legislations and precedents to keep updated on the current developments of the law in the various fields.
- Conducting negotiations with a view to settling potentially litigious matters.
- Draw up contracts and other legal documents ensuring attention to detail
- Offering advice on the law, legal procedures and a wide range of associated issues.
- Research on diverse range of assigned issues, documents and case history to ensure accuracy of advice and procedures
- Developing and maintaining good client relationship skills, gaining clients' confidence and that of other professionals
- Any other duty that may be assigned from time to time to further the vision and mission of the firm.

Onyango & Ameyo Advocates

February 2016 to August 2018: Pupillage Programme and Holding over.

Key Responsibilities

- Studying legal files and preparing legal opinions for Advocates
- Attending Court Sessions and updating clients on the developments of the matter.
- Preparing file notes and making reminders of all upcoming matters
- Responding to email communications and forwarding emails to relevant persons handling the matters.
- Drafting well researched legal briefs on variety of legal issues touching on different branches of law.
- Writing analytical summaries of written argument or evidence and assessing the argument in line of academic legal literature and case law.
- Keep abreast of developments in the legal field that could affect the institution and prepare reports on relevant matters for consideration by the management;
- Other duties assigned from time to time.

ACADEMIC QUALIFICATIONS AND TRAINING

2019 September: Mediation Training Institute

Certified Professional Mediator

2019 Admitted to the Bar as an Advocate of the High Court of Kenya

2015 October: Post- graduate Diploma in Law (ATP Programme) at Kenya School of Law

2011 September to 2014 October: Catholic University of Eastern Africa

Bachelor of Laws Degree (LLB) Course

Second Class Honours.

2007 to 2010: Kangubiri Girls High School (K.C.S.E) Certificate

2006: Thorn Tree Primary School (K.C.P.E Certificate).

HOBBIES

Reading books and law journals

Socializing and interacting with colleagues in discussing innovative ideas.

Travelling, visiting children homes, and the less fortunate in the society.

REFEREES

- 1. Mr. Kenneth Onyango Odhiambo**
Onyango & Ameyo Advocates,
KTDA, Chai House 3rd Floor
P.O Box 16343-00100 Nairobi
Mobile No: +254722919456.
- 2. Mr. Wilson Marotse Mulei**
Senior Lecturer, Catholic University of Eastern Africa
Mulei Marotse & Company Advocates
Karen Centre Co-op Bank House
P.O Box 19299-00100 Nairobi
Mobile No. +254725981989
- 3. Mr. Alex Ndiema**
Office of the Director of Public Prosecutions
Prosecution Counsel
P.O Box 9799-00100, Nairobi.
Mobile No: +254720736932.

CURRICULUM VITAE

PERSONAL DETAILS:

NAME: APOLLO KARIUKI

DATE OF BIRTH: 26TH MARCH 1961

PROFESSION: CONSERVATION PLANNING

CONTACTS: POSTAL ADDRESS -P.O. BOX 105-00511 ONGATA RONGAI
TELEPHONE - 0722779293
EMAIL – apollokari26@gmail.com

LANGUAGES: ENGLISH (FLUENT); KISWAHILI (FLUENT)

EDUCATION

Master of Science (MSc) in Rural and Land Ecology Survey; International Institute for Geo-Information Science and Earth Observation (ITC), a faculty of University of Twente, the Netherlands, 1995.

Post Graduate Diploma in Geographic Information Systems for Rural Applications; International Institute for Geo-Information Science and Earth Observation (ITC), a faculty of University of Twente, the Netherlands, 1991.

Bachelor of Science (BSc Hons) in Zoology and Botany; University of Nairobi, Kenya, 1985.

RELEVANT SHORT TRAINING COURSES

Protected Area Management Planning Training Workshop supported and facilitated by Parks Canada at the Kenya Wildlife Service Training Institute, 2011

A short course on *Best Practices for Land Tenure and Natural Resource Governance in Africa* provided by USAID/Kenya at the Holiday Inn, Nairobi, 2009

A training course in Environmental Assessment provided for KWS under the USAID/Kenya Cobra Project at Naro Moru River Lodge, 1997.

A training Course in policy Analysis for Africa. A three-months training course organized by the African Centre for Technology studies (ACTS) Nairobi, 1996.

Computer Training in EIA: A study in Environmental assessment. A course prepared by the Division of Geological Survey of the International Institute for Aerospace Survey and Earth

RECENT WORK EXPERIENCE

I have recently facilitated the following management planning processes as an individual consultant:

Period	Client & Contact Information	Country	Consultancy
June 2023- March 2024	Client: Lolldaiga Wildlife Conservancy Reference Contact: Abdi Sora Tel: 0728391823 Email: sora@ani-kenya.org	Kenya	Facilitating the development of Lolldaiga Wildlife Conservancy Management Plan
August 2022- March 2023	Client: Borana Conservancy Reference Contact: Abdi Sora Tel: 0728391823 Email: sora@borana.co.ke	Kenya	Facilitating the development of Borana Conservancy Management Plan
October 2022- February 2023	Client: Baringo County Conservancies Association Reference Contact: Susan Jepkemboi Tel: 0721481467 Email: susan@baringoconservancies.co.ke	Kenya	Facilitating the development of Kiborgoch Community Wetland and Wildlife Conservancy Management Plan
October 2022- February 2023	Client: Baringo County Conservancies Association Reference Contact: Susan Jepkemboi Tel: 0721481467 Email: susan@baringoconservancies.co.ke	Kenya	Facilitating the development of Chuine Wildlife Conservancy Management Plan
October 2022- February 2023	Client: Baringo County Conservancies Association Reference Contact: Susan Jepkemboi Tel: 0721481467 Email: susan@baringoconservancies.co.ke	Kenya	Facilitating the development of Irong Community Conservancy Management Plan
November 2021-May 2022	Client: El Karama Wildlife Conservancy Reference Contact: Michael Nicholson Tel: 0713549019 Email: michael@elkaramaranch.com	Kenya	Facilitating the development of El Karama Wildlife Conservancy Management Plan
June 2021 – March 2023	Client: GIZ Reference Contact: Simon Chuchu Tel: 0788259215 Email: simon.chuchu@giz.de	Kenya	Facilitating the development of the Greater Maasai Mara Ecosystem Management Plan
April-June 2021	Client: Kenya Wildlife Conservancies Association Reference Contact: Dickson Kaelo Tel: 0722467344 Email: dkaelo@kwakenya.com	Kenya	Facilitating the development of Lake Bogoria Landscape Conservancies Land Use and Business Plan

Period	Client & Contact Information	Country	Consultancy
June 2021- August 2021	Client: Ewaso Lions Reference Contact: Dr Shivani Bhalla Tel: 0719883520 Email: shivani@ewasolions.org	Kenya	Facilitating the development of West Gate Conservancy-Core Area Management Plan

I also facilitated the following planning projects while working for KWS:

Lead KWS Planning Consultant in the formulation of the following management plans (NB: KWS offered consultancy services in the development of these plans)

1. South Kitui National Reserve Management Plan (2015-2025)
2. Mwingi National Reserve Management Plan (2015-2025)
3. Aberdare Hills Golf Resort Management plan (2014-2019)
4. Tatu City Open Areas Management Plan (2013-2017)

Planning facilitator in the formulation of the following Conservancies Management Plans

1. Amboseli Land Owners Conservancies Management Plan (2016-2026)
2. Mara Lemek Conservancy Management Plan (2018-2023)
3. Olare-Motorogi Conservancy Management Plan (2018-2023)
4. Ol Kinyei Conservancy Management Plan (2018-2023)

Planning facilitator in the formulation of the following KWS-approved Ecosystem/National Park/National Reserve Management Plans

Ecosystem Plans

1. Amboseli Ecosystem Management Plan (2008-2018)
2. Marsabit Forest Ecosystem Management Plan (2015-2025)
3. Kakamega Forest Ecosystem Management Plan (2013-2023)
4. Mt. Kenya Forest Ecosystem Management Plan (2010-2020)
5. Aberdare Ecosystem Management Plan (2010-2020)
6. Hell's Gate-Longonot Ecosystem Management Plan (2010-2015)

National Park/National Reserve Plans

1. Nairobi National Park Management Plan (2020-2030)
2. Amboseli National Park Management Plan (2020-2030)
3. Kora National Park Management Plan (2018-2028)
4. Lake Turkana National Parks Management Plan (2018-2028)
5. Kisite-Mpunguti Marine Protected Area Management Plan (2015-2025)
6. Watamu Marine Protected Area Management Plan (2016-2026)
7. Malindi Marine Protected Area Management Plan (2016-2026)
8. Ruma National Park Management Plan (2010-2015)
9. Kisumu Impala Sanctuary Management Plan (2010-2015)
10. Lake Bogoria National Reserve Management Plan (2019-2029)
11. Kiunga-Boni-Dodori Conservation Area Management Plan (2013-2023)

Conservancy Management Plans

Masai Mara Ecosystem

1. Olare Motorogi Wildlife Conservancy Management Plan
2. Ol Chorro Oirwa Wildlife Conservancy Management Plan
3. Ol Kinyei Wildlife Conservancy Management Plan
4. Pardamat Conservation Area Management Plan

Amboseli Ecosystem

5. ALOCA Wildlife Conservancy Management Plan

EMPLOYMENT EXPERIENCE

March 2021-Present: Conservation Planning Consultant

- Planning facilitator in the development of landscape, ecosystem and conservancy management plans

December 2014-March 2021: Head-Planning and Environmental Compliance Department, KWS

Duties included:

- Coordinating protect area planning, ecosystem planning, and environmental assessments conducted by KWS, and providing Geographic Information Systems (GIS) information to enhance ecological integrity in Protected Areas (PA) and their ecosystems
- Formulating and reviewing policies, guidelines and manuals for protected area planning and environmental assessments
- Participating in environmental or planning related task forces or committees (participated in the multiagency committees that prepared the **National Wildlife Strategy 2030** and a report on **Wildlife Migratory Corridors and Dispersal Areas in Kenya**)
- Preparing or coordinating preparation of funding proposals
- Providing advisory services on planning and environmental assessments to internal and external stakeholders
- Collaborating with internal and external stakeholders in protected area planning and environmental assessments

December 2006-November 2014: Senior Resource Planner- Planning and Environmental Compliance Department, KWS

Duties included:

- Coordinating preparation of ecosystem and protected area management plans
- Undertaking planning related public and stakeholder consultations
- Participating in, and leading teams of diverse professionals in biodiversity planning
- Ensuring integration of wildlife conservation into national and local land use plans
- Part-time Lecturer in Land Use Planning at the Kenya Wildlife Service Training Institute (KWSTI) where I taught the Land Use Planning Module to students pursuing Diploma in Environmental Management.

January 2004 to November 2006: Senior Research Scientist/Head of Research Station (Tsavo Research Station and Lake Nakuru Research Station).

Duties included Coordination of:

- All wildlife research activities at the Research Station
- Ecological monitoring
- Development of adaptive participatory wildlife related management plans
- Development of ecological as well as Geographical Information Systems databases to support management
- Environmental Impact Assessment/Environmental Audit studies for facilities in the Park
- Administration of the Research Station

January 2002 to December 2003: Research Scientist, KWS Research and Planning Department

Duties included:

Coordination of and participation in:

- National land use coordination activities including preparation of land use report.
- Development of ecosystem based protected area management plans
- Implementation of activities under two UNESCO programmes: Man and Biosphere programme (MAB) and World Heritage Convention (Coordinated the designation of Mt. Elgon as the sixth Biosphere Reserve in Kenya)
- Designing and implementing research activities at Tana River Primate National Reserve Ecosystem
- Part-time lecturer in Land Use Planning at the Kenya Wildlife Service Training Institute

June 2000- December 2001: Project Scientist – Tana GEF Project

Duties included:

- Coordinating activities in the Research and Monitoring component of the Tana GEF Project. This component was being implemented by the National Museums of Kenya, Department of Resource Survey and Remote Sensing (DRSRS) and Kenya Wildlife Service (KWS).

- Team leader in the preparation of a five- year management plan for Tana River Primate National Reserve and adjacent areas.
- Coordinating Primate Monitoring work in Tana River Primate National Reserve.

1997-2000: Land Use Planner: Research and Planning Department

- Duties included: Coordinating the ‘*Savanna Land Use Policy Outcomes Project: Serengeti-Mara Ecological Unit Project*’. This was a collaborative project funded by the European Union and implemented by Kenya Wildlife Service, University College London, Catholic University of Louvain (Belgium) and University of Dar- Es- Salaam.
- Designing and participating in studies on Community Knowledge Attitudes and Practices (KAP) Surveys and Participatory Rural Appraisals (PRA) in group ranches adjacent to Maasai Mara National Reserve.
- Development of a GIS database for the Mara ecosystem
- Coordinating protected area planning

1991-1997: Ecologist II: KWS Wildlife Planning Unit

Key assignments included:

- **1991:** - Team Member in the preparation of Amboseli Management Plan.
- **1992-1993:** Team Leader in the preparation of Shimba Hills National Reserve Management Plan.
- **June 1995- February 1996:** Project Coordinator: **Land Use Planning and Coordination Study**, Research and Planning Department, KWS. Duties involved coordinating all activities related to a land use planning and coordination consultancy. The study’s aim was to develop feasible land use policies that consider the importance of biodiversity conservation.
- **1996-1998:** Project technical staff for the UNESCO funded project titled “**Biosphere Reserves for Biodiversity Conservation and Sustainable Development in Anglophone Africa (BRAAF)**” This project was implemented in five biosphere reserves, Amboseli National Park (Kenya), Queen Elizabeth National Park (Uganda), Lake Manyara National Park (Tanzania), Omo National Park (Nigeria), and Bia national Park (Ghana).
- **1991- 1994:** Project technical staff for the UNESCO funded project titled “**Geo-information for Environmentally Sound Management of Natural Resources**”. Duties in included:
 - Development of a Geographic Information Systems (GIS) database and an Interactive Spatial Modelling (ISM) program for Amboseli Biosphere Reserve.
 - A trainer in two regional GIS training courses organized by UNESCO at the Regional Center for Resource Mapping for Development in 1991 and 1994.
 - Implementing and coordinating research activities.

1985-1990: Assistant Warden I: Wildlife Services Department, Wildlife Conservation and Management Department (WCMD), now KWS.

1981: Untrained Teacher: Kieni Secondary School, Nakuru.

SELECTED REPORTS/PAPERS

1. Muya S., Kamweya A., Muigai A., Kariuki A., and Ngene S., 2013. Using Range Condition Assessment to Optimize Wildlife Stocking in Tindress Wildlife Sanctuary, Nakuru District, Kenya. *Rangeland Ecology & Management*: July 2013, Vol. 66, No. 4, pp. 410-418.
2. Kariuki A. 2004. A Critical Review of Impacts of Land Use Changes on Wildlife Conservation in Kenya. A Report Prepared for Kenya Wildlife Service.
3. Kariuki A. and Bagine R. 2002. "Unique Natural and Cultural Heritage in Kenya's Great Rift Valley for inscription in the World Heritage List." In proceedings of the Great Rift Valley Expert Meeting. Final Report and Recommendations. The Dead Sea, Israel, 30 September – 4 October 2002.
4. Coast E., Homewood K., Lambin E F., Kariuki A., Kikula I., Kivelia J., Said M., Serneels S., Thompson M., 2001. Long Term Changes in African Savanna Wildlife and land Cover. *Pastoralists or Policies*. Proceedings of the National Academy of Science 98, No. 22. pp 12544-12549
5. Kariuki A. 1997. 'Development of an Interactive Spatial Modeling System and Geographic Information System (GIS) data base for Amboseli Biosphere Reserve' in Conservation and Utilization of Indigenous Medicinal Plants and Wild Relatives of Food Crops. UNESCO.
6. Kariuki A. 1996. "The Role of Fire and Elephants in Modifying a Semi- Arid Environment: Woody Cover Modification in Tsavo East National Park" in *Proceedings of the Conference on the Application of Remotely Sensed Data and Geographic information Systems (GIS) in Environmental and Natural Resources in Africa March 15-22, 1996. Harare Zimbabwe*.
7. Toxopeus A G, Bakker X, and Kariuki A., 1994. An interactive Spatial Modeling (ISM) System for the Management of Amboseli Biosphere Reserve. ITC Journal 1994-4. ITC Enschede, the Netherlands.
8. Toxopeus A G, Bakker X, and Kariuki A., 1994. ISM Handbook Volume III. User Manual (Amboseli Case). KWS.
9. Kariuki A. 1992. Application of GIS in Managing the Wildlife Resource" in Proceedings of the Symposium on GIS Applications in Kenya, held at the Hilton Hotel, Nairobi. February 1992.

COMPUTER SKILLS

I can competently use the following software applications: MS Word, MS Access, MS Excel, and MS PowerPoint. In the case of GIS software applications, I have experience in ARC/Info, Arc/View and ILWIS. I also have extensive experience in spatial modeling techniques using Geographic Information Systems (GIS).

WRITING SKILLS

- I have strong writing skills as attested by the management plans that I have authored

PROFESSIONAL REGISTRATION

- I am registered with NEMA as a Lead EIA Expert

PROFESSIONAL AFFILIATIONS

- A member of the Environment Institute of Kenya (EIK)

REFEREES:

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Vice President, Species Conservation and Science
African Wildlife Foundation
Email: pmuruthi@awf.org
Telephone: +254 711063219

Date: 24th March 2024



Apollo Kariuki

APPENDIX 4: KAJIADO COUNTY LAND SUBDIVISION GUIDELINES



COUNTY GOVERNMENT OF KAJIADO

P.O BOX 11-01100, KAJIADO

MINISTRY OF LANDS, PHYSICAL PLANNING AND URBAN DEVELOPMENT

DEPARTMENT OF PHYSICAL PLANNING



KAJIADO COUNTY LAND SUB-DIVISION GUIDELINES - 2018

	Enkariak-Rongena and Empiron	- Loitokitok Town, Radius of 2 Km	- 0.045	- Mixed Urban Use
		- All other Trading Centres, Confined to original boundaries	- 0.045	- Mixed Urban Use
		- Other Areas	- 0.4	- Agriculture
	Entonet	- All Trading Centres, be confined to original boundaries	- 0.045	- Mixed Urban Use
		- Other Areas	- 1.0	- Agriculture
	Olgulului/Oloolarashi	- All Trading Centres, confined to original boundaries	- 0.045	- Mixed Urban Use
		- Group Ranch Area	- Retain Status quo	- Pastoralism and Conservation
	Eselenkei	- All Trading Centres, confined to original boundaries	- 0.045	- Mixed Urban Use
		- Group Ranch Area	- Retain Status quo	- Pastoralism and Conservation
	Kuku	- All Trading Centres, confined to original boundaries	- 0.045	- Mixed Urban Use
		- Group Ranch Area	- Retain Status quo	- Pastoralism and Conservation
	Mbirikani	- All Trading Centres, confined to original boundaries	- 0.045	- Urban Use
		- Group Ranch Area	- Retain Status quo	- Pastoralism and Conservation
2. Kajiado Central	Mailua, Osilalei, Lorn'osua, Meto, Purko	- Namanga Town, radius of 2 Km - Ilbisil town, radius of 1.5 Km - Other trading centres along Namanga Road, radius of 1 Km	- 0.045	- Mixed Urban Use
		- All Trading Centres, confined to original boundaries	- 0.045	- Mixed urban use
		- 1 Km buffer along Namanga Road (between Kajiado and Namanga town)	- 1.0	- Mixed commercial use
		- 1 – 5 Km from Namanga road (between Kajiado and Namanga town)	- 2.0	- Agricultural

APPENDIX 5: KAJIADO COUNTY SPARTIAL PLAN 2019 – 2029 RECOMMENDED LAND USE FOROOGR

SUB-COUNTY	REGISTRATION SECTION NAME	AREA/ZONE	MINIMUM PERMITTED SUBDIVISION (in hectares)	PERMISSIBLE USE
		All Trading Centres, be confined to original boundaries	- 0.045	- Mixed Urban Use
		- Other Areas (Adjudicated)	- 2.0	- Agricultural
		- Group Ranch Area	- Retain Status quo	- Pastoralism and Conservation
	Enkariak-Rongena and Empiron	Loitokitok Town	- <0.5 km radius - 0.045	- Mixed Urban Use
			- 0.5 – 1km km radius - 0.10	
			- 1 – 2 km radius - 0.20	
		- All other Trading Centres, Confined to original boundaries	- 0.045	- Mixed Urban Use
		- Other Areas	- 0.4	- Agriculture
	Entonet	- All Trading Centres, be confined to original boundaries	- 0.045	- Mixed Urban Use
		- Other Areas	- 2.0	- Agriculture
	Olgulului/Olool arashi	- All Trading Centres, confined to original boundaries	- 0.045	- Mixed Urban Use
		- Group Ranch Area	- Retain Status quo	- Pastoralism and Conservation

APPENDIX 6a: Proceedings of the Plan Scoping and Screening by the Core Planning Team at African Conservation Center (ACC), Nairobi.

First Core Planning Team Meeting

Agenda

- 1) Meet face to face**
- 2) Get to know the team
- 3) Review of the planning process**

The meeting was held at ACC Karen on 11th July, 2018.

Opening Remarks: The Chair of the meeting Mr Johnson started off the meeting by welcoming members and asked all to introduce themselves. After introductions, the AET CEO Mr Jackson welcomed the PECS Ltd Consultants led by Dr. Bernard Kaaria and congratulated them for demonstrating capability to undertake the AEMP preparation. He also said that the contract to the consultancy firm is now officially granted and that work should start immediately.

The following are the key highlights of the meeting:

- It was noted that process has one year time frame starting from 15th July, 2018, to be ready same time next year, around July 2019
- It was agreed that the consultants will need to meet the Senior researchers and stakeholders in the Amboseli ecosystem
- That the plan needs to be participatory and remarkably from the existing plan, by incorporating components of that were previously missing like community and grazing activities
- The meeting noted that AET is now fully functional and effectively coordinating other ecosystem stakeholders.
- Dr. David Western gave a background on origin and evolution of the plan since 2004. He emphasized the need to understand the concept of minimum viable area
- He also emphasized importance of data collected by ACP, which he recommended to the consultants to make reference.
- He also indicated to the team that he has prepared a 45 page summary of the issues surrounding the plan and promised to make it available to the consultant
- He reported that the new wildlife strategy recognizes the minimum viable conservation area (MVCA) planning concept.
- Challenged the consultants to come up with plan that can serve as a template for other integrated ecosystem plans
- The planning process should take account of Noonkatiak Community Resource Monitoring and Cultural Center and factor its operations in the plan.
- The plan process should take into consideration the spatial plan being developed by Kajiado County Government, the grazing and land use plans by individual group ranches with a view to integrating them in the plan

- The consultant will play coordination role of the planning process and ensure effective participation by all stakeholders
- The Chairman tasked the consultant to develop a work plan and share with the Core Planningteam to enable forward planning.
- The consultant was requested to give a minimum of 14 days' notice when planning for im-portant consultation meetings with stakeholders
- Finally, the consultant made a short power point presentation of the Planning and Strategic En-vironmental Assessment process.

APPENDIX 6b: Proceedings of the Plan Scoping Work-shop for Amboseli Ecosystem Held on 11 October 2018 at Ol Tukai Lodge

Annex 3: Amboseli Ecosystem Plan Scoping Meeting Agenda

8:45 – 9:00 Registration
9:00 – 9:10 Introductions Welcome remarks-AET
9:10 – 10:30 Amboseli Ecosystem Plan Foundation

ACP: The Ecology and Changes of the Amboseli Ecosystem
AET : The AEMP 2008-2018 and SEA implementation and lessons learned
KWS: Amboseli National Park-Management Issues and Options
NEMA: Compliance with the ecosystem management plan at implementation level
PECS: The AEMP Planning Road map and progress to date

10:30 – 11:00 Tea

11:00-13:00 Plan Scoping

- Defining the Geographic Scope
- Identifying plan owners
- Identifying key values
- Identifying Issues, Problems and Opportunities to be addressed by the plan

13:00-14:00 Lunch

14:00-16:00 Plan Scoping continued

- Developing the AE vision
- Identifying stakeholders
- Developing a stakeholder participation and communication strategy
- Information requirements for planning

16:00-16:30 Tea

16.30-17.00 Next Steps and closing

Introduction

This report sets out the proceedings of a stakeholder plan scoping meeting for Amboseli Ecosystem (AE) held on 11 October 2018 at the Ol Tukai Lodge Amboseli. This was the first stakeholder meeting organized for development of a new management plan for the Amboseli Ecosystem. This document outlines the key decisions made by stakeholders at this meeting.

Workshop Objectives

The principal objective of the Plan Scoping Meeting was to discuss and agree on:

- Who owns the management plan and is responsible for its implementation;
- The geographical scope of the plan;
- The management problems & opportunities to be addressed by the plan;
- Management Programmes to address these problems and opportunities;
- The exceptional resource values in the AE;
- A provisional long term vision statement of the AE; and
- Stakeholders potentially affected by the plan

Opening remarks

Remarks by Jackson Mwato, Executive Director, AET

In his opening remarks, Mr. Mwato welcomed participants to the meeting and pointed out that:

- That the AEMP 2008-2018 has expired, hence need for a new one
- The scoping meeting is a mini launch of the planning process as the main launch is slightly de-layed by protocol issues
- That after 2 month trying to fix the date for actual launch, it has become difficult because of the packed diaries of the officials targeted to grace the occasion
- That AET decided to unlock the process with the mini launch as the official launch is waited

He also noted that:

- AET is now established as the coordinating body for the ecosystem plan, making it easier now unlike before
- Before AET, KWS was steering stakeholder meetings and activities
- AET has made Amboseli ecosystem way ahead of other areas because it is the only place with an ecosystem level plan that is being implemented
- AET is now coordinating small management plans for the group ranches/conservancies

- The success of Plan Implementation Committee – PIC – which has hitherto played a big role in regulating developments in the ecosystem– Example, it vetoed vision 2030 project that wanted to set up a tourism city at Mashenani area. It also put pressure to realign road initially designed to pass via Amboseli National Park. It also managed to move an upcoming town next to Kimana Gate. This was noted as a big plus for PIC and the new management plan was asked to give it more leeway to handle its mandate of harmonizing divergent interests
- The review of the AE plan is being supported by many organisations including UNDP, Big life, IFAW, Lion Guardian, KWS, Ol Tukai Lodge among others

Remarks by Kenneth Ole Nashu, Senior Warden, Amboseli National Park

In his remarks, the Senior Warden noted that:

- The management plan would be a milestone for integrated management plans
- The mini launch was vital before the official launch to give participants time to interrogate the plan review process
- Previous plan has expired and there is need for a new one to guide management for the next 10 years
- There is great concern over many land use activities in the ecosystem that are inimical to conservation. Hence there is need for a management plan to guide land use regulation
- There is need to safeguard the ecosystem to protect all interests – livestock, people, wildlife etc
- All stakeholder are appreciated for collective efforts to manage the ecosystem
- there are many issues in Amboseli National Park that would benefit attention by the management plan
- that shrinking space - for livestock and wildlife is a big challenge
- degradation in the ecosystem has increased competition for pasture and concentration of wild- life within the park. Example, 950 elephants were counted inside the park two weeks ago
- human wildlife conflict is another problem –closely related to lack of space, and increase in other land uses like agriculture
- Another challenge in the park is administrative – staffing issues especially shortage of rangers, which is complimented by staff employed by stakeholders like big life etc
- Another problem -congestion of tourists, which is a big challenge because the park is small
- He said options lie with working better with community. E.g. Kitenden conservancy, which assists in lessening pressure on the park
- Another challenge is roads, noting that there very bad roads outside the park – which are classified roads by government and ambit of KURA but which is too bureaucratic to deal with.
- there is need for modern structures for curios/beadworks
- that trans boundary issues are very important eg elephant and wildebeest and asked the plan to consider cross border issues
- Water is an important subject in the plan – for wildlife and livestock
- Infrastructural development – to be regulated in consideration of livestock and people – eg

un- derpasses and overpasses.

- Degradation and invasive species – plan to manage the invasive species before they mess the ecosystem

Remarks by Dr. David Western, ACP

In his remarks, Dr. Western pointed out that:

- Fifty years (50) of data has been compiled into a report already given to the consultant. Hence no need for more comprehensive submission at the meeting
- No other ecosystem has as much information as Amboseli and hence it should be possible to take advantage of all this knowledge to come up with the best plan. history is vital to guide the new developments and proposals. For instance, historically, wildlife used to move away together with livestock, but now we have resident populations of both cate- gories, including people.
- The biggest change has been observed with elephants – whose population dropped from about 1000 in 1970s and increased to about 1500 recently. And now they have started concentrating in Amboseli Park causing huge impact
- Also, most Maasai don't migrate as before and this sedentarization need to be understood and factored in the plan
- the above changes have created conflicts which become very serious during drought and as such, how to manage the conflicts is very important, the plan must also consider human development, including shambas and settlements e.g. 80% of herbivores are livestock and 20% wildlife and there is need to plan for all these sectors.
- There is degradation of pastures affecting livestock. The plan has to concentrate on livestock de- velopment – productivity by allocating big land for cattle and wildlife to minimize losses. It should also explore possibility of moving livestock from subsistence production to commercial production in order to create space for wildlife
- The plan is not about wildlife alone and must not be perceived to be about wildlife by the public. That it must get land use planning right as that is what will save wildlife
- resource assessors who tell us the condition of everything is important
- Centerpiece of the plan must be the Nongotia centre. Centre of information and research, which in future will also become planning centre

Remarks by the planning consultant, Dr. Benard Kaaria - PECS

In his remarks, Dr Kaaria:

- Informed the workshop that the previous management plan was gazetted under KWS Act 2013. And since KWS has no control of land use outside the park, it poses a challenge on who will ga- zette the plan and under what law
- Gave the workshop detailed account of his efforts to engage NEMA and get them to commit to gazette the new plan
- noted the need for the plan to be gazetted under EMCA 2015 which allows plan owner to have more teeth in enforcing compliance
- noted that there is need for high level participation and commitment

Summaries of the deliberations of the plan scoping workshop discussions and the decisions made re-

garding each of the points outlined under the workshop objectives section above are set out in the following sections of this report. Details of participants of the plan scoping workshop are given in Annex 1 while annex 2 presents the agenda for the Plan Scoping Workshop.

Geographical Scope of the Management Plan

1. ***Which ecological processes link the different geographic components of the AE E.g. Livestock movement patterns, wildlife migration***
2. ***Social connections in the ecosystem***

In deciding on the geographic scope of the plan the meeting was guided by the following questions:

The workshop agreed that the plan will cover the six group ranches (Olgulului/Olorarashi, Selengei, Mbi-rikani, Kuku, Rombo, Kimana group ranch (now subdivided) and Amboseli National Park, which together host over 95 per cent of the wildlife populations in the Amboseli Ecosystem. The migratory wildlife species in Amboseli, such as elephants and wildebeests, although they spill over to adjacent ecosystems, mostly forage in the six ranches and the park.

Plan ownership

The question of who owns the plan and has lead responsibility for its implementation has important implications for how the planning process will be carried out and how stakeholders will be involved. In identifying the plan owners the meeting deliberated on the following issues:

- Who are the competent authorities (legal owners) in regard to land and land use in the planning area?
- The plan will contain Prescriptions and Limits of Acceptable Use (e.g. on tourism use). The plan owners will need to agree on these, and then enforce them.
- The plan will contain Activities that will need to be implemented if it is to succeed. The plan owners will need to agree on these activities, assign responsibility for delivering them, and allocate the necessary resources.
- The plan owners will need to sign the Approval Page of the plan, agreeing that they will implement the contents of the plan
- An alternative to being a plan owner is to simply be a stakeholder. Stakeholders are not directly responsible for plan implementation, and plan activities will therefore address stakeholder needs to a lesser extent

The workshop deliberated on plan ownership and agreed that ***the plan will be owned by community – represented by AET***. The AET Governing council is made up of land owners who endorse all decisions. AET coordinates the implementation of the 2008-2018 management plan with support from the multi-agency Plan Implementation Committee.

Problems and Opportunities to be addressed

In a brainstorming session, workshop participants identified what they considered to be the major management problems and opportunities facing the AE. This analysis provides a foundation for the identification of the management programmes the plan should contain (discussed in the following

section), as well as for the development of each management programme's objectives and actions at subsequent planning events.

Table 1 and 2 present the outcome of the problems and opportunities analysis respectively.

Problems to be addressed by the management plan

<ol style="list-style-type: none"> 1. Incompatible land uses eg. agriculture in wildlife corridors 2. Encroachment into wildlife areas 3. Recurring droughts 4. Deforestation 5. HWC 6. Implementation hiccups brought about by legal issues 7. Land Subdivision 8. Insecurity 9. Climate change 10. Increasing sedentary lifestyle 11. Habitat Fragmentation 12. Limited Resources to fund implementation 13. Charcoal burning 14. Sand harvesting 15. Poaching 16. Land and soil Degradation 17. Disagreements between stakeholders 18. Conflicts of interest by the legal document holders 19. Lack of transparency in distribution of communal income 20. Development in the wrong places; Lack of control on development along water course 21. Migration of wildlife 22. Lack of or delayed compensation 23. Lack of benefits from the wildlife/ Amboseli National Park 24. Lack of support from government/ KWS on conservancies 25. Poor Governance structures 26. Population increase 	<ol style="list-style-type: none"> 27. Inadequate Livestock and grassland management 28. Disconnect between government (KWS) and conservation 29. Politics in the ecosystem 30. Overgrazing and Overstocking 31. Reduced space for wildlife conservation movement and livestock grazing 32. Poorly planned tourism development 33. Increase poverty levels among community 34. Local community exploitation by outsiders 35. Poor infrastructure 36. Fencing 37. Poor planning on Water distribution 38. Lack of ways of curbing fire and fire fighting process 39. Lack of security rangers patrol 40. Unplanned settlements 41. Lack of consultation incase of plan implementation 42. Little benefit to the community/ wildlife accrued benefit 43. Mining 44. Corruption 45. Illiteracy 46. Diseases 47. Communication 48. Land sale bringing people with different land use plans 49. Insufficient Management capacities 50. Ownership of the land should the organization go into insolvency
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Opportunities to be addressed by the management plan

<ol style="list-style-type: none"> 1. Wealth of documented information 2. Model of community based conservation approach 3. Availability of un-subdivided community land 4. An intact culture 5. Management plan 6. Policy environment 7. Community goodwill 8. Amboseli Ecosystem Trust 9. Many stakeholders eager to contribute 10. Existence of the previous plan 11. skills 12. Livestock economy 13. Community projects to improve livelihood 14. Equipped rangers 15. Fundraising plan 16. Awareness creation 17. Creation/ development of community conservancy 	<ol style="list-style-type: none"> 18. Productive rangelands if managed properly 19. World renowned ecosystem and tourism value 20. Scholarships 21. Well equipped hospitals 22. Available open communal land 23. Communal land ownership 24. Management plan fully implemented 25. Resource centers 26. Development of land bank to purchase land 27. Compensation fund
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Preliminary Management Programme Identification

The problem and opportunities analysis described in the previous section provided the basis for the preliminary identification of plan management programmes. The four management programmes the plan is likely to contain are:

- **Community Livelihood and Use Programme**
- **Natural Resource Management Programme**
- **Tourism Development and Management programme**
- **Institutions and Governance Programme**

Each of these programmes, and the principal management themes identified under each of them, are presented in Table 3 below. The themes will provide the basis for the development of management programme objectives and actions at subsequent planning events.

Potential management programmes and major themes

Community Liveli-hoods and Use	Natural Resource Management	Tourism Develop-ment and Man-agement	Institutions and Governance
<ul style="list-style-type: none"> • Livestock Management • Agricultural Development • Other Socio- 	<ul style="list-style-type: none"> • Habitat management • Wildlife Management • Water re- source 	<ul style="list-style-type: none"> • Infrastructure development • Product diversi-fication • Tourism In-vestment 	<ul style="list-style-type: none"> • Institutional col-laboration • Natural resource governance

Economic activities	management	<ul style="list-style-type: none"> • Administration & Management • Marketing 	
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Amboseli Ecosystem's Exceptional Resource Values

The AE Exceptional Resource Values (ERVs) describe the area's key natural resources and other features that provide outstanding benefits to local, national and international stakeholders and that are especially important for maintaining the ecosystem's unique ecological, scenic, and socio-cultural characteristics. Table 4 presents all the ERVs identified at the scoping workshop..

AE's Exceptional Resource Values

Category	Exceptional Resource Value
Biodiversity	• Wildlife Corridors
	• Big tusker elephants
	• Large Carnivores
	• Birds
	• Buffaloes
	• wild dogs
	• Ostriches
	• Acacia woodlands
	• Black rhino
	• Grasslands
	• medicinal herbs
	• Natural Forest
	• Livestock
	• Ecological services
Scenic	• Mt. Kilimanjaro
	• Valleys
	• Chyullu hills
	• Kitirua area
	• Loosikitok hill
	• Swamps and rivers
	• Lake Amboseli
Socio-cultural	• Traditional Pastoralism
	• Bead works
	• spiritual development
	• Rich Maasai culture & local people
	• Employment
	• Tourism
	• mining potential
	• Cross-border connections
	• Health – medicinal materials
	• Education

	<ul style="list-style-type: none"> • Totems
	<ul style="list-style-type: none"> • Income generation

Provisional Vision Statement

A management plan vision is an inspiring forward-looking statement that describes the planning area as it could be in 10 years as a result of implementing actions and resolving issues related to:

- The important features of the planning area;
- The way people value and support the place and
- How they experience it.

The purpose of a vision is to establish common ground among those involved with and affected by the plan, communicate the unique and important special characteristics of the planning area, to inspire support for it, and to provide an overarching framework for the more specific management objectives.

The workshop deliberated on the vision statement for AE by brainstorming on the future desired states regarding the AE's socio-ecological system. The individual contributions of the workshop participants are listed in box 1 below

Box 1: List of AE's future desired conditions proposed by workshop participants

1. A balanced ecosystem where resources are shared equitably for the betterment of the land owners' livelihoods
2. A more inclusive management plan that will cut across the views and to take into consideration of people/ communities to be able to achieve the plan goals looking into the future
3. To have an exemplary conservation community with pristine wilderness and coexistence with people, farming that is sustainable and people who are happy and proud of their natural heritage
4. To see a well-managed ecosystem in which all the interrelated living and non-living organisms are in harmony with one another and that communities derive maximum benefits on land resources
5. Ecosystem with freedom of movement for all people and animals (livestock and wildlife) and well-secured connectivity
6. Holistic grazing on communal land
7. No shoot
8. Improved livestock breed and viable manageable livestock population
9. Improved infrastructure and well-coordinated ecosystem management in both tourism and other key facilities or issues
10. Cross-border security
11. Communities around the park benefiting almost or more than KWS because of conservation
12. Conservancies becoming self-sustainable

13. More people from the communities around the park being employed in the tourist facilities around the park
14. more conservancies and wildlife corridors Created
15. Maintenance of wildlife numbers living compatibly with traditional pastoral lifestyle
16. Controlled land selling
17. More graduates in the community
18. Improved health care
19. Improved culture
20. Improved security
21. Fence in water catchment areas
22. Afforestation
23. The management plan effective and implemented
24. Improved livelihood of the communities around the ecosystem
25. Improved tourism environment
26. Amboseli Ecosystem should have a vibrant governing system that will reduce human wildlife conflicts
27. It should be a role model to be adapted in other ecosystems in the country
28. Improved infrastructure
29. In all planning is important to consider balance especially livestock and tourism and asked the members to appreciate significant role played by tourism in the ecosystem and national economy

The following is the provisional Vision Statement for the Amboseli Ecosystem:

“A balanced ecosystem where resources are shared equitably for the betterment of the land owners livelihoods”

- ***Community livelihoods and Use: 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.***
- ***Natural Resource Management: Amboseli Ecosystem features a diversity of ecological processes, with rich and varied biodiversity interactions. This has resulted in increasing healthy populationsof wildlife. 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.***
- ***Tourism Development and Management: The 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 tourism activities are enjoyed.***
- ***Institutions and Governance: The Ecosystem has effective management institutions and clear gov- ernance systems.***

Stakeholder Analysis

The workshop participants analyzed the key organizations, institutions or groups potentially involved in or affected by the plan and grouped them according to the following categories:

- Implementers
- Supporters/Beneficiaries
- Partners/Collaborators
- Policymakers
- Opponents/Losers

This analysis is an important precursor for identifying which stakeholders should be involved in particular planning events. The results of the stakeholder analysis are presented in Table 5 below.

A preliminary analysis of stakeholders for the Amboseli Ecosystem Management Plan

Implementers	Supporters	Partners/collaborators	Beneficiaries	Policy Makers	Opponents/Losers
<ul style="list-style-type: none"> Local Community KWS 	<ul style="list-style-type: none"> NGOs KWS KWCA 	<ul style="list-style-type: none"> NGOs KWS Research Groups Tourism Partners ACC AET IFAW Big Life Foundation Private Sector Private Land Owners NEMA WRMA County Government Community conservancies 	<ul style="list-style-type: none"> Local communities KWS Land owners Business community 	<ul style="list-style-type: none"> KWS County government WRMA NEMA 	<ul style="list-style-type: none"> Poachers Land grabbers community members

Further, the workshop made the following recommendations:

- Core planning team – The CPT should be broadened from previous one, which was more wildlife focused, to reflect diversity of mandate. It should include AET, KWS, IFAW, NEMA, Big Life, Amboseli Trust for Elephants, ACC, AWF and Ministries responsible for Land, Water, Agriculture and Livestock
- Discussion on stakeholder participation strategy to wait for stakeholder planning meeting to be convened later
- Stakeholders from the tourism sector should be consulted and they should be encouraged to participate and commit to the planning process

Management Planning Activities for the Next Eight Months

The workshop deliberated on management planning activities that will be implemented between October 2018 and June 2019 and agreed on the following next planning steps:

1. Stakeholder Planning Workshop
2. Village level consultative meetings
3. Expert Working group meetings
4. Final Plan drafting
5. Plan endorsement and approval
6. Plan gazettelement

APPENDIX 7: PROCEEDINGS OF THE WORKSHOP FOR THE AMBOSELI ECOSYSTEM MANAGEMENT PLAN KYAKA MACHAKOS 26-27TH MARCH 2019

Background

The Amboseli Ecosystem (AE) planning process began in October 2018, with a “Plan Scoping Meeting” held at Ol Tukai Lodge. This meeting defined the geographic scope of the AE management plan, and the major problems and opportunities in the AE that the plan should address. This meeting was followed by the collection and synthesis of resource base information and the launch of stakeholder consultations necessary for plan development. The consultations are being held through small consultative meetings and large planning workshops. In addition, four working groups (WGs) have been formed to develop the eight management programmes that have been agreed upon by stakeholders and will form the heart of the new AE Management Plan. These working groups and the programmes developed are:

AEMP Working Groups

Working Group	Management programme
1. Natural Resource Management	1. Habitat
	2. Wildlife
	3. Water
2. Tourism	4. Tourism Development & Management
3. Socio-economic	5. Livestock
	6. Agriculture
	7. Socio-economic
4. Governance	8. Institutions and Governance

The WGs are intended to be technical forums, and therefore group membership is selected on a technical, not representational, basis. The outputs of the WGs will later be reviewed and discussed by all stakeholders involved in the planning process at the subsequent Stakeholder Plan Validation Workshop.

A. Tasks

The **Natural Resource Management Working Group** will be responsible for elaborating the following aspects of each of the AE plan’s Habitat, Wildlife and Water resource management programmes:

1. Developing an overall programme purpose and strategy that provide general statements of policy to guide habitat, wildlife and water resource management activities in the AE over the next 10 years, and which is linked to national and county policies and strategies.
2. Reviewing and elaborating the 10-year provisional programme management objectives, and identifying management actions to achieve the management objectives.
3. Reviewing the provisional AE zoning scheme and management prescriptions and guidelines for each zone to ensure that AE’s ecological integrity is maintained.

The **Tourism Management Working Group** will be responsible for elaborating the following aspects of the AE Plan’s Tourism Development and Management Programme:

1. Developing an overall tourism strategy for the AE, that provides a general statement of policy to guide tourism development and management activities in the AE over the next 10 years, and which is linked to national and county tourism policies and strategies.
2. Reviewing and elaborating the 10-year provisional tourism management objectives, and identifying management actions to achieve the management objectives of the Programme
3. Reviewing the provisional AE zoning scheme including developing specific tourism development and management prescriptions and guidelines for each zone (including “Limits of Acceptable Use” for tourism activities, concession development, bed numbers, etc.)

