

FINAL Report

***ENVIRONMENTAL IMPACTS ASSESSMENT (EIA)
STUDY REPORT FOR THE OPERATIONALIZATION
OF NYAMBENE NATIONAL CONSERVANCY IN
MERU COUNTY***



Giraffe in Meru Conservation Area (MCA)

**A Study Report for
The County Government of Meru
P.O Box 120 – Meru**

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DECLARATION

This EIA Report was prepared in accordance with Environmental Management and Coordination Act, 1999 and the Environmental Impact Assessment and Audit Regulations, 2003, for submission to National Environmental Management Authority (NEMA) Nairobi.

Meru County Government, submits the following Environmental Impact Assessment Report for the proposed operationalization of Nyambene National Reserve in Meru County. All information contained in this report is accurate and truthful representation of all findings as relating to the project.

NAME.....

SIGNATURE.....

NEMA REGISTRATION No: 2815

DATE.....

ON BEHALF OF THE PROPONENT:

MERU COUNTY GOVERNMENT P. O. BOX 120 – MERU KENYA

Signed by:

Name and Designation	Signature	Date

PROPONENT

I,on behalf of the Government of Meru County submit this Environmental Impact Assessment Report for the Proposed establishment of Nyambene Community Conservancy. To my knowledge all information contained in this report is accurate and truthful representation of all findings as relating to the project.

Designation:

Signature:

Date:

Disclaimer:

This Environmental Impact Assessment Report is strictly confidential to the Government of Meru County (the proponent) and any use of the materials thereof should be strictly in accordance with the agreement between the proponent and Dr. Joseph M. Maitima of Ecodym Africa (the consulting EIA Expert). It is, however, subject to conditions in the Environmental (Impact Assessment and Audit) Regulations, 2003 under the Kenya Gazette Supplement No. 56 of 13th June 2003.

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Acronyms

CBO – Community Based Organization

CDF – Constituency Development Fund

CMS – Community Management System

CWM - Community-based wildlife management

EA – Environmental Audit

EIA – Environmental Impacts Assessment

EMCA – Environmental Management and Coordination Act

ESMP – Environmental and Social Management Plan

IBA – Important Bird Area

KNP - Kora National Park

KWS – Kenya Wild Life Service

LAPSSET - Lamu Port Southern Sudan-Ethiopia Transport

MDG – Millenium Development Goals

MCA - Meru Conservation Area

MNP – Meru National Park

NEMA – National Environment Management Authority

NGA – Northern Grazing Area

NGO – Non Governmental Organization

NP – National Park

NRT – Northern Rangeland Trust

NR – National Reserve

PA – Protected Area

PPE – Personal Protection Equipment

STDs – Sexually Transmitted Diseases

Preamble

The gazetted name of the proposed conservancy is Nyambene National Reserve, Legal Notice No. 86 published in Gazette Supplement N. 43 of 30th June 2000.

In this report other names like Nyambene Conservancy and Nyambene Community Conservancy have been used invariably all referring to Nyambene National Reserve and should be understood to refer to the area gazetted as Nyambene National Reserve.

In reference to various sources of information used in this report, the same area understood as Nyambene National Reserve is also referred to as Northern Grazing Area NGA.

Executive Summary

The Northern Grazing Area of Meru County has been a gazetted Wildlife National Reserve since 2000. It was gazetted as Nyambene National Reserve under the management of the defunct Nyambene County Council (Legal Notice No 86 published in the Kenya Gazette Supplement No. 43 of 30th June, 2000). The process to Gazette the area as a National Reserve was undertaken by the former Nyambene County Council but due to lack of funds, the council could not operationalize the reserve immediately. The efforts to secure the funds for this purpose were overtaken by events at the National level when the County Councils were taken over by the County Governments across the country following promulgation the new constitution in Kenya in year 2010.

Meru county government took over all the functions of the county councils and as was the case for all other county councils in Meru, all the functions of the now defunct Nyambene County Council were taken over by the current Meru County government. These functions included the operationalization of Nyambene National Reserve in the area currently referred to as the Northern Grazing Area of Meru County that borders with Isiolo County located close to Isiolo town whose boundaries are delineated and edged purple on boundary plan No. 216/61 which is signed, sealed and deposited at the Survey records Office, Survey of Kenya, Nairobi.