The zoning scheme and the associated tourism management prescriptions and guidelines, designed to control use of and minimise pressures on AE tourism features and facilities, are regarded as an especially important aspect of the Tourism WG’s outputs, given the anticipated growth in tourism in Kenya over the coming years and the need, as identified by AE stakeholders, to maintain the AE’s ecological integrity.

The **Socio-economic Working Group** will be responsible for elaborating the following aspects of each of the AE plan’s Livestock, Agriculture and Socio-economic management programmes:

1. Developing overall programme purpose and strategy that provide general statements of policy to guide programme management activities in the AE over the next 10 years, and which are linked to national and county policies and strategies.
2. For each programme, review and elaborate the 10-year provisional programme management objectives, and identify management actions to achieve the management objectives.
3. Reviewing the provisional AE zoning scheme and management prescriptions and guidelines for each zone to ensure that zoning considers socio-economic development.

The **Governance Working Group** will be responsible for elaborating the following aspects of each of the AE plan’s *Institutions and Governance* management programme:

1. Reviewing and developing overall programme purpose and strategy for the Institutions and Governance programme that provide general statements of policy to guide Institutions and Governance management activities in the AE over the next 10 years, and which are linked to national and county policies and strategies.
2. Reviewing and elaborating the 10-year provisional programme management objectives, and identifying management actions to achieve these management objectives.
3. Reviewing the provisional AE zoning scheme and management prescriptions and guidelines for each zone.

B. Time Schedule

It is expected that the above TOR can be accomplished in a 3-day meeting of the Group, with potentially some additional individual contributions after the meeting. The ground to be covered at the meeting is shown in the box below.

C. WG Meeting

- Review and development of the AE Livestock, Agriculture and Socio-economic Strategies
- Review of Livestock, Agriculture and Socio-economic Programmes Objectives
- Identification of management actions to meet the Programmes management objectives
- Review of AE Zoning Scheme and management prescriptions

D. Working Groups Membership

The following Core Planning Team members and Socio-economic experts will be invited to participate in the AE Socio-economic WG:

S/N	WORKING GROUP	MANAGEMENT PRO-GRAMME	MEMBERS	ORGANIZATION
1	Natural Re-source Man-agement	1. Habitat	1. KoikaiOloitiptip	AET
		2. Wildlife	2. KenethNashuu	KWS
		3. Water	3. Vicki Fishlock	ATE
			4. Anthony Kiande	WARMA
			5. Leela Hazah	LION GURDIAN
			6. Daniel Metui	MBIRIKANI CHAIR
2	Tourism	Tourism Development and Management	1. Daniel Kaaka	AET
			2. Jeremy Goss	BIGLIFE
			3. Johnston Sipitiek	ACC
			4. Nelly Palmares	AD-KWS
			5. Florence Mwikali	NEMA
			6. Samuel Kaanki	ALOCA
3	Social Economic	1. Livestock	1. Peter Solonka	ACC
		2. Agriculture	2. Apollo Kariuki	KWS
		3. Socio-Economic	3. Daniel Leturesh	OLGULULUI-CHAIR
			4. NdundaZakayo	Min-AGRICULTURE
			5. Esther Solonka	Min-LIVESTOCK
			6. Abraham Loomuna	AET
4	InstitutionAnd Governance	Governance	1. Jackson Mwato	AET
			2. Keen Parashina	COUNTY GOVT
			3. Evans Mkala	IFAW
			4. Emmanuel Mpararia	GOVERNANCE CHAIR
			5. Moses Okelo	SFS
			6. Joel Ketukei	KUKU

2. WORKING GROUP PRESENTATIONS

A. NATURAL RESOURCE MANAGEMENT WORKING GROUP

The participants were as follows: -

<u>Name</u>	<u>Organisation</u>
1. Koikai Oloiptip	AET
2. Kenneth Nashuu	KWS
3. Christine Mwinzi	KWS
4. Tal Manor	ATE
5. Katitio Sayialel	ATE
6. Luke Mamai	LG
7. Jackson Mereesi	EGR

Management Programme 1: Habitat Management			
Problems & Opportunities	Actions	Priorities (H,M,L)	Partners
Habitat degradation	1. Soil restoration 2. Woodland regeneration/ enclose fences 3. Re- seeding programs (grass, indigenous species) 4. Soil erosion control 5. Managing off road driving in conservancies 6. Pasture management/ livestock grazing plans 7. Establishing grazing committees and enforcement bodies for grazing plans on local level 8. Opening avenues for local communities to establish profitable livelihoods from their traditional lifestyle 9. Environmental education programs/ outreach	1. H 2. H 3. H 4. H 5. M 6. H 7. H 8. H 9. H	KWS, NGO, GR
Invasive Species	1. Physical removal of invasive plants	H	KWS, NGO, GR
Logging / Charcoal Burning	1. Ranger patrols 2. Education programs 3. Providing alternatives for cooking firewood e.g. biogas, solar	1. H 2. H 3. M	KWS, NGO, GR
Mining of resources	1. Control and monitoring of quarrying activities 2. Surveys for mining opportunities in the AE provided they are eco-friendly	1. M 2. M	KWS, BL, NEMA PAC and respective land owners
Unplanned human settlements / developments	1. law enforcement 2. Local leadership engagement	1. H 2. H	AET, NEMA

Fire outbreaks	<ol style="list-style-type: none"> 1. Building fire breaks 2. Provision for fire fighting equipment 	<ol style="list-style-type: none"> 1. L 2. L 	KWS, GR
Management Programme 2: Wildlife Management			
Problems & Opportunities	Actions	Priorities (H,M,L)	Partners
HWI	<ol style="list-style-type: none"> 1. HWI protocols 2. Intensification of patrols 3. Identification of hotspots Compensation/ Consolation programs for live stock loss from wildlife 	<ol style="list-style-type: none"> 1. H 2. H 3. H 4. H 	KWS, NGO, Community Representatives
	<ol style="list-style-type: none"> 5. Establishing a unified/ collaborative fund for consolation 6. Conflict mitigation and education 7. Intervention of lion hunts 8. Mobile ranger units (rapid response) 9. Fences in Agricultural areas to prevent crop loss as well as people illegally settling in wild-life areas 10. Environmental education programs to avoid human injuries or casualties 4. Agricultural areas need interventions for HWI 	<ol style="list-style-type: none"> 5. H 6. H 7. H 8. H 9. H 10. H 5. H 	
Wildlife dispersal areas / migration corridors	<ol style="list-style-type: none"> 1. Engagement with National Wildlife Corridors and Dispersal area Taskforce 2. Engagement with NEMA to control development 3. Education programs 4. Developing tourism income in the corridors to encourage alternative land-use 5. Establish conservancies/ long -term leases in connectivity area 6. Discourage land-use which damages wildlife movement 7. Providing support for communities (pastoral or agricultural) to promote coexistence (i.e. finding lost livestock, repair bad bomas, mock hunts, hydroponics) 8. Regular Wildlife Monitoring & aerial surveillance of corridors for early intervention 9. Regular reports to partners regarding status of corridors 11. Engaging with new communities to increase dispersal areas and tourism areas in the AE 	<ol style="list-style-type: none"> 1. H 2. H 3. H 4. H 5. H 6. H 7. H 8. H 9. H 10. H 11. M 	Government sectors, NGO, GR, Community

Wildlife Population Dynamics	1. Regular surveys on population dynamics for shared database 2. Research on carrying capacity	1. H 2. M	ATE, LG, ACC, KWS, Baboon Research
Diseases	1. Undertake disease surveillance (research) 2. Disease transfer between livestock and wildlife 3. requires intervention	1. M 2. M	KWS
Wildlife Security	1. Poaching for bushmeat / wildlife products 2. Wildlife Trafficking e.g. pangolin 3. Stopping retaliation killing 4. Livestock theft assistance 5. Wildlife poisoning intervention 6. Engage with bordering communities regarding poisoning of wildlife e.g. Kaputei, Matapatu (Osewan, Kunchu), Kilinyet	1. H 2. H 3. H 4. M 5. M 3. H	KWS, NGO, GR, Community Scouts
Management Programme 3: Water Resources			
Problems & Opportunities	Actions	Priorities (H,M,L)	Partners
Relieving water shortages	1. Creating rain water catchment dams in areas without permanent water sources 2. New boreholes / wells for communities & wildlife 3. Large scale rainwater harnessing projects Maintenance of boreholes & wells	1. H 2. H 3. H H	GR, KWS, NGO
Destruction of water catchments	1. Restoration of rivers	4. H	KWS, NGO, GR
Shallow wells that trap wildlife	1. Unused wells that trap wildlife need to be closed and communities provided an alternative i.e. Kitirua Engage grazing committees on alternative water points for livestock	1. H 5. H	AET, KWT, GR
Northern Pipeline & maintenance	2. 1. Regular service & repair	2. H	TANA, ATHI, OGR, KWS
Nolturesh Pipeline usage issues	3. 1. Adhere to specific GR management/zonation plans for the pipeline	3. M	Kuku, Mbiri-kani, Selenkay GR
Agricultural chemical water pollution in farmed regions of the AE	4. 1. Encourage organic farming	4. H	AET

B. TOURISM WORKING GROUP

1. Group Discussion Members

<u>Name</u>	<u>Organisation</u>
1. Daniel	PECS
2. Ken Naine	OGR
3. Joseph Kipaai	OGR
4. Lydia Biri	MWCT
5. Jonah Maai	Eselengei
6. Florence Mwikali	NEMA
7. Jeremy Goss	Big Life Foundation
8. Nelly Palmeris-	KWS
9. Johnson Sipitiek-	ACC
10. John Sitelo–	Rombo Chairman
11. Daniel Kaaka	AET

2. Attractions

- Amboseli National Park
- Lake Amboseli
- Views of Kilimanjaro – from everywhere in ecosystem
- Wildlife in the group ranches
- Large elephant herds habituated to human presence
- Presence of large charismatic wildlife species, and high levels of biodiversity
- Authentic Maasai culture
- Scenery and geographical features (eg.Chyulu Hills)
- Accessibility – easy drive from Nairobi
- Hospitable climate and all-year accessibility

3. Tourism infrastructure

Roads

- Roads inside the park are not good, and the existing road network for tourist access to group ranches is both not sufficient and of poor quality.
- Lack of connectivity between tourism destinations, without having to go back to Nairobi e.g. Amboseli – Mara and Amboseli - Tsavo

Visitor facilities

- Need active visitor education center (Noonkotiak coming up)
- Signage (good in park, little on group ranches)
- Info panels (good in park, little on group ranches)
- Picnic areas (Observation Hill in the park, but no real options on group ranches)
- Entrance gates and payment systems non-existent on group ranches
- Perhaps an app for getting information on the area (?)

Infrastructure within group ranches is not good enough, and so we can't capitalize on tourists to Amboseli. Tourists access the ranches during the times of the year when wildlife has left the park. There's need to avoid white elephants such as 'Maasai Museum' at Lemong'o, and look at ways to utilize it.

4. Community Benefits

Cultural tourism

Types of cultural tourism (existing and potential)

- Manyatta visits
- Beadwork (see enterprise) and curios
- Cultural dances in lodges
- Cultural food (not being done presently, but a potential opportunities)
- Cultural story-telling in lodges
- Local knowledge nature walks, sharing of indigenous knowledge – guiding / herding / stick-carving etc.
- Homestays

Community don't understand tourism, but they want to benefit – lack of awareness and skills to benefit from tourism.

5. Manyatta Visits

Challenges:

- Exploitation of cultural Manyatta visits. There is currently exploitation by the tour drivers. For example drivers pay only 500 per person for a village visit, but charge the guests a lot more. Ticketing systems a challenge because people lose opportunity to take their cut.
- There is also a problem from within, each boma has a chairman who are trying to get the drivers to visit them and so it becomes a 'race to the bottom', with the drivers going where they take the highest commission. This is part of a governance issue, and if there was a strong consolidated local position then there would not be an opportunity for exploitation.
- Cultural 'exploitation' and misrepresentation/stereotypes of Maasai culture, often by Maasai guides. Tourists need to be better educated. Need to protect Maasai dignity, provide correct information and adhere to standards.
- Lots of pollution (plastics) in the ecosystem, and also challenges with women's sanitation at bomas.
- Harassment at gates with people selling curio

Solutions:

- Start with outreach meetings with cultural manyattas, to gauge their interest in AET help. Maybe create Cultural Tourism Association for the ecosystem, and let them come up with solutions. Organise meeting with chairman of all of these bomas.
- Perhaps take charges for manyatta visits at the lodges?
- Or market directly to driver companies, and take the decision away from the driver.
- There are lots of cultural manyattas inside and outside the ecosystem, and so we could potentially

push the drivers elsewhere. Need to be careful about too much regulation.

- Enhance connection and relationship between the manyattas and the lodges.
- Need transparent way of selecting which manyattas to send guests to.
- Opportunity to use Noonkotiakas a tourist education centre.

6. Beadwork & Curios

- Need a focus on product quality and preference on client tastes.
- Need to learn the market and see where the competitive edge. Avoid product fatigue, it's all the same across Kenya.
- Need innovative cultural tourism products in Amboseli. Product and packaging of Maasai culture.
- Need for training on appropriate products/experiences, but first need to identify and decide on what are those products/experiences.
- Perhaps develop list of AET- approved cultural manyattas, according to set standard of experience, and then a map thereof. These can then be marketed collectively.
- Develop an agreed code of behaviour and rules of engagement.
- AET pricing guides (range) for curios for tourists and for sellers.
- Is there a way to ensure that all goods sold in local lodges are from local producers?
- Plan for establishment of curio seller stations at each Amboseli gate.
- Recommend task force within AET to work on all of these cultural tourism issues, and develop an in-depth plan.

7. Homestays

- Big opportunity for homestays, to experience the Maasai way of life, particularly in the experiential and budget traveler market.
- This could be overnight, or just a few hours in the day-time. Herding livestock/milking cows/beading.
- Once again, this needs strict certification and upholding of standards. Can we partner with a Kenyan wide accreditation company?
- Maybe tender out the opportunity to run this business across the ecosystem?
- Needs proper infrastructure.
- Biggest challenge is how to market this to tour companies.
- Maybe start with one pilot homestay boma?

8. Benefit Sharing

- Current status is that benefits are largely extracted from the ecosystem.
- There are benefits that are accumulated through KWS, and benefits accrued directly to group ranches (through leases and employment).
- Some concern about the level of benefit-sharing from KWS, and that speed of processing is slow. Currently 20 million shared by KWS. AET can engage at government level on benefit-sharing policies and guidelines.
- Can we set basic employment quotas for locals, and level of contribution back to communities? Some sort of guidelines. Is this practical and workable, or outside the remit of this plan?

9. Charges and/or Standardized Rates

- This is highly variable, and should be up to communities to negotiate with investors. But

equally, AET could perhaps provide a service of being available to communities for helping to negotiate with potential investors.

- But need to make sure that there are sufficient accommodation options and variation in accommodation costs.

-

10. Tourism planning

- Need to come up on a bed density rate, variable across the ecosystem. Limit on number of beds. What is carrying capacity of Amboseli?
- Need further consultation with each ranch/conservancy to do this. Each conservancy needs management plan, including tourism plan.
- Investors need certainty.
- How do we reduce the impact of subdivision on tourism?

11. Marketing

- Lack of diversification and Amboseli is known as a 'one-night' destination. Need to properly understand WHY this is. Need to examine how marketing is currently done, and how do we infiltrate that marketing network. Needs a careful strategy.
- Lack of appropriate product packaging and marketing.
- ANP does marketing from HQ.
- No coordinated marketing effort.
- Need ecosystem-wide coordinated marketing plan specific to Amboseli, jointly between KWS and land-owners. Perhaps a website that includes all lodges and accommodation options, activities, booking links etc
- Marketing should move away from simply animal-viewing to include more experiences and activities, and packaging them to keep guests in the ecosystem for longer.
- Could have suggested itineraries.
- Emphasize complementarity between ANP and ranches around, for instance can't do night drives in ANP but could do it in a neighboring conservancy.
- Involve tour operators in all of this, work with them to market various options.
- Need to agree on packaging of marketing information – website, app?
- Modernise marketing – employ a marketing contractor?

12. Product and Service Quality

- Want to try to ensure a steady flow of guests, and not boom and bust cycles through the year.
- Not capturing full value from tourists because of short stays
- Don't want to overcapitalize with too many facilities that stand empty.
- How do we incentivize eco-friendly building options that have a low impact. Prioritise eco-lodges.
- Need to look at ways to stimulate local tourist visits.

Accommodation options:

- o Large-scale lodges inside Amboseli and in Kimana
- o Smaller higher-end lodges in community conservancies/ranches (eg Porini tented camp, Oldonyo Lodge, Kampiya Kanzi, Tortilis, Satao Elerai)

- Smaller low-cost accommodation options (mainly in and around Kimana)
- Limited campsites, particularly around the park, some in neighbouring ranch-es/conservancies
- No hostels

Opportunities:

- More campsites
- Lodges inside the park are constrained during high season
- Too many mid-market lodges, opportunity for more high-end accommodation close to ANP
- Also need to look at options for more high-end tourist products on the ranches
- Lack of places to eat in or nearby the park.

Opportunities for activities:

- Nature walks/birdwatching – local guides
- Balloon rides (needs regulation and limits)
- Night game drives
- Horse-riding
- Hiking
- Research tourism
- Mountain biking/outdoor sporting events (way to target local tourists)

Training needs:

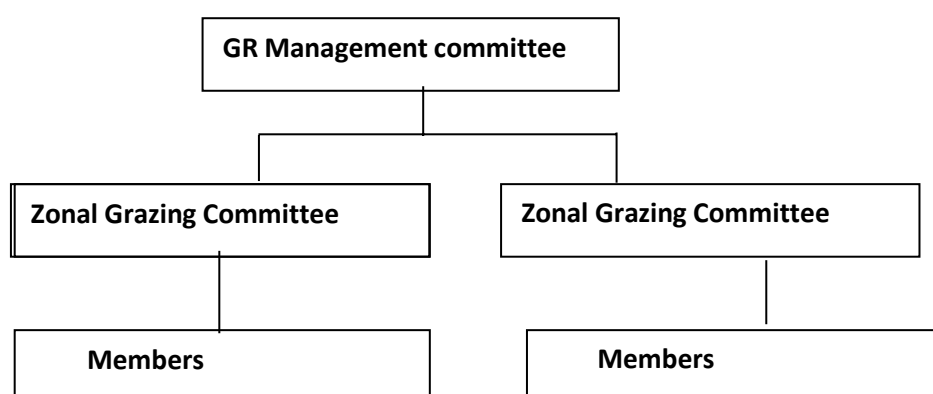
- Guiding – where are guides trained, what information is passed on (nature interpretation)
- Hospitality for service in manyattas
- Training of women in beadwork and curio industry
- Tourism hospitality training for high-demand positions (need to identify these)
- Customer service in general
- Governance and business planning (so that industries don't fail because of the problems that come with money and success)

COMMUNITY LIVELIHOODS

1. Livestock Production

- **Goal:** *Winning space for livestock*
- **Thematic areas:** Grass, livestock husbandry, market

o Organizational Structure of the Livestock Grazing System



i) Roles and Responsibilities of the Committees

Committee	Responsibilities	Membership
GR Management Committee	<ul style="list-style-type: none"> -Oversee all zonal grazing committees -Setting dates for livestock movement -Solve conflicts arising from grazing zones -Overseeing grazing zone by laws are implemented -Disseminating information on livestock husbandry issues e.g. vaccination i.e. link between government agencies and livestock NGOs -Following up on zonal grazing committee requests -Approving grazing by laws 	<ul style="list-style-type: none"> -Officials Grazing zonal committee members
Zonal Grazing Committee	<ul style="list-style-type: none"> -Implementation of grazing by laws -Marking grazing zones -Planning and controlling human settlement -Controlling migrating herders from other group ranches -disseminating relevant information to members form government agencies or development partners -Control hay prices 	11 elected members; officials-chairman, secretary, treasurer; area chief
Members	<ul style="list-style-type: none"> -Members of the zone -Adhering to the grazing by laws -Sensitizing other members on the grazing by laws. -Participating in developing grazing by laws 	Members of the zonal grazing area

ii) Livestock Grazing Action Plan

Problems & Opportunities	Action	Priority (H,M,L)	Partners
	Livestock Grazing zones		
disease and drought resistant and have high market value	1. Establish a breeding farm in every group ranch		and Livestock NGOs Community Members
Livestock pests and diseases	2. Establish cattle crushes, cattle dips, in every zone 3. Train and deploy paravets to work at the eco-system level	M	Ministry and Agriculture and Livestock NGOs Community Members
Human-wildlife conflict-livestock predation	4. Compensate for livestock losses	H	KWS NGOs
Market			
Lack of value addition to livestock products	5. Establish a milk cooling plant in each Group ranch	H	Ministry and Agriculture and Livestock NGOs Community Members
	1. Upgrade and equip the Mbirikani slaughter house to serve the entire ecosystem	H	Ministry and Agriculture and Livestock NGOs Community Members
	2. Establish a milk processing plant to produce diverse milk products e.g. yoghurt, cheese, ghee, pasteurized milk, sour milk	H	Ministry and Agriculture and Livestock NGOs Community Members
	3. Establish a tannery at Mbirikani	M	Ministry and Agriculture and Livestock NGOs Community Members County Government
	4. Promote and advertise livestock products using electronic and print media and road show	M	Community members NGOs County Government
	5. Engage distributors of livestock products	M	Community members NGOs County Government

	6. Partner with other established livestock product companies to market the ecosystem's live-stock products including bones	M	Community members NGOs County Government
	19. Establish livestock cooperative society	H	Community members NGOs County Government

Agricultural production

- **Goal:** Promoting sustainable agriculture
- **Thematic areas:** irrigated and rainfed agriculture
- **Location:** Agricultural zones

Major Issues

- Human wildlife conflict in Rain fed agricultural areas
- Water resource use conflict -livestock herders vs farmers in Kuku
- Role of WRUAs- Irrigation committees control water use

iii) Agricultural Production Action Plan

Problems & opportunities	Action	Priority (H,M,L)	Partners
Most perishable agricultural products go to waste e.g. tomatoes	Establish a horticultural products cold room	H	Ministry of Agriculture and Livestock Community members NGOs County Government
	Establish horticultural canning factory	H	Ministry of Agriculture and Livestock Community members NGOs County Government
Water resource use conflicts	Strengthen the WRUAs so that they can control water use effectively	H	Ministry of Agriculture and Livestock Ministry of Water Community members NGOs County Government
Lack of extension officers	Work with county government in training agricultural extension officers for effective extension services	H	Ministry of Agriculture and Livestock Community members NGOs County Government

Increase value for agricultural products	Promote organic farming	M	Ministry of Agriculture and Livestock Community members NGOs County Government
Grains with high moisture content prone to aflatoxin	Establish a grain drier at entarara and Entonet	M	Ministry of Agriculture and Livestock Community members NGOs County Government
Lack of value addition to maize products	Establish a maize milling factory at Kimana	H	Ministry of Agriculture and Livestock Community members NGOs County Government
Lack of standard packaging of products	Standardize the selling packaging for different products	H	Ministry of Agriculture and Livestock Community members NGOs County Government
Lack of coordination of production and marketing of agricultural products	Establish agricultural farmers association	H	Ministry of Agriculture and Livestock Community members NGOs County Government
Crop raiding	Install and maintain wild-life fences	H	KWS NGOs Community Members

2. Other Socio-economic Activities

- **Goal:** *To improve the living standards of the local community*
- **Thematic areas:** *Enterprises, natural resource use, settlement*
- **Location:** *different zones*

Other Socio Economic Activities Action Plan

Problems & opportunities	Action	Priority (H,M,L)	Partners
Unplanned settlement	Establish community service centers	H	Community members County government NGOs
Lack of alternative enterprises	Establish amboseli water bottling plant- enkogo narok water; shokut in Kuku;	H	Community members County government NGOs
	Promote bee keeping	H	Community members County government NGOs
	Establish a stone crusher Namelok, Enkongo Narok, Narok-enterit in Kuku GR	H	Community members County government NGOs

	Establish additional conservancies	H	Community members KWS County government NGOs
	Enhance mining, sand harvesting, ballast	H	Community members County government NGOs NEMA Ministry of Mining
	Lease land to investors	H	Community members County government NGOs

3. NATURAL RESOURCES DOCUMENTATION

A. NATURAL RESOURCES IN ROMBO

WATER RESOURCES	
RIVER	LOCATION
1. a) Rombo River	Rombo spring flowing through town to Tsavo national park
b) Agricultural area	It is along the Rombo river on both sides i.e. <ul style="list-style-type: none"> i. Kizioki canal ii. Oloishiro canal iii. Oltepesi canal iv. Kizipia canal v. Olchorro canal vi. Matepez canal vii. Esosian canal viii. Canann canal
c) Swamps	Eboliei swamps located two from Rombo towards Matepez center near Eboliei canal
d) Springs	Olchorro spring near Olchorro canal flow its water to Rombo River. Enyarrru springs situated at Olgirra 2km from Oloirien second-ary school
e) Water pan	Located at various agricultural Ranching area
f) Borehole	Bomas borehole near Bomas Primary School. Maarwe borehole located near Market
2. Wild Life Resources	Emambuli Conservancies with types of animal include: lion, wild beast, elephant wild dog hyena.

3. Salt licks	At Eboliei swamp Illooitong near Olomnaru camp
4. Wildlife migratory corridor	Along corridor starting from Tsavo national park to Emambuli conservancy to kuku group ranch getting to Amboseli to Serengeti in Tanzania
5. Grazing area	Ormapitet grazing area border in Kiitoki Ndoomani Olgirra and Tsavo national park
6. Forested Area	We have a natural forest near Rombo town between Rombo mix Primary School and Rombo girl primary school.
a) Natural forest	
b) Planted forest	This is personal planted by one of the farmer Nkamerol Meliyo on his farm at Mungushi near Deral
7. Archeological and cultural sites	Eboliei- located between saint Clare and Matepez center. This used to be a cultural for the Masai boys before circumcision went there have a white soil apply their face and legs for identification before undergo initiation.
8. Building materials	Within the group ranch we have grass, stones, sand, post land, and twigs all from the group's ranch.
TOURISM ATTRACTION	
a) view point	We have several hill situated within the group ranch i.e. Lenkopito hill border Emambuli conservancy. Kortuni hill along the high way Loitokitok.
b) Gorges and valleys	Tangwa valley flow from Tanzania passing Oloyi parsei area Rombo River.
2 Cultural sites and cultural manyatta	We have two manyatta one at Lemongo and Moran manyatta near Orgirra.
9 Tended camp	We have one tended camp known as Olowaru camp situated 3km away from Olgirra center for the community
Tourism Attraction	Mount Kilimanjaro view Gama viewing Bird watching Photography
Ecology	No any
Secondary school	Oloirien secondary school Rombo hiri St. Clare
Water pipelines	Ormapinu/Aderkesi pipeline; Mailitatu, Olgirra pipeline Rombo, bomas, naiipa pipeline.
4) Churches and mosques	We have many churches but the main one are: Catholic, FPFK, Baptist and KAG.
Mosques	One at Rombo town
5) urban centers	We have five urban center i.e. Rombo, Matepez, Maili-tatu, Olgirra and Elevai

Market	Rombo market Maarwe market Elevai market
6) Livestock infrastructure	
Abattoirs	One slaughter at Rombo town.
Dipi	Nil
INFRASTRUCTURAL RESOURCES	
Road network	No developed road network into conservancy apart from Loi-tokitok to Taveta tarmac road.
Airstrip	There is one un-developed airstrip by bid life investors.
School and colleges, pipeline	<p>We have primary and secondary school i.e.: primary</p> <ul style="list-style-type: none"> ➤ -Olgirra ➤ -Oloborr-Soit Primary ➤ -Elerei Primary ➤ -Orgumaet primary ➤ -Ormapinu ➤ -Matepez ➤ -Oloyiaparsei ➤ -Rombo mix ➤ -Rombo girls ➤ -Enchurrai ➤ Munyurra ➤ BeihroofLemongo ➤ Bomas ➤ -Nasipa ➤ - Maili-tatu.
7) Quarantines	nil
8)Health infrastructure a)Hospital b)Dispensary c)Clinic	<p>Nil</p> <ul style="list-style-type: none"> • -Rombo mission • -Olgirien clinic • -Emumwenyi clinic • -Oloiborsoit clinic • Nolosit clinic
9)Security infrastructure a) police station b)police camp	<ul style="list-style-type: none"> ➤ Nil ➤ One at Rombo town ➤ Elevai ➤ Maili-tatu ➤ One at Iloitong

c)Game- scout/camp KWS station	➤ One at Iloitong ➤ One at kombo head by community herder.
10) Research center	- Olownaru camp (lion research)

1. What form of land use are found Amboseli:

- i. Tourism
- ii. Livestock grazing
- iii. Cultivation
- iv. Wildlife conservation
- v. Product harvesting: e.g. post, sand, stones grass and twigs

2. What form of land use might we have in the future?

- i. Tourism
- ii. Wildlife
- iii. Large-scale irrigation
- iv. Zero grazing
- v. Potential of starting light industry because of large scale farming leading of agro-business.

SUMMARY OF LAND USE MATRIX:									
ROMBO									
	Tourism	Settlement	L.Grazing	Cultivation	Wildlife	P.Harvesting	L.Scale	Z.Grazing	Light industry
1. Tourism	NC	CM	Assist other	CM	NC	CM	CDM	CM	CDM
2. Settlement	CM	NC	NC	NC	CM	NC	NC	NC	NC
3. L.Grazing	LUA	NC	NC	NC	CM	NC	CM	NC	NC
4. Cultivation	CM	NC	NC	NC	CM	NC	NC	NC	NC
5. Wildlife	NC	CM	CM	CM	NC	NC	CM	NC	NC
6. P.Harvesting	CM	NC	NC	NC	CM	NC	NC	NC	NC
7. L.Scale	CDM	NC	CM	NC	CM	NC	NC	NC	NC
8. Z.Grazing	CM	NC	NC	NC	NC	NC	NC	NC	NC
9. L.Industry	CDM	NC	NC	NC	NC	NC	NC	NC	NC

1. No conflict (NC)
2. Conflict can be managed (CM)
3. Conflict difficult to manage (CDM)
4. Land use assist each other

B. NATURAL RESOURCES IN KIMANA LOCATION

SPRINGS	NAME
	I. Namelok
	II. EnchoroNkai
	III. Lemongo
	IV. Oltiani
	V. Isinet
	VI. Oloite
	VII. Kimana
	VIII. Enkumi
LODGES	NAME
	I. AA
	II. Sopa
	III. Mada
	IV. Kibo
	VI. Tawi
	VII. Zebra
	VIII. Setao
CONSERVANCIES	NAME
	I. Kilitome
	II. Olepolos
	III. Olarano
	IV. Nailepo
	V. Osupuko
	VI. Oltiani
	VII. Kimana (community)
FORESTS/HABITATS	NAME
	I. Unique riverline
	II. Woodland along Kimana river
	III. Grasslands, woodland
SALT LICKS	IV. Bushland in conservancies
	NAME
	I. Olkelunyet
	II. Kinluna sanctuary

MISSING SITES

- i. Cultural sites
- ii. Waterfalls
- iii. Hiking trails (Potential in conservation)
- iv. Canopy walks

GRAZING AREA

I. Areas allocated as grazing lands are absent except in conservancies

BULIDING MATERIALS	
HARDCORE STONES	Ohiani
	Naelepo
SAND	Laimuronya (ground)
	Lemongo (River)

TOURISM

Viewpoints:

1. Oltiani hills

2. Conservancies

i. OldonyoAnorua

ROADS	Limited (a few)
	PK –Kimana PK-Namelok Kimana-Namelok

INFRASTRUCTURE

AIRSTRIPS	Kilitome(grass)
LIVESTOCK MARKETS AND ASSOCIATED	Kimana market
	Lemongo cattle dip
	Two slaughter houses
CHURCHES	Multitude (Christian)
	Two Mosques (Muslim)
SCHOOLS	Primary-10
	Secondary-4
	Colleges-2
	Research centers-1
TOWNS/MARKETS	Kimana
	Isinet
	Namelok
	Impironi
AGRICUTURE SPOTS	Namelok
	Isanet
	Kimana
	Impironi(Rainfed)
	Enchoro-Nkai
	Oloile/Noomanayiat
	NgariaRongena(Rainfed)

SECURITY	Local rangers-6 outposts in each conservancies
	KWS(Kimanagata)
FENCE BARRIERS	Kimana sanctuary
	Namelok
	Ngaria Ongena(near Sopa)

LIST OF LAND USERS

LAND USE CLASS	NAME
AGRICULTURE	Horticulture(onions, tomatoes, kales)
	Fruits(Avocado, pawpaw, bananas, oranges)
CONSERVATION	Conservancies
	Migration corridors
	Wetlands/springs/rivers/swaps
PASTORALISM/LIVESTOCK KEEPING	Grazing lands
	Cattle dips
	Markets for livestock
	Slaughtering houses
	Livestock production industries e.g. stock improvement
TOURISM	Public campsite
	Lodges (old and expected new)

	Diversified activities/attractions <ul style="list-style-type: none"> • Horse back • Balloons • Nature trails
	Good infrastructure (especially roads)
TOWNS/MARKETS/SETTLEMENTS	Kimana
	Isanet
	Namelok
	Growth in settlement

SUMMARY OF SETTLEMENT

AVOID	Agriculture	Conservation
	Tourism	Agriculture/settlement
	Conservation	Agriculture

	Settlement	Conservation/tourism
MANAGE	Pastoralism	Conservation
	Tourism	Pastoralism
	Conservation	Infrastructure development
PROMOTE	Conservation	Tourism
	Livestock improvement	Conservation
	Agriculture-settlements	Towns/markets
	Pastoralism	Settlement
	Conservation	

C. NATURAL RESOURCES IN IMBIRIKANI GROUP RANCH

1. WATER RESOURCE

- Inkoroshoni spring
- Isinet Springs
- Inchalai Springs
- Noolturesh Water Pipeline
- Water pans (Embaruatin-1, Kalesirua-3, Enkaji Naibor-1, Olmapitet-1, Ichalai-2, Olbili-2, Oltiasika-2, Olgosua-4, Imbirikani-6, Inkoisuk-4, Noosilale-3, Olagarama-3, Emukutan-3, Oldonyo Wuas-7)
 - Isinet Swamp
 - Inchalai Swamp
 - Namelok Swamp
 - Empakaai Swamp
 - Embaruatin Borehole
 - Nabulaa Borehole
 - Isinet Borehole
 - Kalesirua Borehole
 - Ichalai Borehole
 - Emukutan Borehole
 - Olbili Borehole
 - Oltiasika Borehole
 - Simba cement Borehole

2. WILDLIFE RESOURCES

- Oldonyo Wuas
- Lemasusu-Oltiasika
- Emukutan-Oldonyo Sampu Area
- Loosikitok Area
- Marura Area (Hipo area, Birds Breeding area, Roosting area)

- Lenkiloriti

3. SALT LICKS AREAS

- Intinyika
- Enkeju oo losho

4. WILDLIFE MIGRATORY COORIDORS

- Inkoisuk-Emukutan-Lenkiloriti-Chyulu
- Loosikitok-Olangarrama-Noosilale-Chyulu
- Empakaai-Olgosua-Ilchalai-Chyulu
- Imbirikani-Ilchalai-Kuku
- Imbirikani-Oltiasika-Kuku
- Kimana sanctuary-Marura-Ilchalai
- Motikanju-Imbirikani

5. GRAZING AREAS

- Oldonyo wuas (Kotisha, Ilmao, Olosira)
- Loosikitok
- Emukutan
- Lemasusu/Oltiasika

6. FOREST

- Lava forest
- Cider forest
- Lemasusu

7. ARCHEOLOGICAL SITES

- Noonkiyia area

8. BUILDING MATERIALS

- Sand harvesting- Intinyika-Ilchalai seasonal river
- Sand harvesting-Imbirikani area-along the tarmac road
- Inkoroshoni-Isinet-building stones
- Limestone-Emukutan/olagarama

9. AGRICULTURAL AREAS

- Inkoroshoni
- Isinet
- Ilchalai
- Enkaji Naibor

- Lemasusu
- long water pipeline

INFRASTRUCTURAL RESOURCES

1. Road Network

- Emali-Loitokitok
- Isinet-Namelok
- Esambu-Ilchalai
- Olngosua-Imbirikani
- Siamalil-Amboseli
- Imbirikani-Oldonyo was
- Imbirikani-Olbili
- Olbili-Oltiasika-Center
- Emukutan-Oldonyo sambu-Oldonyo was

2. AIR STRIPS

- Imbirikani
- Oldonyo was

3. SCHOOLS

- Primary Schools-16
- Secondary Schools-5

4. CHURCHES AND MOSQUES

- Churches and Mosques-35

5. URBAN CENTERS

- Simba cement
- Inkoisuk
- Imbirikani
- Enkaji Naibor
- Ilchalai
- Oltiasika
- Isinet

TOURISM ATTRACTIONS

1. VIEW POINTS

- Losikitok
- El-Mau
- Olosira
- Ol-Donyio Wuas
- Chyulu Area

2. CULTURAL SITES

- Osiram Womens Cultural Manyatta

- Moran Cultural Manyatta

3. CAVES

- Losikitok Hill Caves
- Lava Caves in Chyulu

The area is of high potential for hiking trails and nature walks

4. LODGES

- Oldonyio Wuas Lodge

5. SPECIAL CAMPSITES

- Crater Campsite (Close to Kona Tatu)
- Pelican Campsite (Between El-Mau and Lenkiloriti)

LANDUSE IN IMBIRIKANI GROUP

- Livestock farming (free range)
- Settlement (urban centres, rural homes)
- Rain fed irrigation
- Mining
- Tourism
- Transportation (mainly road network)
- Public utilities

FUTURE LANDUSE

- Establishment of wildlife conservation areas
- Industrial –mining industry (subject to discussion)

	Live-stock Farming	Settle-ment	Crop farm-ing	Min-ing	Tour-ism	Transporta-tion	Publi-c Utili-ties	Wildlife Conserva-tion
Livestock Farming	NC	LCC	CCM	CCM	LCC	LCC	NC	CCM
Settlement	LCC	NC	LCC	CCM	CCM	NC	NC	CDM
Crop farming	CCM	CCM	NC	CDM	CCM	NC	CCM	CDM
Mining	CDM	CDM	CDM	NC	CDM	NC	CCM	CDM
Tourism	CCM	CDM	CDM	CDM	NC	NC	CDM	NC
Transporta-tion	NC	NC	NC	NC	NC	NC	NC	NC

Public Utilities	CCM	NC	CCM	LCC	CDM	NC	NC	CDM
Wildlife Conservation	CCM	CDM	CDM	CDM	NC	NC	CCM	NC
NB: NC-No conflict CCM-Conflict can be managed CDM-Conflict difficult to manage LCC-Landuse can coexist								

A. NATURAL RESOURCES IN THE ESELENKEI GROUP RANCH

We grouped Eselenkei Group ranch into four zone

1. Iloirero
2. Iltuleta
3. Lenkism
4. Kiserian

Zone	Categories-Natural resource							
Iloirero	Water	Wildlife resources	Salt licks	Wildlife migratory corridors	Grazing areas	Forest	Archeological site	Building materials
	Enkii borehole							
	Kabukoki borehole							
	Noirr water pump							
	Oltotoi borehole							
	Selenkay safari camp borehole							
	Nolturesh pipeline water along the new Kajiado-Isaarag road							
	One Seasonal river							
	Dams- Mutenger, Nosira-mi, Logogolala, Kabukoki							

AE Zoning- current usage of land Eselenkei Group ranch

1. Livestock grazing
2. Agriculture
3. Tourism
4. Settlements
5. Conservancies
6. Trading centers
7. Social infrastructures

Land use-current –future

AE Zoning current	Livestock	Agriculture	Tourism	Conservancies	Trading centers	Social Infrastructure	Wildlife corridors	Land subdivision
Livestock grazing	1	2	2	2	1	1	2	3
Agriculture	2	1	3	3	2	1	3	2
Tourism	2	3	1	4	2	4	4	3
Conservancies	4	3	4	1	1	4	4	3
Trading centers	1	2	2	3	1	1	2	4
Social infrastructure	1	4	4	4	1	1	2	4
Wildlife corridors	1	2	4	4	2	2	1	4
Land subdivision	1	3	4	3	2	4	3	3

Code

- No conflicts
- Conflicts manageable 3- Difficult to manage
- The two land uses can help each other

B. NATURAL RESOURCES IN OOG**1. NATURAL RESOURCES****i) Water Resources**

Watering points- river systems, dams, swamps, springs, water pans, waterholes

Springs (4)	Seasonal Rivers (9)		Shallow Wells (5)	Seasonal Lakes (1)
Orkishungi spring (at Isinya mines)	Lekilesi	Orkejuloom ugurri	Laimutiak	Lake Amboseli
Lendikirr springs	Lekiteng	Eyata river	Ngararambuni	
Lemuny springs	Olala- rashi	Kitirua	Sinya mines	
Namelok Springs	Olgulului	Matasia	Kasiaka	
	Kitende n		Nebitirr	
Boreholes (30 Boreholes)				
Naipera	Misigiyo	Lemomo	Eluai	Loositima
Oldule	Mutrot	Embaringoi	Loolakirr	Lengism – Kijito
Olmoti	Entonet	Olgulului	Oltinga le Ngusero	Lengism
Oldepen	Elrai	Loomayianat	Oloilalei	Olepolos – Len- kism
Ilmarba	Olchorro	Emaambuli	Osewan	Olepolos - Murtot
Nchakita	Risa (2)	Noonkotiak	Osoit	
Piped water				
Northern Pipe- line with source from Serena	Wet- lands			
	Namelok			
	Sinya Mine s			
Water pans (14)				
Sayialel	Ole Mwangi	Meshanani	Nchakita	Osoit
Oltemwae	Ole Seita	Loolakirr	Namelok - Osoit	Lenkism
Oltinga	Oldule	Risa x 2	Nkiito	

ii) Wildlife Resources

- a) Wildlife concentration areas, hippo pools, roosting sites, breeding sites, burrows, dens, nesting sites, Beekeeping sites, fish ponds, game farms(11 rich wildlife areas with spe-cial animal and plant species)
 - NadoSoitok elephant breeding site
 - Naripi (Elephant Maternity)
 - Osewan

- Matasia
- Lendikirr
- Engaboli
- Nairabala
- Ilaingarunyoni
- Narolokuny
- Kitenden
- Kitirua

iii) Salt licks (6)

- Sinya mines
- L. Amboseli
- Engong Narok
- Kitirua
- Ilaimutiak
- Meshanani

iv) Wildlife migratory corridors (4)

- Kitenden
- Ilaingarunyoni
- Ole Narika - Nairabala
- Kitirua

v) Livestock grazing areas (12)

- Olglului area
- Kitenden - Oldule
- Olmoti- Ilmarba – Murtot - Olepolos
- Meshanani
- Loolakirr – Oloilalei-Osewan
- Risa
- Nchakita
- Lenkism
- Nkiito – Risa
- NamelokOsoit
- MuruaOloiborr
- Engong Narok

vi) Forest areas

- Different forest/vegetation types/habitats, invasive species, unique plants
- Kitenden Woodlands
- Osewan
- Ole Narika
- Ilaingarunyoni
- Mangula

vii) Archeological sites

- Different sites

viii) Building materials

Sand harvesting

- Olugululi river
- Kitenden river
- Nkiito
- Risa
- Meshanani

Hard core collection (Stones)

- Engong Narok
- Osoit
- Embarinkoi
- Risa
- Kitenden river
- Nkiito (quarry stones)
- Risa
- Meshanani (quarry stones)

ix) Mining areas

- Sinya Mines (abandoned)

x) Agricultural areas- irrigation and rain fed areas

- Olchorro
- Murtot-Lemai
- Entonet
- Misigiyo
- Namelok

2. Tourism attractions

i) Viewpoints, gorges & valleys

- Lendikirr – Lekilesi caves
- Siruai hill
- Lekiteng area
- Lemomo hill
- Osewan camps
- NadoSoitok
- Nairabala – Kitirua
- Nairabala - Nchakita
- Ilmerishari
- Enkoinkumashi- Ildepen
- Kitirua hill
- Meshanani A&B
- Ilaingarunyoni

ii) Cultural Attractions

- Preserved and develop better cultural bomas
 - Tented camps

- Tortilis
- NadoSoitok 1 & 2
- Kitirua
- Narripi
- Public campsites
 - Elkangere – Oltiani

3. Infrastructural Resources

i) Road network

Namanga - Olgulului – Kitirua–Embarinkoi-Engong Narok-MuruaOldule-Ilmarba

Namanga-Meshanai-Nkiito -Risa-Namelok

Olgulului – MuruaOloibor-Meshani

Meshani–Nkiito-Risa-Namelok

Meshanani-Lolaakirr – Osewan-Lenkism – Nkiito

Meshani – Lenkism

Lenkism – Risa-Namelok

Kimana gate-Ilkilunyiet-Olmoti-Ilmarba-Misigiyo-Murtot-Entonet-Olchorro

ii) Airstrips

- Namanga Airstrip
- Lemomo
- Sinya mines
- Tortilis
- Nookotiak

iii) Schools & Colleges

- i. Olgulului Primary
- ii. EluaiPri
- iii. Meshanani
- iv. Loolakirr
- v. OloilaleiPri
- vi. NaorenkarePri
- vii. Risa Pri.
- viii. Osoit – NamelokPri
- ix. Amboseli Pri
- x. OlmotiPri
- xi. Engong Narok Pri
- xii. EsitetiPri
- xiii. ImmisigiyoPri
- xiv. ImurtotPri
- xv. EntonetPri
- xvi. Olchorro
- xvii. ParanaiPri.
- xviii. Oclchorro Sec.
- xix. Entonet Sec.
- xx. Amboseli Sec.
- xxi. Namelok Sec.

i) Churches & mosques

- a. In all Community Service Centers

ii) Community Service Centers - towns, markets places

- a. Olgulului
- b. Meshanani
- c. Loolakirr
- d. Lenkism
- e. Risa
- f. Namelok
- g. Olkilunyiet
- h. Ilmarba
- i. Engong Narok
- j. Embarinkoi
- k. EsoitoPusi

iii) Livestock infrastructure - abattoirs, cattle dips, quarantine areas, livestock market centres

- a. In all Community Service Centers

iv) Health infrastructure -hospitals, dispensaries, clinics

- a. Meshanani
- b. Olgulului
- c. Loolakirr
- d. Amboseli / Olkilunyiet
- e. Murtot
- f. Engong Narok
 - 1. Olchorro
 - 2. Lenkism

Security infrastructure – Police stations & camps, scout camps, KWS stations and camps

- a. Mangula
- b. Osewan
- c. Risa
- d. Ilmarba
- e. Lemomo
- f. Kitirua
- g. Lenkism police post/Admin Dos

v) Research & information resource centers- camps

- a. Noonkotia
- b. Nairrbala – Lion Guardians
- c. Public Camp site - Amboseli Baboon Research
- d. Risa - Born Free Foundation
- e. Amboseli Trust for Elephants
- f. Amboseli Conservation Program

vi) Fences- wildlife barriers

- g. Namelok
- h. Murtot – Emisigiyo

vii) Habitat Restoration fences

- i. Kitirua
- j. NadoSoitok
- k. Noonkotiak
- l. Oloopoli
- m. Nkiito

3. AE Zoning

Activity 1: What forms of land use are found in the AE? Current land uses.

- Human Settlement
- Grazing
- Wildlife
- Farming / Agriculture
- Mining
- Tourism
- Infrastructure
- Dams and boreholes

Activity 2: What forms of land use might we have in the AE in the future? Future land use.

- Human Settlement
- Grazing committee managed pastoralism for the 12 grazing zones
- Silvopastoralism for the upper zone
- Wildlife Conservation
- Farming / Agriculture
- Mining
- Tourism
- Infrastructure – Roads,
- Dams and boreholes (Rain water harvesting)
- Recreational / Sports
- State of art centres of excellence (Institutions of higher learning)
- Factories for local products (Meat, Dairy, Leather,
- Factories for local agricultural products
- Mining (Salt licks, precious stones, limestone, etc)
- Promote genuine cultural practices and museum / traditional artefacts e,g.
Educative and develop education tools for children to learn and practice
true Maasai culture and way of life.

APPENDIX 8a- Stakeholders Consulted, signed Consent forms and NEMA Certificates.



Amboseli Ecosystem Trust,
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Website: www.amboseliecosystemtrust.org




Project... RAMBO GROUP LAND SENSITIZATION MEETING

AET Attendants' list – Date... 24/5/2019

No.	Name	Organization	Telephone	ID No.	Signature
1.	Joseph L. Lemuko	Rambo G. Secretary	0707688250	24521688	
2.	John Logelo	Chief of Rambo	0721143767	22770685	
3.	Nkolelo Mwachu	Committee member	0707448995	29706886	
4.	PADAM JASHUA	Member	0725365787	25869082	
5.	TORRE LONGOI	member	0700097882	28565074	
6.	George Sante	member	0720032073	24647281	
7.	Maty Temukel	Member	0712878134	24681332	
8.	Kaliret elochamy	V. Chairman	0725952019	13611265	
9.	Tipapa TORASA	Member	0740527269	34367723	
10.	Nkangai Okolel	member	0712855654	13611299	
11.	PATRI JAMPICKA	member	0754815636	9743143	
12.	Moses Ole Nambare	MEMBER	0702541476	1346340	
13.	SURUMA MATINYA PHOTO	MEMBER	071196224	26040556	
14.	Unjani mpopet	C. Secretary	0711947224	11126821	
15.	MARAO JACHAN	member	0710998167	4887315	
16.	SARUMI LONDYIYI	Member	0707608551	26167406	
17.	JANUS OLAMAYIANI	Ambo Trustee	0700978134	24749144	
18.	John Sileu	Chairman Rambo	0727853717	23255832	
19.	David Aladani	Member	0725443211	1313428	
20.	Joseph Mugevi	Member	0725521795	12741796	
21.	Joseph Kintukia	Member	0727005359	20187992	
22.	Jeshua Ketema	Chief Rambo	0720753409	29330248	
23.	Nasanie Kanchangia	R. Member	0706456171	20237244	
24.	Idimant Kilele	R. Member	0702592076	11587684	
25.	James Panian	R. Member	0710618569	23753945	
26.	Kipambi Mosiony	R. member	0704570660	12741418	
27.	Melomai Nkayem	R. member	0792480367	14474106	
28.	John Mutiaza	R. member	0740316171	26017952	
29.	Pyttia Nemerian	R. member	0710831506	24982492	
30.	James Mayiani	R. member	0720667739	12741361	
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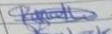


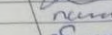
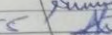

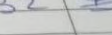
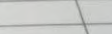


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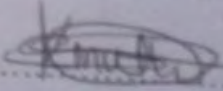
Enhancing Wildlife Conservation in the Productive Southern Kenya Rangelands through a Landscape Approach

Project...C.P.T.I.P.C...meeting.....

AET Attendants' list – Date...24/11/2023.

No.	Name	Organization	Telephone	LD No.	Signature
1.	SUSAN KIMUTITA	AET	0712738607	24642087	
2.	VICKI FOLLOCK	ATE	0710282688	2107828691	
3.	VICTOR MARE	ACP	0720323683	20128354	
4.	PETER MAINA	KWS	0721796030	22457975	
	DAVID WESSON	ACT	072277227	689437	
	NELLY PALMERIS	KWS	0722965255	13415992	
	THOMAS SIPITIK	ACC	0722856703	1220770	
	APOLLO KARUKI	KWS	0722779298	7155056	
	KOIKOU OLOTHIPI	AET	0700727499	1065466	
	BERNARD KAMBA	PECS	0722773951	1241632	

No.	Name	Organization	Telephone
1.	Jackson Njoro	ATE	07125886
2.	KES Smith	ACC-EN	070651334
3.	JOHNSON SIPITIKI	ACC	0722851703
4.	TAL MANOR	ATE	090262740
5.	MOSES Samuni	ATE	079811126
6.	Jeremy Goss	BLF	0718781354
7.	K. Njoroge	KWS	07149976
8.	Daniel Sambo	BLF	072188820
9.	ERIC OLE KECOI	LION GUARDIAN	072973994
10.	Shadock Ngere	ICWS	0719701911
11.	Martin Kirasi	Amb. Rangers	070412934
12.	David Kayiga	Imbrikane	072422025
13.	Lengen Vichu	ACC	092279534
14.	Joel Ketukei	Kuku'a' C/Ranger	0720815150
15.	JULIUS MURUKI	ACC	0722-289447
16.	Susan Kinyutha	ATE	0712738607
17.	Daniel Mutze	MGR c/Man	0721291356
18.	Jesus Suyana	MGR. Thesma	0720580038
19.	Peter Kibuka	ACC	0727413762
20.	SAMUEL KANIHI	ALOCA	0723918068
21.	SADALAH KORIHO	ALOCA	0722309434
22.	Daniel Njaga	PECS	0720950500
23.	Dr. Bernard Kanihi	PECS Ltd	0722733951
24.	Koikai Otambop	ATE/ATGRCA	0700727499
25.	DAVID K. MAITUMU	ACC	0725431662
26.	Philip Mwangi	IFAW	0727246220
27.	BENARD TULIO	IFAW	0724178512
28.	EVAN M. MKALA	IFAW	0722623771
29.	DANIEL MAPI	SEC-MGR	0724792240
30.	Loama Ngere	OPR	0712134534

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AMBOSELI ECOSYSTEM TRUST

Project...AEMP...-Launch...

AET Attendants' list – Da

	Name	Organization	Teleph
1.	Daniel Lelure	AET/DOGA	072
2.	SOLomon M LOMBARD	DOGA	072
3.	Patrick Papatiti	DOGA-	071081
4.	John de Moli	DOGA	072176
5.	Emmanuel Mpararia	EGR	072686
6.	Michael Parks	Independent Journalist	07577
7.	DAVID WESTON	ACP	07224
8.	STEFANO CHELI	TORTILIS.	07225
9.	IRENE AMOKE	KWT	0722445
10.	ANDREAS FOX	KTD/KWT	0723493
11.	Jonah Ole Maai	EGR Chairm	072046
12.	MOLINKA	Eseleget	0712083
13.	JACOB GISHAN	Eseleget	0726551
14.	JOSEPH PARMUAT	ALOGA	0721897
15.	William Lemmon	OGA	072574
16.	DAVID MWANTITS	KWS	0724351



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Project... AEMP Review 2019-2029.....

AET Attendants' list - Date... 21/5/2019

No.	Name	Organization	Telephone	ID No.	Signature
1.	SADALAH R.	NALARAM	0722389434	16094743	<i>[Signature]</i>
2.	SAMUEL KAAHA	ALOCAMAR	0733918068	11738014	<i>[Signature]</i>
3.	AKAL KISONKOI	OLYATANI	0719648456	04083002	<i>[Signature]</i>
4.	LESALIE IRIASA	OSUPUKO	0716325657	12740001	<i>[Signature]</i>
5.	JEREMIAS JALOROT	KILITOME	0725902870	23251600	<i>[Signature]</i>
6.	JOSHUA PUZUKA	KILITOME	070704917442	1352746	<i>[Signature]</i>
7.	MARGARET NAYESO	OLEPOLO	0705072730	9231640	<i>[Signature]</i>
8.	Lucy Masangira	NALARAM	0727676016	8336061	<i>[Signature]</i>
9.	Mykael Pormuat	NAILEPO V. Chair	0790110375	6113538	<i>[Signature]</i>
10.	WYNETTE NABUKA	AET	0723720907	35122509	<i>[Signature]</i>
11.	JOTHA GISA	BIG LIFE	0721378087	13086943	<i>[Signature]</i>
12.	Michael Suyanka	OLYAN	0725275263	24107988	<i>[Signature]</i>
13.	Daniel Mekemei	Nalepo - Secretary	0722809135	9742945	<i>[Signature]</i>
14.	NOITUBUKASAKEPO	OLYAN	0712064909	0499186	<i>[Signature]</i>
15.	Kimaree JEMAPWA	OLEPOLO - Chairman	0785580206	9366014	<i>[Signature]</i>
16.	Tailo OLENALEPO	NAILEPO - Chairman	0727355707	8337582	<i>[Signature]</i>
17.	Ituma Kuusikima	OLEPOLO - Sec	0702273635	27123854	<i>[Signature]</i>
18.	Abraham Lomura	Peregryn	0722028724	25663741	<i>[Signature]</i>
19.	Dr. Benjamin Karamu	PECS	0722773951	1241632	<i>[Signature]</i>
20.	Kolilai Oloithip	AET / AICILIA	0700727499	1063466	<i>[Signature]</i>
21.	Mamadi Sampuri	NALARAM - Secretary	0727650418	22196618	<i>[Signature]</i>
22.	Musei Ole Joonkrot	OSUPUKO - Chairman	0726392965	23226214	<i>[Signature]</i>
23.	Daniel Kacka	AET	0724861523	21706285	<i>[Signature]</i>
24.	Patrick Kariki	PECS	0715936997	6484473	<i>[Signature]</i>
25.	SUSAN KINUTHIA	AET - Admin	0712738607	20600087	<i>[Signature]</i>
26.	Emmanuel Samosyuku	Secretary	0727326520	1352911	<i>[Signature]</i>
27.	NASIKU KAPATO	NAILEPO - Treasurer	0716499012	11728198	<i>[Signature]</i>
28.	PANILAAI	Kilitome - Chairman	0726497857	9655586	<i>[Signature]</i>
29.	JACKSON NUNTO	AET	0712588693	23369718	<i>[Signature]</i>
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PREPARED BY: SUSAN KINUTHIA SIGN: *[Signature]* DATE: 21/5/2019

CHECKED BY: SIGN: DATE:

Aardam Environmental Trust
P.O. Box 246-01020
Londolozi, Kenya
Website: www.aardam.co.ke

Project: D. Lawululul Group e-govt. Community Sensitization

AET Attendants' list - Date: 27/5/2019

No.	Name	Organization	Telephone	ID No.	Signature
1	Elph K Njiru	OGR	0721271589	14672282	
2	Joseph K. OGR	OGR	0722978204	22544414	
3	Wacukui S. OGR	OGR	0722759783	22460901	
4	Abraham OGR	OGR	072205224	256679401	
5	Songale S. OGR	OGR	0729439755	13269289	
6	William L. OGR	OGR	0704333261	30052179	
7	MATHIE OGR	OGR	0704333766	6113885	
8	Solemn K. OGR	OGR	0724110308	6108323	
9	PURRY PRAMORE OGR	OGR	0727274219	24109298	
10	BUSH TATIANA OGR	OGR	0713194265	22637204	
11	MAXI KATUNGA OGR	OGR	0722545807	2347173	
12	MOSES Sarni AET	AET	0798111265	33436211	
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PREPARED BY: SUSAN KIMUTUA SIGN: DATE: 27/5/2019

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Website: www.amboseliecosystemtrust.org

AET Attendants' list – Date...28/5/2019...

Attendants list - Date: 24.07.2019				
Name	Organization	Telephone	LD No.	Signature
1. NKAITOLE	NGAURU	0728211963	14672254	
2. JACKLINE PAPA	EGR	0748301551	32926548	
3. Wynnette Nalaka	AYI	0723124407	35122549	
4. M.B. KAMUKA	PECS HD	0722773951	1241632	
5. MOSES SARUNI	ATE	0798111265	33436211	
6. Kusee James	BEI	0715305087	23589930	
7. MONICA OKOLU	ECR		6108987	
8. SUSAN KIMUTHIA	ATI	0712738607	24642087	
9. DR. PATRICIA KARUKU	PECS	0715936997	6484473	
10. EMMANUEL MPARARA	ATI	0786862702	21909819	
1. DEMA OLE SILANGA	Eselenbei	0741635397	7343084	
2. MORINKE OLE MAKE	Eselenbei	0723542371	14672454	

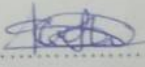
AMBOSELI ECOSYSTEM TRUST

Website: www.amboseliecosystemtrust.org

Project: ESELENKEI Group Ranch Community Sensitization Meeting

AET Attendants' list – Date: 28/5/2019.

	Name	Organization	Telephone	LD No.	Signature
1.	NAMBA NGIWI SAMBURA	ESELENKEI	0714295606	32967039	
2.	Faith Manau	ESELENKEI	0728972438	34870931	
3.	Lucy parashian	ESELENKEI	0718305098	23670487	
4.	NadoROI ASHI	ESELENKEI	071844593	61732110	
5.	RICARDO MUKENTET	ESELENKEI	071529127	25669528	
6.	SAYORE MAAI	ESELENKEI	0727796359	23588746	
7.	THOMAS O KASTINE	ESELENKEI	0710352444	12950620	
8.	MORINKE KAYIARA	ESELENKEI	07136773938	14672260	
9.	KORTOMPOI MASOPR	ESELENKEI	0728247127	6108332	
10.	Jonah mael	Climate ESELENKEI	0720461911	23670496	
11.	JACOBON MORREB	EGR TLEKIA	0726078085	23585705	
12.	Koikai Obulipip	AET/ATC/CHA	071727499	1063466	
13.	Jacob Leyian	ESELENKEI	0726471260	0494064	
14.	David Kifasho	ESELENKEI	0710580788	11127557	
15.	NKiti Samingo	ESELENKEI	0758089797	11385063	
16.	LOKE Maamari	ESK/Lionguard/CAI	0726546839	25634354	
17.	JOSEPH LEKANAIYA	CHIEF/KIJEKIA/EGRE	0720908817	22305615	
18.	ONANAI Kinyiti	EGR	0713209997	25781943	
19.	MATASHA KARIONGI	EGR	07	6113376	
20.	LEYIAN MBAA	EGR	0703216559	6108780	
21.	MARIKA OLEKISOI	EGR	0711574350		
22.	SAMUOLE SHUKA	EGR		9654339	
23.	OSCAR KESOI	EGR	0717763035	23592749	
24.	OLUPA Samingo	EGR	0712190229	14672466	
25.	JACKSON KESOI	EGR	0790713652	23593125	
26.	STEPHEN NKIITA	EGR	0752051356		
27.	Keturai babu	EGR	072084159	6113595	
28.	MELU LEYIAN	EGR	0745295498		
29.	MUSA SHUKA	EGR	0741780944	14672343	
30.	LOIS HUKU MPORO	EGR	0708395821	23567859	
31.	LEMUJA MALE	EGR	07		
32.	KIJANA MPORO	EGR	0723440934	11335150	

PREPARED BY: SUSAN KINYITI SIGN:  DATE: 28/5/2019

CHECKED BY: _____ SIGN: _____ DATE: _____



AEMP REVIEW

Activity... Working Group (Governance).....

AET Attendants' list – Date... 31/7/2019.

No.	Name	Organization	Telephone	I.D No.	Signature
1.	Jonathan Kamau	Perigine Inc.	0722028724	25667441	
2.	Dr. Benjamin Kariuki	PECS Ltd	072273951	1241632	
3.	Koikai Olorhapt	AET - Ltd	0700727499	1063466	
4.	Daniel Njogu	PECS	0726956500	5789548	
5.	Jackson Njogu	AKI	0712588693	23369978	
6.	Margaret Muriuki	UON	0725660273	23421725	
7.	Prof. Moses Okech	SFS - CUMS	0722598884		
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AEMP REVIEW

Activity: Working Group (Governance)AET Attendants' list – Date: 31/1/2019

No.	Name	Organization	Telephone	I.D No.	Signature
1.	Balemi Komara	Peregrine	0922028724	25667444	
2.	De Berardina Kikula	PECS Ltd	0922773951	1241632	
3.	Koikai Olorhityp	AET Ltd	0700727499	1063466	
4.	Daniel Njaga	PECS	0726958500	5789548	
5.	Jackson Njato	AET	0712588693	23369978	
6.	Margaret Muriuki	UON	0725660273	23421753	
7.	Prof. Moses Okeb	SFS-CDMS	0722595884		
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Amboseli Ecosystem Trust,
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Loitokitok, Kenya.

Website: www.amboseliecosystemtrust.org

Project.. KUKU A Game Ranch SENSITIZATION MEETING

AET Attendants' list – Date... 24/5/2019

No.	Name	Organization	Telephone	I.D No.	Signature
1.	JOSEPH MPAI	COP	0925587992	13221705	
2.	LACHAYO LACHAYE	KUKU A	0718981277	9209881	
3.	KIRATUKA KINENGO	" "	0726771315	12240065	
4.	NOAH RAHATO	" "	0714927366	12482994	
5.	TEMUKA MAKO	" "	0717335452	12492963	
6.	KIRAMON LAMOND	" "	0716471468	20272966	
7.	ANDREW KANYERE	" "	0729163208	12740722	
8.	BUCH SOMBOH	" "	0703130175	26041523	
9.	NOAH KAYIHI	" "	0708479129	26490545	
10.	KIZUMBUKA MPEJE	" "	0715226141	24325233	
11.	JOEL NKAORI	" "	072543331	11587217	
12.	NYERERE CHACHA	" "	0741639446	174183	
13.	LEKIFONY NKAORI	" "	07		
14.	MUSHTUKA KURESO	" "	0743498787	23968732	
15.	KENKERAI SEBEKA	" "	0729436514	24308094	
16.	MATIAS MELA	" "	0714706518	23445965	
17.	SEMPEA SPANIA	" "	0717586356	20406419	
18.	NTIPAPA METITO	" "	0798342216	13086324	
19.	KUTITA CHACHA	" "	070947654	24326503	
20.	TIMOTEO REREA	" "	0724883263	0	
21.	MAKETI NAZANGOYO	" "	0728116653	1352460	
22.	JOEL KETUKI	" "	0720315150	14607231	
23.	LEKIFONYI MOKO	" "	0716127403		
24.	DIOMA PARMETOI	" "	0720784657	20318589	
25.	NAANI SHWAKA	" "	0792399521	1467534	
26.	KORDUNI MEIHI	" "	0790772554	9366193	
27.	KITIPAI MPEJE	" "	0720141736	9366104	
28.	NAPUNNA MPEJE	" "	0701923065	9366119	
29.	ABRAHAM LUKAS	" "	0720140534	1467245	
30.	KAMAA LEIRO	" "	0721635232	3214426	
31.					
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AEMP REVIEW

Activity... Tourism expert workshop

AET Attendants' list – Date... 18/10/19

No.	Name	Organization	Telephone	I.D No.	Signature
1.	Abraham Lomungu	AET	0727028724	25663941	
2.	Esther Makungu Mbiti	Ponungufani Camp	0706407921	22023009	
3.	Komara Odion	Tortilis Camp	0722448579	22950744	
4.	KADZO SOFFIYA	MWCT	0729202511	3552588	
5.	ETDIA BIRI	MWCT	0728769429	26733109	
6.	DANIEL NJAYA	PECS	0720950350	5789548	
7.	Koikai Maitip	AET / ATGPCA	0700727499	1063466	
8.	DR BERNARD KAKKA	PECS Ltd	0722773951	1241632	
9.	Mwansa Margaret	UON	0725660273	23421255	
10.	Jackson Muto	AET	0712588693	23369778	
11.	Daniel Kaaka	AET	0724861523	21706285	
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PREPARED BY:.....SIGN:.....DATE:.....

CHECKED BY:.....SIGN:.....DATE:.....

AET Attendants' list – Date... 27/5/2017


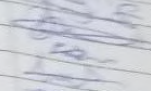

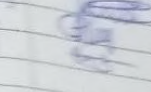

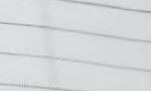

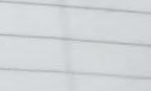
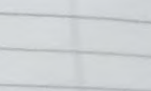
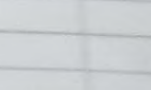

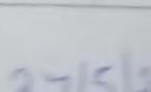
No.	Name	Organization	Telephone	LD No.	Signature
1	Elijah K Njimi	OGR	0721271589	114672282	
2	Joseph Kipat	OGR	0722972204	22648854	
3	Joseph Kipat	OGR	0722972204	22460901	
4	Joseph Kipat	OGR	0722759703	256629001	
5	Songale S. Kamba	OGR	0722759724	13265289	
6	William L. S. Kamba	OGR	0729439755	30053179	
7	William L. S. Kamba	OGR	0704333766	6113305	
8	MAH TIE	OGR	0704333766	6108323	
9	Solemn L. Kamba	OGR	0724110308	24109298	
10	PURM PHAMORRE	OGR	0727274219	22637204	
11	RUTH TATIANA	OGR	0713194263	23467171	
12	MAK KAMUKO	OGR	0722548807	33436211	
13	MOSES Sarnni	AET	0798111265		
14					
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19					


PREPARED BY: SUSANA KIMULITHA SIGN: [Signature] DATE: 27/5/2019



 Project: Olusaba Swamp Land Community Settlement

AET Attendants' list - Date: 27/5/2019

No.	Name	Organization	Telephone	ID No.	Signature
1	Eliah H. Njiru	CCGR	0722171899	1467221	
2	Joseph K. Kariuki	CCGR	0722993206	12805104	
3	Walter K. Kariuki	CCGR	0722993206	22460901	
4	Stephen K. Kariuki	CCGR	0722993206	20660901	
5	Stephen K. Kariuki	CCGR	0722993206	13749289	
6	William K. Kariuki	CCGR	0722993206	3005577	
7	M. A. T. T. T.	CCGR	0704323300	648645	
8	William K. Kariuki	CCGR	0722993206	6108323	
9	Paul M. Mwangi	CCGR	0722993206	2409302	
10	Paul M. Mwangi	CCGR	0715194263	32657204	
11	Paul M. Mwangi	CCGR	0722993206	21467171	
12	M. A. T. T. T.	AET	0798111261	33936211	
13					
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PREPARED BY: Susana Kariuki SIGN:  DATE: 27/5/2019

CHECKED BY: _____ SIGN: _____ DATE: _____



Amrohi Ecosystem Trust
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Lombok, Kenya
Website: www.amrohiecosystemtrust.org

Project: Olugulu Group Ranch Community Sensitization

AET Attendants' list - Date: 27/5/2019

No.	Name	Organization	Telephone	LD No.	Signature
1.	Miriam Mboya	..	0719665644	29174603	
2.	Kevin Steve	..	0714466733	2566665	
3.	Bob Kimuti	..	0714315058	25671632	
4.	MILAKAN NASISI	1172747	
5.	BENSON HAMBE	..	0722568053	22418680	
6.	MARIEA SHEKE	..	0725562449	5372146	
7.	Simon M. Oloitihip	..	0710416357	22475359	
8.	Kipatitu Tekehi	..	0719550997	11885742	
9.	Rinkene Kalama	..	07248824240	11728074	
10.	DICKSON MELIA	O.R.T	0720907096	10403385	
11.	MUKURE LENTIO	"	0792245597	9023762	
12.	THOMAS MARIKBEI	O.O.G.R	0726928855	24773254	
13.	Benson Kuya	O.O.G.R	0726684925	83286502	
14.	TYUEN MUKURE	O.O.G.R	0721289515	13285378	
15.	Louma Nkureh	O.G.R.C	0712134534	6113577	
16.	Raphael K. Kisiipia	O.G.R.C	0713938396	11384592	
17.	Njoroke Ole Setorak	O.G.R.C	0726897796	10408993	
18.	Malayo Ole Swampi	O.G.R.C	0722114816	14672161	
19.	Daniel Tolwesh	ODGR/AET	0721292256	3729575	
20.	JOEL KIPATITU	O.O.G.R/AES	0727466571	07201743	
21.	JOHN KIPATITU	072024429	11586906	07201743	
22.	OSERIAN	O.O.G.R	072579504	12088594	
23.	GEORGE LUPANGE	O.G.R	0724587624	11587305	
24.	Stephen Kipat	O.G.R	0722621719	11586112	
25.	Richard Kosei	O.G.R	07283329251	24925986	
26.	Samuel Kestep	O.G.R	0725323149	11285126	
27.	Amugian Tipilep	O.R.T	0797002481	13215024	
28.	Tipilit Tipape	O.O.G.R	0712639436	14672251	
29.	JACKSON MUKURE	AET	0712588693	23369978	
30.	Koikai Oloitihip	AET/ATCRCA	070727499	1063466	
31.	Mr. B. KAKKIK	PLCS Ltd	0722773951	1241632	
32.	Dr. P. KARIUKI	DECS Ltd	0715936997	6484473	
33.	SUSAN KIMUTITA	AET Admin	0712738607	24642081	
34.	Wynnette Njoroke	AET	0723724901	35122509	

PREPARED BY: SUSAN KIMUTITA SIGN: DATE: 27/5/2019

CHECKED BY: _____ SIGN: _____ DATE: _____



Amroseli Ecosystem Trust
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Londolozi, Kenya
Website: www.amroseliecosystemtrust.org

Project: Olgeululw Group Ranch Community Sensitization

AET Attendants' list - Date: 27/5/2019

No.	Name	Organization	Telephone	LD No.	Signature
1.	Miriam Mboya	..	0719665644	29174603	
2.	Jason Steve	..	0714466733	2566635	
3.	Bob Kimuti	..	0714315058	25671652	
4.	MILAKON NACISI	..		1172747	
5.	BENSON HAMIR	..	0722568053	22418680	
6.	MURIEL SHOKI	..	0725562449	5372146	
7.	Simon M. Oloitihip	..	0710416357	22475359	
8.	Kitaulu Leketi	..	0719530991	11855742	
9.	Rintene Kalama	..	0724882424	11728074	
10.	DICKSON MELIA	O.R.T	0720907096	10403885	
11.	MUKURE LENTIO	"	0792245557	9023762	
12.	THOMAS MAMIMBEI	O.O.G.R	0726928055	24773254	
13.	Benson Kuya	O.O.G.R	0726634925	83286508	
14.	Tyger Murewa	O.O.G.R	0721289515	13485378	
15.	Louisa Nkureh	O.G.R.C	0712134534	6113577	
16.	Raphael K. Kisipia	O.G.R.C	0713938396	11384592	
17.	Njoroka Ole Setrak	O.G.R.C	0726897796	10400993	
18.	Malayo Ole Sumpi	O.G.R.C	0722114816	14672161	
19.	Daniel Teluash	ODGR/AET	0721292256	3729575	
20.	JOEL S. MURRAY	O.O.G.R/AET	0727166874	07201707	
21.	DAVID K. MURRAY	0792024429	11586906	07201707	
22.	OSERIAN	O.O.G.R	072579504	12085594	
23.	GEORGE LUNGE	O.G.R	0724587624	11587305	
24.	Stephen Kipra	O.G.R	0722621779	11586112	
25.	Richard Kosei	O.G.R	0728327251	24925986	
26.	Samuel Kosei	O.G.R	0720323149	11325126	
27.	Amugwa Tipile	O.R.T	0797002481	13215024	
28.	Tipilit Tipile	ODGR	0712639436	14672251	
29.	JACKSON MURRAY	AET	071258693	23369978	
30.	Koikai Oloitihip	AET/AMROSEL	070727499	1063466	
31.	DR. B. KIMUTI	PLCS Ltd	0722773951	1241632	
32.	DR. P. KARIUKI	DELI Ltd	0715936997	6484473	
33.	Susan Kimuti	AET Admin	0712738607	20642081	
34.	Wynette Nalunga	AET	0723720901	35122509	

PREPARED BY: SUSAN KIMUTI SIGN: DATE: 27/5/2019

CHECKED BY: SIGN: DATE:



Amboseli Ecosystem Trust,
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Loitokitok, Kenya.
Website: www.amboseliecosystemtrust.org

Project... KUKUB GROUP RANCH SENSITIZATION MEETING

AET Attendants' list - Date... 21/5/2019

No.	Name	Organization	Telephone	LD No.	Signature
1.	KETON KISIKI	KUKU B	0706447432	26490534	
2.	JOICE SERET	KUKUB	0757356474	29118196	
3.	SHAPAU MUTIA	KUKU B	0742301121	36472905	
4.	LOOMU MUKAMA	KUKU B	0701463504	0495360	
5.	KINYI SONKOL	KUKU B	0728493642	12740167	
6.	NGABORI TUMAKA	KUKU B	0724128118	14672526	
7.	ODINGA MEITIPATISHO	KUKU B	0715303154	12740158	
8.	LEMASIKI LOMAKUA	KUKUB	0713842166	12740314	
9.	LESAMATI NGASHINGASHI	KUKU B	0728967532	1312533	
10.	SIMON JOLU	KUKU B	0718420059	32309552	
11.	NKABANI NKIRANDU	CHIEF	0726550908	12740170	
12.	LESERU LEAPA	KUKU B	0715055456	20273881	
13.	KASINE LEMEREI	KUKU B	0713519421	20311295	
14.	ERICK KAPAITO	KUKU B	0741641989	21442802	
15.	KISIMIR KETUKI	KUKU B	0725376460	12492986	
16.	KONENE LEKODLA	KUKU B	0720135597	9209808	
17.	SALUPA RAPAIO	KUKU B	0715861009	26854401	
18.	LEKATOO OLOMDOLO	KUKU B	0729813625	20369080	
19.	LANKOI MEEKI	KUKU B	0712657056	11587795	
20.	PANIAN KIMISI	KUKU B	0725363387	24107647	
21.	JAMES KOTIAN	KUKU B	0711208238	24324203	
22.	KEETIO KETURAI	KUKU B	0729304116	20310040	
23.	NKATOLE KUTATOI	KUKU B	0727692525	20192155	
24.	KETURAI KAIPOON	KUKU B	0715078157	30480369	
25.	LEKARUKA OLENG'ORO	KUKUB	0715567761	6113416	
26.	Saroni Mulu	KUKU B Treasur	0712046253	12740267	
27.	Kipalalo	LENKOKU	072795206	13611139	
28.	BUNGO RHODAH NGENTU	KUKU B	0708512236	30106747	
29.	Jukas Lemeta	KUKU B	0725928764	20324715	
30.	John Sese	KUKU B	0790979147	9367374	
31.					
32.					

PREPARED BY:.....SIGN:.....DATE:.....

CHECKED BY:.....SIGN:.....DATE:.....



Amboseli Ecosystem Trust,
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Website: www.amboseliecosystemtrust.org

Project... AEMP Review 2019-2029

AET Attendants' list - Date... 21/5/2019

No.	Name	Organization	Telephone	LD No.	Signature
1.	SADALLAH K.	NALARAM	0722389434	16098743	<i>[Signature]</i> Chair
2.	SAMUEL KAAH	ALUCA OHAR	0723918068	11738014	<i>[Signature]</i> Procs.
3.	ALAIL KISONKO	OLTIATANI CHAIR	0719648456	0498302	<i>[Signature]</i> Chairman
4.	LESALE IRIPSA	OSUPUKO	0716325657	12740001	<i>[Signature]</i> Treasurer
5.	JEREMIAS JACOB	KILITOME	0725402270	23851600	<i>[Signature]</i> Secretary
6.	JOSHUA PUZUKA	KILITOME-SEC	07304917942	1352746	<i>[Signature]</i> Treasurer
7.	MARGARET NAYESO	OLEPOLUS	0705072730	9831640	<i>[Signature]</i>
8.	Lucy masangira	NALARAM-Treasurer	0727696016	8236061	<i>[Signature]</i>
9.	Mikael Permyat	NAILEPO V-Chair	0790110375	6113538	<i>[Signature]</i>
10.	WINNETTE NAWAKA	AET	0723726907	35122509	<i>[Signature]</i>
11.	JOHNSON GISA	BIG LIFE	0721378081	13086993	<i>[Signature]</i>
12.	Michael Suyanka	Oltyan Secretary	0725275263	24107988	<i>[Signature]</i>
13.	Daniel meikomei	Nailepo - Secretary	0722891300	9742945	<i>[Signature]</i>
14.	NOITURUKASAKAPO	Oltyan-Treasurer	0712064909	0499186	<i>[Signature]</i>
15.	KIMARE DJE MAREM	OLEPOLUS-Chairman	0785520206	9366014	<i>[Signature]</i>
16.	TAILO OL NALOR	Nailepo-Chairman	0727355707	8337582	<i>[Signature]</i>
17.	Ituma Kwasikina	OLEPOLUS-SEC	0702273635	27172854	<i>[Signature]</i>
18.	Abraham Lomura	OLEPOLUS	0727028724	25663911	<i>[Signature]</i>
19.	ALBERT KAMUKA	PECS	072773951	1241632	<i>[Signature]</i>
20.	KOIKAI OLOITHIP	AET / AIGRA	0700727499	1063466	<i>[Signature]</i>
21.	Mamadi Sampuati	NALARAM-Secretary	0727650418	22196618	<i>[Signature]</i>
22.	MUSEI DJE JOUKAROT	OSUPUKO-Chairman	0726392965	23286214	<i>[Signature]</i>
23.	Daniel KAKKA	AET	0724861523	21706285	<i>[Signature]</i>
24.	Patrick Karicki	PECS	0715936997	6484473	<i>[Signature]</i>
25.	SUSAN KIMUTHIA	AET-Admin	0712738607	20602087	<i>[Signature]</i>
26.	Emmanuel Samco	OSUPUKO-Secretary	0727326520	1352911	<i>[Signature]</i>
27.	NASIKOI KAPATO	NAILEPO-Treasurer	0716499012	11728198	<i>[Signature]</i>
28.	PANILAI KATOK	Kilitome-Chairman	0726497857	9655586	<i>[Signature]</i>
29.	JACKSON NIWATO	AET	0712585693	23369918	<i>[Signature]</i>
30.					
31.					
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PREPARED BY: SUSAN KIMUTHIA SIGN: *[Signature]* DATE: 21/5/2019

CHECKED BY: _____ SIGN: _____ DATE: _____



Amboseli Ecosystem Trust
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Website: www.amboseliecosystemtrust.org

Project: Mbarivani Group Ranch Sensitization meeting

AET Attendants' list - Date: 23/5/2017

No.	Name	Organization	Telephone	ID No.	Signature
1.	Titus Ombani	ORGASUA	0713319336	26623883	PS
2.	MARIKA SEMETI	ISINET	0725992501	20361406	mm
3.	FRANCA Sanchuka	MBIRIVANI	0707341769	26491371	Thund
4.	Leiya Muinet	NGOROSHI	07064493856	25808004	mm
5.	Matayo Naini	NGOROSHI	07102090491		mm
6.	Lempapide Kothari	Kale Sirwa	0710291702	14607282	mm
7.	Kasaine Koiwai	Njara	0729473363	25655100	mm
8.	Wynette Nalaka	AET	0723724907	35122549	Wynette
9.	David Beckson	Emukutan	0702072432	21811513	Beckson
10.	James Selengis	IGA	07081308699	11586874	James
11.	Kitesho marika	Chemchem	0702798615	31062445	Kitesho
12.	Jonathan Kidiya	ASS. CHIEF	0724108518	2453821	Jonathan
13.	JOSEPH NIAKUMU	ASS. chief	0729573662	25486675	Joseph
14.	JOEL KECOT	ASS. chief	071218019	24034525	Joel
15.	LESAITA KIKOIA	Committee member	0711542872	22608392	Lesaita
16.	LETINA KIKOIA	member	0771556060	26273765	Letina
17.	SAINEPUNE MARIS		0725470937	19265128	Sainepune
18.	JOHN LUYATA	ISINET	0711536617	23841267	John
19.	TURERE OLSALEM	ILCHALAI	0710256832	21349401	Turere
20.	LEWISTIA TORO	ENKONGU	0724879779	20405917	Lewistia
21.	TIMOTHY SAGULU	CHIEF - ISINET	0727614771	22237429	Timothy
22.	JACKSON NIAKUMU	AET	071268693	22369915	Jackson
23.	ABBERMANY KAMUN	PECS Ltd	0722773951	1241632	Abbermany
24.	ABERHANY KAMUN	Peraguer	0727028724	25662961	Aberhany
25.	SITRI EME SHUKOR	OSIRAM	0728801767	9654393	Sitri
26.	Grace N. Kanchori	"	0728953141	27710099	Grace
27.	MANTIVENE KUNI	OSIRAM	0718691733	5873606	Mantivene
28.	DR. PATRICK KARIUKI	PECS	0715936997	6484473	Patrick
29.	SUSAN KINUTHIA	AET	0712738607	24602027	Susan
30.	JACKSON KIRIAN	NGOROSHI	0728413573	25110906	Jackson
31.	ISAIAH NAOITO	ISINET	0795831552	11385155	Isaiah
32.	JOHNSON SIPITUK	ACC	0722856703	0200770	Johnson

PREPARED BY: Susan Kinuthia SIGN: [Signature] DATE: 23/5/2017

CHECKED BY: _____ SIGN: _____ DATE: _____



Amboseli Ecosystem Trust,
P.O. Box 146-00209
Lustakotok, Kenya

Website: www.amboseliecosystemtrust.org

Project: Mbarika Range Ranch sensitization meeting


AET Attendants' list - Date: 23/5/2019

No.	Name	Organization	Telephone	ID No.	Signature
1.	Titus Oluoch	ORGESUG	0713319336	26623883	<i>TS</i>
2.	MARILYN SONGUEI	ISINET	0725992501	20361406	<i>marilyn</i>
3.	FRANCIS SONGCHUKA	MBIRIKANI	0707341769	26491371	<i>Francis</i>
4.	Linda Mwindi	NGORUSLON	0706493856	25808004	<i>Linda</i>
5.	Mutaya Naini	NGORUSLON	0710209049		<i>Mutaya</i>
6.	Lempapade Kothari	Kalesiwa	0710291702	14607282	<i>Lempapade</i>
7.	Kasane Kikai	Mbarika	0729473363	25655100	<i>Kasane</i>
8.	Wynette Naliaka	AET	0723724907	35122549	<i>Wynette</i>
9.	DAVID Beckson	Emukutan	0702072432	24811513	<i>David</i>
10.	James Selengis	ICRA	07021208695	11586874	<i>James</i>
11.	Kitesho marika	Clemson	0702798615	31062445	<i>Kitesho</i>
12.	TOTALION KIDIAI	ASS. CHIEF	0724108518	24163821	<i>TOTALION</i>
13.	JOSEPH NIAKAMU	ASS. CHIEF	0729573662	25486675	<i>JOSEPH</i>
14.	JOEL KECI	ASS. CHIEF	071218015	24034525	<i>JOEL</i>
15.	LESANTA KIKANDA	Committee member	0711542172	22608372	<i>LESANTA</i>
16.	LETINA KOMEI	MEMBER	0771556060	20273765	<i>LETINA</i>
17.	SAINEPUNE MARIS		0725470937	19265128	<i>SAINEPUNE</i>
18.	JOHN LUYATA	ISINET	0711570617	23841267	<i>JOHN</i>
19.	INBERE OKSALAM	ILCHALAI	0710256832	21349401	<i>INBERE</i>
20.	LEHTISIA IORG	ENKONGU	0724879779	20405917	<i>LEHTISIA</i>
21.	TIMOTHY SAILUKU	CHIEF - ISINET	0777619771	22237429	<i>TIMOTHY</i>
22.	JACKSON NIKATO	AET	0712588693	22369975	<i>JACKSON</i>
23.	ALBERNATH KAMUKU	PECS Ltd	0722773951	1241632	<i>ALBERNATH</i>
24.	Abraham Lomua	Delegated	07720287241	25602901	<i>Abraham</i>
25.	SITARI EME SHUKOR	OSIRAM	0728001767	9654393	<i>SITARI</i>
26.	Grace N. Kanchori	II	0728953141	27710099	<i>Grace</i>
27.	MANTWENE KONI	OSIRAM	0718691733	5373606	<i>MANTWENE</i>
28.	DR. PATRICK KARIUKI	PECS	0715936997	6484473	<i>DR. PATRICK</i>
29.	SUSAN KIRUTHI	AET	0712738607	24602071	<i>SUSAN</i>
30.	JACKSON KIRIAN	NGORUSLON	0728413573	25110906	<i>JACKSON</i>
31.	ISAIAH NGOITO	ISINET	0795831552	11385155	<i>ISAIAH</i>
32.	JOHNSON SIPITIK	AET	0722856703	0200770	<i>JOHNSON</i>