The area lies within the borders of Meru County and is categorized as part of the land within the County and belonging to the Tigania and Igembe communities of Meru who have been using the area as grazing land.

To the north the area borders Shaba National Reserve where wildlife are protected but with no physical barrier to constrain the animals from getting into the grazing area.

The area is hot and dry and not suitable for cultivation of crops due to low rainfall. The area is generally a water scarce area with no permanent rivers or surface water bodies like lakes or wetlands. It is for this reason that people have been using the area only for grazing livestock. For many years livestock and wildlife coexisted in the area but recently wildlife numbers have declined significantly due to increased disturbance by people

Over the years the area has experienced wildlife – livestock conflicts and also numerous incidences of cattle rustling resulting into inter-communal attacks where property and human lives have been lost. These supported by the desire to increase tourism potential in the region have been some of the reasons why the defunct Nyambene County Council decided to convert the area into a National Reserve where wildlife will be guarded by trained Rangers.

This EIA Study Report recommends operationalization of Nyambene National Reserve in this area that is already gazetted for the same use.

Findings of this study can be summarized as follows:

- **Location**

The area is located within the Northern Rangelands of Kenya that has been identified to be rich in flora and fauna and has a great potential for wildlife conservation. The area is within the Meru Conservation Area (MCA) that comprises of Meru National Park, Kora National Park, Bisanadi National Reserve and Mwingi National Reserve which have been identified as the area for expansion of wildlife conservation to attract more tourism. The area proposed for

establishment of Nyambene Conservancy strands between MCA and three other National Reserves in Isiolo (the Shaba National Reserve, Ngutu/Nakupurat, and Biligu Bulesa, National Reserves) and the Samburu National Park.