PREPARED BY: Susan Kiruthi SIGN: [Signature] DATE: 23/5/2019

CHECKED BY: _____ SIGN: _____ DATE: _____

AMBOSELI ECOSYSTEM PLAN
VALIDATION MEETING
18-19 DECEMBER 2019
THE KYAKA HOTEL MACHAKOS
HEKIMA HALL




CONFERENCE

PARTICIPANT LIST FOR UNDP FROM 18TH-19TH DECEMBER, 2019

NO	NAMES	ORGANIZATION	PHONE NO	ID NUMBER	EMAIL ADDRESS	18TH SIGN	19TH SIGN
1	Benjamin Kimiti	UNEP	0722413762				
2	ANNE MUGO	WVF-KENYA	0793256320	14117889	amugo@wvfkenya.org		
3	Kosim Olejiphip	AET/AIGACA	0700727491	1063466	olejiphip@outlook.com		
4	John S. S. S.	ACC	0722413762	0722413762	solunko@acc.co.ke		
5	Keter Solunko	ACC	0722413762	25710200	Solunko@acc.co.ke		
6	Pedrick Karuku	PECCU	0715936997	6484473	karukip@peccu.org		
7	Bernard Karuku	PECCU	0722773451	1241632	bernard@peccu.org		
8	Syngia Mwangi	CWCCC	072349412	25027147	syngia@cwccc.co.ke		
9	Jackson Njiru	AET	0712555693	23367978	jackson@etnail.com		
10	Dickson Muli	O.R.T	0720-907091	10403885	N/A		
11	Kenneth Njiru	KWS	0714597690	6494569	knjiru@kws.go.ke		
12	Daniel Lotuoch	AET/ODSE	0721392256	2929575	lotuochdaniel@gmail.com		
13	John Bura	KWS	0721250806	23573251	johnbura@kws.go.ke		
14	Bernard Tulito	IPNW	0724178512	13086674	btulito@ipnw.org		
15	Daniel Kaaka	AET	0724861523	21706255	danielkaaka@etnail.com		
16	Devius Kinyo	KWS	0722647192	2151845	devius@kws.go.ke		

ORGANIZER'S NAME: WVF-KENYA AIGACA
 SIGNATURE: [Signature]
 DATE: 19/12/2019



NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

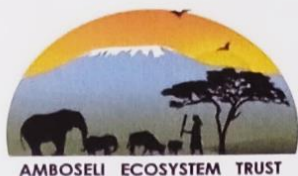
SITE VERIFICATION AND SITE MEETING FOR THE STRATEGIC ENVIRONMENTAL AND SOCIAL ASSESSMENT (SESA) PROCESS FOR THE AMBOSELI ECOSYSTEM PLAN (AEMP) 2020-2030 AND 3 GROUP RANCHES IN LOITOKTOK KAJIADO COUNTY

ATTENDANCE LIST

Dates: 29/Nov-2023

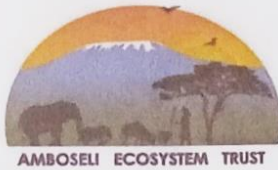
No.	Name	Institution	Designation	Contacts (Phone No. & Email)	Signature	Signature	Signature
1.	MARGARET NJUKI	NEMA	SPCO	mngiki@nema.go.ke			
2.	MARRIAN KISKO	Nema	SPED	mkeoko@nema.go.ke			
3.	Kennedy Chaganda	Intar BV	SACC	chaganda2015@gmail.com			
4.	Adrian Jiru	KWS	AWI	ajiru@kws.go.ke			
5.	Francis Mwangi	ENEM/HP	Consultant	francis.mwangi@2013@gmail.com			
6.	David Mwangi	ENEM/HP	Consultant	mwangidavid@gmail.com			
7.	JAMES MUTIMU	ENEM/A	Consultant	0722857230			
8.	Johana Reuben O. Ouma	NEMA	SEO	johana@nema.go.ke			
9.	VALENTINE OKOTH	WRA	L.O	0725639127 valentiano@nema.go.ke			
10.	FINNE W. MACHARIA	NEMA HQ	PCED	fmacharia@nema.go.ke			

No.	Name	Institution	Designation	Contacts (Phone No. & Email)	Signature	Signature	Signature
11.	Christine Mwinzi	MRTI	scientist	0722299912			
12.	Daniel Ole Kidi	MGRCS		0721682890			
13.	Joel Ole Leshao	MGR	C/M Subdivision	T.F. 0722475586			
14.	Oceanic Sakwa	NGMA		0720318948			
15.	GRIC Dlette	NGMA	AFED	0726069351			
16.	ANDREW MACHO	SURVEY OF KENYA	SUB COUNTY SURVEYOR	0721376687			
17.	PAUL NTIATI	MGR	MGR-TASK FORCE	0729363176			
18.	Dr. Bernard Kagia	PSCS Ltd	MD	0722773951			
19.	Kaikai Olehipip	Architects & Interiors	Partnership Gtd	0700727499			
20.	Lokapusha Kenka	Sub-county Administration Kaji	Director	0728917388			
21.	Kennedy Chumanda	Infra-IV	SACC	0723667579			
22.	Jackson Moresi	EGR	TREASURER	0726078075			
23.	Jacob Luyisi	EGR	Committee 2020	0745655435			
24.	Daniel Mapi	MAR-Secretary	Secretary	0724972240			
25.	LESANTA KEREMPU	VICE MAR	V/CHMR	0711542572			
26.	Benson Kexcom	BLF	C.E.O	0721941926			
27.	Isiungu Sereka	COGR	V/CHMR	0723759703			
28.	JOSEPH KIPATPAI	COGR	Secretary	0728975304			
29.	Joshua Lejian	COGR	Treasurer	0723856115			



STRATEGIC ENVIRONMENTAL ASSESSMENT FOR OOCR SUBDIVISION SCHEME PLAN
LIST OF PARTICIPANTS

No.	Name	Organization/Group	Date	Signature	
1	JOAH KARAT	CHAIRMAN MESHAMANS	12/10/2022	N'm K	0710304133
2		CURIO HAWKER			
3		ASSOCIATION			
4		Ohugululu Ranch			
5					
6	MUMBI	TUNDU MONJE	12/10/2022		07031604
7	KITOSILO	GRADING GROUP			72
8	CHARLADY	MESHAMA HIZONE			
9	SEBGE WPEMPE	CHIEF	12/10/2022		072458702
10	DARIEL KIPIDE	MEMBER			
11	SEMPETO LKUNWALE	"			
12	NEANI KOUNGET	"			
13	NALASTA MUSE	"			
14	REJI KOITEE	"			
15	NUTAN NCAOBI	"			
16	NEPILWA KIKIKU	"			
17	NKARINA NINA	"			
18	MULELE KIDOWA	"			
19	ESTEL JACKSON	"			
20	TITOLAI OLUPEMPE	"			
21	YIOSTA TUMURVA				
22	MESHA OLWUKU				
21	MESHA KIKAOBI				
22	NATETIA DIMAKA				
23	NATETIA JALIBATU				
24	NAMPA SATIRAKA				
25	PSCALU THA PARTINA				
26	NATETIO LALI PASTIC				
27	TITO MARCON				
28	NILASU MABU				
29	KUSUJI KILWIKO				
30	NEWIKO KILWIKO				
31	TIATUJI SILAKU				
32	TOLEKUN KIKU				
33	KELU WILWIKU				
34	NAMBUKA LE PAKU				
35	MEM				



CONSENT FORM

Good morning/ afternoon my name is pecs Ltd and I am here with my colleague Experts We are from Planning and Environmental Consultancy Services, and working in consultation with our client Amboseli Ecosystem Trust.

We are currently carrying out a Strategic Environmental Assessment for Olgulului Ololarrashe Sub division Scheme Plan in Amboseli Ecosystem, and as part of consultation and public participation we would like to get your views on the subject matter. All information that you give us will be kept confidential and you will not be identified personally in any reports resulting from this research. Your participation in this study is completely voluntary and with no monetary compensation and you may refrain from answering any questions and end the survey at any point in time. It will take an approximately one hour to complete this discussion.

Do you consent to participating in this discussion?

Yes ☒

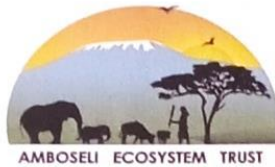
No ☐

If yes:

Name: Alexis Kioola

Signature: [Signature]

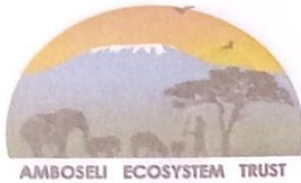
Date: 14th Oct. 2022



STRATEGIC ENVIRONMENTAL ASSESSMENT FOR OOG SUBDIVISION SCHEME PLAN
LIST OF PARTICIPANTS

No.	Name	Organization/Group	Date	Signature
1	Daniel Letur	OOG Chair	11/10/2022	[Signature]
2	Tajen Miliari	OOG Patron	"	[Signature]
3	LEHRESIA KUDAI	OOG MEMBER		[Signature]
4	RINKOINE KALAMA	OOG MEMBER		[Signature]
5	SARUNI KATAMBOI	OOG MEMBER		[Signature]
6	Richard LEPORES	OOG - MEMBER		[Signature]
7	Daniel Kaaka	AET	11/10/2022	[Signature]
8	Nicholas Bunyige	PECS Ltd	11/10/2022	[Signature]
9	Dr. Bernard Kean	PECS Ltd	11/10/2022	[Signature]
10	Joshua Leppan	OOG Treasurer	11/10/22	[Signature]
11	YDRAH NJIRANI A. I. C		11/10/22	[Signature]
12	Brian Sankale Taya	OGR Ranger	12/10/2022	[Signature]
13	DAVID Kevacire	OGR Chairman	12/10/2022	[Signature]
14	JOSEPH Kihura	KWS Sgt Kihuna	12/10/2022	[Signature]
15	Peter munda	KWS Rgr Kihuna	12/10/2022	[Signature]
16	Charles Wyamongo	KWS Rgr Kihuna	12/10/2022	[Signature]
17	Solama Gitonga	KWS Rgr Kihuna	12/10/2022	[Signature]
18	mekomet Githani	Slamt Rgr Kihuna	12/10/2022	[Signature]
19	Evans OUIS	OOG Ranger	10/13/2022	[Signature]
20	Lekina Ferkata	OOG Chair Grazing	12/13/2022	[Signature]
21	Fred Sammut	COMT GRU	12/10/2022	[Signature]
22	JOHNATHAN OJUA	Colony GOVERNMENT	14/10/2022	[Signature]
21	JOSEPH KIPMAN	OOG	10/10/2022	[Signature]
22	Vicki Fshale	AET	14/10/2022	[Signature]
23				
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070831788



CONSENT FORM

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We are currently carrying out a Strategic Environmental Assessment for Olgulului Ololarrashe Sub division Scheme Plan in Amboseli Ecosystem, and as part of consultation and public participation we would like to get your views on the subject matter. All information that you give us will be kept confidential and you will not be identified personally in any reports resulting from this research. Your participation in this study is completely voluntary and with no monetary compensation and you may refrain from answering any questions and end the survey at any point in time. It will take an approximately one hour to complete this discussion.

Do you consent to participating in this discussion?

Yes ☒

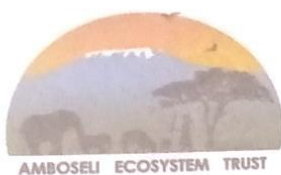
No ☐

If yes:

Name: Daniel Leturash

Signature: [Signature]

Date: 11/10/22



CONSENT FORM

Good morning/ afternoon my name is PECS Ltd and I am here with my colleague Experts. We are from Planning and Environmental Consultancy Services, and working in consultation with our client Amboseli Ecosystem Trust.

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Do you consent to participating in this discussion?

Yes ☒

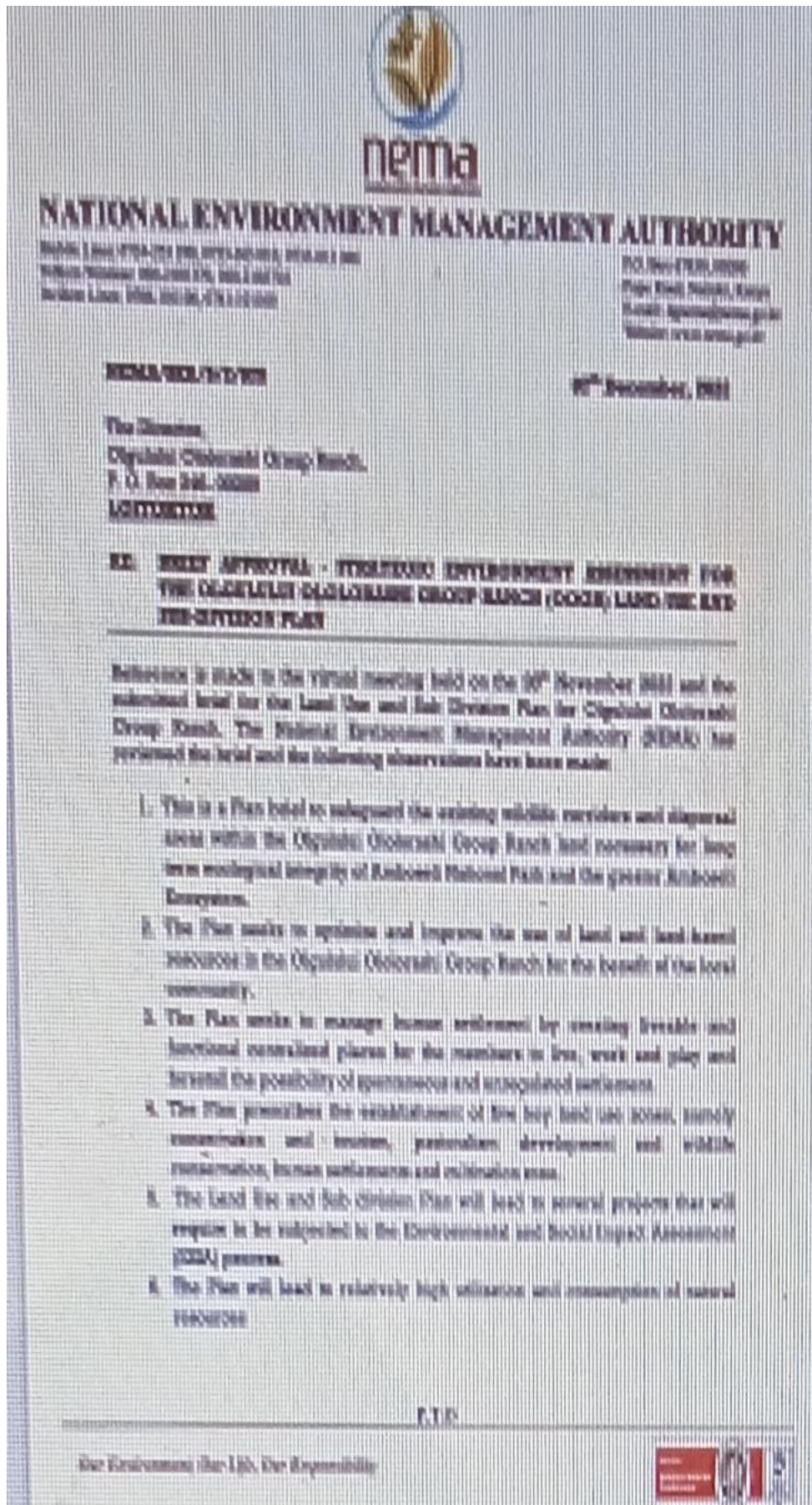
No ☐

If yes:

Name: EVANS OLUIS MERITE

Signature: [Signature]

Date: 10/13/2022




In view of this, you are requested to submit the following documents to the Agency, along with the required fee for the Strategic Environmental Assessment (SEA) process:

Designs yet to be made with those that are requested by the Agency will have no impact on the SEA process who will prepare and submit a working report to the Agency for review in line with the provisions of section 34 of the Environmental Management and Coordination Act (EMCA, 1991) and the National Guidelines for Strategic Environmental Assessment in Kenya.

DECLARATION

**DECLARATION
FOR THE SEA PROCESS**



nema
NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Mobile Lines: 9733-233 390, 9733-263 018, 9733-813 096
Toll-free Numbers: 800-208 1370, 800-208 7113
Incident Lines: 8700-1 81380, 0700-1 011 00

P.O. Box: 07000, 00000
Ngara Road, Nairobi, Kenya
Email: agencies@nema.go.ke
Website: www.nema.go.ke

NEMA/REG/01/000

01st December, 2022

**The Director,
 Amboseli Ecosystem Trust
 P.O Box 344-0020
 LOITOKYOTI**

**RE: BRIEF APPROVAL - STRATEGIC ENVIRONMENTAL ASSESSMENT FOR
 THE AMBOSALI ECOSYSTEM MANAGEMENT PLAN (AEMP) 2020-2030**


Reference is made to the virtual meeting held on the 28th November 2022 and the submitted brief for Amboseli Ecosystem Management Plan. The National Environment Management Authority (NEMA) has reviewed the brief and the following observations have been made:

1. This is a Plan brief for integration and management of different land uses and natural resources in the Amboseli ecosystem aiming towards realisation of sustainable development goals.
2. The Plan seeks to facilitate conservation of viable wildlife population at the ecosystem through planning for wildlife migratory routes and critical refuges, restoring degraded lands through grass banks, resting and rotation of pasture use, soil erosion control measures and establishment of wildlife conservation.
3. The Plan prescribes the establishment of an intact block of land as the wildlife corridor and disposal area to enhance sustainable human settlements and eliminating human-wildlife conflict.
4. The Land Use and Sub division Plan will lead to several projects that will require to be subjected to the Environmental and Social Impact Assessment (ESIA) process.
5. The Plan will lead to sustainable management and utilisation of the ecosystem natural resources for community livelihood improvement.

In view of this, you are required to subject the Amboseli Ecosystem Management Plan to the Strategic Environmental Assessment (SEA) process.

P.T.O

The Environment, Our Life, Our Responsibility



EST 1975, 2017 Certified

Kindly get in touch with firms that are registered by the Authority and have expertise in the ESEA process who will prepare and submit a scoping report to the Authority for review in line with the provisions of section 13A of the Environment Management and Coordination Act (EMCA), 1999 and the National Guidelines for Strategic Environmental Assessment in Kenya.

(Signature)

STEPHANIE OUMA
FOR DIRECTOR GENERAL

APPENDIX 8b-Photos of Stakeholders Consulted





OLTUKAI SCOPING MEETING





ALOCA COMMUNITY Meeting





KUKU B COMMUNITY MEETING



ROMBO and KUKU



OLGULULUI



MBIRIKANI



ESELENKEI





Expert Consultation Meeting at Kyaka Hotel Machakos



ESELENKEI



Community Livelihood Expert Working Group



Tourism, IG and CL Expert Working Groups at Lunch at Noonkotiak Center







Expert Review Meeting at Kimana House





Amboseli Research Elephant Center where Natural Resource Management Expert Group Convened









Photo of Stakeholder Validation Meeting at Kyaka Hotel Machakos



StakeHolders, Consultants and NEMA Officials during Site Visit and Scoping Meeting at Amboseli National Park on 28th March, 2023













APPENDIX 9-General Baseline Survey Questionnaire

AEMP BASELINE SURVEY 2019 HOUSEHOLD QUESTIONNAIRE

SECTION A. HOUSEHOLD IDENTIFICATION

A1.1 Date of Interview.....

A1.2 Start TimeEnd Time.....

A2 IDENTIFICATION

	Response	Use codes as applicable
A2.1 Interviewer's Name		
A2.2 Name of the Respondent		
A2.3 Gender of the respondent	1. Male 2. Female	
A2.4 Name of Household Head		
A2.5 County		
A2.6 District		
A2.7 Division		
A2.8 Project Area		
A2.9 Village		
A2.10 GPS Reading	N/S	
	E/W	
A2.11 HH Head Mobile Number		

B. HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS

B1. What is your total household size?

B2. Household head and spouse demographic data (Fill in the table below)

N o.	B2.1: House hold mem- ber	B2.2: Age (In years)	B2.3: Sex CODE: 1= Male; 2= Fe- male	B2.4: Marital Status CODE: 1=Single; 2=Married; 3=Widowed/ Separated; 4= Others (spec- ify)...	B2.5: Education level: CODE: 1=No formal school; 2= Attended primary; 3 = Completed primary; 4 = Attended secondary; 5 = Completed secondary; 6= Post secondary; 7= Adult education.	B2.6: Main occupa- tion	B2.7: Period as Main source of occupation (in years)
01	Head						
02	Spouse						

Main Occupation (CODES for 2.6): 1=Crop farming; 2=Livestock farming; 3= Formal employment (Salaried or permanent); 4=Informal employment (wage & casual labor); 5= Small/ micro enterprises; 6= Petty trade; 7= Others (specify)....

B3. Please provide information on the following

Age category (years)	Total in the household		Total
	M	F	
Under 15			

Strategic Environmental and Social Assessment for AEMP 2020-2030

15 – 40			
41 – 64			
Over 64			

B4.1 What is the main source of income for your household?(USE CODES Below)

1=Crop farming; 2=Livestock farming; 3= Formal employment (Salaried or permanent); 4= Informal employment & casual labor); 5= Small/ micro enterprises; 6= Petty trade; 7= Others (specify)....

(wage

B4.2 What are the other two important sources of income for your household? (In order)

B4.3 When did you start keeping livestock?

B4.4 How did you acquire your initial herd?

1= inheritance, 2 = bought 3 = relative 4 = Other (Specify).....

B4.5 Who in your household is primarily responsible for making key decision regarding livestock activities? 1= Household Head, 2= Spouse; 3 Both HH Head & spouse; 4= Son; 5= Daughter; 6= Others (specify.....)

B4.6 Who in your household spends most the time performing livestock activities?

1= Household Head, 2= Spouse; 3 Both HH Head & spouse; 4= Son; 5= Daughter; 6= Worker; 7= others (specify....)

B5.1 Type of livestock shed owned

1= Bricks 2= Pole; 3= Open; 4= Others (specify).....

B5.2 Type of floor of livestock shed

1= Mud 2= Concrete; 3= Stones/gravel; 4= Others (specify)

B5.3 Do you have separate sheds for different livestock types and ages? 1 = Yes, 2 = No

If YES, Explain.....

B6.1 Do you keep records of your livestock activities?

1= Yes 2= No

B6.2 If yes, which ones? And for which livestock type?

1= Breeding; 2= Milking; 3= Feeding; 4= Health; 5= Expense; 6= Others (specify)

In Yes, for which Livestock Type 1 = Cattle, 2 = Sheep, 3 = Goats, 4 = All

B7 How did you learn about record keeping? (Record in verbatim)

B8 Income status of household (Average total income from livestock related

activities) per month 1=<5,000; 2= 5,001-10,000; 3= 10,001-20,001; 4= 20,001-30,000; 5= >30,000

C. PRODUCTIVE RESOURCE ENDOWMENT

C1.1 Provide information on land tenure and use in the table below

Land tenure structure	Size (Hectares)	Size of land under (Hectares)					Rented out or Given out
		Annual crops (1year)	Perennial crops (More than 1year)	Grazing	Fodder	Fallow	
Owned land							
Leased land							
Borrowed land							

Strategic Environmental and Social Assessment for AEMP 2020-2030

Communal land							
Total							

C2. Provide information on the following productive assets **OWNED** by the household

Functioning asset	Do you own any of the assets? 1=Yes, 2=No	Number owned	Working status 1 = most working properly; 2 = most working moderately; 3 = most working improperly	Unit Price (Ksh) (Current price if liquidated)	Total value (Ksh)
Crush					
Ox/donkey cart					

Pasture/crop enclosure					
Water tank/borehole					
Feed store					
Livestock routine management tools					
Sprayer					
Irrigation equipment					
Tractor					
Pickup, lorry					
Slaughter Slab					
Others (Specify)					

D3 LIVESTOCK PRODUCTION

D3.1 Please indicate the types of **livestock** you **OWN** in your household (2014)

Type	Number owned by breed			Number lost	Current average price/unit (Ksh)	Service 1=AI 2=Natural 3= Bull scheme	Mineral supplement	Average Livestock Body Condition Score (USE CODES)
	Local	Improved	Breed Type					
Cattle								
Goats								
Local goats								
Sheep								
Others (specify)...								

Average body condition Score: 1= Emaciated, 2 = fairly emaciated, 3 = average, 4 = good, 5 = fat

D2.2. What was the cause of livestock losses (**Circle all that apply**)?

1= Drought related, 2= Disease related, 3= Skills related, 4= Other (specify).....

D2.3 Which of the following herding practices do you practice?

Herding Practice		
Paddocking		
Semi-paddocking		
Open grazing		
Mineral supplements		
Tethering		
Other (Specify)		

D2.4 Which is the main herding system practiced by your household?

1= Paddocking, 2 = Semi- paddocking, 3= Open grazing, 4 = Tethering, 5 = Other (Specify)

D2.5 What is the average culling period for your livestock (yrs).....

D2.6. Use and satisfaction with Livestock Services in the past 1 year

Livestock Technology	Whether	Who provided	Reliability of	Affordability of	Satisfaction level
----------------------	---------	--------------	----------------	------------------	--------------------

	Is the household aware of service? 1=Yes 2= No	household has used service in the past 1 year 1= Yes 2= No	the service 1. Private service provider 2. Government extension agent 3. Marketing association 4. Other (specify)	provider 1. Not reliable 2. Neutral 3. Reliable	service 1. Very expensive 2. Fair 3. Affordable	with service 1. Dissatisfied 2. Fairly satisfied 3. Satisfactory 4. Very Good
Purchased Hay						
Vet services & Vaccinations						
Tick control						
De-worming						
AI service/Breed improvement services such as bull schemes						
De-stocking/re-stocking						
Use of crop residue						
Spraying race						

D2.7 Do you practice on-farm feed conservation? 1=Yes 2=No

D2.9 If yes, which method did you use in the past 12 months? 1=Hay
2=Silage 3=Both (i.e. hay & silage); 4 Other (specify)

D2.10. In which year did you first use this method?

D.2.11. Who is your nearest stockist or supplier of livestock inputs in Kms?

D.2.12 What is the distance to the nearest stockist of livestock inputs in Kms?

D.2.13 What is the distance to the nearest market where you sell or buy livestock in Kms?

D.2.14 What is the mode of transport used to the nearest market for livestock?

Mode of transport 1=Walking, 2=Bicycle, 3=Matatu/Bus, 4=Motorbike, 5= Others (specify.)
D2.15 What is the cost to and from the nearest market for livestock?

E1: ACCESS TO WATER FOR DOMESTIC AND LIVESTOCK USE**E.1.1 Water Source for Domestic and Livestock Use**

Water Use	C3.2: What is the main source of water for this use during wet season?	C3.3: What is the distance to the water supply infrastructure mentioned in Q C3.2 in wet season?	C3.4: What is the main source of water for this use during dry season?	C3.3: What is the distance to the water supply infrastructure mentioned in Q C3.4 in dry season?
	1=Piped, 2= Public Tap, 3= Borehole, 4= Communal water point, 5=Rain water, 6=Vendor/tanker truck, 7=River/stream, 8= Others (Specify)....			
Livestock production				
Domestic use				

E1.2 If used for livestock production, is water supply adequate for continuous planning of your activities?

1=Yes; 2=No

E1.3 If **No** to Q E1.2, what mechanism do you use to cope with water scarcity during dry seasons? **(Circle all that apply)**

- f) Develop water harvesting structures e.g. water pans,
- g) Move to other locations in search of water
- h) Reduce the scale of operation
- i) Withdraw from water demanding activities
- j) Do nothing
- k) Other (specify).....

E1.4 Are you a member of a Water User Association in this area? 1= Yes, 2 = No

E1.5 If **Yes**, Which one? (Actual Name)

E1.6 Are you satisfied with the service offered by the Water User Association?.....

1= Not satisfied at all, 2 = fairly satisfied, 3 = neutral, 4 = satisfied, 5 = very satisfied

E1.7 What is your reason for the level of satisfaction with the service above?

.....

E2. LIVESTOCK OUTPUT AND MARKETING

Livestock and related products	Total herd size in 2013	Number of months of sales	Average quantity sold per month	Average unit sale price during a peak month of sale	Who is mostly involved in selling these products? **	Buyer type of largest sale***	Market place where most of the produce was sold****	Main marketing challenge
Cattle								
Goat								
Sheep								
Meat (slaughtered)								
Hides and skin								
Other (specify):								

E2.1 Livestock and livestock products produced in the past 1 year.

***Unit of Production:** 1= Kgs, 2= Numbers

Specify the units (products like milk can be captured on a daily basis and computed before entry in the table)

**** HH member involved:** 1= HH Head; 2= Spouse; 3= Son/Daughter; 4= Hired labour; 6=Others (specify...)

***** Buyer type:** 1=Cooperative societies, 2=Farmer group, 3= Private processors/abattoirs';
4= Middlemen/informal traders; 5=Institutions/Hotels, 6= Consumer/Neighbour/Farmer, 7= Other (specify)

****** Market place:** 1=Village, 2=Neighboring village/location/road/junction, 3=Nearby township, 4=Distant township, 5=Regional market, 6=Others (Specify)

.....

******* Constraint:** 1=Low price, 2=Poor road to the market, 3=Poor access to information, 4=Lack of reliable transport, 5=Others (Specify)

E2.2. What are your main sources of market information?

1= Mass Media – Radio; 2= Brokers; 3= Neighbours/friends; 4= Private sector; 5= Group /members;
6= NGOs/CBOs; 7= Others -.....

E2.3. Do you add value to your livestock products before selling?

1=Yes; 2=No

E2.4. If yes, what value adding activities did you carry out?**E2.5. Do you have any formal marketing arrangement for your livestock?**

1=Yes; 2=No

E2.6. If yes, explain?

E2.7. What determines your choice of market to sell your livestock? 1= Price,
2. = distance, 3 = convenience, 4 =

Other (specify)

F. MEMBERSHIP TO FARMER GROUPS AND OTHER SOCIAL GROUPS

F1.1 Are you a member of any farmer group? 1=Yes; 2= No

F1.2 If Yes to F1.1 above, please provide the following information if you or any member of your household belongs to any local association/group

Household member 1=Head, 2=Spouse, 3=Both (i.e. 1&2); 4= Son/daughter; 5=Others (specify)....	Association/ group type*	Year joined	Main activities of the association/ group		
			1.	2.	3.
			1.	2.	3.
			1.	2.	3.
			1.	2.	3.
			1.	2.	3.

***Association/group type:** 1=Farmers Field School (FFS), 2=Cooperative/marketing, 3=Faith based group, 4=Credit and savings group, 5=Extension group, 6= Common interest group e.g. water users association, 7=Community self-help group, 8=Others (specify)

F1.3 If Not a member of a marketing association, why?.....

F1.4 Has the group assisted you in solving problems experienced in livestock production or marketing?
1=Yes, 2=No

F1.5 If Yes, how.....

F1.6 How has your membership to the group **MAINLY** impacted on your household?

Type of impact on the household	Ranking of main reason
Has raised household living standard	
Increased level of livestock productivity	
Increased level of awareness	
Increased access to markets and inputs	
Has assisted during time of need	
No impact at all despite undertaking group activities	
A waste of time –opinion that participation in groups yields no change and would better be spent in alternative activities	
Others (specify)	

F1.7 Are you satisfied with the service offered by the Marketing Association?

1= Not satisfied at all, 2 = fairly satisfied, 3 = neutral, 4 = satisfied, 5 = very satisfied

F1.8 What is your reason for the level of satisfaction with the service above?

.....

F1.9. Are women as well as men involved in the following activities and practices in your

community? Please fill in the table below

No	Activities and practices	Involvement	If involved, what is the level of involvement
		1=Involved 2=Not involved	1-Only women involved 2-More women involved 3-Equal involvement Less women involved No women involved
1	Attending field demonstrations and trainings		
2	Farm livestock activities: management practices		
3	Farm livestock activities: sale of livestock products		
4	Off farm activities		
5	Learning improved agricultural technologies		
6	Adaptive trials of improved agricultural/livestock technologies		
7	Training other farmers on improved agricultural/livestock technologies		
8	Others (Specify).....		

G. ACCESS TO FINANCIAL SERVICES**G1. Financial capital**

Have you applied for loan/credit from any financial institution source in the last one year? 1= Yes; 2= No

Have you received any loan/credit in the past one year from any financial service provider? 1= Yes; 2= No [if question G.2 is No, move to G.3]

G.2.2.1 Person who received the loan Codes: 1=Household head 2=Spouse	G.2.2.2: If Yes to G.2; from which source? USE CODES BELOW*	G.2.2.3: What was the amount received?	G.2.2.4: What was the loan received used for? USE CODES BE-LOW**	G.3: If did not receive the loan applied for, why? CODES:	

G.2.2.2* Codes: 1=AFC; 2=K-rep; 3=Merry go round/ROSCAS; 4=SACCO; 5=Cooperative; 6=Commercial bank; 7=MFIs; 8=Other(specify).....

G.2.2.4 Codes:** 1=Livestock; 2=improved livestock inputs; 3=Building (livestock related); 4=Livestock equipment; 5=Other livestock assets; 6=Other Farm Inputs; 7=Fees; 8=Other (Specify)

G.3 If No, to G1, why?

.....

.....

G4. What are the main obstacles you face in accessing credit services for your livestock enterprise? 1.....2.....3.

H4.1: Extension services received**H.4.1.** Which type of extension services are you aware of in the area **(circle all that apply)**

- 1 Breeding (including AI, bull selection, etc)
- 2 Feeds and feeding
- 3 Animal health
- 4 Animal nutrition
- 5 Fodder establishment

- 6 Record keeping
- 7 Financial services
- 8 Managing livestock enterprise as a business
- 9 Acaricides/pesticides storage, handling, use and disposal
- 10 Integrated Pest management
- 11 Other (Specify)

H.4.2: If aware, please indicate the services have received and the source received from

	Type of extension/training received in the last 2 years	Whether received service/training 1=Yes; 2=No	Source/provider
1	Breeding (including AI, bull selection, etc)		
2	Feeds and feeding		
3	Animal health		
5	Animal nutrition		
6	Fodder establishment		
7	Record keeping		
8	Financial services		
9	Managing livestock enterprise as a business		
11	Acaricides/pesticides storage, handling, use and disposal		
12	Integrated Pest management		
13	Other (Specify)		

***Providers code:** 1= Vet; 2 = Ministry; 3 = Research Organization; 4 = Private company; 5 Farmers Field School (FFS); 6=Farm visits; 7 = Other(Specify)

H4.3: How long do you take before selling livestock after de-worming **(Days)**? **H4.4:** How long do you take before selling livestock after use of anti-biotics **(Days)**?

H4.5: How do you dispose of acaricide/pesticide containers after use?

1=Burying; 2=Throw away; 3= Throw in pit latrine; 4=Other Specify

H4.6: What in your opinion are key challenges that you face as a livestock farmer in this area (list in order of priority?)

- 1.....
- 2.....
- 3.....
- 4.....

G: TRENDS AND IMPACTS ON THE LIVESTOCK SECTOR

E2.8. List the **3 Major factors** which have caused **positive or negative changes** in your livestock production in the last five years?

KEY: *✓ for positive change; while X represents negative change; and blanks no change (Mark as appropriate).*

<i>Factors</i>	<i>Change observed</i>
1. Rainfall/weather changes	[]
2. Change in techniques of livestock farming	[]
3. Change in market prices	[]
4. Change in community land management	[]
5. Change in prices of improved inputs	[]
6. Incidences of livestock diseases	[]
7. Incidences of HWC	[]
8. Others specify	[]

APPENDIX 10- Assessment forms for reviewing the Amboseli Ecosystem Management Plan (2008-2018) and its Strategic Environmental Assessment

1.2 art 1. AEMP Implementation Assessment

The following tables give an outline of the stakeholder-agreed second 3-Year Activity Plan for implementation of the Amboseli Ecosystem Management Plan. The activity plan details the activities, responsibilities, timeframe and milestones necessary for implementation of each management action over the second 3-year timeframe of the management plan.

From the “status codes” provided at the end of each management programme, select the code that represent the current status of the management action and insert the code (numerical) in the “**status of action**” column. Also, give a brief description of progress in the “**description of progress made**” column. Score for the management actions only. **Do not score for the activities** under the actions.

2. Ecological Management programme

Management Action and Activities	Responsibility	Timeframe												Milestones	Status of Action	Description of progress made	
		FY 2014-15				FY 2015-16				FY 2016-17							
		1	2	3	4	1	2	3	4	1	2	3	4				
Objective 1: Critical Wildlife dispersal areas and corridors within Amboseli Ecosystem aresecured																	
Action 1.1 Support the development of land use plans for individual group ranches in the eco-system														Land eval			
1.1.1 Carry out an inventory of natu- ral resources in the group ranches and conservancies	SRS-SCA, ACC, AWF													uation stud y	2	This has only been competed recently,	

Management Action and Activities	Responsibility	Timeframe												Milestones	Status of Action	Description of progress made
		FY 2014-15				FY 2015-16				FY 2016-17						
		1	2	3	4	1	2	3	4	1	2	3	4			
														re-report com		as part of AEMP revision
1.1.2 Carry out a land evaluation study for tourism development, live-stock production and agriculture	SRS-SCA, ACC, AWF													plied by Sep-tem	9	No action
1.1.3 Carry out land use zoning basedon the land evaluation study	SRS-SCA, ACC, AWF, GR committees													ber 2015	3	Some plans created, but little implementation. Other plans created, not accepted by communities
1.1.4 Organise group ranch level meetings to disseminate the land eval-uation study outputs	SRS-SCA, CWO-Amboseli, ACC, AWF, GR committees														9	No action
1.1.5 Carry out a study on habitat connectivity with focus on the proposedconservancies	SRS-SCA, CWO-Amboseli, ACC, AWF, GR committees														9	No action
Action 1.2 Liaise with District Administration to control charcoal burning and sand harvestingin the AE														A char		
1.2.1 Identify and map charcoal burn-ing and sand harvesting hotspots	SRS-SCA, ACC, AWF, GR committees													coal burn ing survey re-	8	Hotspots might be known anecdotally but not mapped
1.2.2 Disseminate the charcoal burn-ing survey information to the District Environment Committee	SW													port com piled by	9	No action
1.2.3 Enforce the regulation and lawon ban on charcoal production	KFS, KWS, County Govt, Regional a;dmin													every end	4	Carried out by community rangers

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1.2.4 Monitor and evaluate charcoal production and sand harvesting law enforcement and compliance	KFS, KWS, County Govt, Regional admin																of the year	8	Carried out by community rangers
Objective 2: Swamps and River Systems managed and protection in collaboration with stakeholders																			
Action 2.1 Carry out a water resource assessment study to discern both water availability in the ecosystem and water requirements for the local community.																A water re-sour			
2.1.1 Carry out an inventory and map of key water sources	SRS-SCA, ACC,																	9	Not done that we are aware

Management Action and Activities	Responsibility	Timeframe												Milestones	Status of Action	Description of progress made
		FY 2014-15				FY 2015-16				FY 2016-17						
		1	2	3	4	1	2	3	4	1	2	3	4			
														ces		of
2.1.2 Carry out a survey of water users for each key water source	SRS-SCA, ACC, AWF, GR committees													assessment report	9	Not done that we are aware of
2.1.3 Prepare a report on water resource assessment detailing water availability and demand	SRS-SCA, ACC, AWF, GR committees													report ready by June 2015	9	Not done that we are aware of
2.1.4 Develop water allocation plan across the ecosystem for both domestic and wildlife use	SRS-SCA, ACC, AWF, GR committees														9	Not done that we are aware of
Action 2.2 Support development of Kimana Wetland Management Plan														Gazzette		
2.2.1 Gazette Kimana wetland management plan	KWS, WRMA, AWF, WRUAs committees													ment of Kimana wetland management plan by December 2015	9	Not done that we are aware of

Action 2.3 Support establishment of soil and water conservation measures to reduce water pollution in AE's water bodies												Water		
2.3.2 Monitor water quality and quantity at key water points	SRS-SCA/ WRMA											quality and quantity monitored semi-annually	5	Done by certain research projects and hopefully by WRMA, but not sure if done properly
Action 2.4 Carry out Environmental Audits of water projects in the ecosystem to determine the social and environmental impact of water abstraction												Environ		
2.4.1 Collate and share water related	WRMA, KWS											men	9	Not done

Management Action and Activities	Responsibility	Timeframe												Milestones	Status of Action	Description of progress made
		FY 2014-15				FY 2015-16				FY 2016-17						
		1	2	3	4	1	2	3	4	1	2	3	4			
information from all the stakeholders and researchers and identify the gaps														tal Au- dit		that we are aware of
2.4.2 Carry out an environmental audit of Nol Turesh and other water supply systems	SRS-SCA, WRMA													re- port for all river sys- tems com piled by De- cem ber 2015	9	Not done
Objective 3: Conservation of AE threatened large mammal species is enhanced																
Sub-Objective 3.1: Elephant monitoring and management enhanced																
Action 3.1.1 Carry out an elephant-habitat modelling study to determine the elephant carrying capacity of the ecosystem																

[illegible]

Management Action and Activities	Responsibility	Timeframe												Milestones	Status of Action	Description of progress made
		FY 2014-15				FY 2015-16				FY 2016-17						
		1	2	3	4	1	2	3	4	1	2	3	4			
for cheetah, hyena and wild dogs														mon i tor- ing		that we are aware of
3.2.1.2 Monitor population status and distribution of cheetah, hyena and wild dogs	SRS-SCA													pro- to- cols de- velo ped by De- cem	?	Not done that we are aware of

[illegible]

Objective 4: Ecological monitoring and research information dissemination is strengthened																	
Management Action and Activities	Responsibility	Timeframe												Milestones	Status of Action	Description of progress made	
		FY 2014-15				FY 2015-16				FY 2016-17							
		1	2	3	4	1	2	3	4	1	2	3	4				
Action 4.1 Establish a KWS research sub-station at ANP headquarters															More KWS researchers deployed to ANP by June 2016		
4.1.1 Deploy more research scientists to ANP	SRS-SCA, DDBR&M															?	
4.1.2 Equip the KWS Research with facilities and equipment required to enhance an ecological research and monitoring system;	SRS-SCA															?	
Action 4.2 Establish a database of research on Amboseli Ecosystem															A digital research library compiled by December 2016		
4.2.1 Carry out a comprehensive inventory of research work that has been carried out in Amboseli	SRS-SCA															9	Not done that we are aware of
4.2.2 Collect all the available published and unpublished research documents on Amboseli	SRS-SCA															9	Not done that we are aware of
4.2.3 Develop a digital research library for Amboseli documents	SRS-SCA															9	Not done that we are aware of
Action 4.3 Establish a transboundary research coordinating committee to facilitate information sharing and implementation of cross border activities																	
4.3.1 Organise a transboundary research meeting for researchers in the Amboseli-Kilimanjaro ecosystem	SRS-SCA, ACC, ATE, AWF															9	Not done that we are aware of
4.3.2 Develop terms of reference for the transboundary research coordinating committee	SRS-SCA, ACC, ATE, AWF															9	Not done that we are aware of

4.3.3 Hold regular research coordination meetings	SRS-SCA, ACC, ATE, AWF																	9	Not done that we are aware of
Action 4.4 Monitor the range condition and develop measures to improve the poor range condition within the Amboseli Ecosystem																	Veg-eta-tion moni-tor-ing plan		
4.4.1 Establish a biomass monitoring programme using remote sensing data	SRS-SCA																	?	
4.4.2 Establish ways to monitor impacts of elephants on woody vegetation in and outside ANP	SRS-SCA, ARCP																	?	

Management Action and Activities	Responsibility	Timeframe												Milestones	Status of Action	Description of progress made
		FY 2014-15				FY 2015-16				FY 2016-17						
		1	2	3	4	1	2	3	4	1	2	3	4			
4.4.3 Monitor elephant impacts on the woody vegetation semi-annually	SRS-SCA, ATE, ACC/ARCP													es-tab-lished by June 2015	?	
4.4.4 Map out all invasive plant species and degraded areas in the AE	SRS-SCA														9	Not done
4.4.5 Establish control and eradication measures to manage the spread of invasive species and associated impacts	SRS-SCA														9	Not done
4.4.6 Establish ways of improving range condition e.g. grass banks	SRS-SCA														3	As far as we understand there are some limited activities underway on Kuku and MGR, and some things planned for OGR. But there is nothing on a large scale
Action 4.5 Carry out priority applied research in support of Amboseli Ecosystem Management														A Sci-		
4.5.1 Organise a research meeting to identify priority research areas for Amboseli	SRS-SCA, ATE, ACC, AWF													en-tific work shop	9	Not done that we are aware of

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4.5.2 Create awareness on identified research opportunities through the internet	SRS-SCA, ATE, ACC, AWF																		or- gan- ised by June 2015	9	Not done that we are aware of
--	------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	---	---	--

*Status codes are below (two or more of these stages can be achieved at the same time):

- | | |
|---|---|
| 1. Action completed
not yet imple-mented as required | 5. Routine activity but |
| 2. Substantial progress (action is making progress in ALL areas) | 6. Planning has been carried out
but there hasbeen no implementation |
| 3. Some progress (action is making progress in SOME areas) | 7. Planning is in progress for that
action |
| 4. Routine activity that is carried out regularly
progress madebut there is no planning) | 8. Follow-up is reactive (some
9. Not commenced |

APPENDIX 11: Noonkotiak Community Resource and Cultural Centre-

Concept Ideas

Noonkotiak has the potential to be a one of a kind community centre that incorporates best practices from around the world. It is proposed to be a center for conservation in the Amboseli ecosystem that serves community needs, showcases culture (museum/educational programs), provides community and tourist educational opportunities, provides eco/cultural tourism, sustains enterprise and becomes a home for ACC's scientific research as well as housing AET offices. Ideally, ACC should maintain strategic leadership roles in this community centre so that it becomes a tangible project that can build name recognition for ACC and provide a home for researchers.

1. Determine if a community resource and cultural Centre are needed.
2. If there is interest to move forward with the community resource and cultural Centre, with a proper plan to guide the development in a manner that can then be used to raise funds to build the centre and run it until it's sustainable.
3. For this to work, it needs to function at a very high level with beautifully done structures and a long- term plan for sustainability. However, the structures need to be fairly rustic to blend with the envi- ronment, like Lalenok or the enkang.

General Concept for the Community Centre

Four main themes are suggested as listed below:

1. Green/Beautiful/Functional Design - Entire Centre must be cohesive, beautiful, sustainable, green design with renewable energy sources/easy for community to maintain and fix and functional for many uses. This should be something we can model in other areas where it makes sense.

2. Educational Programs

- i. *Library* for the community and a research library with a repository of findings of all research done in the Amboseli ecosystem.
- ii. *Cybercafé* – with computers and WIFI.
- iii. *Large and small meeting hall*- with ability to cater for big and small community meetings/workshops
- iv. *A school*, probably pre-primary, the women at Enkang requested for the school which is best while they are working. Waldorf type system works well in integrating traditional culture with wildlife and always interests visitors.
- v. *Park visitation program* - Bring kids/families into park for safari experience/workshops – opportunity to see wildlife in new ways
- vi. *Kirrinkol Youth Program*- Engage teens/young adults in research/internship and link them with visiting or resident scientists as well as provide Scholarships to Bright-needy students from the community giving them an opportunity to pursue their education. (EU project to engage an Education Outreach Officer, who can help.)
- vii. *Adult training* on literacy, governance, leather tanning, HWC mitigation. For example- ATE does training workshops on interacting with elephants.

1. Research/Conservation Centre

- i. *Offices* for AET, ACC and ACP. well designed and equipped offices

- ii. *Research Centre* complex for Resource Assessors, researchers, long-term research students for data consolidation and analysis with adequate space
- iii. *Permanent, comfortable, quality lodging* space for researchers, students and staff- Permanent, comfortable, quality structures for stay on site staff, students and researchers. Initially can use current ngaji and high-end tents if suitable rustic toilet and shower facilities are built within the boma fence. Also need to be careful not to have too great a contrast or overlap between smarthouses and the cultural enkaji.
- iv. Workshop/studio
- v. Outdoor group eating area with a canopy for hot days.

1. Eco/cultural tourism

1. *Traditional Maasai homestay cottages alongside the enkaji*
2. *A few high-end cottages or houses for individuals and groups/families/student groups* (see <http://tsavoconservancy.com/visit-us/ndovu-house/>) A combination of current enkaji and tents would probably be OK if rustic toilet and shower facilities are constructed in suitable places.
3. *Kitchen and dining area*- a spacious well ventilated and equipped kitchen to cater for different in-terests including everyday meal provision to the offices, self-catering guests and large meetings meals. *N/B This should be an Income generating venture for the women*
4. *Toilets*- the current toilets are too far away from huts with just a hole in the ground. This is not going to work for most international guests. Enough and closer toilet and shower facilities need to be created so people don't have to walk far in the dark. All toilets should have seats. Running wa-ter is nice if possible. (See Twala.) Keeping it eco-friendly is important - solar/biofuels etc. and making it look rustic and open air while clean.
5. *Campsite* between current offices and Enkaji
6. *Maasai Museum/ lectures*: to potentially show films and videos. Have already obtained a full set of Alan Root films in both English and Swahili.
7. *Shop*: to sell local arts, crafts, and relevant books.
8. *cultural activities*: Plant walks, herding, milking, sterilizing gourds, interpreted elder stories, bead-ing and the meanings of the colors and designs, traditional dance and its interpretation, visits to scientific projects/restorations, etc.

N/B We need to respect women's self-help group within financial planning and management.

2. Sustainability Plan

- I. Charge the following fees.
 - a. Fees to visit
 - b. Fees to stay
 - c. Fees for meeting hall
 - d. Fees for everyone but community to visit museum (free for community)
 - e. Fees for visiting research institutions/scientists
 - f. Fees for visiting tourist groups
 - g. Some support from community and nearby lodges?

2. Branding

Decide how we are going to spell Noonkotiak (Noongotiak?) so we are consistent. The sign that was created and is at Noonkotiak spells it with a K – Noonkotiak. Maybe pitch this back to the community

and get the correct spelling then create a logo that can be used on signage.

Management

This venture will need high-level managers for various components – Research, Hospitality, Museum and Education programs. Additionally, the manyatta needs at least two very good English speakers to manage the women enterprises and the cultural components. This is what Twala has and it makes the experience so much richer for English speaking guests. We would probably not stay at Twala without this. This will work under the hospitality manager and may require hospitality training.

Landscaping

Although it's a cultural manyatta, some shade trees would be nice in certain areas. Pathways to toilets etc. Need to balance real manyatta feel with some comforts. The chain link fence round the enkang needs to be hidden by a brush boma fence. The bush at the Centre of the boma needs to be moved to one edge and at least goats, ideally in time cattle, should be kept there at night and milking become part of a visitor experience

Pricing

The women need to be guided on reasonable pricing for the homestays, currently a room in a hut is \$50 per person. So for a three room hut it's \$150. That's way too much for what they offer.

Training Needs

Hospitality, Interpretation and Sales.

Recent guests noted that they were uncomfortable with how aggressive some of the women were in selling products. Although very friendly, the women grabbed at us and put things on us before we could say no. It made for an uncomfortable transaction and turned several guests off. Some training in working with international guests would be good. Again, Twala does a great job with this. They are very hands off - just letting guests shop on their own.

Marketing

We'll need a way to market the centre so the right audiences. If the Amboseli National Park Visitor Centre goes in nearby, that might help. Lodges could also bring guests for day visits.

General Needs

WiFi - needed for
AET/nice for
guests
Fence
around
manyatta.

Activities

Nature walks nearby -
medicinal plants/birds
Carrying water and
firewood
Learning to bead

Milking goats

Plastering houses

Learn about enterprise if they develop more: bee keeping?

Potential Donors

- USAID
- Kenya Government
- LCAOF
- Ambassador funds
- GEF
- Norwegian bank
- Nairobi museums
- Nairobi wealthy individuals
- Lodges in Amboseli area?
- Other NGOs? (Do we want to do this?)
- Universities to help pay for research centre?
- Zoos? Research centre
- Smithsonian – for museum and/or part of research centre
- Individual donors

Appendix 12: Amboseli Conservation Program Paper, 7th April, 2018: THE AMBOSELI ECOSYSTEM: STATUS, CHANGES AND RECOMMENDATIONS FOR THE AMBOSELI ECOSYSTEM MANAGEMENT PLAN 2018-2028

(David Western, Victor Mose, David Maitumo, Caroline Mburu, Eric Ochwangi, Sakimba Kimiti and Bernadette Thomas.)

The information provided in the report has been prepared specifically for the Amboseli Ecosystem Management Plan and is not available for other uses without consultation

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INTRODUCTION

This report is prepared for the Task Force overseeing the Amboseli Ecosystem Management Plan (AEMP) 2018 to 2028. The report updates the original Amboseli Conservation Program (ACP) report titled The Ecology and Changes of the Amboseli Ecosystem: Recommendations for Planning and Conservation (2007).

The 2007 report defined the Minimum Viable Area (MVA) for conserving the integrity of the ecosystem, based on three decades of ecological monitoring by ACP. The report also pinpointed threats to the productivity and viability of the Amboseli ecosystem and national park. The main threats included 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 is 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. The ACP report further recommended specific actions to combat the threats and the creation of Amboseli Ecosystem Trust (AET) to oversee the implementation of the plan.

The Minimum Viable Area was subsequently adopted as the planning framework for the AEMP and AET was set up to coordinate the plan. Several developments since the adoption of the AEMP 2008-2018 call for a different approach to the AEMP 2018-2022 planning process.

First, it became evident that AEMP was largely a wildlife conservation plan and ignored the land use changes and rangeland degradation underway. The plan also lacked legal teeth to enforce the zonal plans and prevent adverse development. The first draft of the plan was rejected by the community for lack of local engagement and, after revisions from group ranch representatives, was approved and co-signed by the Amboseli and Tsavo Group Ranch Conservation Association (ATGRCA) and Kenya Wildlife Service (KWS). The AEMP shortcomings in addressing other forms of land use and securing legal enforcement were addressed through a Strategic Environmental Assessment (SEA), undertaken by AET in 2011. The SEA report spelled out the steps needed to complete a multi-sectoral plan for the ecosystem in compliance with the requisite national policies and legislation governing land use and natural resources. Because the amended Environmental Management and Coordination Act (EMCA) had yet to be enacted in line with the 2010 Constitution, the AEMP was legally registered under the Wildlife Act 2013, pending updating in line with the SEA report and registration under EMCA.

Second, since the adoption of AEMP 2008-2010, the passage of the Constitution of Kenya 2010 mandates that county governments are responsible for spatial planning. This necessitates the Kajiado County's participation in the ecosystem planning processes and its endorsement of AEMP 2018-2028. Third, the Wildlife Conservation and Management Act 2013 recognizes and devolves a series of rights and responsibilities for wildlife management to private and community land. The act covers regulations for the registration, planning and management of wildlife conservancies, which will need to be incorporated into group ranch and AEMP plans.

Fourth, the Community Land Act 2016 requires all community lands to complete a full registration of eligible members, conduct land use plans and register the membership as a community land owner association. The provision of the Act and the Kajiado County spatial planning mandate places the primary responsibility for planning the new AEMP in the hands of the six group ranches covering 90 percent of the ecosystem, coordinated by AET.

This report updates the ACP 2007 report, taking into account the new mandates over community lands and changes to the ecosystem over the last decade. Specifically, the report details rangeland degradation caused by land subdivision, sedentarization and heavy grazing. The degradation has intensified droughts, precipitated heavy losses of livestock and wildlife in 2009, and intensified human-wildlife conflicts. Although the livestock and wildlife populations have since rebounded, they have failed to recover to pre-drought levels and face further persistent droughts.

The report distills the results of the ACP ecosystem monitoring updated to 2017, highlights the key changes underway, modifies the MVA boundaries, identifies the main threats to the ecosystem, and recommends conservation and restoration measures.

Most of the results presented in this report have appeared in various publications. We refer to these publications and other research cited for more detailed accounts of the methodology and findings.

MEASURES OF ECOSYSTEM HEALTH AND TRENDS

The status of savannah ecosystem is best summarized by the productivity of plants, livestock and wildlife. Production (the annual biomass yield of plants and animals) gives a common measure for all species and, summed for all species, measures the trends over time in relation to rainfall, human activity and other factors. We first present data on all large herbivores to look at the overall production trends across the 8,500 km² of eastern Kajiado since 1973. We then break down the total production by livestock, wildlife and feeding guilds (grazers, browsers and elephants—a mixed feeder) to detect similarities

and differences in trends. Next, we look at changes in individual species to track changes in populations over the last four decades.

We then look at the loss of open grazing lands due to subdivision and sedentarization over the last few decades and define a reduced Minimum Viable Area for maintaining the integrity and viability of Amboseli's migratory wildlife and livestock populations. Next, we look at what accounts for declines in animal production and plant biomass, the impact of the changes on the ecosystem and national park, and the implications for conservation. Finally, we update the recommendations for the Amboseli Ecosystem Management Plan 2018-2028, based on the findings.

We have not included large carnivores in this report. Lion Guardians, Big Life and other organizations with ongoing research, conservation and conflict mitigation programs are best placed to report on large carnivores. We should note, however, that 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.

HERBIVORE PRODUCTION

The key features are the large loss in production in the drought of the mid-1970s, a steady increase to a peak in 1990s, a drop in the 2000 drought, a steadily declined leading to a precipitous drop in 2009, followed by rapid recovery. **Some Figures referred to here are in the plan.**

Temporal trends in total production of large herbivores in the Amboseli ecosystem for the period 1973 to 2017. The shaded bands are the point wise 95% confidence limits. The red line shows the most significant change point (1986-01-06) based on a likelihood function.

production trends for livestock and wildlife since 1973. Livestock (which accounts for 77% of the total production) and wildlife are both significantly correlated with total production ($r=0.97$, $p<0.0001$ and $r=0.73$, $p<0.001$ respectively), and with each other ($r=0.53$, $p<0.01$).

Trends in livestock and wildlife production in the Amboseli ecosystem from 1973 to 2017 The shaded bands are the pointwise 95% confidence limits.

Production responses differ between grazers, browsers and elephants over the four decades. The grazers, which account for 62% of production, closely match the combined herbivore production ($r=0.97$, $p<0.0001$) shown in Figure 2. Browser production, which accounts for 30% of total production and is significantly correlated with total production ($r=0.45$, $p<0.01$), shows a small upward trend in the 1970s, levels off through to the 2000s and then increases once more. Elephants, which account for 8% of total production and show no correspondence to total production ($r=0.16$, $p=0.251$), declined steeply in the 1970s due to ivory poaching, followed by a steady recovery from the 1980s, before shallowing off in the 2000s. Grazers and elephants are not significantly correlated ($r=0.05$, $p=0.75$). Elephant production is, however, significantly correlated with browser production ($r=0.28$, $p=0.045$).

Trends in browsers, grazers and elephant production for wildlife species in the Amboseli ecosystem from 1973 to 2017. The shaded bands are the point wise 95% confidence limits.

Cattle account for 83% of livestock production and explain the close correspondence with both the total herbivore production and livestock production ($r=0.98$, $p<0.0001$). Cattle increased significantly from the 1973 drought ($r=0.333$, $p=0.0135$) to the late 1980s, followed by a prolonged significant decline ($r=0.4$, $p=0.0122$) to the lowest production value in the 2009 drought. Sheep and goats, which showed no significant correlation with overall production ($r=0.27$, $p=0.06$), increased significantly throughout the four decades despite a slight downturn in the 1990s ($r=0.484$, $p<0.0001$). Sheep and goats showed little loss in the 1973 drought but a steeper drop in the 2009 drought, though noticeably less so than cattle. Donkeys oscillated until 1990, fell steeply through

the 2000s ($r=0.27$, $p=0.062$) and showed sharp losses in the 1970s and 2009 drought.

INDIVIDUAL SPECIES TRENDS

Zebra ($r = 0.68$, $p < 0.001$) and wildebeest ($r = 0.68$, $p < 0.001$) are closely correlated to the overall herbivore production changes and to each other ($r = 0.42$, $p < 0.01$). Neither show a strong decline in the 1970s droughts, but both fall steeply in the 2009 drought. Over the four decades, zebra show no significant decline, but wildebeest populations fall steeply and significantly (Table 1).

Kongoni show a decline in the 1970s, followed by a levelling off through to 2000s, then a sharp decline to levels far below the 1970s levels. Thomson's gazelle shows a decline through to 2000 and a subsequent increase to 1970s populations. Grant's gazelles hold steady through to 2000, show a slight subsequent decline and then recovery towards 1970s levels.

Impala, Oryx, eland, gerenuk and lesser kudu all show a significant decline. Giraffe shows a steady decline from 1990 but a recovery in the 2000s to levels below the starting population. Rhinos, regularly recorded in the 1970s, were heavily poached and no longer detected after the late 1970s. The last two Amboseli males were translocated to a rhino sanctuary in Tsavo West in 1995. A small closely-guarded population survives in the northern Chyulu Hills. Buffalo show a high variance due to over-dispersion. Except for a small population in the Chyulu Hills, the buffalo population is confined to the Amboseli basin. Here regular monthly total counts give a detailed picture of buffalo and elephant trends. The monthly total counts show buffalo production fell sharply in the drought of early 1970s, rose steeply to a peak in the 1990s, fell steadily in the 2000s and showed a steep decline in the 2009 drought. All other species show a decline in populations since the 1970s, with the exception of elephant and shoats, which increase significantly, and lesser kudu, which show no change (Table 1).

CHANGES IN HUMAN ACTIVITY

Thatched and tin roofed huts reflect permanent settlement. The number of occupied traditional huts increases from 6,000 to 7,000 in the early 1970s to a peak of 15,000 in 1990, before falling steeply to under 2,000 in the 2000s. Thatch and tin-roofed huts increase from 3,000 in the early 1970s to a peak of 20,000 in the 2000s. A decline in the number of both traditional mobile and permanent huts is associated with the droughts of 1970s and 2009, with an additional decline in the mid-1990s when many families moved temporarily across the border into Tanzania to take advantage of good grazing at a time of poor rains in Kenya.

The traditional Maasai huts used as temporary settlements by mobile pastoralists are replaced by thatched and tin huts as the growing number of families take up permanent residence after 1990s. The change in the use of houses from the traditional "ngaji" of mobile pastoral families in the 1970s to permanent homesteads is reflected in the sharp drop in donkey numbers (Figure 5) once they were no longer used for moving household through the season. The increase in cattle following the 1970s drought peaks in the 1990s and declines sharply after the 1990s, corresponding to a strong switch to sheep and goat herds associated with sedentary households and growing dependence on a cash economy. Figure 8 shows the growth and spread of small farms across the Amboseli ecosystem and

Farms were largely confined to the wetter uplands north of Amboseli and slopes of Kilimanjaro in

the 1970s, covering 12% of the ecosystem in total. By the 2000s small farms were recorded in 39% of the grids across the ecosystem, including the lowland swamps and Lolterish River east of Amboseli National Park.

Small scale farms spread from the higher elevations and rainfall areas to the north and south, then extend to the lowland's swamps and along the Lolterish River and finally stretch along the Loitokitok pipeline. The grids with farms increased from 925 km² (11.9 % of the ecosystem) in the 1970s to 3025 km² in the 2010s (38.9% of the ecosystem).

Human settlement spread in the Amboseli ecosystem in the 1970s and 2000s

ECOLOGICAL CHANGES IN AMBOSELI NATIONAL PARK

As noted in the ACP background report and Western (2007), the major trends in habitat change since the 1950s have continued (Figure 10). The woodlands 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 (Western, 2007).

Changing proportion of five major Amboseli habitats from 1950 to 2017.

The biomass density of trees, shrubs and grasses aggregated for all habitats has also fallen steeply since the 1970s (Figure 11). Herbs increased until the 1990s then declined steadily.

Biomass density of trees shrubs, herbs and grasses aggregated for all habitats.

Other indicator of a loss of ecological complexity include plant and large herbivore diversity and dominance (Figure 12). The decrease in the relative abundance of grasses and rising dominance of a few species reflects a three-fold increase in grazing pressure (Appendix). The decrease in the diversity of large herbivores reflects the heavy browsing pressure in the Amboseli National Park and a reduction in habitat diversity (Figure 13). Figure 12: Dominance and diversity of grass species in the Amboseli Basin and of large herbivores in the Amboseli ecosystem 1974-2014.

The reduction in herbivore diversity tracks the reduction in habitat diversity in the Amboseli Basin due to heavy grazing and browsing pressure (Appendix).

CAUSES AND IMPLICATIONS OF CHANGE

The causes of ecological change in the Amboseli ecosystem and National Park are summarized in the Appendix 1, based on published studies and updated monitoring data. The main cause of the declining live-stock and wildlife productivity in the Amboseli ecosystem is a three-fold increase in grazing pressure. The main cause of the loss of habitat, plant and herbivore diversity in Amboseli National Park is the large increase in browsing pressure. The increase in grazing and browsing pressure from a variety of factors 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 increased pressure on the rangelands.

Causes of ecological decline

- Dry land farming
- Wetland irrigated farming

- Sedentary pastoralism
- Land use segregation effects
- Loss of drought refuges
- Loss of rangeland productivity and recovery
- Rising drought frequency and intensity
- Poaching and elephant range compression
- Habitat change

Factors contributing to the increasing grazing and browsing pressure on the Amboseli range- lands and national park, to the decline in plant and animal production and diversity, and to an increase in human-wildlife conflict.

The decline in plant production due to increased grazing pressure has intensified the seasonal cycle and apparent frequency of droughts. Measured by rainfall, the seasons have changed insignificantly. Based on pasture availability, the dry seasons and droughts (measure by one and two standard deviations below average) have intensified and deepened, most strikingly after the mid-1980s change point for herbivore production.

Seasonality based on rainfall has not changed significantly since the 1970s. Seasonality based on pasture shortfall has deepened and intensified strongly since the mid-1980s.

The intensified grazing pressure and seasonality is reflected in livestock condition, milk yield and market prices of cattle (Figure 15 and 16 below). The fluctuations are becoming more pronounced as heavy grazing exaggerates rainfall seasonality, causing a boom and bust cycle in market prices of cattle

COMMUNITY PERCEPTIONS OF CHANGE

A study of nomadic, semi nomadic and sedentary communities shows perceptions of change over the last four decades closely matching the ACP monitoring results (Sakimba et al. 2017). Nearly 80% of respondents reported a sharp decline in pasture availability. The decline is most pronounced in Kimana where 50% of the grazing areas has been lost. The decrease is attributed to a growth in human population, expansion of cultivation and settlements, land use changes and reduced rainfall. The results show that the average household herd size has declined due to the loss of grazing lands and recurrent drought. Livestock holdings in nomadic sites (40.8 Tropical Livestock Unit (TLU)) are almost twice that of sedentary sites (22.9 TLU).

Pastoralism remains an important livelihood for the majority of households in Amboseli area. The restoration of herd mobility and grazing management are considered key coping strategy for sustaining livestock production in the Amboseli ecosystem. Participatory approaches to resource monitoring and planning as well as assessing the causes of change are seen as central to good land management. Improving local livestock breeds to secure higher economic returns from sales and diversification of livelihoods is seen as vital for improving income.

CONCLUSIONS AND RECOMMENDATIONS

The aim of AEMP 2008-2018 was to maintain the viability of the Amboseli migratory wildlife populations. The plan recognized that pastoral herders also moved seasonally in much the same way as wildlife in order to maintain the productivity of their herds and minimize exposure to droughts. To this end, AEMP defined a Minimum Viable Area for sustaining wildlife and pastoral herds, the threats to the integrity of the ecosystem, and proposed specific mitigation measures.

Support for AEMP has strengthened over the past ten years with the establishment of the Amboseli Ecosystem Trust, the adoption of the Strategic Environmental Assessment, Kajiado County support of the plan, the gazettment of the plan under the Wildlife Act, and funding from NGOs, multilateral and bilateral agencies and a grant from the Global Environmental Facility.

The activities of NGOs, KWS, the tourism industry and group ranches have subsequently been integrated and consolidated under AET and coordinated by various committees. The committees include the Amboseli Tsavo Group Ranch Scouts Association, a Human-Wildlife Conflict coordinating group and, most recently, the Rangeland Division. The Rangeland Division promotes and integrates group ranch land use, grazing and restoration plans.

The renewal of AEMP for a further 10 years shows the commitment of landowners, KWS, NGOs, the tourism industry and researchers to a viable Amboseli ecosystem. The new plan must, however, take into account the recommendations of the SEA report and widened its scope to include livestock development, rangeland and water management, agriculture, permanent settlements, and allow for urbanization and new enterprises.

AEMP 2018-2028 must also address the changes over the last decade documented in this report and elsewhere. The threats detailed in the ACP 2007 report have intensified since and include subdivision, agricultural expansion, water extraction for farms and development, a loss of seasonal pastures, and the growing impact of grazers and browsers on habitat, species diversity, plant production and on livestock and wildlife populations.

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.

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 (Sakimba et al, 2016). 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.

The changes detailed in this report, bolstered by the publications cited, have transformed Amboseli from a savannah ecosystem dominated by free-ranging wildlife and livestock populations driven largely by rainfall, to a highly transformed landscape shaped by human activity.

The 2009 drought was far more severe than the 1970s droughts 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. The immigrations underscored the importance of the meta-ecosystem connections identified in the MVA for Amboseli in sustaining the viability of the Amboseli wildlife populations.

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. Namelog and Kimana swamps, the Lolterish 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.

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. If AEMP 2018-2028 focuses on this remaining open landscape reserved for rotational livestock use, it should be possible to restore the Amboseli pastures and habitats and conserve a viable large herbivore and carnivore ecosystem. Mining and other commercial enterprises that impede the migrations will need to be excluded.

The land use changes call for reducing the Minimum Viable Conservation Area (MVCA) to exclude heavily settled and farmed areas and focusing on the open rangelands still supporting free-ranging wildlife and livestock.

The refined Minimum Viable Area for sustaining free-ranging wildlife and livestock populations in the Amboseli ecosystem showing the vital connections to adjacent wildlife areas.

Although most of the elephant movements of the Amboseli population fall within the Minimum Viable Area, satellite tracking undertaken by IFAW shows elephants ranging into Tanzania and across to the Rift Valley. Given the extensive movements, the Amboseli elephant population should be planned within the Borderland Conservation Initiative framework and national elephant strategies for Kenya and Tanzania, aimed sustaining a viable meta-population.

Ecosystem planning and coordination framework

At the time AEMP 2008-2018 was drawn there was no governance structure in place to oversee and coordinate the plan. AET was set up nearly three years after the launch of the plan, faced considerable resistance from conservation organizations, lacked funds for implementation and took time to establish itself. Subsequent threats to the Amboseli ecosystem, including a Nairobi Metropolitan Area on the border of the park, a public highway cutting the migration routes and a rush to develop new lodges, gave AET a central role in coordinating the responses, overseeing the Strategic Environmental Assessment and the gazettement of AEMP. The need for an integrated land use and natural resource plan pointed out in the SEA report further reinforced the role of AET. Recognizing the role of the Kajiado County in spatial planning and the communities in land use plans under the Community Land Act, AET has assumed the central role in planning and coordinating the AEMP for 2018-2028.

The revised AEMP must confront the biggest threats to the seasonal movements of pastoral livestock and wildlife, subdivision, sedentarization, and the breakdown of traditional grazing rotation causing land degradation and falling productivity of the rangelands. Alarmed by the loss of pastoral lands following the subdivision of Kimana, the area MP, MCAs and community leaders urged the group ranches to halt subdivision and look at alternatives for keeping the land open for livestock production. The rapid deterioration of pasture caused largely by a breakdown in grazing management has spurred efforts to restore governance of seasonal grazing practices, pasture productivity and livestock marketing.

A number of group ranches have begun to conduct land use plans, re-establish traditional grazing committees, rotational herding practices and establish conservancies in response to the worsening range and livestock conditions. The plans include restoring degraded lands through olopololi (grass banks), resting and rotation of pasture use, soil erosion control measures and designated wildlife conservancies. Integrated group ranch 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. Ogulului and Kuku have recently completed land use and grazing plans and embarked on restoration plans funded by Just DiggIt. Mbirikani is in the final stages of completing its own land use and grazing plans. Selengei has embarked on similar plans and Rombo is following suit. 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.

The group ranch plans integrated under the umbrella of AET should constitute the bulk of the AEMP 2008-2018. The group ranch plans will, however, need to incorporate a viable ecosystem-wide wildlife and biodiversity conservation plan in collaboration with KWS and conservation partners. KWS must draw up an Amboseli National Park plan taking into account AEMP plans and specific threats to wildlife, the free movement of migratory species, threatened and endangered species management plans, human-wildlife conflict, wildlife conservancies and tourism zoning and management. AEMP 2018-2028 should also spell out the role of AET and partnering organizations in overseeing and implementing the plan. The plan should also define the role of the Nonkotia Centre in 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.

Appendix 13: Second advert of the public advert notice on the newspaper seeking a wider public and stakeholder consultation

STAR.CO.KE Tuesday, October 31, 2023

Notwithstanding the above, the advertiser's product, service or its quality and value are not the subject of the advertisement. The advertiser is not held responsible for any claims made in the advertisement. The advertiser is not held responsible for any claims made in the advertisement.

Tuesday October 31, 2023

nema
National Environment Management Authority

Popo Road, off Mombasa Road
P.O. BOX 67615-00200, Nairobi, Kenya
Tel: (254 20) 4000000, 4000001, 4000002, 4000003
E-mail: info@nema.go.ke Website: www.nema.go.ke

NOTICE TO THE PUBLIC TO SUBMIT COMMENTS ON THE DRAFT STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE AMBOSLI ECOSYSTEM
MANGAWEYI WARD, KENYA COUNTY

In light of the provisions of sections 57 of the Environmental Management and Coordination Act (EMCA) 1999, Regulation 42 and 43 of Environmental Impact Assessment and Audit Regulations (EIA Regulations) 2003, the National Environment Management Authority (NEMA) has received a Draft Strategic Environmental and Social Assessment (SESA) report for the Ambosli Ecosystem Trust Management plan in Rajada County. The SESA findings are expected to integrate the existing sectoral plans and programs to establish sustainable development mechanisms.

The Ambosli Ecosystem Trust is the Plan owner located in Lohitok Sub-County Rajada County. The Management plan is a plan for environmental and natural resources management with a specific period of time. The Plan is being subjected to Strategic Environmental and Social Assessment (SESA). The SESA will evaluate the implementation of the Ambosli Ecosystem Trust Management plan in Rajada County. The SESA findings are expected to integrate the existing sectoral plans and programs to establish sustainable development mechanisms.

The proposed environmental management and social mitigation plan for the Ambosli Ecosystem Trust Management plan is highlighted below. The proposed mitigation strategies are aimed at minimizing the negative impacts of the project and maximizing the positive impacts.

Key Environmental and Social Impacts and Mitigation Measures	Summary of Impact	Proposed Mitigation
Impact of establishing green banks (boreholes)	Overhead and degradation in harvesting (boreholes)	Issue control and monitoring and carrying out EIA and follow up EIA as potential impact
Impact of developing and implementing traditional grazing plans	Displacement of the community for membership of the group. Carry out EIA prior to implementation	Proper engagement of the community for membership of the group. Carry out EIA prior to implementation
Impact of establishing degraded grazing areas	Lack of grazing plans. Potential conflict with community on established grazing during rehabilitation	Develop grazing plans and adhere to them. Carry out EIA prior to implementation. Engage community on potential benefits of rehabilitation
Impact of household water supply for livestock	Soil erosion and removal of vegetation while laying pipes, potential increase in animal population due to increased water availability	Carry out EIA before laying water pipes and comply with the recommendations. Assign guards to water use among the community
Impact of establishing a livestock disease free zone	Carry out EIA before laying water pipes and comply with the recommendations. Assign guards to water use among the community	Carry out EIA before laying water pipes and comply with the recommendations. Assign guards to water use among the community
Impact of securing wildlife disposal areas and corridors	Restriction of freedom by land owner and proximity of HWC, increased loss of pasture for livestock and wildlife from predators	Proper engagement of community for ownership of the pasture and adequate compensation in cases of injury and loss
Impact of ban on charcoal trade on poverty reduction	Loss of livelihood income for business potential increase in poverty due to loss of income stream	Establishment of alternative sources of livelihood by project
Impact of reduction of quarrying activities	Loss of livelihood income by employees and revenue by quarry owners. Loss of supporting businesses due to loss of market	Training on environmentally friendly quarrying and provision of alternative sources of income for the employees
Impact of off road driving in the countryside	Degradation of the ecosystem, increased soil erosion and animal disturbance	Restriction of off road driving to specified areas. Establishment of off road driving to allow for loading
Impact of development of pasture management and livestock grazing plans	Restriction of community activities and movement within the AL, potential for increased conflicts due to restricted animal movement	Community involvement on the importance of the project and the importance of the project and the importance of the project
Impact of provision of alternative cooking methods and materials	Improved income from sale of reduced use of wood and charcoal, loss of income stream among charcoal and firewood merchants	Provision of alternative sources of energy to community through solarized purchase and alternative sources of revenue for affected traders
Impact of the establishment of an ecosystem wide consultation fund	Improved income from sale of reduced use of wood and charcoal, loss of income stream among charcoal and firewood merchants	Provision of alternative sources of energy to community through solarized purchase and alternative sources of revenue for affected traders
Impact of creating awareness on HWC mitigation strategies among the community	Improved income from sale of reduced use of wood and charcoal, loss of income stream among charcoal and firewood merchants	Provision of alternative sources of energy to community through solarized purchase and alternative sources of revenue for affected traders
Impact of strengthening community wildlife guards	Improved income from sale of reduced use of wood and charcoal, loss of income stream among charcoal and firewood merchants	Provision of alternative sources of energy to community through solarized purchase and alternative sources of revenue for affected traders
Impact of water allocation enforcement	Reduced availability of water for farming and likely water conflicts among users	Proper engagement of the community and proper handling of issues in the water
Impact of establishment of a groundwater monitoring network	Better management of the ground water and reduced depletion rate	Proper engagement and mobilization of the affected users prior to enforcement
Impact of training on rain water harvesting technologies	Increased availability of water for domestic use and reduced pressure on existing sources	Education on sustainable ground water harvesting and storage
Impact of securing critical water sources	Better management of the sources and reduced accidents	Establishment of proper guidelines on management of critical water sources
Impact of implementation of water pollution control	Conflict with the farmers	Securitization of the farmers and community is opened on the advantages of reduced water pollution

The full draft Strategic Environmental Assessment report for the Ambosli Ecosystem Management plan is available for inspection at the following locations:

1. Principal Secretary, Ministry of Environment, Climate Change and Forestry, State Department of Environment and Climate Change, WFP Building, 12th Floor, Rajada Road, Upper Hill, P.O. BOX 31736-00100, NAIROBI
2. Director General, NEMA, Popo Road, off Mombasa Road, P.O. Box 67615-00200, NAIROBI
3. County Director of Environment, RAJADA COUNTY

Copies of the Draft SESA reports can be downloaded from www.nema.go.ke (NEMA/SEA/5/2/000).

NEMA invites members of the public to submit oral or written comments within thirty (30) working days from the date of publication of this notice to the Director General, NEMA, to assist the Authority in the decision making process regarding the SESA.

Comments can also be e-mailed to info@nema.go.ke

MAYO B. NAKHO, ESQ.
DIRECTOR GENERAL
This advertisement is sponsored by the project

Ref: KBC/SOP/MKTG & ADVG/500/F-08

Kenya (K B C)
YOUR NATIONAL BROADCASTER

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NAIROBI
KENYA

Serial No. **54707**

Tel: 318823/223757 Fax: 223566
Email: marketing@kbc.co.ke
Offices: Broadcasting House
Harry Thuku Road

Client Order Number.....

AIR-TIME ORDER

DATE 30/10/2023 SERVICE NO. RADIO TAIFA
CLIENT AMBOSeli Ecosystem Trust PRODUCT NEMA ANNOUNCEMENT AD
AGENCY DIRECT DURATION 2 min SOURCE.....
START DATE 1/11/2023 END DATE 6/11/2023

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	TIMES PER WEEK
			1x2min 1ac Nov		1x2min 3 Nov		2
	1x2min 6 Nov						1
Note! To provide recording for the client							

Rate Per Broadcast..... Total Broadcasts 3 days Rate Card No. Package
Additional Charges..... Total Gross Charges Ksh 148,500 VAT Inclusive
Commercial Materials To be produced
Instructions Tx the Nema advert @ 8am-9am

Marketing Executive
Name Sarah Muriuki
Signatures Sue Date 30/10/2023

Cashier
Cash /Cheque.....
Receipt No.....
Signatures..... Date.....

Credit Control
Approved / Not Approved.....
(Finance Manager)
Signatures..... Date.....

Operations
Name..... Signature.....
Signatures..... Date.....
Approved by: ADM/Sales Manager James Mwangi Date 30/10/23 Signature John Mwangi

I have read the terms and conditions overleaf and I accept to be bound thereby.

Client
Name Jackson Makoto
Designation Executive Director
Signatures [Signature] Date 31/10/2023

Postal Address.....
Physical Address AET MAIN OFFICE-AMBOSELI NOONKOTIAK
P.O. Box 346-00209, LOITOKITOK, KENYA
Tel: +254 746 139 004
Rubber Stamp /Seal WWW.AMBOSELIECOSYSTEM.ORG



Quotation Summary

Customer :

Star Special Classifieds
Nairobi
Kenya

Space Order Reference#SO24239

Customer Contact	Star Special Classifieds, Management	Order Date	30/Oct/2023
Advertiser	Star Special Classifieds	Sales Executive	Winnierose Wainaina
Advertiser Contact	Star Special Classifieds, Management	Payment Terms	Immediate Payment
Customer Reference	2 NEMA AD		

Brand	Product	Publication Date	Subtotal
The Star	[PC0113] Classifieds - Auction - PSCC	2023-10-31	70,052.40 Ksh
The Star	[PC0113] Classifieds - Auction - PSCC	2023-10-31	70,052.40 Ksh
Untaxed Amount			120,780.00 Ksh
Taxes			19,324.80 Ksh
Total			140,104.80 Ksh



Advertiser's Signature _____ Date _____

[Handwritten signature] 30/10/2023

Sales Executive's Signature _____ Date _____

APPENDIX 14: Letter from NEMA with issues of concern raised on validation workshop



nema
nema.go.ke | 020-2183718 | 0724-253398

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Telcom Wireless: 020-2183718, 020-2101370
Mobile Line: 0724 253 398, 0723 363 010, 0735 013 046
Incident Line: 0786 101 100, 0741 101 100

P.O. Box 67839 - 00200
Popo Road, Nairobi, Kenya
Email: dgnema@nema.go.ke
Website: www.nema.go.ke

NEMA/SEA/5/2/080

13th February 2024

The Director
Amboseli Ecosystem Trust
P.O Box 346-00209
LOITOKTOK

RE: VALIDATION WORKSHOP FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) REPORT FOR THE AMBOSELI ECOSYSTEM MANAGEMENT PLAN (AEMP) KAJIADO COUNTY.

In light of the provisions of the Environment Management and Coordination Act (EMCA) 1999, of the Environmental (Impact Assessment and Audit) Regulations, 2003 and the National Guidelines for Strategic Environmental Assessment 2012. The draft Strategic Environmental Assessment (SEA) Study report for the Amboseli Ecosystem Management Plan (AEMP) Kajiado County was submitted to the Authority on 04th July 2023.

The draft SEA study was then subjected to the public disclosure period through advertisement in the print media, Kenya gazette and over the radio. The advertisements appeared on the Star newspaper on the 31st October 2023, the Daily Nation newspaper on 21st July 2023, the Kenya Gazette on the 28th July 2023 and over the Citizen radio on the 19th July 2023 to 24th July 2023.

In view of the above and noting the expiry of the Public disclosure period as well as responses made to the technical issues raised, the Plan owner in coordination with NEMA will hold a validation workshop at an appropriate venue to engage the public/stakeholders in reviewing and validating the SEA Report.

As you plan for the validation workshop, kindly ensure that the concerns by Amboseli Lands Owners Conservancy Association (ALOCA) Management Plan, 2016 -2026, the Rombo Group Ranch land use and land sub-division plan (*copies attached*) and the issues raised vide our letter dated 05th October 2023 regarding the AEMP are well incorporated and taken into consideration to inform the final SEA process.

Please get in touch with Reagan Awino on rawino@nema.go.ke/0726989293 as you initiate the preparation for the validation workshop.


MARGARET NJUKI.
FOR: DIRECTOR GENERAL

Our Environment, Our Life, Our Responsibility



**Strategic Environmental Assessment of the
Amboseli Land Owners Conservancies
Association Management Plan, 2016-2026,
Kimana, Kajiado County**



Plan Brief
August 2022

Submitted To:
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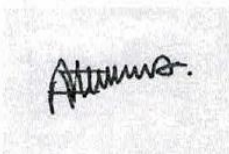
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DECLARATION

The **Plan Brief** for the **Strategic Environmental Assessment (Plan SEA)** of **Amboseli Land Owners Conservancies Management Plan, 2016-2026** is submitted, on behalf of **ALOCA, Big Life Ltd and Amboseli Ecosystem Trust** by **ENRM Associates Ltd (NEMA Reg. # 12767, EIK No. 5727)**:

Name**Signature****Date**5th September 2023**Francis Mwaura**

.....

.....

Lead consultant and Team Leader (**NEMA Reg. No. 0077**)

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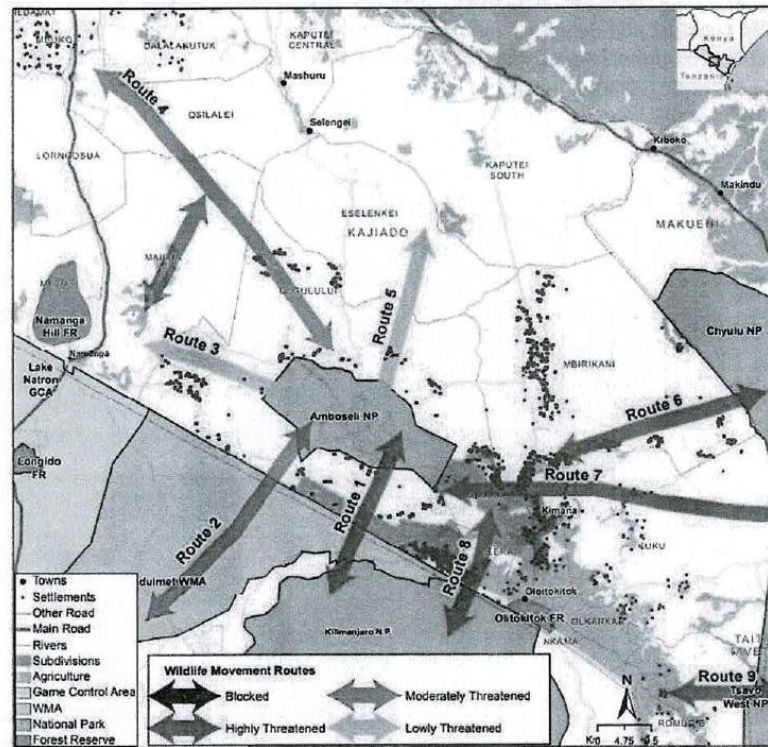


Figure 2: Map of Amboseli region showing wildlife corridors

One of the flagship projects in Kenya Vision 2030 for biodiversity conservation is centred on securing threatened wildlife migratory corridors and re-establishing habitat networks that have been compromised by human activities as a basis for revenue generation in the tourism sector. Kimana Wildlife Corridor (**Routes 6, 7 & 8 in Figure 2**) is one of the threatened wildlife migratory corridors in Amboseli region.

2. KIMANA WILDLIFE CORRIDOR

The former Kimana Group Ranch (KGR) was sub-divided in 1999 thereby transiting from communal land tenure to private land ownership. Two decades after sub-division of KGR, most of the other group ranches in the Amboseli region are adopting similar transformation from community to private land tenure. These ranches can learn many lessons from the former KGR where one of the positive outcomes is the establishment of seven community conservancies, namely, Kilotome, Nailepu, Nalarami, Osupuko, Olepolos, Oltiyani and Elerai. The conservancies are instrumental in sustain the KWC which connects the Amboseli National Park, as an ecological island, with other critical wildlife habitats in the Chyulu Hills, Tsavo Conservation Area (TCA) and Mt. Kilimanjaro (**Figure 3**). The KWC conservancy network is sustained through a partnership between ALOCA and non-state conservation organizations especially BLF, AWF, IFAW and ACC. The seven conservancies were created through conservation lease agreements between willing private

landowners and conservation partners such as Big Life Foundation (BLF) as a strategy for securing wildlife corridors and migratory routes through the hybrid private-communal land tenure which would also ensure revenue generation. **Table 1** shows the trends in wildlife species populations in the Amboseli region.