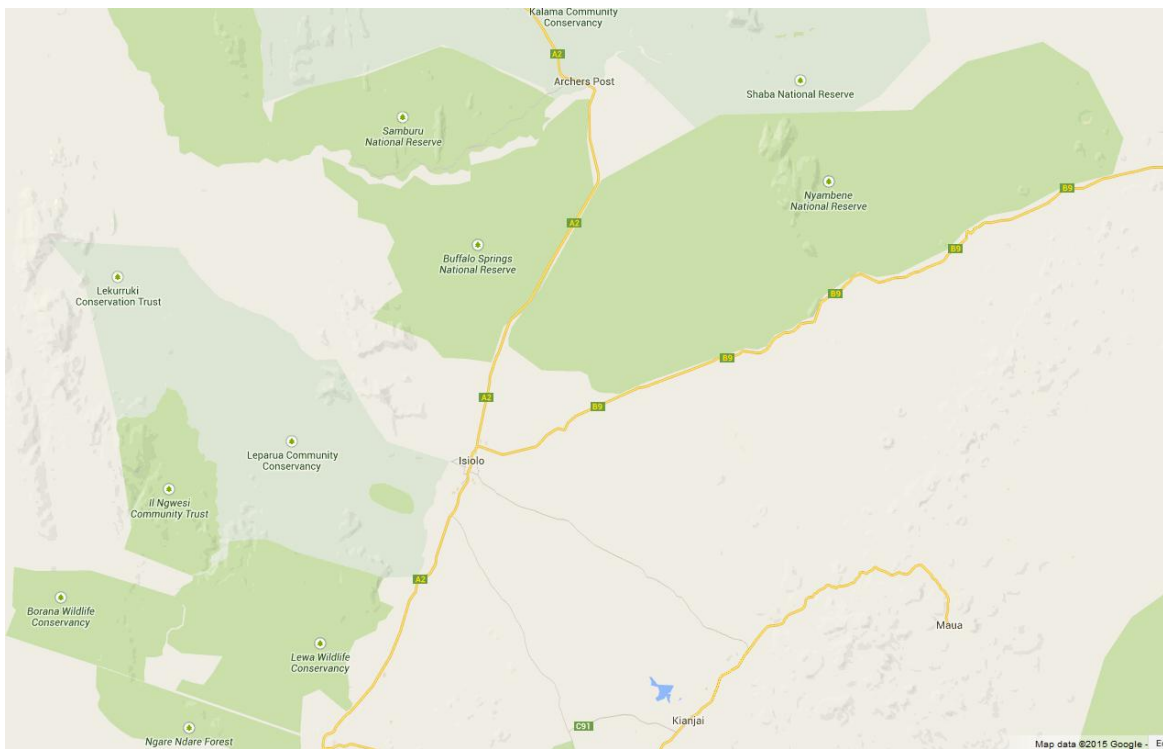


Figure 1: Showing the Location of Nyambene Conservancy

- **Importance as a conservation area**

The issue of the Conservancy is not a new idea or a new concept. The then Nyambene County Council had resolved in 1995 through a minuted resolution to establish the Nyambene National Reserve. This gave way for the Minister to issue a legal notice in the Kenya Gazette. L.N No. 86 of 6th June, 2000 which cited an order to establish Nyambene National Reserve. This order has not been revoked. Meru County government is therefore riding on it to operationalize the Reserve as a community Conservancy.

The area has been an important wildlife dispersal area for wildlife from the neighboring wildlife protected areas. In some seasons the area has more wildlife than Meru National Park. It is an area important for migratory animals like the elephants that move from the lowlands to the highlands of Mt. Kenya National Park during dry seasons. Without the area being designated as wildlife protection area wildlife will be in danger when they move into the area either in search for pastures or on transit to Mt. Kenya National park.

A section of the area proposed for conservancy has for many years been identified to be rich in avian fauna and the habitats need to be conserved in order to continue providing this ecosystem service to these rare species. The area is an important bird's breeding site where birds including migratory species inhabit seasonally presumably even species from the temperate regions that migrate to the tropics to escape the harsh weather conditions of winter.

Naturally the area has been a wildlife dispersal area where wild animals migrate to from the surrounding wildlife protection areas to come and graze or inhabit at certain times of the year. An animal count in MCA (Meru Conservation Area) by KWS in 2007 reported more wildlife numbers in the Northern Grazing Area (area proposed for the conservancy) than in Meru National Park.