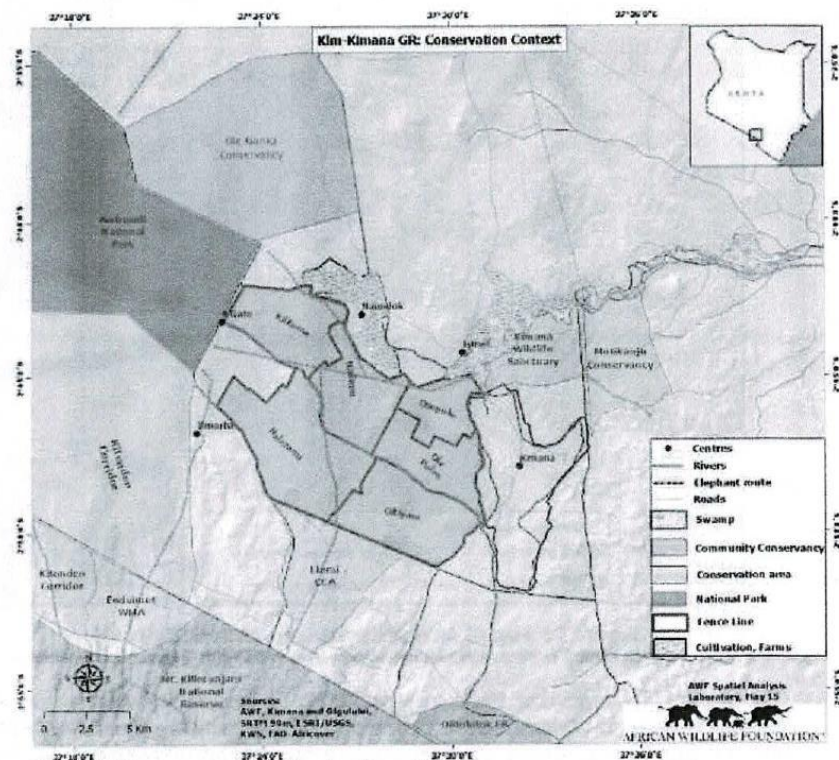


Figure 3: Map of conservancies in the Kimana wildlife corridor

The KWC network of seven conservancies covers an area of 130 km² is managed jointly as single conservancy known as ALOCA. It also ensures that ecological and social interactions between this ecological unit and the adjacent socio-ecological units in the Amboseli Ecosystem such as Amboseli National Park (which is a major source of water for livestock) and Kimana Wildlife Sanctuary, Olgulului Olorarashi, Kuku and Mbirikani group ranches are maintained for sustainable livelihoods. Further, managing the conservancies holistically provides an opportunity for achieving the communities development aspirations because of economies of scale when addressing landscape level conservation and land use management issues that are of benefit to all conservancies (e.g. tourism development, infrastructure development, and maintenance of wildlife movement routes and dispersal areas).

Table 1. Changes in the populations of individual species over the period beginning 1974–2020 using the modified non-parametric Mann-Kendall trend test (τ) analysis.

Species	1974–2020 population trend		
	τ	Trend	P
Zebra	0.34	+	0.0003***
Wildebeest	-0.08	-	0.4034
Grant's gazelle	-0.06	-	0.5606
Thomson's gazelle	-0.22	-	0.0184*
Elephant	0.3	+	0.0017**
Buffalo	-0.19	-	0.0447*
Shoats	0.52	+	<0.0001***
Cattle	-0.07	-	0.4378
Donkey	-0.4	-	<0.0001***
Eland	-0.05	-	0.5707
Gerenuk	-0.39	-	<0.0001***
Giraffe	0.05	+	0.5809
Impala	-0.5	-	<0.0001***
Lesser Kudu	-0.11	-	0.2265
Warthog	-0.06	-	0.5308
Waterbuck	-0.2	-	0.0391*
Kongoni	-0.28	-	0.0034**
Oryx	-0.32	-	0.0005***
Ostrich	0.02	+	0.8345
Rhino	-0.56	-	<0.0001***
Total wildlife production	0.08	+	0.3707
Total livestock production	0.04	+	0.6544
Total animal production	0.08	+	0.3787

Notes: Elephant, zebra, and shoats increased significantly. Buffalo, Thomson's gazelle, donkey, gerenuk, impala, waterbuck, harlebeest, and rhino decreased significantly. Other species showed no significant change.

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

(Western & Mose, 2022)

3. ALOCA COMMUNITY GROUP

The Amboseli Land Owners Conservancies Association (ALOCA) was established to coordinate the management of the seven conservancies, which is managed jointly as single conservancy known as ALOCA. The association was registered in 2012 under the Societies Act of Kenya (Cap 108). The Association comprises 413 members who pooled their individual private land parcels to form the conservancy. The purpose of the association is to provide a platform for dialogue for a cross section of private landowners as a vehicle for the conservation of Amboseli ecosystems in order to improve the lives of the people by bringing the landowners together to conserve and sustainably use the natural resources on which they depend. The conservancy is intended to serve as an instrument for ensuring sustainable economic and social benefits from conservation, management and utilization of wildlife resources in the area and at the same time secure land tenure for posterity. The subsidiary purposes are to:

- Enable collaboration between stakeholders in the conservation and sustainable use of natural resources;
- Promote scientific research and education in order to guide sustainable management of natural resources; and
- Promote eco-tourism.

The association serves as a framework for the landowners to link with other relevant stakeholders such as state agencies (e.g. KWS, NEMA), County Government of Kajiado, AET, KWCA, non-state conservation organizations (Big Life Foundation, AWF, IFAW, ACC etc.), tourism investors and other partners. The Association is governed by a committee comprising a chairperson, vice-chairman, secretary, assistant secretary and treasurer. The committee is supported by a number of sub-committees, namely, grazing sub-committee, corridor and conservation sub-committee, livestock owners sub-committee, and water sources sub-committee. The operations of the sub-committees are guided by the ALOCA Constitution and by-laws developed and adopted by the association on various issues including dispute resolution.

4. ALOCA MANAGEMENT PLAN 2016-2026

The ALOCA Management Plan (2016-2026) was developed with the support of AWF and KWS in order to serve as a management instrument for the ALOCA conservancy within the KWC. It is based on the KWS Protected Area Planning Framework (PAPF), which is designed to fulfil a variety of divergent functions with a focus on conservation and development. The management plan is configured and aligned with the Amboseli Ecosystem Management Plan (2020-2030) which it seeks to domesticate and implement at the local level within the KWC. The management plan has been designed to address threats and challenges to the conservancy's values, promote sustainable use of natural resources, and incorporate wildlife as a land use alternative.

The ALOCA Management Plan 2016-2026 is considered as a grass-root driven instrument for securing Kimana Wildlife Corridor (**Routes 6, 7 & 8 in Figure 2**) which is one of the threatened wildlife migratory corridors in Amboseli region. This will support the realization of the Kenya Vision 2030 goal of securing threatened migratory corridors in the country and re-establishing habitat networks that have been compromised by human activities as a basis for revenue generation in the tourism sector.

4.1. Purpose

The Management Plan has been designed to fulfil the following specific functions:

- a) Set out an agreed future vision for the Conservancies,
- b) Provide a framework for practising multiple land uses by dividing the Conservancies into different zones with clear land use prescriptions for each zone,
- c) Establish clear management objectives that are agreed by the Conservancies' stakeholders and managers and that, if achieved, will ensure the Conservancies' purpose will be fulfilled.
- d) Provide specific management actions that Conservancies' Managers will need to implement to achieve the management objectives, and
- e) Set out a plan implementation strategy to deliver the plan.

4.2 Plan Structure

The specific chapters of the plan and their main functions are highlighted in **Table 2**. Overall, the plan structure has been designed to be as user-friendly as possible, and in a form that it can be easily understood and implemented by the Conservancy's management and stakeholders.

Table 2: Overview of plan structure and contents

Chapter	Function and contents
Part I: Plan Foundations	
Chapter 1: Plan Scope	This chapter describes the geographic scope of the plan, the plan owners and implementers, and the Conservancies' purpose and functions (including the Vision Statement).
Chapter 2: Key Values and Threats	This chapter provides an introduction and background information concerning the Conservancies' key values and major challenges facing natural resource sustainability.
Part II: The Plan	
Chapter 3: Zonation Scheme	This chapter provides a framework for practicing a mix of land uses harmoniously for social as well as economic benefits of the Conservancies' members.
Chapters 4, 5, and 6: Management Programs	Each of these chapters set out a programme's purpose, underpinning guiding principles, management objectives and the management actions required for delivering the objectives. <ul style="list-style-type: none"> ▶ Chapter 4: Conservation and Tourism Management Program, focuses on protecting the wildlife dispersal areas and corridors; and minimising threats to the Conservancies' conservation targets. In addition, it focuses on strategies for developing sustainable tourism in the Conservancies. ▶ Chapter 5: Community Livelihoods and Resource Use Management Program, focuses on strategies for improving community livelihoods through pastoralism development and other sustainable livelihood strategies supported by the plan, in harmony with wildlife and conservation values. ▶ Chapter 6: Operations management Program, focuses on resource requirements for effective delivery of the other management programmes contained in the plan.
Chapter 7: Plan Monitoring	This chapter provides a plan monitoring framework to enable the assessment of the potential impacts, positive, and where appropriate negative, resulting from the implementation of each of the four management programmes.

5. THE NEED FOR STRATEGIC ENVIRONMENTAL ASSESSMENT

The ALOCA Management Plan 2016-2026 was developed as a framework for coordinating landuse management in the community wildlife conservancies where landuse activities have to co-exist with wildlife conservation and tourism. In addition to their intended positive development dividends, the proposed interventions in the management plan, (especially under the conservation and tourism development management and community livelihoods and resource use management programmes) might have caused or are likely to introduce unintended negative environmental and social impacts especially in critical ecologically significant areas (CESAs). The aim of the strategic environmental assessment (SEA) for the ALOCA Management Plan 2016-2026 is to subject it to the obligations of Section 57A of EMCA 1999 (revision 2015) by integrating it with relevant national policies, national strategies and action plans as well as MEAs. The SEA will also effectively integrate and align the ALOCA Management Plan 2016-2026 with the Amboseli Ecosystem SEA, AEMP 2020-2030 and Kajiado CSP 2019-2030.

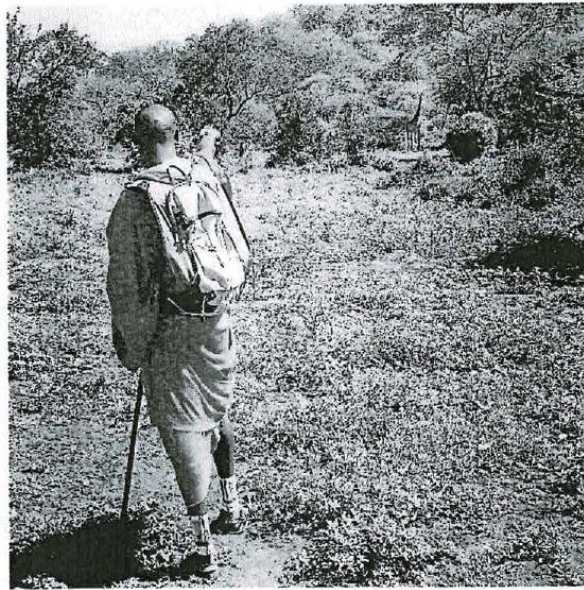
The SEA is one of the tools to be used for the protection of the environment for the benefit of present and future generations as enshrined in Articles 42(b) of the National Constitution of Kenya. Article 69(a) of the constitution is aimed at ensuring sustainable exploitation, utilisation, management and conservation of the environment and natural resources, and ensuring equitable sharing of the accruing benefits while 69(g) aims at eliminating processes and activities that are likely to endanger the environment. Article 70(2b) of the constitution empowers relevant public officer to take measures to prevent or discontinue any act or omission that is harmful to the environment.

The SEA is one of the innovative environmental management tools advocated in s3.1 (d) of the National Environmental Policy (2013) for ensuring sustainable development for the benefit of the present and future generations. Several policy statements including 5.5.3(3) and 9.1.1(3) advocate for the application of SEAs in the evaluation of conservancy management plans for effective environmental governance. The execution of the ALOCA Conservancy Management Plan 2016-2026 will greatly support the implementation of the plan including the enforcement of the conservancy by-laws and incompatible land use restrictions for sustainable development and conservation of the Kimana Wildlife Corridor (KWC).

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Strategic Environmental Assessment of the Group Ranch Landuse and Subdivision Plan, Kajiado County



Plan Brief

October 2023

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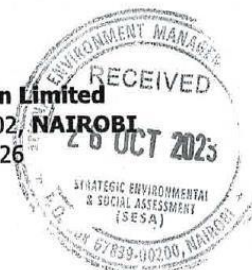
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DECLARATION

The **Plan Brief** for the **Strategic Environmental Assessment (Plan SEA)** of **Rombo Rombo Group Ranch Landuse and Land Sub-Division Plan, Kajiado County** is submitted, on behalf of **ALOCA, Big Life Ltd and Amboseli Ecosystem Trust** by **ENRM Associates Ltd (NEMA Reg. # 12767, EIK No. 5727)**:

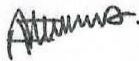
<i>Name</i>	<i>Signature</i>	<i>Date</i>
		19 th October 2023
Francis Mwaura Lead consultant and Team Leader (NEMA Reg. No. 0077)



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1. INTRODUCTION

1.1 Purpose of the Plan Brief

This Plan Brief is prepared in accordance with the EMCA (Integrated Environmental Impact and Audit) Regulations of 2003 (Amendment 2018, Legal Notice No. 101) and the National Strategic Environmental Assessment (SEA) Guidelines of 2012. The purpose of the Plan Brief is to provide the details to NEMA regarding the Strategic Environmental Assessment (hereafter denoted as SEA) of the Rombo Group Ranch Land Subdivision Plan (hereafter referred as RGR LSP) in Kajiado County. The need for the RGR LSP arose following the desire of the Rombo Group Ranch landowners to subdivide their ranch and acquire individual title deeds. In line with the resolution, the group ranch representatives subsequently applied for and obtained consent from the Director of Land Adjudication and the Settlement Officer to dissolve the incorporated group representatives and subdivide the land among members. Consequently, the RGR management prepared the Landuse and Subdivision Plan (LSP) to facilitate issuance of individual land titles to members. The LSP was necessary to guide the land subdivision and the subsequent registration of land rights for private landowners. The aim of the LSP was to fulfil the desire of members to own individual land, while ensuring sustainable conservation and management of natural resources to secure communities' livelihoods now and in the future. The principal role of the LSP is to serve as an important governance tool for regulating landuse in the new private tenure regime. The LSP was approved by the County Government of Kajiado (CGK), and the primary ownership and responsibility for implementation of the LSP is vested in the RGR Cooperative Society.

1.2 Background

A large number of group ranches in Kajiado County have recently been sub-divided thereby marking the irreversible transition from communal land ownership to private ownership and management. The group ranches were established in 1968 under the Group (Land Representatives) Act and later the Community Land Act. The trend towards subdivision implies a likelihood of dramatic changes in pastoral land use – from a system predicated on extensive seasonal movement towards one based on intensive and long-term grazing in small private parcels where households will have ostensibly fewer options for mobility.

The subdivision of the group ranches will transform traditional communal land into multiple independent parcels within different management zones through the distribution of titled land parcels to individual shareholder members. It will create a significant transformation into the new private tenure regime associated with owner driven landuse decision making. The LSP will serve as an important governance tool for regulating landuse in the new private tenure regime. Consequently, there is an urgent need to ensure proper integration of all the necessary instruments of control in the LSP. The LSP also needs to be legalized through gazettment in order to instil the required muscle to prevent negative landuse changes including widespread land sub-division, selling, leasing and fencing. These changes are likely to accelerate land degradation and permanently obstruct and eliminate wildlife corridors and dispersal areas thereby reducing wildlife habitats outside protected areas in the greater Amboseli ecosystem. The changes are likely to affect community livelihoods in a negative way.

Rambo Group Ranch (3°2'46"S; 37°41'43"E) is located in Rombo Ward, Kajiado South Sub-county Kajiado County. It covers an area of approximately 94,705 acres (38,326.42 Ha) with 6,000 members and is linked to significant urban areas such as Ilasit, Kimana, Oloitoktok, and Emali via the B55 road. The group ranch is part of the Amboseli ecosystem and it hosts the Rombo Wildlife Corridor (RWC), which connects the Amboseli landscape to the Tsavo Conservation Area (TCA) as shown in **Figure 1-1**.

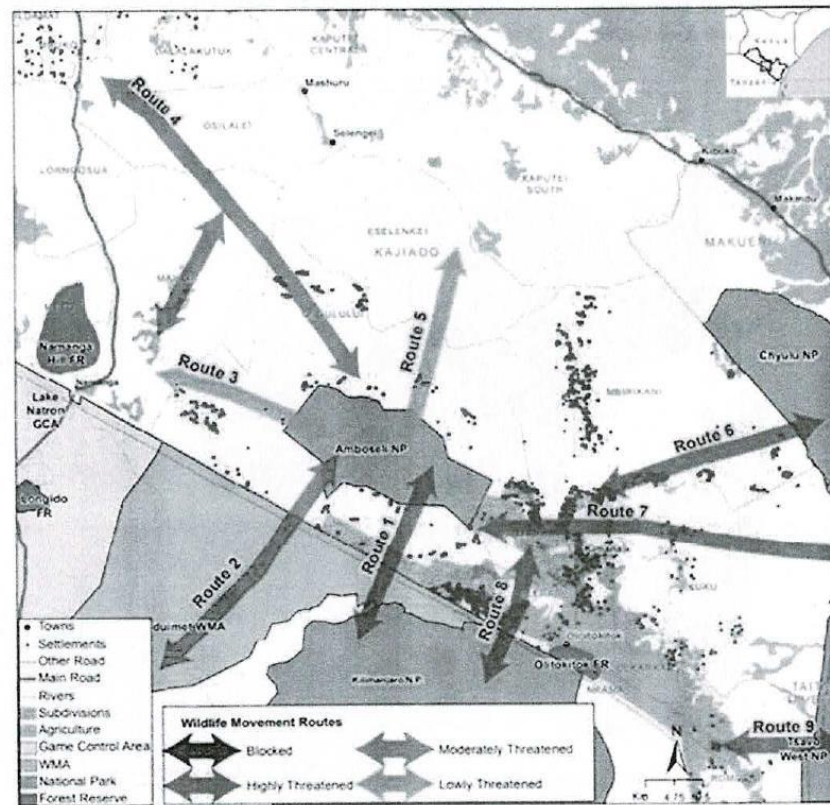


Figure 1-1: Location of the Rombo wildlife corridor (Route 9)

The ranch borders Kuku "B" Group ranch to the North, Olkaria to the North West, Taita Taveta County to the South and the East, and the Tanzania Republic to the West. It is characterized by dryland conditions as shown in **Figure 1-2**. The group ranch is located in the Rombo ward which has three locations (Entara, Rombo and Njukini) and six sub-locations (Ilasit, Entarara, Rombo, Olgirra, Njukini, Elerai).

1.3. Group Ranch Characteristics

1.3.1 Landuse

Land use in RGR, includes farming, livestock keeping (cattle, sheep, goats and donkeys), limestone mining, cement manufacturing, urban development in addition to human settlement. The area is dominated by Acacia woodland and grassland with forests occurring along the riparian zones especially of the Rombo River. The natural vegetation cover has enabled the integration of RGR in the Chyulu Hills REDD+ Project through the coordination of Big Life Foundation (BLF). It is hoped that the RGR land subdivision will not affect the carbon credit scheme in a negative way through vegetation clearance. The headwaters of the Rombo River in the landscape constitute the key tributary to the Tsavo River and thus an important lifeline for communities, farmers,

livestock keepers and wildlife alike. **Figure 1-3** shows the land suitability assessment map for the RGG. **Figure 1-4** shows the environmentally significant areas in the ranch.

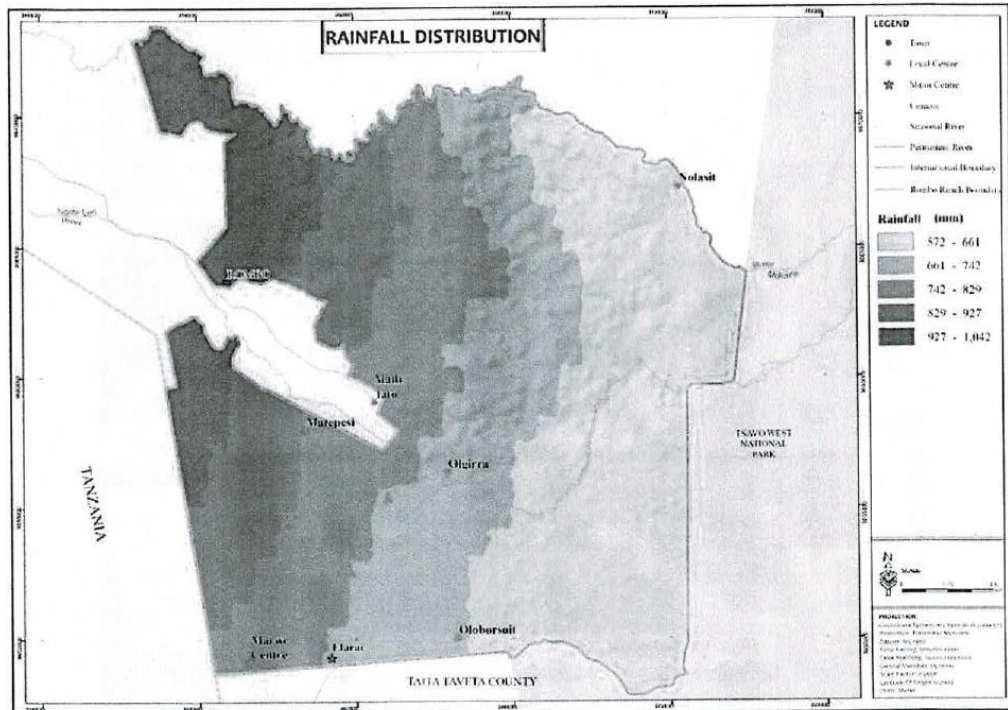


Figure 1-2: Location of the Rombo Group Ranch and its rainfall characteristics

1.3.2 Wildlife

Rombo Group Ranch is associated with a wide range of wildlife species which include giraffe, elephant, buffalo, eland, zebra, Thompson and Grants gazelle, impala, baboon, hyena, lion, leopard and ostrich. The group ranch has established the 95,000-acre Rombo Community Conservancy, which serves as the main ecological link between the Amboseli and Tsavo conservation landscapes. The Rombo conservancy is under management of Rombo Wildlife Conservancy Trust (RWCT) that was established in 2014 by the RGR leadership, AET and other partners. The RGR management also works closely with KWS ensure sustainable human-wildlife co-existence in the area. The agency supports the local people through the provision of school bursaries as well as the support of local development projects including borehole construction and maintenance. In addition, RGR has been collaborating with Big Life Foundation (BLF), a non-profit conservation organization focused on preserving wildlife habitats in the Amboseli-Chyulu-Tsavo-Kilimanjaro region. BLF currently employs hundreds of local Maasai rangers and maintains over 30 patrol outposts including the provision of vehicles and aircrafts for aerial surveillance. The organization has established a Predator Compensation Fund (PCF), which pays livestock owners for the loss livestock due to predation. BLF also offers bursaries and scholarships for needy students as well as funding other conservation related activities including research and workshops. Increased ranger presence in Rombo has led to enhanced security, and reduction of poaching incidents in Rombo, which will attract tourism investments and boost income from

[illegible]

Figure 1-3: Land suitability assessment map for the RGG

The SEA is one of the tools used to protect the environment for the benefit of present and future generations as enshrined in Articles 42, 69 (a & g), and 70 (2b) of the National Constitution of Kenya 2010. Article 42 of the National Constitution of Kenya 2010 pertains to the right to a clean and healthy environment, which can be violated through implementation of policies, plans and programmes, which are environmentally unsustainable. The Rombo LSP SEA complies with S57A (1&2a) which requires all new policies, plans and programmes (including those from local communities like RGR) to be subjected to strategic environmental assessment. The purpose of the LSP SEA is to reinforce and legitimize the LSP beyond the County Government of Kajiado (CGK) approval by legalizing it under section 57A (1) of the Environmental Management and Coordination Act (Amendment Act 2015) by subjecting the LSP to comprehensive environmental and social screening for effective environmental and natural resources governance. The SEA would ensure that the LSP is well aligned with relevant policies, legal frameworks and subsidiary regulations at local, county and national levels for ease of implementation and enforcement as the principal landuse governance instrument under the private land tenure regime. The gazettment of the SEA report will legalize the Rombo LSP and support its application including legal enforcement of landuse restrictions to avoid landuse disorder and irreversible environmental and social problems that are likely to be triggered by land sub-division and land reforms such as widespread land disposal, land leasing, fencing, charcoal burning and landuses which are incompatible with pastoralism and wildlife conservation.

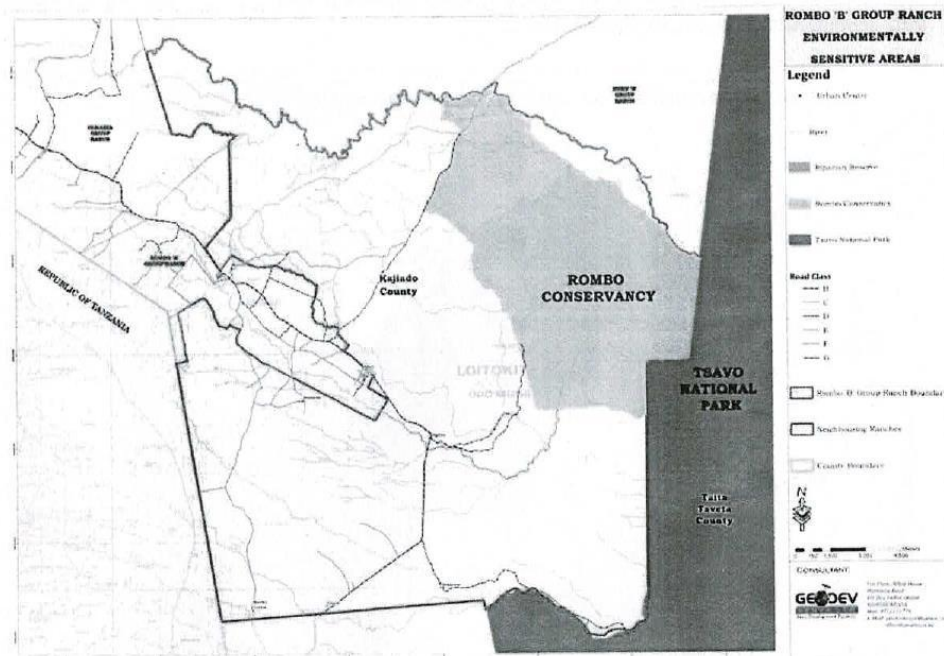


Figure 1-4: Environmentally significant areas in RGR (Geodev 2021)

The Rombo LSP SEA is a rare grassroots effort in compliance with S57A (1&2a) which requires "All Policies, Plans and Programmes to be subjected to Strategic Environmental Assessment. The SEA will address management gap associated with the emerging and inevitable challenge of land subdivision and land use change in the Amboseli ecosystem. The issue was not considered in the 2014 Plan SEA for the AEMP (2008-2018) because the SEA was mainly commissioned in response to the one-year Amboseli Moratorium of 2013 which suspended all development activities especially in the tourism sector until AEMP was gazetted so that it could serve as a regulating instrument for development activities in the ecosystem. The 2014 Amboseli ecosystem-wide Plan SEA did not consider the issue of group ranch land sub division, which mainly started after 2019. Prior to that land sub division had only occurred in the Kimana Group Ranch without a SEA which culminated in a wide range of negative environmental and social impacts (including widespread land dispossession through mass acquisition of land by "outsiders", fragmentation of pastoral and wildlife landscapes through fencing, loss of critical wildlife habitats and migratory corridors, and degradation of environmentally sensitive environments such as the Kimana wetland and wildlife sanctuary). The Rombo LSP SEA and other similar interventions will reinforce the Amboseli Ecosystem SEA by the AET, which was not covered in the umbrella SEA.

2. THE PLAN CONCEPT

The need for the plan was driven by the desire of RGR members to tap the local resources and opportunities sustainably and to address the existing and anticipated key issues that constrains the actualization of the objectives to secure current and future generations of its people. The Land Use and Sub-Division Plan was prepared to guide the land governance and management after the group ranch after sub-division. This includes the need for safeguarding the existing wildlife corridors and dispersal areas within the RGR, which is necessary for the long-term ecological integrity of Amboseli National Park and the Greater Amboseli Ecosystem.

2.1 Plan Objectives

The role of the Land Use and Sub-Division Plan is to:- a) define the most appropriate land use mix and practices that would optimize sustainable economic returns to the RGR land owners, b) provide a framework for delivering the optimal mix of land uses by dividing group ranch into different zones where different types of land uses and activities are permitted in accordance to the Kajiado County Land Sub-division Guidelines 2018, Kajiado County Spatial Plan 2019-2029, Amboseli Ecosystem Management Plan 2020-2030, among other relevant frameworks, c) broadcast the land use and land management policies which will ensure the undertaking of acceptable development and conservation practices.

2.2 Landuse Zoning Guiding Principles and Frameworks

The RGR LSP was guided by and sought to fulfil the principles and provisions of the Community Land Act, Physical Planning Act, Survey Act, Land Act, County Government Act, Urban areas and cities Act, Wildlife Protection Areas Act and Wildlife Management Act, the National Land Community Act as well as sector specific acts such as environment, water, forests among others. The plan has also considered the aspirations of the Kenya Vision 2030, which is the overarching vision for national development. In addition to this, it has been referenced to National Spatial Plan (2015-2045) as well as the Kajiado County Spatial Plan 2019-2029 and relevant sector development policies. The RGR LSP was guided by the goals and objectives of the Amboseli Ecosystem Management Plan 2020-2030.

2.3 Landuse Zoning Scheme

The zoning plan aims to achieving prosperity, efficiency, equity, and sustainable development in the Rombo Group Ranch by promoting and accommodating competing land uses. The spatial framework adopted standard principles such as sustainable development and minimal disturbance, promote economic growth, and conservation of the environment and natural resources. Further, the zoning plan seeks to reduce human-wildlife conflicts through active interventions that maintain and protect the ecosystems.

The zoning scheme for RGR LSP is based on the following zones:-

- a) *Farmland and settlement zone*: This zone is focused on irrigated agriculture areas which are mainly in the southern part of RGR below Olgirra and around Elerai and Olborsoit near the Taita Taveta border. Other pockets of this zone are located in Rombo market, Maili Tatu and Nolasit. All forms of agriculture are permitted in this zone, but pastoralism and tourism are not encouraged.
- b) *Rangeland and settlement zone*: This is the largest zone cross-cutting RGR from north-west (Loitokitok direction) to the southeast (Tsavo direction) through areas such as Lemongo, Ol Mapinu, Maili Tatu and Olgirra. Pastoralism will be actively promoted and

developed in this zone. However, the zone is also associated with scattered pockets of wildlife habitats.

- c) *Conservation zone*: This zone is mostly associated with the Rombo Community Conservancy which bordering the Kuku Group ranch to the north along River Mokoine. The conservancy zone comprises the critical wildlife corridor linking Amboseli ecosystem and the Chyulu Hills to the north with the Tsavo Conservation Area (TCA) in the south.
- d) *Commercial zone*: This zone is associated with the small market centres scattered across RGR. The zone will therefore be used for commercial and residential development, light industrial activities as well as social amenities such as education, health, etc.
- e) *Infrastructure*: The zone has been designated for development of transport, communication and related infrastructure to spur socio-economic development of the community

Table 2-1 shows the area coverage for each of the land zones while **Figure 2-1** shows the land subdivision scheme.

Table 2-1: Area coverage for the landuse zones in Rombo Group Ranch

Landuse Zone	Area coverage (acres)	%
Farmland and settlement	19,504	20.72
Rangeland and settlement	42,206	48.91
Conservation	25,735	27.17
Commercial	233.95	-
Education	136.32	0.14
Public purpose	77.11	0.08
Public utility	44.23	0.05
Infrastructure	2,767.54	2.92
Total	94,704	100

2.4 Permitted Activities

The permitted activities for each of the five key landuse zones, namely a) conservation and tourism development, b) pastoralism development and wildlife conservation, c) human settlements, d) cultivation, and e) industrial zone have been specified in the LSP. They include residential, commercial and infrastructure development, industries, irrigation, agroforestry, pastoralism, conservation, ecotourism and research.



3. PLAN FORMALIZATION AND IMPLEMENTATION

3.1 Plan Formalization

Rombo Group Ranch Management is undertaking a Strategic Environment Assessment (Plan SEA), in accordance with the section 57A (1) of the Environmental Management and Coordination Act (Amendment Act 2015) in order to legalize and gazette the Land Use and Sub-Division Plan (LSP) as the principal governance instrument for regulating landuse in the new private tenure regime.

3.2 Strategic Environmental Assessment (SEA) for the Rombo Group Ranch Landuse and Sub-division Plan (LSP)

The overall goal of the RGR SEA is the legalizing of the RGR LSP through gazettelement by NEMA under EMCA Cap 387 (like in the Amboseli SEA) in order for it to serve as the long-term landuse governance tool under the new dispensation associated with the private land tenure regime. The specific objectives are:-

- a) Compliance screening of RGR LSP against the relevant environmental policies, laws, and guidelines at local, county and national levels for sustainable development.
- b) Consulting landowners and partners to ensure they understand the necessity of the SEA for legalization of the LSP under the new land ownership arrangements - Owner driven landuse management regime.
- c) Creating awareness on the LSP as the principal instrument of land governance as opposed to the group ranch governance regime (CLA) including the role of the SEA integrating relevant environmental policies, laws and guidelines.
- d) Preparation of a comprehensive SEA report demonstrating the compliance of LSP to environmental and social frameworks and the LSP acceptance by the stakeholders.
- e) Gazettelement of the RGR LSP under the Physical and Landuse Planning Act (No. 13 of 2019) for legitimate enforcement after the sustainability assessment through the SEA.

The SEA report will ensure that the implementation of the RGR LSP will avoid landuse disorder and irreversible environmental and social problems that are likely to be triggered by land sub-division and land reforms such as widespread land disposal, land leasing, fencing, charcoal burning and landuses which are incompatible with pastoralism and wildlife conservation

3.3 Plan implementation

The implementation of the RGR LSP is vested in the Rombo landowners Cooperative Society and partners. **Figure 3-1** shows the institutional framework for the implementation of the Rombo LSP.

- 1) Secretariat - minutes / Reg
2. token
3. Lunches
- 4 Reg
5. Prep

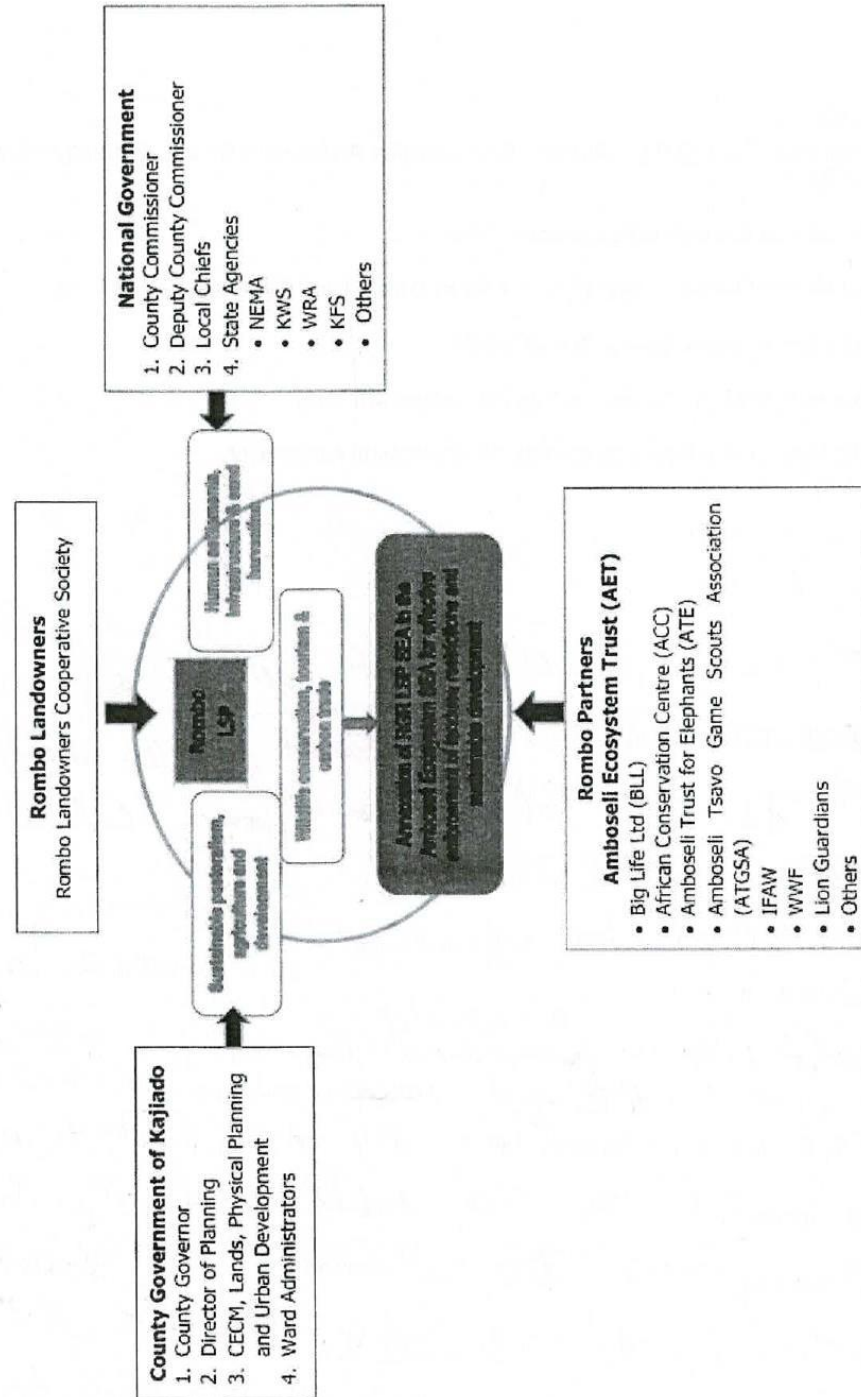


Figure 3-1: Implementation framework for the Rombo LSP

REFERENCES

Amboseli Ecosystem Trust (2011): Strategic Environmental Assessment for the Amboseli Ecosystem Management Plan.

AET (2020): Amboseli Ecosystem Management Plan.

County Government of Kajiado – CGK (2018): Kajiado County Land Sub-Division Guidelines.

CGK (2019a): Kajiado County Spatial Plan 2019-2029.

Geodev Consultants (2021): Rombo Landuse and Subdivision Plan.

NEMA (2012): National Guidelines for Strategic Environmental Assessment.

* *SEA for AEMP should control LAs in all lease agreements and separate individual LA SAs for the area not necessary. All GR Ranches should be part of AEC Governance to ensure an all inclusive decision making process for effective enforcement and compliance.*

* *Most issues associated by LS in other GRs are across the AEC and therefore can be addressed by AEMP SEA. LUGS are identified by AEMP SEA as ^{occasional} ~~being~~ ^{being} detrimental to the well being of the ecosystem. The subdivision was sanctioned by the Land Act 2016, but with that people have learnt that sale of subdivided parcels will lead to ~~poverty~~ and have started ~~repossessing~~ the subdivided parcels for conservation and restoration purposes.*

APPENDIX 15: SESA FOR AEMP validation meeting minutes submission letter to NEMA



Amboseli Ecosystem Trust, ATGRCA House – Loitokitok Town, P.O.Box
346-00209, Loitokitok, Kenya. Tel: 0712588693 0700 727 499
Email: info@amboseliecosystemtrust.org,
Website: www.amboseliecosystemtrust.org.

28th March, 2024

The Director General,
National Environment Management Authority
P.O. BOX: 67839-00200, Nairobi.

Subject: AEMP SESA Validation Minutes, 20th March, 2024

Dear Sir,

Please find attached the minutes of the Strategic Environmental and Social Assessment (SESA) for Amboseli Ecosystem Management Plan (AEMP) 2020-2030 Validation Meeting held on 20th March 2024

The meeting provided a valuable opportunity for stakeholders to review the SEA report and provide feedback on its adequacy and completeness. The key discussion points and resulting action items are summarized in the attached minutes.

We appreciate the participation of all stakeholders in the validation process, and in particular continued guidance by your dedicated officers to ensure a successful process.

We look forward to your timely response and continued guidance in this SESA and other related processes.

Thank You,

Jackson Mwato

CEO- Amboseli Ecosystem Trust

APPENDIX 16: Minutes for (SESA) for Amboseli Ecosystem Management plan (AEMP) 2020-2030 Validation Meeting Held on 20th March, 2024 at Amboseli National Park.

**Minutes of the Strategic Environmental and Social Assessment (SESA)
for Amboseli Ecosystem Management plan (AEMP) 2020-2030
Validation Meeting Held on 20th March, 2024 at Amboseli National
Park.**

Meeting Details:

Meeting Title: Strategic Environmental and Social Assessment (SESA) for Amboseli Ecosystem Management Plan (AEMP) 2020-2030 Validation Meeting

Location: Amboseli National Park Conference hall

Attendance

The validation workshop was attended by all key stakeholders of the Amboseli Ecosystem and the full list of participants and their institutions is in *Annex 1*.

MIN 1/20/03/24: Opening Remarks.

Mr Koikai Oloitiptip of Amboseli Ecosystem Trust, was the master of the ceremony (MC) and he ensured smooth, timely and focused deliberations. He informally invited all participants to the venue and requested the KWS Assistant Director to officially welcome participants and offer opening prayers.

Mr Wambi opened the workshop with a word of prayer. He welcomed all participants to the ecosystem and noted that KWS could not have succeeded in insuring sustainability of the Ecosystem without the support of the local land owners. He underscored the importance of team work in achieving success.

Mr, Joel Nyika, the Kajiado County Director Culture, Tourism & Wildlife who represented the Kajiado County Governor in his opening remarks welcomed participants to the County and emphasized that the County Government of Kajiado is committed to supporting conservation both in the park and on group ranches which are in the process of converting to conservancies. Mr Ole Nyika also informed participants that the President of the Republic of Kenya issued a moratorium on Environmental Impact Assessments (EIAs) of projects proposed in all key wildlife conservation areas in the country to give way for proper land use guidelines in the affected areas, stating that Kajiado County is one of the affected areas. He also briefly mentioned that there is a directive for the transitioning of Amboseli National Park to the Kajiado County Government and a task force to execute the transition has been gazetted.

The NEMA representative *Mr. Reagan Awino* in his opening remarks on behalf of the Director General, thanked all the stakeholders for their involvement in the SEA process. He stated that The Strategic Environmental Assessment aims at integrating environmental considerations into planning and decision-making processes. He urged all stakeholders and public to work closely with NEMA in their respective areas in order to propel the environment Agenda to greater heights.

The CEO of the Amboseli Ecosystem Trust (AET), *Mr. Jackson Mwato* in his opening remarks, outlined the key role of AET as an institution that facilitates, guides and enables communities to benefit from their natural resources in a sustainable, structured and planned manner, using conservancies as the vehicle for this. AET bridges a gap between development agencies and donors wishing to invest in conservation for benefit of local people and to resolve local issues, and uplifting marginalized communities, whilst striving to improve their lives by sourcing for capacity through AET as the institutional structure to create the connection.

Mr Mwato stated that the Amboseli Ecosystem Trust (AET) was formed to coordinate and oversee the implementation of the Amboseli Ecosystem Management Plan (AEMP), and more broadly to promote coordination of stakeholder actions across the landscape. The presentation by the CEO is in *Annex 2*.

MIN 2/20/03/24: Amboseli Ecosystem Management plan (AEMP 2020-2030).

The Amboseli Ecosystem Trust (AET) Executive Director, Mr. Jackson Mwato stated that this plan was developed by everyone in terms of effort, resources, commitment and data, and the process was very participatory.

The AEMP ensures that wildlife continue to thrive and contribute sustainably to the enhancement of community livelihoods in Amboseli. It outlines specific management programs and action plans that if implemented, wildlife conservation values and quality of life of people in the area will be improved significantly. The full presentation is in *Annex 2*.

MIN 3/20/03/24: The SEA Process

Mr. Reagan Awino presented the SEA process as outlined: Introduction to SEA, what makes a Good SEA, and Steps in the SEA process undertaken, including key stages and methodologies as per annex 3. Participants commended Mr Awino for presenting a very elaborate process.

MIN 4/20/03/24: SEA Findings and Recommendations

The SESA Lead Consultant Dr. Bernard Kaaria acknowledged all stakeholders present in the validation meeting. He presented the key findings of the SEA using the outline below:

- Social and Environmental issues of concern identified by the AEMP 2020-2030
- Impact analysis and alternative options
- Identifying environmental and social impacts (positive and negative).
- AEMP identified Land uses
- AEMP Management programmes
- Mitigation measures proposed to address potential negative impacts.
- Recommendations for enhancing environmental and social considerations in the management plan and implementation.

The full presentation by the consultant is in *Annex 4*

MIN 5/20/03/24: Plenary Discussions and Comments

The MC, Mr Koikai Oloiptip opened the floor and invited participants to freely comment and discuss to add value to inform the final SESA report. Comments and discussion points are recorded in the matrix below:

<i>Name/ Agency</i>	<i>Comment/Question</i>	<i>Remarks/responses</i>
<i>Koikai Oloiptip (AET)</i>	<i>Add the word win space for wildlife in the purpose statement</i>	<i>Endorsed</i>
<i>Lucy Waruinge (ACC)</i>	<i>Ensure the different enterprises within the ecosystem are captured</i>	<i>The assessment has considered all land uses and other activities with potential to negatively impact the ecosystem and suggested mitigation measures. During implementation, other emerging enterprises will be noted and mitigated progressively,</i>
<i>Jonnah Western (ACP)</i>	<i>Recommendation on undertaking Biodiversity Baseline Surveys</i>	<i>ACC has undertaken research and monitoring within the AE since 1967. There's understanding of what needs to be done, the connectivity, and minimum viable area which wildlife needs. AEMP was prepared using the data that has been collected and the plan will guide implementation of sustainable activities within the ecosystem. During implementation of the plan, the relevant research institution within AE will continue to</i>
<i>Koikai Oloiptip</i>	<i>Informed participants that other institutions such as Wildlife Research Institute (WRTI), the County Government and other stakeholders</i>	

like KWCA are likely to support annual surveys. collect monitoring and evaluation data and other emerging information to guide sustainable implementation of the plan.

The provision of **THE LAND ACT, 2016** guided sub division which is a negative impact towards sustainability and conservation practice in Amboseli Ecosystem. There's need to maintain space mobility and right use of land in the zones prescribed by the management plan.

Theres is great need of enforcement to be constituted and well-structured governance.

The land owners were resisted sub division but due to fears to lose their lands they opted for it. Since the group ranches are critical for wildlife and pastoralism there was need for space and mobility for conservation purposes thus creation of conservancies, protection of migratory corridor and restoration of degraded areas

Bernard Kaaria Strategic Environmental and Social Assessment (SESA) for AEMP 2020-2030 Should control land uses in all conservancies/group ranches and individual Group ranches Strategic Environmental and Social Assessment (SESA) are not necessary. However, Environmental Impact assessment (EIA) of proposed projects in all group ranches/Conservancies are Mandatory. Mr Olenyika responded that individual project EIAs are currently suspended but once the AEMP and its SEA are gazetted by the County Government of Kajiado they will liaise with DG NEMA to reinstate project EIAs and avoid dissatisfaction by investors

Jackson Mwato (AET) On land repossessing by the PIC Stakeholders were advised that the PIC have no powers to repos land. This is being done by the communities in a structured way through the through the Land Acquisition Committees.

Samuel Jakinda (Just Dig It) Land degradation There should be promotion of nature-based solution as a preferred way of restoring degraded areas.

IFAW Education and awareness on land use issues Communities to be continuously empowered through seminars and workshops (land clinics).

Mark Angwenyi Compliance and Enforcement

AET will coordinate compliance and enforcement with the support and collaboration from NEMA and all enforcement agencies

Lucy Waruinge (ACC) Biodiversity credits, Carbon Credits and awareness of land option to nature-based solutions should be captured clearly in the plan and also including benefit sharing.

This was accepted to be inserted in the recommendations

Cynthia Nemayian (Kimana Ward Adm) Include Ward representatives in the enforcement and compliance committee.

This suggestion was accepted

MIN 6/20/03/24: Next Steps, Closing Prayers and Prayers

Mr. Reagan outlined the next steps after validation where he advised on the timelines. The client is to submit the minutes for NEMA to review and communicate further on areas to be included in the final SEA report. Minutes and response will be 14 days after validation date, the completion and final approval of the SESA report will be within 60 days. He also advised on how NEMA and client should work together to ensure the SESA process is shortened.

The Kajiado County Director of Environment Mr. Mark Angwenyi on behalf of the Plan Implementation Committee (PIC) in his closing remarks thanked all participants for their attendance and contributions.

Mr Mwato gave a vote of thanks and appreciated all stakeholders and invited them for lunch.

The Validation Workshop was adjourned with a word of prayer by the Ward Representative Ms. Cynthia Nemayian.

Annex 1. List of participants



SUSTAINABLE MANAGEMENT OF THE TSAVO AND AMBOSELI LANDSCAPES

MEETING/TRAINING ATTENDANCE FORM

From: 20/03/2024 to 20/03/2024 Year: 2024 Topic of Focus: Strategic Environmental Social Assessment for AEMP 2020-2030

Venue: Amboseli Ho. Bundas

No	Name	Gender		Age ✓		Organization	Contact	ID NUMBER	Day I sign	PHOTO CONSENT
		Female	Male	35y and below	36y and above					
1	Daniel Sambo		✓		✓	BLF	0721885261	13611550	<i>[Signature]</i>	✓
2	Wilson Tikoo		✓		✓	AET	0724605414	24034800	<i>[Signature]</i>	✓
3	Kater Gionka		✓		✓	ACC	0727413762	25110200	<i>[Signature]</i>	✓
4	WATANA Ikere		✓		✓	KWCA	0727845190	24657539	<i>[Signature]</i>	✓
5	Samuel Jambaga		✓		✓	Jvstidigit	0727777354	1386052	<i>[Signature]</i>	✓
6	John KIROO		✓		✓	WNE-K	0720779657	10968386	<i>[Signature]</i>	✓
7	JUCH WAMUGI	✓			✓	ACC	0708849977	8822918	<i>[Signature]</i>	✓
8	David K. Mwangi		✓		✓	ACC	0728431662	0498907	<i>[Signature]</i>	✓
9	JACKSON NWAJO		✓		✓	AB	0712558693	23369578	<i>[Signature]</i>	✓
10	PAUL WAMEI		✓		✓	KWS	0723211634	22519273	<i>[Signature]</i>	✓
11	DAVID WESPERN		✓		✓	ACP	0727767228	6894096	<i>[Signature]</i>	✓
12	JOEL NTIKA		✓		✓	CGK	0723512794	13610485	<i>[Signature]</i>	✓
13	Reagan Awino		✓		✓	NEMA	0726989293	24589710	<i>[Signature]</i>	✓
14	TOTAL		✓		✓	NECS Ltd	072773451	1241632	<i>[Signature]</i>	✓

PREPARED BY: SIGN: DATE:

CHECKED BY: SIGN: DATE:



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FROM THE AMERICAN PEOPLE

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SUSTAINABLE MANAGEMENT OF THE TSAYO AND AMBOSELI LANDSCAPES

MEETING/TRAINING ATTENDANCE FORM

MEETING/TRAINING ATTENDANCE FORM

From: 2013 To: 2013 Year: 2024 Topic of Focus: Strategic Environmental Social Assessment for NEAP Co

Venue: Ambagali Ho, Boudat

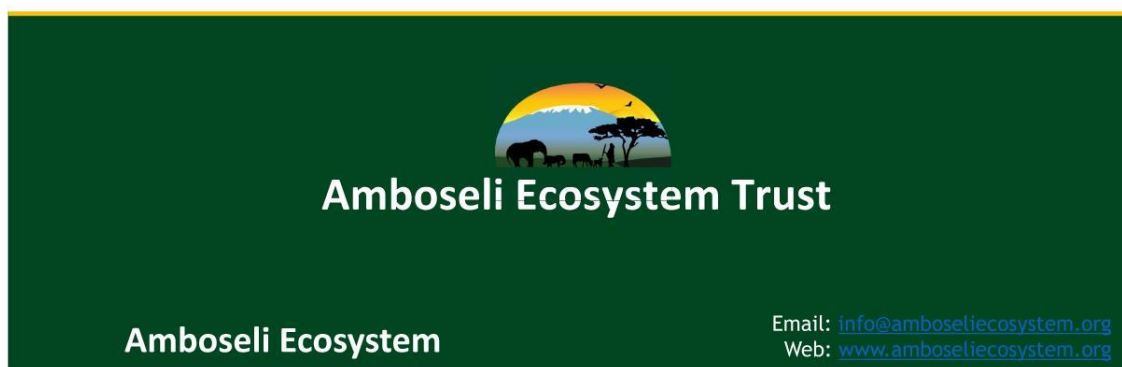
Venue..... Amboli Ho. Bndar

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PREPARED BY:.....SIGN:.....DATE:.....

CHECKED BY: SIGN: DATE:

Annex 3: The AEMP 2020-2030 by the Plan Owner -AET (Jackson Mwato)



About AET

The Amboseli Ecosystem Trust (AET) was formed to coordinate and oversee the implementation of the Amboseli Ecosystem Management Plan (AEMP), and more broadly to promote coordination of stakeholder actions across the landscape.



Mission: To foster sustainable development through effective conservation in the greater Amboseli Ecosystem

Vision: An Ecosystem Where People and Nature Thrive in Harmony.

AET GOALS

GOAL 1: The Amboseli Ecosystem Management Plan 2020 - 2030 is effectively implemented through coordinated partnerships.

GOAL 2: Community conservancies and designated Rangeland Management areas are effectively managed to enhance habitat connectivity.

GOAL 3: Economic growth and community livelihoods are enhanced through viable community enterprises.

GOAL 4: AET's Institutional Capacity strengthened to deliver its mandate as a locally led umbrella body

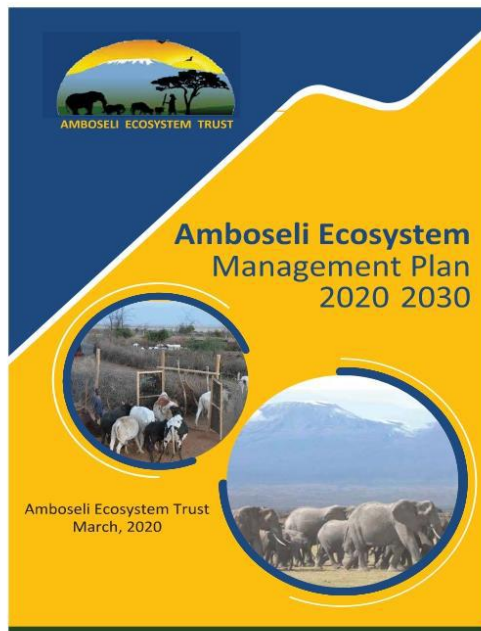


SECTION HEAD TITLE

The Key Role AET



The key role of AET is to **facilitate, guide and enable** communities to benefit from their natural resources in a sustainable, structured and planned manner, with conservancies as the vehicle for this. AET **bridges a gap** between development agencies and donors wishing to invest in local people and resolve local issues, and marginalised communities striving to improve their lives but without the capacity or institutional structure to create the connection. Community conservancies are about national development with improved conservation being a by-product of the **process**.



The AEMP 2020 - 2030

This management plan identifies the course Amboseli Ecosystem stakeholders intend to follow to ensure that wildlife continue to thrive and contribute sustainably to the enhancement of community livelihoods in Amboseli.

The plan outlines specific management programs and action plans that if implemented, wildlife conservation values and quality of life of people in the area will be improved significantly.

SECTION HEAD TITLE



What drives the Ecosystem Planning

1. A roadmap for managing an ecosystem sustainably.
2. Sets a long-term vision (approximately 10 years)
3. Articulates clear results to achieve the ecosystem's management goals, address local priorities and issues

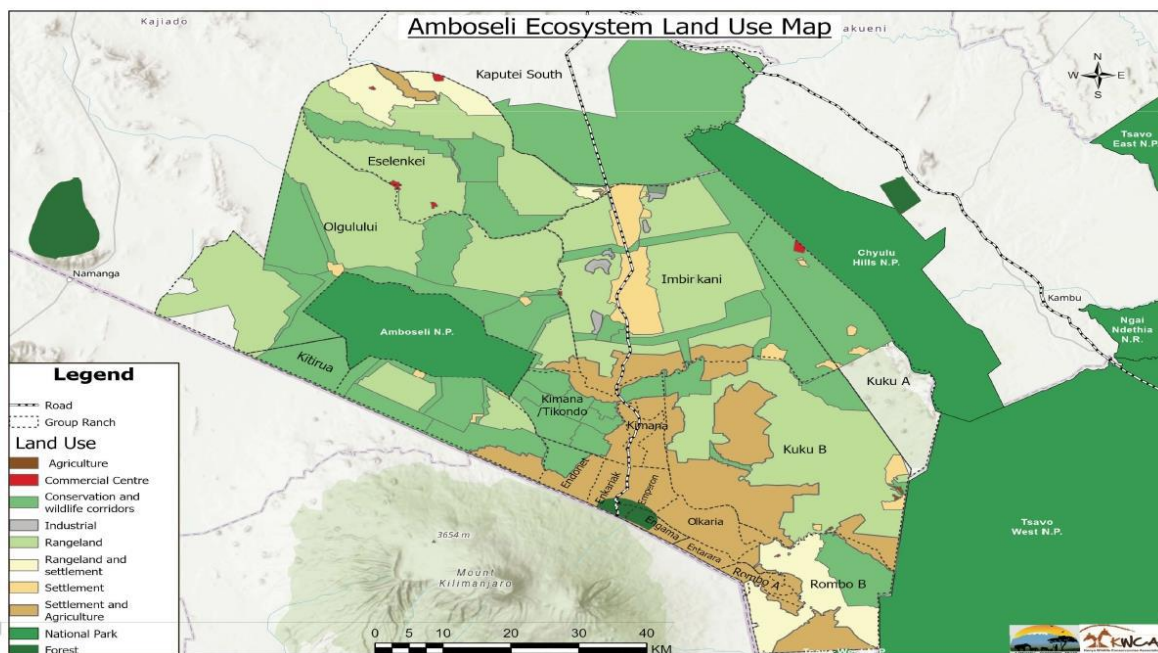




Why is the AE plan needed?

The plan provides a 10-year framework for management of the entire Amboseli Ecosystem to ensure that:

1. a minimum viable conservation area is maintained
2. habitat connectivity improved
3. Viable Populations of Wildlife maintained
4. pastoralism as a mode of livelihood and conservation is maintained
5. community benefits from ecosystem functions are improved
6. cross- border collaboration in NRM is enhanced





Group Ranches Subdivision progress

AET has been engaging landowners in all the group ranches in their subdivision process especially on;

- To align their subdivision plan with AEMP 2020 - 2030
- Advocate for connectivity corridors and establishment of new conservancies
- Sensitization in Land use Zonation and the underlying uses restrictions
- Sharing of information of other group ranches subdivision progress and considerations that needs to be factored

Support the mobilization of resources to group ranches to Gazette their subdivision plans

- Currently SEA process for OGR, EGR and MGR is already underway

SECTION HEAD TITLE



Ecosystem Challenges

- 1 Land Subdivision, Land sales and Land use change
- 2 Expansion of Irrigated Agriculture and Unplanned Development
- 3 Human wildlife interaction and co-existence
- 4 Community conservation is still not a competitive land use option – less benefits
- 5 Climate change and Rangeland degradation



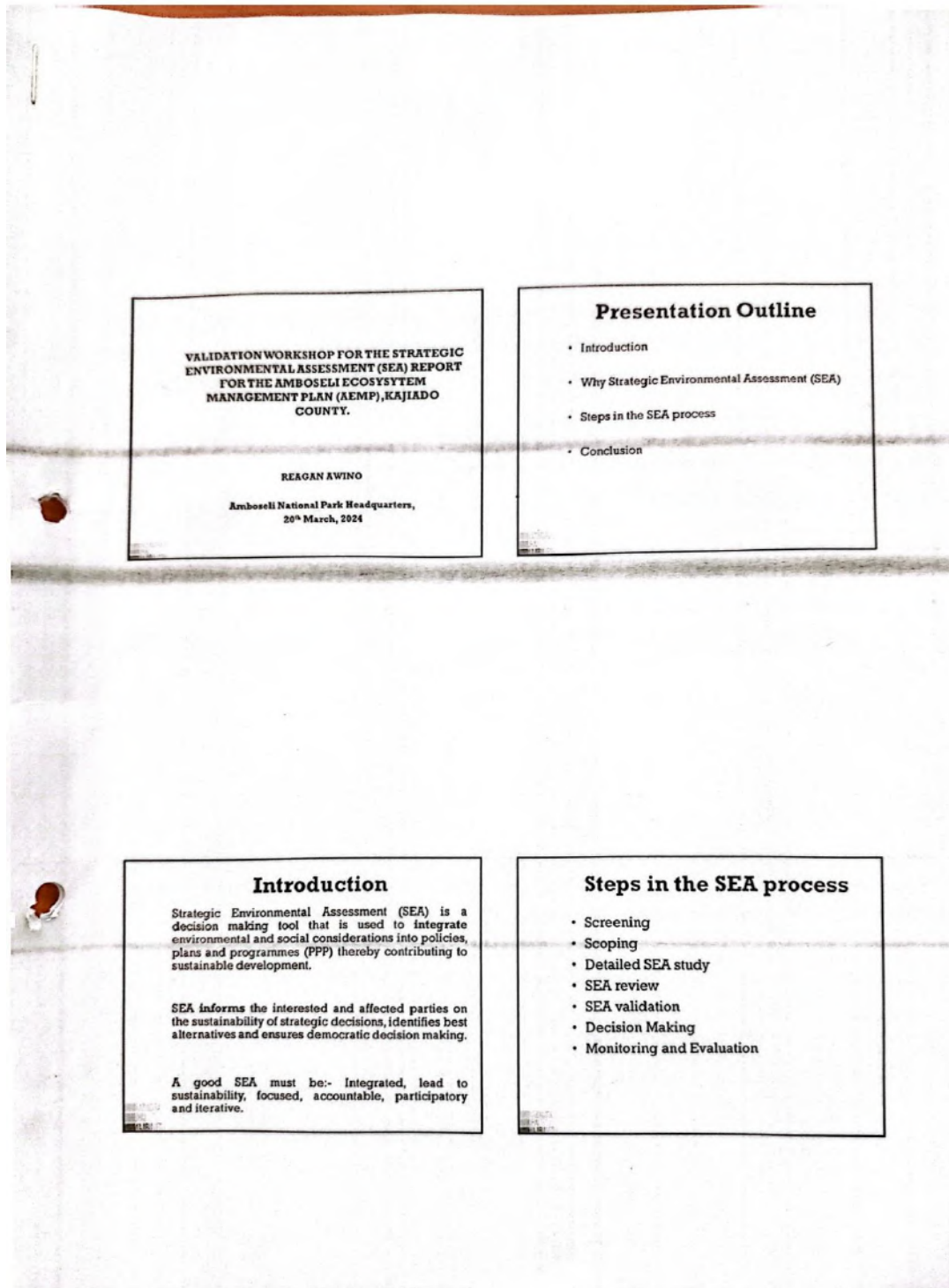
The Role of AEMP PIC

1. Align development proposal as per Land uses zonation in the Plan.
2. Work closely with NEMA to enforce the ecosystem plan zonation
3. Recommend approval consideration to projects that are in line with AEMP





Annex 4: SEA Process Presentation by NEMA (Reagan Awino)



Screening

The Plan owner submitted a Policy brief to the Authority on 10th November 2022.

The Policy brief was screened to determine whether SEA is required.

- Whether the impacts are significant and cumulative in nature
- Risks to health, safety and /or integrity of social or ecological systems
- Existing levels of environmental quality
- If it is politically or publicly contentious
- Gaps and inherent uncertainties in predicting the effects of the Amboseli Ecosystem Management Plan .

Screening Cont.....

The Policy brief was approved vide a letter dated 07th December 2022.

The Policy owner was advised to prepare and submit a SEA Scoping Report.

Scoping Stage

Activities that were undertaken during the scoping stage:-

- Identification of the SEA objectives
- Defining the boundaries in terms of space, time and subject matter
- Stakeholder identification, mapping, and engagement/communication plan
- Identification of possible effects on people and the environment

Scoping Cont...

- Identification of issues/problems to be studied in detail
- Identification of reasonable alternatives
- Analysis of the policy, legal & institutional framework
- Establish linkages/conflicts with existing policies and plans.

Scoping Cont...

- The Scoping report was submitted to the Authority on the 20th February, 2023, reviewed and issues raised on 27th February 2023.
- Submission of an updated scoping report on 11th April 2023, reviewed and approved 13th April 2023.

SEA Study Stage

- This stage involves detailed study of the issues that were identified during the scoping phase.
- Other activities undertaken during the SEA Study include:-
 - Collecting baseline information
 - Situation analysis and predicting trends
 - Identifying and predicting impacts and evaluating significance
 - Comparing alternatives, Identifying measures to enhance opportunities and mitigate adverse impacts

SEA Review

Draft SEA report was submitted on 04th July, 2023.

Draft SEA report was then subjected to different reviews:

- Administrative review by NEMA – 05th October 2023
- Stakeholder review -07th July 2023
- Public Review – 06th July 2023
- Submission of updated draft SEA Report – 04th December 2023
- Validation workshop – 20th March 2024

What next?

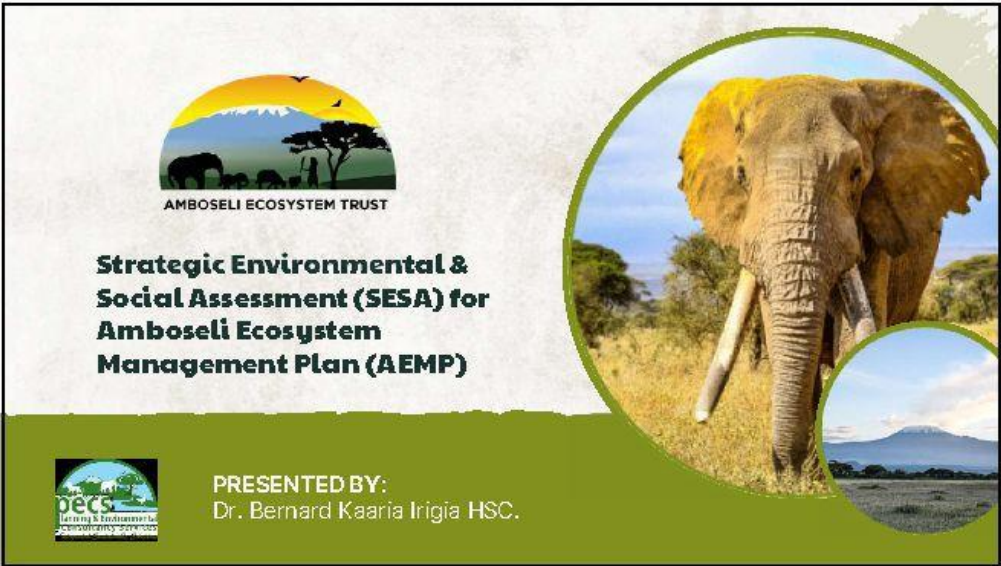
Incorporation of comments into the final SEA report.

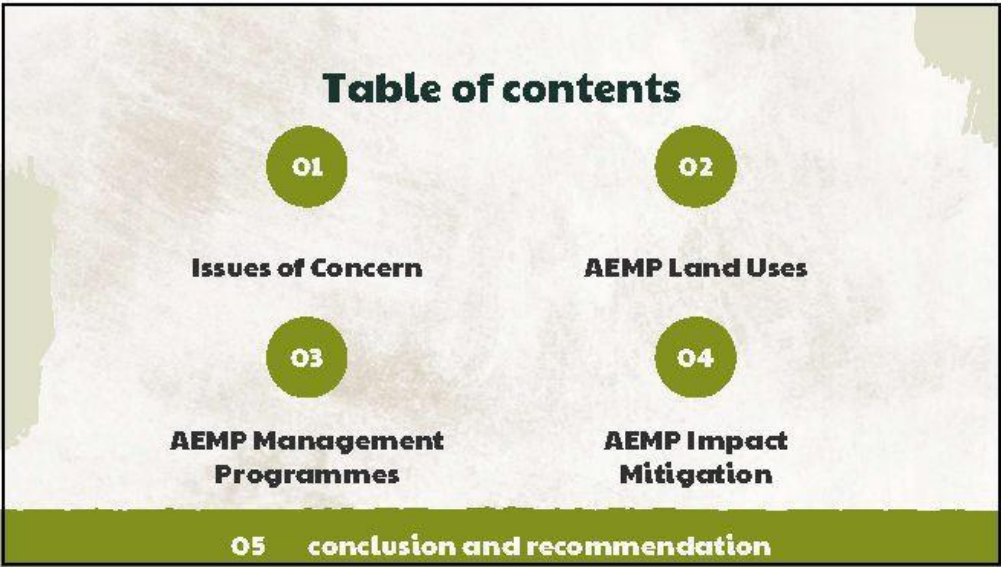
The public and stakeholders to give further comments if any within 14 days from the date of the Validation workshop (**by 04th April 2024**).

Amboseli Ecosystem Management Plan will submit the updated final SEA report to NEMA within 60 days from the date of the Validation workshop.

Annex4: SEA findings by the Consultants (Bernard Kaaria)

3/28/2024





OVERVIEW OF AMBOSELI ECOSYSTEM

The Amboseli ecosystem is a Kenyan gem, known for its stunning scenery, diverse wildlife, and rich cultural traditions. Spanning over 5,700 square kilometers, it's a UNESCO Biosphere Reserve that exemplifies the harmony between conservation, research, and development.

However, this once-pristine ecosystem faces mounting threats. A growing human population and unplanned development projects like unplanned tourist facilities and borehole drilling are putting pressure on the land. Farming activities, particularly irrigated agriculture, are expanding, leading to land subdivision and unplanned settlements.

The traditional free movement of wildlife is being restricted by these changes. Prime wildlife habitats are being degraded and encroached upon. This competition for resources like water and pasture between humans, wildlife, and livestock is causing conflict. Poaching for bushmeat is also on the rise.

The lack of proper compensation for wildlife-related losses fuels negative attitudes towards wildlife conservation among local communities. These issues collectively threaten the preservation of the ecosystem and its historical role in regional and international conservation efforts.

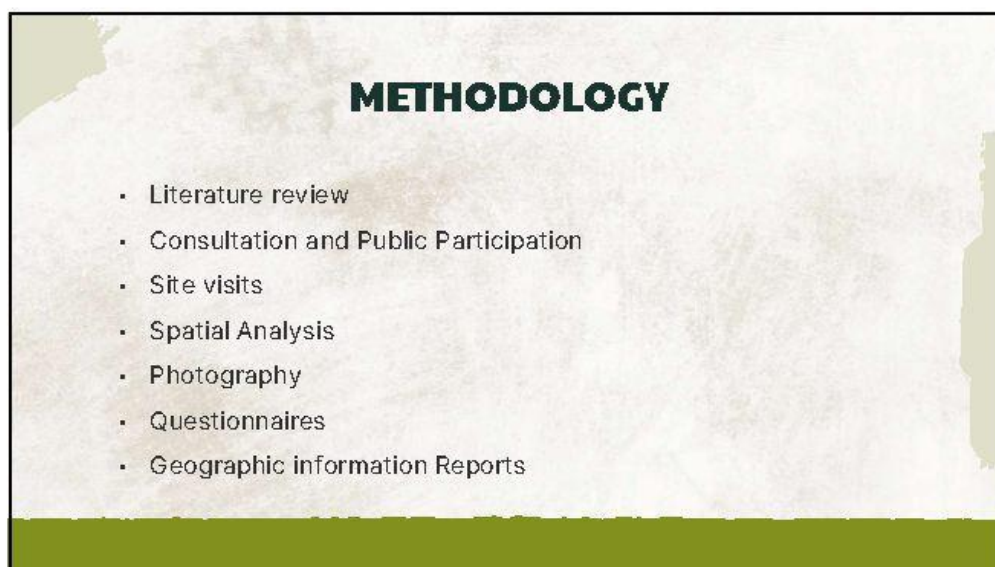
OVERVIEW OF AMBOSELI ECOSYSTEM

The Amboseli ecosystem faces significant challenges, and its previous management plan (2008-2018) had shortcomings in development, approval, enforcement, and stakeholder participation. To address these issues, the Amboseli Management Plan (2020-2030) was created.

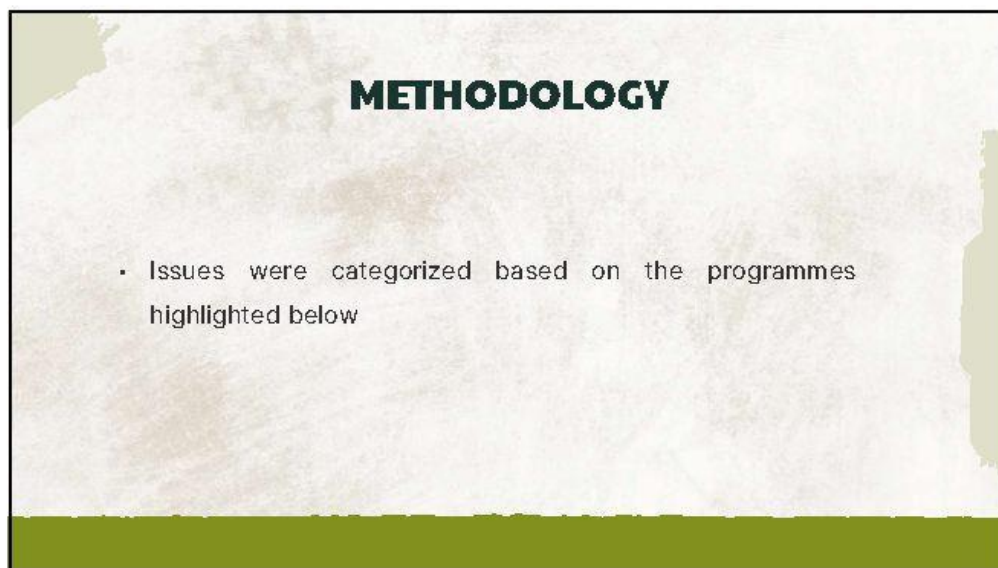
This new plan aims to achieve sustainable management of the ecosystem by balancing environmental protection with development initiatives and local needs. It also ensures alignment with Kenya's development goals, including Vision 2030 and the Sustainable Development Goals.

The plan outlines specific programs to achieve these goals. To assess the potential impacts of these programs, a Strategic Environmental Assessment (SEA) was conducted alongside the development of the management plan. This SEA will identify any potential negative impacts and propose mitigation measures to minimize them.

By combining a comprehensive management plan with a thorough environmental assessment, the Amboseli Ecosystem Management Plan (2020-2030) strives for a sustainable future for this critical ecosystem.



3/28/2024



5



Environmental Issues

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 Lotiuresh River down through the Soit Pus Swamp and areas around Itital 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.

Environmental Issues



Issue 3: Poaching

Poaching has declined to manageable levels since 2008 due to the formation of a large well-managed community ranger force.

Environmental Issues


Issue 4: Climate Change

Climate change effects have continued to manifest themselves through rising frequency and severity of drought, which has a direct impact on livelihoods of the local pastoralist community

Recent drought in the year 2022 had a devastating impact on livestock and wildlife in Amboseli Ecosystem. It resulted in death of livestock and wildlife due to lack of pasture, as wildlife migrated into community land and livestock moved into wildlife zones in search of pasture. There is need to incorporate climate change issues in the various programmes in order to ensure that the matters are addressed at the earliest possible time.

Environmental Issues

Issue 5: 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.

3/28/2024

Environmental Issues


Issue 6: 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 caused intensified "droughts" (measured by lack of pasture) and a 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 wild- life losses in the Amboseli ecosystem. The results do show, however, that the losses can be reversed through an ecosystem-wide integrated AEMP.

Social Issues

Social Issues



Issue 7: Land subdivision

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. The threat grew with the clamor for subdivision on the group ranches across the Amboseli ecosystem.

Fortunately, the large fallout from the resale of Maasai lands resulting from the subdivision of Kimana Group Ranch led Maasai leaders to call a halt and take stock of other land use options. In addition, the Community Land Act, 2016 halts all further subdivision of group ranches, pending registration of all members, including women. Further, the Act calls for all group ranches to draw up land use plans.

Social Issues

Issue 8: 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.

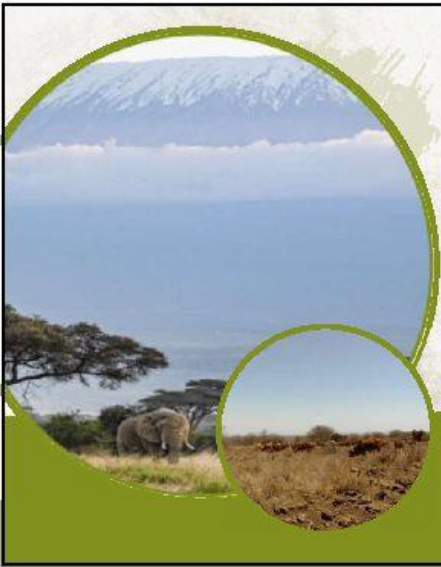


Social Issues

Issue 9: 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.

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



02

AEMP

LAND USES

3/28/2024

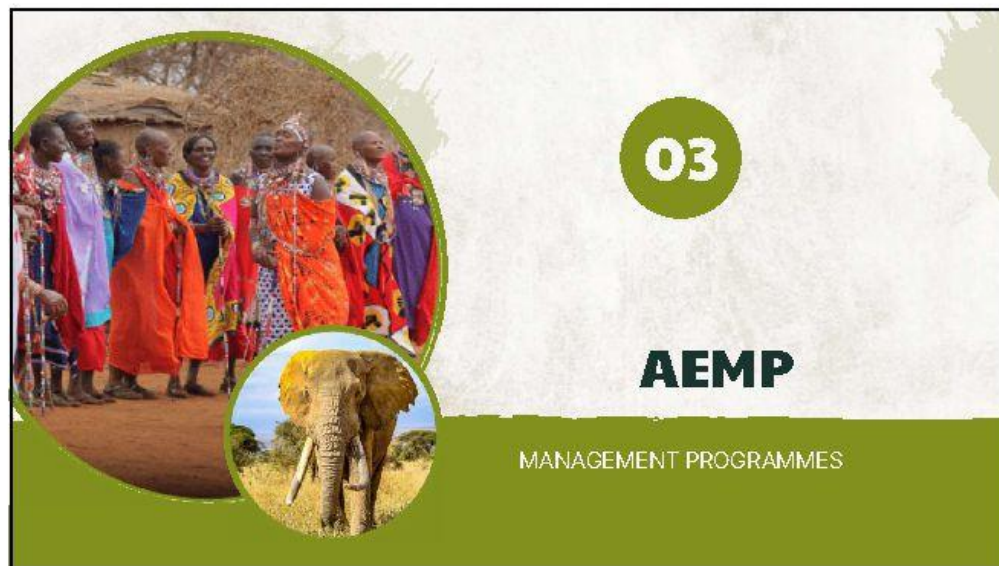
AEMP Land Uses

	Olgulului/ Lolarashi	Mbirikani	Eselengei	Kuku	Rombo	Ki mana	Ambozeli NP
Current & Potential future land uses	<ul style="list-style-type: none"> Human settlement Livestock grazing Agriculture Wildlife Tourism Social infrastructure Commercial Mining 	<ul style="list-style-type: none"> Human settlement Livestock grazing Agriculture Wildlife Tourism Social infrastructure Commercial Mining 	<ul style="list-style-type: none"> Human settlement Livestock grazing Agriculture Wildlife Tourism Social infrastructure Commercial 	<ul style="list-style-type: none"> Human settlement Livestock grazing Agriculture Wildlife Tourism Social infrastructure Commercial 	<ul style="list-style-type: none"> Human settlement Livestock grazing Agriculture Wildlife Tourism Social infrastructure Commercial 	<ul style="list-style-type: none"> Human settlement Livestock grazing Agriculture Wildlife Tourism Social infrastructure Commercial 	<ul style="list-style-type: none"> Wildlife conservation Wildlife tourism

AEMP Land Uses Cont.

From the table, the ecosystem can be divided into the following four major zones that accommodate current and potential future 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 eco-lodges 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)





Impact Analysis and Alternative Option

No	Plan Option	Expert Rating	Explanation
1	No Plan	1-Not preferred	This option means maintenance of status quo. This is bad option for sustainability
2	Spatial Plan	2-Least preferred	This option is global and not very specific on sustainable land use but good for administrative and jurisdiction purposes. Kajiado Spatial Plan is awaiting launching and gazettelement. All other County development and other plans including the AEMP 2020-2030 are anchored on it for effective enforcement. Generally, the Kajiado Spatial Plan is the frame work for other plans in the county.

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Impact Analysis and Alternative Option


No	Plan Option	Expert Rating	Explanation
3	Park Management Plan	3-Preferred	This option though preferred, it only restricts itself to the land uses within the Amboseli National Park. The National Park Plan will be part of the Amboseli Ecosystem Management Plan and was separately prepared by KWS. It is effective in enforcing compliance at the National Park level BUT Not at the Amboseli Ecosystem level.
4	Amboseli Ecosystem Management Plan	4-Most preferred	This option encompasses the entire land uses in details taking care of all stakeholders within the larger Amboseli area. This option also ensures social, economic and ecological benefits to the present and future generations. It ensures enforcement and compliance with the recommendations of the plan and its SEA through a well-structured governance system (AET). Options 2,3 and 4 will however, contribute towards the overall sustainability of the AE

1. Community Livelihoods and Socio-Economic Programme

The purpose of this program is "to win space for livestock, and improve livestock and agricultural productivity to realize the socio-economic aspirations of the AE community within a sustainable frame- work"



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Community Livelihoods and Socio-Economic Programme

Issues to be addressed

Pastoralism

- a) Traditional animal rearing practices.
- b) Poor marketing of livestock and livestock products.
- c) Overstocking and overgrazing.
- d) Unimproved breeds and poor husbandry.
- e) Inadequate livestock husbandry support services.

Crop production

- a) Under exploitation of irrigation potential.
- b) Poor uptake of modern technology in agricultural production

Infrastructure

- a) Unplanned settlements
- b) Poor roads conditions, poor infrastructure and climate variability.

Objectives, actions and activities

Objectives	Action	Activities
Objective 1: Livestock production through pastoralism improved	Action 1.1: Improve the livestock grazing range for sustainable livestock production	<p>Activities</p> <ul style="list-style-type: none">• Establish grass banks (Okpokoli)• Develop and implementing traditional grazing plans• Rehabilitate degraded grazing areas• Increase water supply for livestock

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Objectives, actions and activities

Objectives	Action	Activities
Objective 1: Livestock production through pastoralism improved	Action 1.2 Improve livestock breeding and husbandry	<p>Activities</p> <ul style="list-style-type: none"> • Crossbreeding the local livestock breeds for increased production of meat and milk. • Control livestock diseases. • Maintain cattle dips. • Conduct livestock vaccination campaigns. • Establish a model breeding farm to serve the entire ecosystem

Objectives, actions and activities

Objectives	Action	Activities
Objective 1: Livestock production through pastoralism improved	Action 1.3 Improve the livestock marketing system	<p>Activities</p> <ul style="list-style-type: none"> • Reclaim livestock holding grounds Support existing livestock markets. Develop livestock marketing guidelines. Form a livestock marketing association. • Establish linkages with local and international livestock markets. Improve existing slaughter houses. • Implement a livestock fattening programme and establish a milk processing plant

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Objectives, actions and activities

Objectives	Action	Activities
Objective 2: Adoption of sustainable agriculture is improved	Action 2.1: Adopt modern technology in production, value addition and storage of agricultural produce to minimize waste and economic losses	<p>Activities</p> <ul style="list-style-type: none"> Adopt modern crop production technologies. Establish a horticultural canning factory. Work with county and national governments to source for investors in cold storage facilities and grain dryers. Work with county government in training agricultural extension officers for effective extension services.

Objectives, actions and activities

Objectives	Action	Activities
Objective 2: Adoption of sustainable agriculture is improved	Action 2.2: Work with finance institutions to make it easy for farmers to access credit	-

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Objectives, actions and activities

Objectives	Action	Activities
Objective 2: Adoption of sustainable agriculture is improved	Action 2.3: Empower farmers with market information and direct access to markets to minimize exploitation by middlemen	<p>Activities</p> <ul style="list-style-type: none"> • Use standard nets and packaging and enforce the packaging regulations. • Use modern communication to access market information on prices and tastes.

Objectives, actions and activities

Objectives	Action	Activities
Objective 3: The living standard of the local community is improved through enterprises, natural resource use and planned settlements	<p>Action 3.1: Establish nucleated human settlements</p> <p>Action 3.2: Establish infrastructure to support social development in the AE</p> <p>Action 3.3: Support establishment of new enterprises and employment to improve household income</p> <p>Action 3.4: Strengthen education and health services</p>	<p>.</p>

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Potential Positive and Negative impacts

Potential negative impact	Probability and risk of occurrence	Duration of impact	Magnitude	Reversibility	Importance
Impact of establishing grass banks (Dipolait)	Low	Long term	Bg	Reversible	High
Impact developing and implementing traditional grazing plans	Low	Long term	Medium	Reversible	Moderate
Impact of rehabilitating degraded grazing areas	Low	Long term	Bg	Reversible	Moderate
Impact of increasing water supply for livestock	Medium	Long term	Bg	Reversible	Moderate
Impact of establishing a livestock disease free zone	Low	Medium term	Bg	Reversible	Moderate
Impact of crossbreeding the local livestock breeds for increased production of meat and milk	Low	Medium term	Bg	Reversible	Moderate
Impact of reclaiming livestock holding grounds and supporting existing livestock markets	Low	Medium term	Bg	Reversible	Moderate
Impact of establishing linkages with local and international livestock markets	Low	Medium term	Bg	Reversible	Moderate
Impact of improving existing slaughter houses	Low	Medium term	Bg	Reversible	Moderate
Impact of adopt modern crop production technologies	Medium	Long term	Bg	Reversible	Moderate
Impact of establishing a horticultural canning factory	High	Medium term	Bg	Irreversible	Moderate
Impact of land subdivision with nucleated settlements where social amenities can be provided	High	Medium term	Bg	Irreversible	Moderate
Impact of improved infrastructure (especially roads)	High	Medium term	Bg	Irreversible	Moderate

Tourism Development and Management Programme

The purpose of the Tourism Development and Management Programme is "to make Amboseli Ecosystem an outstanding tourist destination offering premium visitor experience and variety while supporting conservation and communities".



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Tourism Development and Management Programme

Issues to be addressed

The main challenges observed include:

Standards decline – The tourism product of the AE is in sharp decline in quality 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 thanks to poor and weak regulations and controls. These high end and budget tourism facilities largely depend on the Amboseli Park as their 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.

Environmental impacts – The growth of tourism enterprises in the Ecosystem is having adverse impacts like 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 to the east of Amboseli National Park 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.

Tourism Development and Management Programme

Issues to be addressed

Land Use changes – The AE has witnessed rapid land use changes over the recent past. These changes are incompatible with conservation, especially subdivision of formerly community land into small plots, growing sedentarization 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 do not 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.

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Objectives, actions and activities

Objectives	Action	Activities
Objective 1: Tourism developments in the AE are coordinated to ensure proper standards, distribution and sustainability	Action 1.1 Control and regulate infrastructure growth	-
	Action 1.2 Provide incentives for investments	
	Action 1.3 Open connecting circuit between ecosystems	
	Action 1.4 Develop designated entry points and information centres for the conservancies	

Objectives, actions and activities

Objectives	Action	Activities
Objective 1: Tourism developments in the AE are coordinated to ensure proper standards, distribution and sustainability	Action 1.5 Develop tourism accommodation and recreation facilities	-
	Action 1.6 Create large conservation areas	
	Action 1.7 Identify high tourism potential areas	
	Action 1.8 Establish a tourism monitoring programme	

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Objectives, actions and activities

Objectives	Action	Activities
Objective 1: Tourism developments in the AE are coordinated to ensure proper standards, distribution and sustainability	Action 1.9 Monitor tourism activities in the ecosystem Action 1.10 Conduct EIA/EA on tourism projects Action 1.11 Establish a tourism stakeholders' forum	-

Objectives, actions and activities

Objectives	Action	Activities
Objective 2: Local communities are adequately engaged to build local capacity and ensure optimum benefits from tourism	Action 2.1 Review leases where necessary Action 2.2 empower the community and create systems for effective tourism management Action 2.3 Promote and facilitate development of cultural tourism Action 2.4 Establish community curioes Action 2.5 Develop guidelines for human resource services at ecosystem level	-

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Objectives, actions and activities		
Objectives	Action	Activities
Objective 3: Tourism products in AE are diversified to give visitors greater variety and better experience	Action 3.1 Establish a Visitor Centre at Nonkotiak Resource Centre	-
	Action 3.2 Promote adventure tourism	
	Action 3.3 Train local tour guides	
	Action 3.4 Develop nature trails	
	Action 3.5 Promote regulated Balloon safaris	
	Action 3.6 Promote volunteerism	

Objectives, actions and activities		
Objectives	Action	Activities
Objective 3: Tourism products in AE are diversified to give visitors greater variety and better experience	Action 3.7 Conduct night game drives in the group ranches and conservancies	-
	Action 3.8 Promote Horse riding, hiking, filming and photography	
	Action 3.9 Promote Research tourism	
	Action 3.10 Promote Mountain biking/outdoor sports	
	Action 3.11 Develop a framework of cultural tourism	

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Objectives, actions and activities

Objectives	Action	Activities
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	Action 4.1 Develop a brand identity for AE Action 4.2 Form a single marketing secretariat Action 4.3 Adopt latest marketing technology Action 4.4 Develop products for domestic market Action 4.5 Market through local and international media Action 4.6 Develop guide books and maps	-

Objectives, actions and activities

Objectives	Action	Activities
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	Action 4.7 Start an annual event Action 4.8 Design innovative packages Action 4.9 Explore use of royalty programmes	-

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Potential Positive and Negative impacts

Potential Impact	Probability and rate of occurrence	Duration of Impact	Magnitude	Reversibility	Importance
Impact of control and regulation of infrastructure development	Low	Long term	Small scale	Reversible	Moderate
Impact of diversity of tourism attractions and facilities	Low	Long term	Small scale	Reversible	Moderate
Impact of opening up a connecting circuit with Masai Mara	Low	Long term	Small scale	Reversible	Moderate
Impact of the construction of the Visitor Centre on range environment	Low	Long term	Small scale	Irreversible	High
Impact of development of catering and entertainment facilities	Low	Long term	Small scale	Irreversible	High
Impact of establishing a tourism monitoring programme	Low	Long term	Small scale	Reversible	High
Impact of quarterly inspections of facilities to assess their adherence to environmental mitigation measures	Low	Long term	Small scale	Reversible	High
Impact of strengthening community lease funds management offices	Low	Long term	Small scale	Irreversible	High
Impact of establishing well designed, large and environmentally friendly curio shops	Low	Long term	Small scale	Irreversible	High
Impact of development of nature trails	Low	Long term	Small scale	Reversible	High
Impact of developing a common ecosystem wide marketing strategy	Low	Long term	Small scale	Reversible	High

Natural Resource Management Programme

The purpose of the Natural Resource Management Programme is "to sustainably manage natural resources in the AE to continue providing ecosystems goods and services to the local community".



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Natural Resource Management Programme

Issues to be addressed

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; **water pollution due to use of agrochemicals 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.

Natural Resource Management Programme

Below is a summary of the state of environment in **key wildlife dispersal and corridors** in AE as observed currently

Wildlife dispersal and corridor	General state of environment	Key environmental challenges
Kimana-Kuku	Bad and deteriorating	<ul style="list-style-type: none"> Overstocking Land subdivision and sale especially in the former Kimana/Tikanda Group Ranch Restoration of the collapsed Kimana and Namelok electric wildlife barrier fences in order for them to sustainably reduce human-wildlife conflicts in the two critical farming zones Expansion of Maasai cluster settlements coupled by mushrooming urban centres e.g. Namelok and Inkisanjari Prevalence of soil erosion Loss of important grasses species which affects availability of grazing good resources Prevalence and expansion of farming activities
Elerai-Kilimanjaro	Average	<ul style="list-style-type: none"> Observations in the neighborhood of Elerai constituency towards the Kenya-TZ border revealed a high concentration of human settlements and farming activities Environmental degradation in water zones such as boreholes and live-stock watering points Expansion of human cluster settlements Prevalence and expansion of farming

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Natural Resource Management Programme

Below is a summary of the state of environment in key wildlife dispersal and corridors in AE as observed currently

Wildlife dispersal and corridor	General state of environment	Key environmental challenges
Kitenden-Langida	Average but deteriorating	<ul style="list-style-type: none"> Overstocking in some areas Environmental degradation in water zones such as bareholes and live-stock watering points Expansion of human cluster settlements Prevalence and expansion of farming Land sub-division [this is one of the key concerns AWF is trying to address including the prevalence of farming activities especially near the TZ border] Loss of important grasses species which affects availability of grazing good resources
Mbirikani-Chiyulu	Poor	<ul style="list-style-type: none"> Overgrazing and soil erosion especially along the water pipeline. SEA en- quires revealed that soil erosion is actually quite prevalent in most parts of the group ranch Increased land sub-division Loss of important grasses species which affects availability of grazing good resources Environmental degradation in water zones such as bareholes and live-stock watering points Expansion of human cluster settlements Recent mushrooming irrigated agriculture farms especially along the pipeline and its environs
Ramba-Tsavo	Average	<ul style="list-style-type: none"> Overgrazing in some areas

Natural Resource Management Programme

Issues to be addressed

Human-Wildlife Conflicts. 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) 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 measures to curb HWC need to be put in place.

Controlling and monitoring water abstraction from rivers and swamps. 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 ecosystem, which has led to insufficient in-stream flows to sustain domestic and agricultural uses.

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Natural Resource Management Programme

The table below shows the State of environment in key rivers and wetlands in the Amboseli Ecosystem

River/Swamp	General state of environment	Key environmental challenges
Amboseli swamps	Poor	<ul style="list-style-type: none"> Declining swamp areas Widespread loss of swamp vegetation due to heavy use by wildlife and livestock Reduction in available water Given that all the swamps and rivers in the ecosystem get their water from Mt. Kilimanjaro, climate change and variability is therefore a key environmental challenge
Naturesh River	Poor	<ul style="list-style-type: none"> Most of the river has been diverted into the Emali-Sultan Hamud-EP2 water pipeline Severe riverbank degradation coupled by prevalence of soil erosion and loss of riparian vegetation Emergence of irrigated agriculture coupled by high levels of water abstraction Loss of wildlife habitats through agricultural encroachment Heavy use of agro-chemicals along the river in the farms River no longer perennial
Ilisanka River	Poor	<ul style="list-style-type: none"> Unsustainable dryland irrigation and massive water abstraction Severe river bank degradation coupled by prevalence of soil erosion and loss of riparian vegetation

Natural Resource Management Programme

The table below shows the State of environment in key rivers and wetlands in the Amboseli Ecosystem

River/Swamp	General state of environment	Key environmental challenges
Ramba River	Poor	<ul style="list-style-type: none"> Widespread encroachment especially near the Ilisi Trading Centre Widespread abstraction of water for irrigation Unsustainable furrow irrigation methods
Isinet River & Swamps	Deteriorating	<ul style="list-style-type: none"> Widespread diversion of river water for irrigation with cases of water abstraction using pumps even at the source Unsustainable furrow irrigation methods Loss of wildlife habitats through agricultural encroachment Heavy use of agro-chemicals along the river in the farms
Kimana River & Swamps	Deteriorating	<ul style="list-style-type: none"> Widespread diversion of river water for irrigation Numerous water pumps especially between our camp and the entrance to Kimana sanctuary near the bridge to Isinet Unsustainable furrow irrigation methods Loss of wildlife habitats through agricultural encroachment Heavy use of agro-chemicals along the river in the farms Prevalence of sheet erosion along the river bank
Namelak Swamps	Poor	<ul style="list-style-type: none"> Widespread water abstraction and diversion for dryland irrigation Destruction of the papyrus swamp vegetation Unsustainable furrow irrigation methods Loss of wildlife habitats through agricultural encroachment

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Objectives, actions and activities

Objectives	Action	Activities
Objective 1: Habitat conservation improved	Action 1.1 Secure wildlife corridors Action 1.2 Initiate new and support existing habitat, protection, restoration and rehabilitation measures Action 1.3 Develop and implement pasture management and livestock grazing plans Action 1.4 Develop and implement a climate change adaptation and mitigation action plan Action 1.5 Promote use of sustainable energy sources to curb habitat degradation Action 1.6 Develop a fire preparedness and response strategy	-

Objectives, actions and activities

Objectives	Action	Activities
Objective 2: Wildlife conservation enhanced	Action 2.1.1 Support the Amboseli Human-Wildlife Co-existence Committee Action 2.1.2 Implement the AE wide Human-Wildlife Interactions protocols to reduce HWC and prevent retaliatory wildlife killing Action 2.1.3 Rehabilitate and maintain wildlife barriers Action 2.1.4 establish an ecosystem-wide consolation fund Action 2.1.5 Create awareness on Human-Wildlife conflict mitigation strategies	-

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Objectives, actions and activities

Objectives	Action	Activities
Objective 2: Wildlife conservation enhanced	Action 2.2.1 Strengthen the Community Wildlife Scouts units to effectively carry out their functions Action 2.2.2 Intensify patrols Action 2.2.3 Work closely with KWS and other security agencies Action 2.2.4 Liaise with Tanzania's wildlife authorities on cross-border natural resource protection	-

Objectives, actions and activities

Objectives	Action	Activities
Objective 3: Water resource management improved	Action 3.1 Monitor and control illegal water abstraction from both surface and groundwater sources Action 3.2 Develop and implement water allocation plans Action 3.3 Catalyze and collaborate with WRUAS to manage AE water concerns Action 3.4 Monitor ground and river water sources Action 3.5 Train communities in rainwater harvesting techniques and associated mitigation for wildlife interactions Action 3.6 Train communities in rainwater harvesting techniques and associated mitigation for wildlife interactions	-

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Objectives, actions and activities

Objectives	Action	Activities
Objective 3. Water resource management improved	Action 3.7 Collaborate with WRA to support WRUAS in water resource assessment studies to discern water availability and requirements	-
	Action 3.8 Establish and maintain boreholes and wells	
	Action 3.9 Support protection and conservation of critical water sources and riparian land from degradation and initiate restoration activities in degraded riparian land	
	Action 3.10 Protect Kimana swamp from encroachment	
	Action 3.11 Support establishment of measures to reduce water pollution in AE's water bodies	

Potential Positive and Negative impacts

Potential Impact	Probability and risk of occurrence	Duration of impact	Magnitude	Reversibility	Importance
Impact of securing wildlife dispersal areas and corridors	Low	Long	Small scale	Reversible	High
Impact of ban on charcoal trade on poverty reduction	Low	Short	Small scale	Reversible	Moderate
Impact of restriction of quarrying activities	Low	Long	Small scale	Reversible	Moderate
Impact of off road driving in the conservancies	Low	Long	Small scale	Irreversible	High
Impact of development of pasture management and livestock grazing plans	Low	Long	Bg	Reversible	High
Impact of climate change mitigation adaptation action plans	Low	Long	Small scale	Irreversible	High
Impact of promotion of alternative cooling methods and materials	Low	Long	Small scale	Reversible	High
Impact of implementing prudent measures to manage the escalating HWC	Low	Long	Bg	Reversible	High
Impact of ensuring that the fences are rehabilitated and maintained	High	Medium	Bg	Reversible	Moderate
Impact of the establishment of an ecosystem wide conservation fund	High	Medium	Bg	Reversible	Moderate
Impact of creating awareness on HWC mitigation strategies among the community	High	Medium	Bg	Reversible	Moderate
Impact of strengthening community wildlife scouts	High	Medium	Bg	Reversible	Moderate
Impact of water allocation enforcement	High	Medium	Bg	Reversible	Moderate
Impact of establishment of a ground water monitoring network	High	Medium	Bg	Reversible	Moderate
Impact of training on rainwater harvesting technologies	High	Medium	Bg	Reversible	Moderate
Impact of securing critical water sources	High	Medium	Bg	Reversible	Moderate
Impact of implementation of water pollution control	High	Medium	Bg	Reversible	Moderate

Institutions and Governance Programme

The Ecosystem Institution and Governance Programme is geared towards coordination of different programs in this management plan so that it can realize its purpose of conserving the ecosystem values and resources while delivering maximum benefits to the communities and stakeholders.



Institutions and Governance Programme

Issues to be addressed

- The provision of **THE LAND ACT, 2016** has guided sub division which is a negative impact towards sustainability in Amboseli Ecosystem. However, this negative impact can be mitigated through well structured governance.
- 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.

Objectives, actions and activities

Objectives	Action	Activities
Objective 1: New institutional and governance mechanisms established and operationalized and existing ones strengthened	Action 1.1: Strengthen the institutional and governance capacity of AET Action 1.2: Work closely with relevant conservation entities to develop a viable conservation model Action 1.3 Establish effective mechanisms for plan implementation and monitoring	-

Objectives, actions and activities

Objectives	Action	Activities
Objective 2: Conservancies Operational Model Strengthened	Action 2.1: Strengthen conservancies to support tourism development, conservation and livestock production Action 2.2: Explore possibility of establishing conservation companies Action 2.3: Explore possibility of outsourcing management of conservancies to an appropriate conservation Management Company Action 2.4: Establish tourism concessions with suitable tourism investors	-

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Objectives, actions and activities

Objectives	Action	Activities
Objective 2: Conservancies Operational Model Strengthened	<p>Action 2.5: Establish Conservation Trusts to take the lead in fund-raising and implementation of social development and conservation projects</p> <p>Action 2.6: Establish financial mechanisms for distributing economic benefits to conservancy members</p> <p>Action 2.7: Carry out research on ecological, economic and social status of conservation in the Amboseli Ecosystem</p>	-

Objectives, actions and activities

Objectives	Action	Activities
Objective 3: Collaboration mechanisms established	<p>Action 3.1: Establish MoUs with key partners</p> <p>Action 3.2: Identify Amboseli Ecosystem Services with a view to developing a scheme for payment of opportunity costs</p> <p>Action 3.3: Integrate the AEMP with the Kajiado County plans</p>	-

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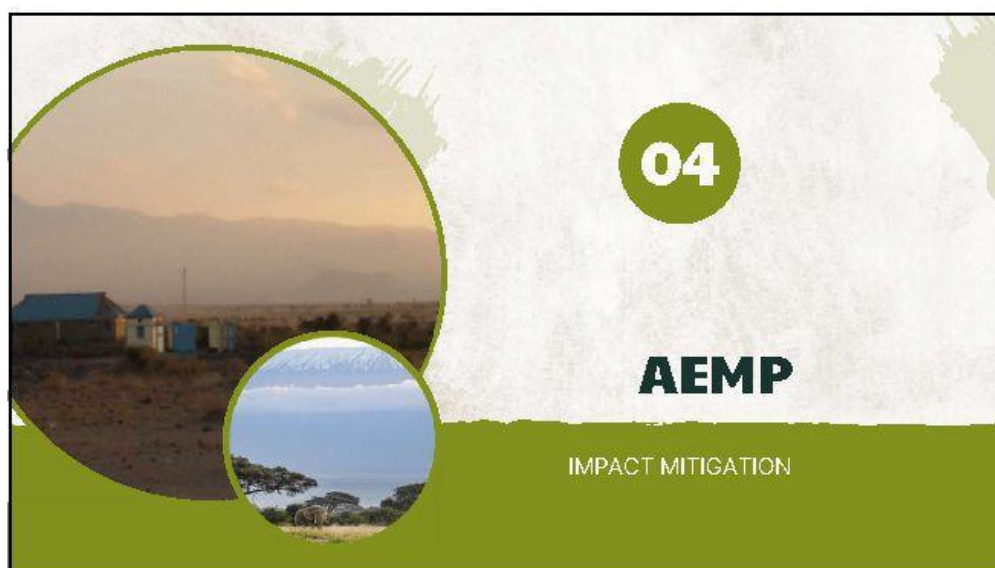
Objectives, actions and activities

Objectives	Action	Activities
Objective 4: All inclusive Governance system established	<p>Action 4.1: Establish governance structures with representation from all group ranches</p> <p>Action 4.2: Strengthen Plan Implementation Committee (PIC) to include representation of all the group ranches for enforcement and compliance purposes.</p> <p>Action 4.3: PIC to repossess the sold parcels of land for conservation and pastoralism purposes.</p>	-

Potential Positive and Negative impacts

Potential negative impact	Probability and risk of occurrence	Duration of impact	Magnitude	Reversibility	Importance
Impact of consolidation of activities of NGOs, KWS, the tourism industry and group ranches under AET	Low	Long term	Big	Reversible	High
Impact of promoting integrated land use development and recognizing conservation as a key land use in Kajiado County	Medium	Long term	Medium	Reversible	Moderate
Impact of AET mobilizing its partners to support the existing conservancies and establishing new ones	Low	Long term	Big	Reversible	Moderate
Impact of outsourcing management of conservancies	Medium	Long term	Big	Reversible	Moderate
Impact of integration of AEMP with county spatial plan	Low	Long term	Big	Irreversible	Moderate

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Community Livelihood and Social Economic Programme			
Activities and Potential Impact	Potential Nature of Impact (+/-)	Proposed Mitigation	Comments
Impact of establishing grass banks (Okopoti)	Overharvesting and degradation in harvesting areas (-)	Ensure controlled harvesting and carrying out BA and follow up EA on potential impacts	Increased availability of animal feed and strong livestock
Impact of developing and implementing traditional grazing plans	Disagreements (-)	Proper engagement of the community for ownership of the program. Carry out an EIA prior to implementation	Better management of pasture within AE
Impact of rehabilitating degraded grazing areas	Lack of grazing plans. Potential conflict with community on restricted grazing during rehabilitation	Develop grazing plans and adhere to them. Carry out an EIA prior to implementation. Enlighten community on potential benefits of rehabilitation	Improved pasture
Impact of increasing water supply for livestock	Soil erosion and removal of vegetation while laying pipes, potential increase in animal population due to increased water availability	Carry out BAs before laying water pipes and comply with the recommendations. Assign quotas to water use among the community	Improved livestock
Impact of establishing a livestock Disease Free Zone	Community disagreements	Ensure community meetings under competent leadership. Put in place proper dispute resolution	Community cohesiveness leading to improved livestock health. Community ownership of program

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Community Livelihood and Social Economic Programme

Activities and Potential Impact	Potential Nature of Impact (+/-)	Proposed Mitigation mechanisms	Comments
Impact of Crossbreeding the local livestock breeds for increased production of meat and milk	Lack of Veterinary services, lack of market for improved breeds products	Engagement with potential markets for the improved production of meat and milk Engagement of county government for provision of AI provided breed services	Improved livelihood among resident community and revenue stream
Impact of reclaiming livestock holding grounds and supporting existing livestock markets	Low marketing capacity, degradation of holding grounds and increased demands from community on county government to support marketing infrastructure	Establishment of proper strategies to engage community on the need for holding grounds. Involve county government in planning for the marketing infrastructure to allow allocation of funds in their budget	Improved management of livestock market
Impact of establishing linkages with local and International livestock markets	Low networking capacity, potential strain to ecosystem due to increased demands and thus animal numbers,	Need to carry out potential market analysis and BA of potential impact on ecosystem due to increased demand resulting from the created linkages	Increased alternative markets to livestock products
Impact of Improving existing slaughter houses	Limited knowledge, increased effluents from slaughter houses and pollution	EIA/EA on the potential impact of slaughter houses on environment	Increased safety of the meat products

Community Livelihood and Social Economic Programme

Activities and Potential Impact	Potential Nature of Impact (+/-)	Proposed Mitigation	Comments
Impact of adopting modern crop production technologies	Increased agro-chemical impacts, increased land fragmentation and pressure on land	Mitigate against negative effects from improved technologies such as use of chemicals in crop production, work with county government to control land fragmentation	Increased crop production
Impact of establishing a horticultural canning factory	Waste disposal and air pollution	Implementation of EMP for the proposed facility	Increased traffic around facility
Impact of land subdivision with nucleated settlements where social amenities can be provided	Reduced space to livestock and wildlife movements, increased pressure on land due to fragmentation	Implementation of EMP for the proposed settlements	Increased degradation around settlements
Impact of Improved Infrastructure (speedy roads)	Dust and loss of biodiversity, increased traffic and noise pollution affecting the animals	Implementation of EMP for the proposed roads	Increased degradation around the road network
Impact of strengthening education and health services	Improved health and literacy,	None	Improved health and literacy

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Tourism Development and Management Programme

Activities and potential impacts	Nature of Impact	Proposed Mitigation	Comments
Impact of control and regulation of infrastructure development	Potential for conflicts and litigation, loss of employment opportunities due to restricted infrastructural development	Ensure Environmental and Social Impact Assessment (ESIA) studies are undertaken to guide sustainable developments	AET to develop data base of all potential developments within the ecosystem and ensure compliance
Impact of diversity of tourism attractions and facilities	Potential for off-road driving biodiversity loss, increased noise pollution and disturbance to animals, degradation of ecosystem in areas previously not disturbed	Tourism activities and facilities to be undertaken in designated areas as per the zoning maps	Placement of facilities to be guided by project EAs and Conservancy management regulations developed by AET.
Impact of opening up a connecting circuit with other ecosystems such as Masai Mara	Potential for increased traffic leading to ecosystem degradation, potential conflict between stakeholders due to reduced revenue	AET and other stakeholders to recruit and mobilise adequate community ranger patrols	There is need for proper entry points to all conservancies in the ecosystem to maximise on increased revenue streams.
Impact of the construction of the Visitor Centre on range environment	Potential for biodiversity loss, soil erosion and land degradation among others.	Carry out project environmental impact assessment	The visitor centre will lead to increased knowledge among visitors and enhanced revenue for the local economy
Impact of development of safety and entertainment facilities	Increased traffic, noise and stirring leading to environ-	AET with stakeholders in the tourism sector to develop rules for	Compliance with the EAs and ecosystem rules as well as individual conservancy rules/guidelines will ensure a holistic healthy AET.

Tourism Development and Management Programme

Activities and potential impacts	Nature of Impact	Proposed Mitigation	Comments
	mental pollution, potential health hazards due to increased waste and scavengers around the activities	Such activities within ecosystem and ensure compliance with individual project EAs and conservancy rules.	
Impact of establishing a tourism marketing programme	Better management of the ecosystem	None	Better management of the ecosystem
Impact of quarterly inspections of facilities to assess their adherence to environmental mitigation measures	Better protection of the AET, potential conflicts and litigation with facility owners who do not adhere to set standards	Establishment of proper dispute resolution mechanism among the stakeholders	Better protection of the AET
Impact of strengthening community lease funds management offices	Improved welfare among community members and appreciation of the AETMP	Need for establishment of proper structures of fund management to for the benefit of all stakeholders	Improved welfare among community members and appreciation of the AETMP
Impact of establishing well designed, large and environmentally friendly curio shops	Potential degradation of the ecosystem from increased human traffic	Ensuring strict implementation of the EAs of the developed facilities	Potential negative impact on the AET
Impact of development of nature trails	Potential degradation of the ecosystem	Ensuring strict implementation of the EAs of the developed trails	Potential degradation of the ecosystem
Impact of developing a common ecosystem wide marketing strategy	Increased revenue stream, potential diversification of the social structures within the community due to increased incomes	Sensitization of community on proper usage of generated revenue in uplifting the living standards among families.	Increased revenue stream

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Natural Resource Management Programme

Activities and Potential Impact	Nature Impact	Proposed Mitigation	Comments
Impact of securing wildlife dispersal areas and corridors	Restriction of fencing by land owners and possibility of HWC, increased loss of pasture for livestock and animals from predators	Proper engagement of community for ownership of the process and adequate compensation in cases of injury and loss	Restriction of fencing by land owners and possibility of HWC
Impact of ban on charcoal trade on poverty reduction	Loss of livelihood for traders, potential increase in insecurity due to loss of income stream	Establishment of alternative sources of livelihood by the project	Loss of livelihood for traders
Impact of restriction of quarrying activities	Loss of livelihood income by employees and revenue by quarry owners, loss of supporting businesses due to loss of market	Training on environment friendly quarrying and proposal for alternative sources of income for the employees	Loss of livelihood income by employees and revenue by quarry owners
Impact of off road driving in the conservancies	Degradation of the ecosystem, increased dust and noise pollution and animal disturbance	Restriction of off road driving to specified areas, establishment of rotational off road driving to allow for healing	Degradation of the ecosystem
Impact of development of pasture management and livestock grazing plans	Restriction of community activities and movement within the AT, potential for increased conflicts due to restricted animal movement	Community sensitization on the importance of the proposed program for ownership and reducing conflicts with the project	Restriction of community activities and movement within the AT
Impact of climate change mitigation adaptation action plan	Reduced degradation of the ecosystem and leading to positive impact	None	Reduced degradation of the ecosystem resulting in positive impacts

Natural Resource Management Programme

Impact of promotion of alternative cooking methods and materials	Improved ecosystem due to reduced use of wood and charcoal, loss of revenue stream among charcoal and firewood merchants	Provision of alternative sources of energy to community through subsidised purchase and alternative sources of revenue for affected traders	Improved ecosystem due to reduced use of wood, charcoal and reduced carbon emissions contributing to reduced potential global warming and climate change related disasters
Impact of implementing prudent measures to manage the escalating HWC	Reduced HWC and better community engagement in conservation	None	Reduced HWC and better community engagement in conservation
Impact of ensuring that the fences are reliable, tested and maintained	Improved security and reduced HWC	None	Improved security and reduced HWC
Impact of the establishment of an ecosystem-wide conservation fund	Improved source of livelihood among the local community	Sourcing of resources from donors and other stakeholders for sustainability of the fund	Improved source of livelihood among the local community
Impact of creating awareness on HWC mitigation strategies among the community	Reduced HWC	Continued community engagement for sustainable reduction in HWC	Reduced HWC
Impact of strengthening community wildlife scouts	Feasibility of harassment of the local community	Proper training of the scouts on civil engagement with the community and proper handling of those in the wrong	Feasibility of harassment of the local community by the scouts
Impact of water allocation enforcement	Reduced availability of water for farming and likely water conflict among users	Proper engagement and sensitization of the affected users prior to enforcement	Reduced availability of water for farming and likely conflicts

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Institutions and Governance Programme

Activities and Potential Impact	Nature of Impact	Proposed Mitigation	Comments
Impact of consolidation of activities of NGOs, EWS, the tourism industry and group ranches under AET	Better management of AE and reduction of duplication. Potential conflicts among the stakeholders due to variation of priorities	Proper engagement of all stakeholders to avoid conflict over priorities	Better management of AE and reduction of duplication
Impact of promoting integrated land use development and recognizing conservation as a key land use in Kallado County	Sustainability of the AE. Potential conflict with various alternative land uses due to lost opportunities	Proper engagement with County planners at early stage of implementation	Sustainability of the AE
Impact of AET in mobilizing its partners to support the existing conservancies and establishing new ones	Increased conservation of habitat	Engagement of community and stakeholders for ownership	Increased conservation of habitat
Impact of outsourcing management of conservancies	Better management of conservancies	Engagement of community at early stage to avoid conflict	Better management of conservancies
Impact of integration of AEMP with county spatial plan	Better managed Ecosystem	None	Better managed ecosystem
Impact of Effective Coordination and strong linkages amongst stakeholders under AET	Better managed ecosystem	None	Better managed ecosystem

Institutions and Governance Programme

Activities and Potential Impact	Nature of Impact	Proposed Mitigation	Comments
THE LAND ACT, 2016	Land subdivision	<ul style="list-style-type: none"> Discourage sale of land Encourage land uses that are compatible with pastoralism, tourism and conservation 	Structured Governance

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Impact Mitigation Guideline

Mitigation Measures and Alternative	Management and Monitoring Actions	Institution Responsible	Re-schedule	Monitoring Frequency	Monitoring Indicators	Standard Guidelines
Establishing grasslands	Capacity building	AET	systemic	Annually	No of tanks	AEMP
Developing and implementing traditional grazing plans	Engagement of the community	AET/MoA		Annually	Implement ed plans	AEMP/Ministry of Agriculture
Rehabilitating degraded grazing areas	Assess status and implement rehabilitation plans	AET		Annually	Rehabilitat ed areas	AEMP
Increasing water supply for live-stock	Establish alternative water supply systems	AET		Monthly	Identifi ed water supply s	Water Act 2012
Establish a livestock Disease Free Zone	Establish suitable locations	AET		Annually	No of DFZ	-
Crossbreeding livestock breeds for increased production	Engagement with potential markets	AET		Annually	No of new markets	-
Redesigning livestock holding grounds and supporting existing livestock markets	Engage community	AET		Annually	No of new holding areas	-
Establishing linkages with local and international livestock markets	Engagement with potential markets	AET		Quarterly	No of new markets	-
Improving existing slaughter houses	Engage relevant stakeholders	AET		Annually	No rehabilitated	-
Adopting modern crop production technologies	Capacity build on new crop production technologies	AET/MoA		Annually	No adopted	-
Establishing a horticultural canning factory	Feasibility study of the facility	AET/KCO		Annually	Study report	-

Impact Mitigation Guideline

Mitigation Measures and Alternative	Management and Monitoring Actions	Institution responsible	Monitoring Frequency	Monitoring Indicators	Standard Guidelines
Land subdivision with nucleated settlements where social amenities can be provided	Baseline survey and EIA studies	AET/KCO	Annually	New subdivisions	-
Improved infrastructure (especially roads)	Feasibility study	AET/KCO	Annually	No of new infrastructure	-
Strengthening education health services	Baseline survey on current infrastructure	AET/MoH/MoE	Annually	No of new facilities	MoE/MoH
Control and regulation of infrastructure development in AE	Establishment of management committees for infrastructure development	AET/KCO	Annually	No. of new facilities	AET/KCO Special Plan
Diversification of tourism attractions and facilities	Formulation of new attractions and establishment of facilities	AET/MoT	Quarterly	No. of new attractions and facilities	Wildlife Act
Opening up a connecting circuit with Masai Mara	Establishment of proper media-room to mitigate effects of increased traffic	AET/KCO	Annually	No. of visitors using the corridor	-
Construction of a Visitor Centre on range environment	Capacity building on environment	AET	Monthly	No of visitors	AEMP
Development of safety and entertainment facilities	Ensuring strict implementation of the EUPs of the developed facilities	AET/NEMA	Annually	No of facilities	ENCA (2002)
Establishing a tourism monitoring programme	Establishment of necessary infrastructure	AET	Annually	Monitoring Reports	AEMP
Quarterly inspections of facilities to assess their adherence to environmental mitigation measures	Establishment of inspection unit	AET/NEMA	Monthly	No of inspections	ENCA
Strengthening community based funds management offices	Capacity building	AET/KCO	Annually	No of new issues	AEMP

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Impact Mitigation Guideline

Preventing integrated land use recognition	Engage with County planners	AET/KCC	Annually	Integrated reports	AEMP
Support existing conservation and establishing new ones	Feasibility study	AET/KWS	Annually	New conservancies	AEMP
Outsourcing conservation management	Consult stakeholders	AET	-	Outsourced managers	-
Integration of AEMP with county spatial plan	Engage KCC	AET/KCC	-	Integrated document	-

Major issues of concern and their mitigation measures

The AEMP 2020-2030 has identified ten (10) major issues of concern to be addressed by the SESA. These issues (impacts), their suggested mitigation measures, responsibilities for implementing the measures, time frame/ frequency and implementation costs are depicted in the matrix below.

Activity	Impact	Mitigation Measure	Responsibility	Time frame/ Frequency	Cost, where applicable
1 Pastoralism and conservation	Decreasing range, human/wildlife conflicts	Prepare grazing management plans and comply with them, or facilitate ranger role	Group ranch/conservancy management, grazing committees, KWS	Annually	Management to work out
2 Land subdivision	Loss of habitat, blockage of livestock and wildlife routes	Ensure land use activities of the subdivided lands are compatible with pastoralism and environmental conservation	AET, MOA, WRA, KWS	Routine	Management to work out
3 Bush meat poaching	Loss of Species	Enhance community ranger monitoring and educate communities	KWS, AET and partners	Routine	Management to work out
4 Reduction in woody species	Loss of browsing species associated with woodlands	Underwrite habitat restoration measures	AET, SFS, KWS, ATE	Routine	Management to work out

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Major issues of concern and their mitigation measures

Activity	Impact	Mitigation Measure	Responsibility	Timeframe/ Frequency	Cost, where applicable
5 Overgrazing	Loss of grassland, livestock and wildlife	Establish grass banks, undertake counts	Grazing Committees, KWS, AET	During rainy season and annually	Management to work out
6 Unsustainable land use	Climate Change (droughts)	Promote tree planting programmes within the ecosystem	AET, KWS, KFS, SFS and partners	During rainy periods	Management to work out
7 Increasing agricultural activities in marginal areas	Blockage of wildlife and livestock corridors	Open up closed corridors	AET, KWS, NEMA and land owners		Management to work out
8 Land sale outside the Maasai community	Conversion of pastoralist land to cultivation and tourism use, Loss of landscape and pastoralism mode of livestock production	Promote land use that ensures viable minimum area for wildlife and pastoralism.	AET, Group Ranch Management Committees	When necessary	Management to work out

Major issues of concern and their mitigation measures

Activity	Impact	Mitigation Measure	Responsibility	Timeframe/ Frequency	Cost, where applicable
9 Reduction of rangelands	Human/wildlife conflicts	Increase ranger patrols, install fences, compensation, coexistence programmes.	KWS, AET, partners	Throughout the year	Management to work out
10 Socio-economic and demographic changes	Highly transformed landscape shaped by human activities, competition between wildlife, livestock and people, shrinking space and resources, increased infrastructure.	Restrict human activities to the provisions of the Integrated land use plan prescribed by the AEMP	AET in collaboration with all stakeholders	Immediately	Management to work out

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Mitigation Measures for AE key Wildlife corridors

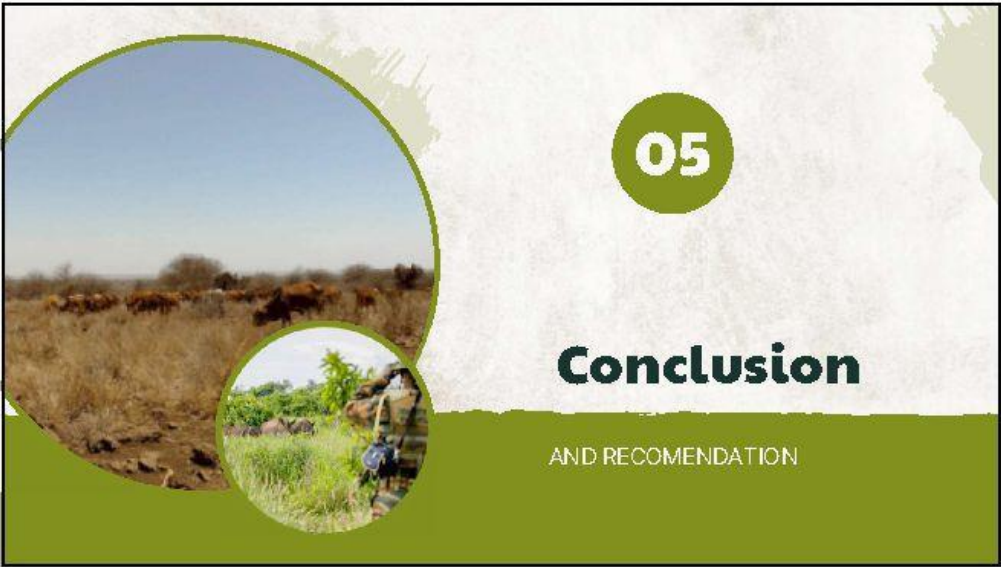
The AEMP 2020-2030 has also identified six (6) Key Wildlife Corridors that are likely to be lost and the table below has outlined the corridor, impact, suggested mitigation measure, mitigation responsibility and timeframe.

Wildlife Corridor	Impact	Mitigation Measure	Responsibility	Timeframe
1. Amboseli NP-Olgutuli-South-Kilimanjaro NP Corridor	Potential for agricultural expansion into Olgutuli-Oloiaresi or part of the corridor	Encourage compatible land use by developing a conservation lease program.	AET, Group Ranches and Partners	Immediately
2. Amboseli NP-Kilimanjaro-Kibira-Olgutuli West Corridor	Irrigated farming through borehole drilling, proliferation of tourism developments, settlements and fencing along the corridor.	Ensure that Osoyulo, Kileleshu, Kileleshu and Kilimanjaro Sanctuary in former Kilimanjaro Group ranch and Mbitanga in Kibira Group ranch conservancies remain intact.	AET, OR Committees	Immediately
3. Amboseli NP-Olgutuli-North-Selenge Corridor	Increasing population and settlements	Maintain the corridor to facilitate wildlife access to the wet season grazing areas in Selenge and beyond	AET	Immediately

Mitigation Measures for AE key Wildlife corridors

Wildlife Corridor	Impact	Mitigation Measure	Responsibility	Timeframe
4. Amboseli NP-Olgutuli-North-Mbitanga Corridor	Road bits along Embi-Lotofoto to road;	Mobilize road use patrols, educate road users, install signage and bumps	AET	As is practicable
	Uncontrolled expansion of farming along the Mbitanga pipeline.	Control farming along the Mbitanga pipeline and maintain the Olgutuli section as a dry season livestock grazing area.	AET	
5. Amboseli NP-Olgutuli-West-Kilimanjaro NP	Increasing human activities including charcoal burning, settlements and irrigation	Set aside land around Kilimanjaro NP Hills, in both Olgutuli and Mbitanga, as conservancies to enhance protection of ecological linkages and to protect this important pastoralism and wildlife zone.	AET/OR Committees	Immediately
6. Amboseli NP-Olgutuli-South-Endumei Wildlife Management Area (Tanzania) Corridor	Human development activities	Promote establishment of conservancies such as Kilimanjaro in Olgutuli to salvage this important wildlife and livestock dispersal area. Engage the relevant Tanzanian Authorities	AET, WWF and KWS	Immediately

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Conclusions

Based on the analysis of all the programmes contained in the AEMP 2020-2030, the SESA for the Amboseli Ecosystem Management Plan concludes that: -

- i. The AEMP (2020-2030) provides a sustainable framework for the implementation of the four proposed programs.
- ii. Strategic Environmental and Social Assessment (SESA) for AEMP 2020-2030 Should control land uses in all conservancies/group ranches and individual Group ranches Strategic Environmental and Social Assessment (SESA) are not necessary. However Environmental Impact assessment (EIA) of proposed projects in all group ranches/Conservancies are Mandatory. ?????
- iii. The plan owner (AET) and all stakeholders must ensure compliance with the Strategic Environmental Management and Monitoring Plan (SEMMP).
- iv. The plan owner (AET) takes up the cardinal role of coordinating and creating linkages with all interested and affected parties including funding institutions at national, regional and international levels for effective implementation of all the programmes.
- v. The plan owner and all stakeholders should carry out research and monitoring of the programmes for continual improvement.

Conclusions

- vi. It is important to appreciate that there are many group ranches in Amboseli Ecosystem which are managed independently and whose members are members of AET. Membership in AET does not presuppose homogeneity and members are free to make independent decisions at the local levels. AET was created to oversee implementation of the AEMP and safeguard the ecosystem. AET is as an administration arm of the AE and does not interfere with the internal management of its members but only provides guidance on sustainable implementation of activities/proposals within the ecosystem
- vii. Ensure Amboseli Ecosystem governance structure has representative from all group ranches, relevant NGO's Researchers, and Government Agencies.
- viii. Undertake a Biodiversity Baseline Survey (BBS) and animal Census: Data is key in guiding Biodiversity Action plan. BBS and animal census will inform comprehensive biodiversity protection strategies, continuous monitoring and long term reporting plans, ensuring maximization of all potential nature based opportunities and guarantee adherence to biodiversity best practices

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Annex 5: Pictorials










APPENDIX 17: Submission Letter of the final Strategic Environmental and Social Assessment (SESA) report for AEMP


nema
mazingira yetu | uhai wetu | wajibu wetu

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NEMA/SEA/5/2/080 **16th April 2024**

The Director
Amboseli Ecosystem Trust
P. O. Box 346-00209
LOITOKTOK

RE: SUBMISSION OF THE FINAL STRATEGIC ENVIRONMENTAL AND SOCIAL ASSESSMENT (SESA) REPORT FOR THE AMBOSELI ECOSYSTEM MANAGEMENT PLAN (AEMP), KAJIADO COUNTY

The above subject here refers,


The National Environment Management Authority (NEMA) commends the Amboseli Ecosystem Trust (AET) for successfully holding a validation workshop for the Strategic Environmental and Social Assessment (SESA) for the Amboseli Ecosystem Management Plan (AEMP). It is noted that NEMA was well represented in the said forum.

The Authority made observations and hereby makes recommendations that need to be included in the final SESA report;

- Wildlife corridors and buffer zones:** - It was noted that the issue of wildlife corridor and buffer zone needs to be well elaborated on so as to prevent future conflicts. This is by providing clearly demarcated areas and route plan for the wildlife corridors and buffer zones. The Plan owner to liaise with Kenya Wildlife Service (KWS), Kajiado County Government and other sector players within the Amboseli Ecosystem and come up with a harmonized wildlife corridor and buffer zone to inform further decision making during the Plan implementation process.
- Integrated land use planning and wildlife conservation:** - The AET should ensure that the set out land uses within the ecosystem are adhered to by collaborating and linking with the relevant government agencies. This will ensure that the various assigned uses and zones are safeguarded to enable proper land use planning and wildlife conservation with minimal disruptions to the social livelihoods of the people and protection of the sensitive environment.
- Climate Change risk and vulnerability assessment mainstreaming:** The Amboseli ecosystem is vulnerable to climate change and climate change risk and vulnerability assessments should be undertaken to inform on potential areas of opportunities to leverage on. AET to ensure that the SESA has a chapter that clearly highlights and discusses the relevant aspects of climate change risk and vulnerability

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assessment including the best practical aspects of mitigation, adaptation and resilience for sustainability.

4. **Collaboration with other Ministry's, Counties, Departments, Agencies (MCDAs):** The Amboseli Ecosystem being in an environmentally sensitive area with cross cutting issues and of strategic national importance area, it is critical that a collaborative and working engagement modality be put in place to ensure that any area of concerns and or any emerging issues are factored in and synergize with the relevant MCDAs undertaken to ensure safeguarding of the environment and wildlife in the ecosystem.
5. **Submission of the final SESA Report** – You will be required to submit 10 hard copies of the final SESA report for the AEMP. This will enable the Authority dispatch the same to key lead agencies that will be involved in the monitoring of the implementation of the AEMP due to its strategic national importance.
6. **Recommendations from the SESA process:** - It was noted that the SESA report has some recommendations based on the SESA findings that can be used to help in informed decision making. The Plan Owner (AET) and the SESA Consultants to comprehensively analyze the SESA findings and indicate how they assisted/will assist in making informed decisions regarding the AEMP formulation and redesigning where necessary. The SESA recommendations should be linked to specific areas of interventions to address the identified gaps therein.

The Plan Owner is therefore required to take into consideration the observations and recommendations made herein and those made during the validation workshop and include them in the final SESA report to enable fruitful conclusion of the process.

The Authority is committed to ensure that appropriate environmental and social safeguards are put in place for a safe, clean, healthy and sustainable development of the Amboseli Ecosystem.

Yours,

Sincerely



DAVID ONGARE
FOR: DIRECTOR GENERAL