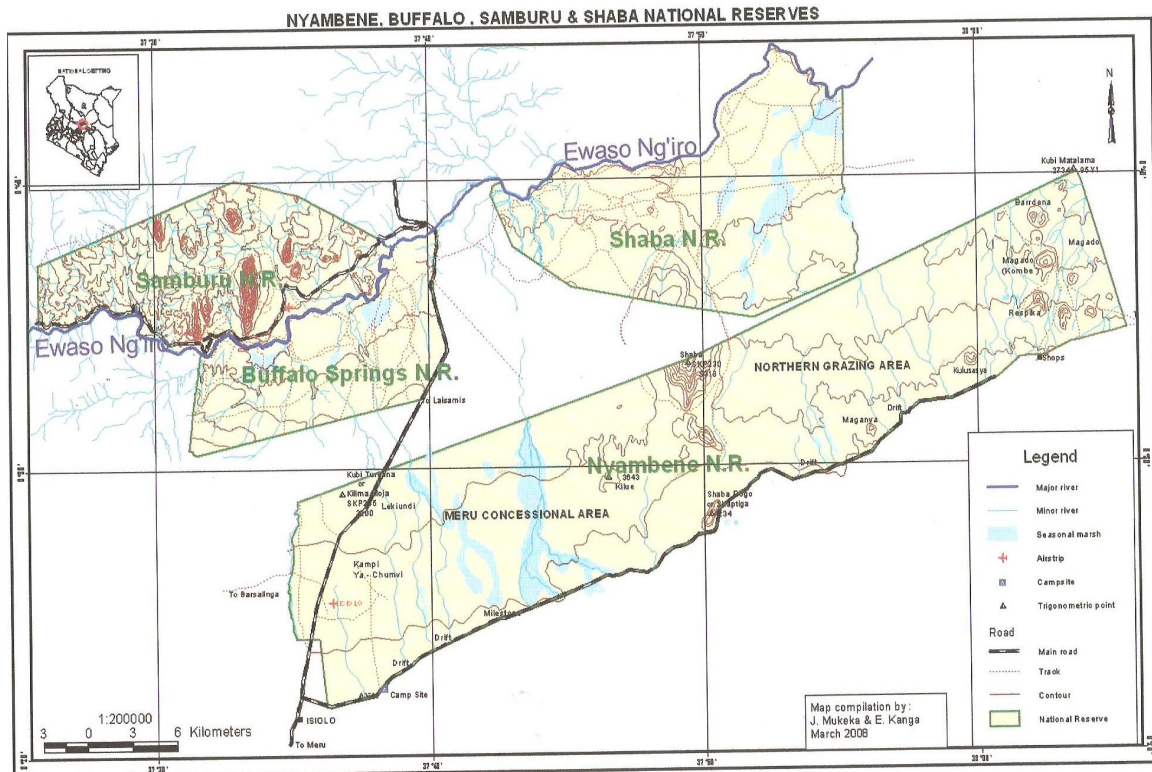


Figure 2: Nyambene National Reserve (Nyambene Conservancy) in relation to the surrounding national wildlife reserves.

- **Importance in Tourism**

The Kenya Vision 2030 is the blue print that guides development in Kenya since it was unveiled in 2007. Among the development objectives of the economic pillar of Vision 2030, is to expand tourism by increasing among others the number and diversity of tourist attraction site in the country. Nyambene National Reserve will be the wildlife conservation area closest to Isiolo resort city one of the Vision 2030 flagship projects. It will be part of the MCA tourism circuit that is being developed as an alternative tourist destination to decongest tourists in Maasai Mara National Reserve.

The reserve will be a short distance away from the tourist hotels in the resort city where tourists and the residents of the city to be can visit to see animals during their free time. The area is also along the proposed LAPSET road connecting Lamu port with Ethiopia and South Sudan through Isiolo town that will be the Y-junction for the three arms of communication. Tourists will be able to access the conservancy either by air through the international airport being constructed at Isiolo, by road through the Nairobi-Ethiopia road or through the LAPSET road and railway connections.

Among the non - wildlife tourist attractions in the area include the famous Igombe crater (referred to by other communities as *Magado*) that is stunning not only for its magnificent geological landscape scenery that would be a big tourist attraction for regular tourists but also for educational and research visitors from around the world.

- **The socio-economics of the surrounding communities**

The most sustainable land use in the area is that of livestock grazing. The area is a communal land where all members of the two communities that own the land have a right to graze their animals. Although the land is suitable for livestock grazing, it has been difficult to graze there because of insecurity. The area is a paradise for cattle rustlers. If the land continues to be as it is now, there will be no development that can be sustained and the obvious result will be subdivision into small individually owned parcels that will not be economical for any use.

Using the land as a community conservancy will protect the wildlife and allow a limited use of the land as a livestock grazing area. The land will be managed communally and investments made on it will benefit all the members of the communities. If it is allowed to subdivide the land into individually owned land parcels it will benefit only a few members of both communities who will be allotted the land and will have the resources to develop the land.

- **Importance in the National Economy**

Kenya's economic growth is guided by Vision 2030 whose pillar of economic growth has tourism as one of the drivers of development that should be expanded to increase the number of international and local visitors per year. To do this, the blue print development plan calls for increase in tourist attraction sites, and also a diversification of the varieties of these sites. To further this drive, Kenya has identified the Meru Conservation Area as the place to develop tourism to decongest the Maasai Mara Conservancy that is already overpopulated with hotels and tourists. It is for this reason that KWS has been stocking wild life in Meru National Park to make it more attractive to tourists. With higher population of wildlife in MCA, it is prudent that they will need larger areas for grazing in order to reduce their movements into the human settled area.

- **Importance to Meru County Strategic Plan**

Operationalizing of Nyambene Conservancy featured prominently during the Meru Rising Conference held in June 2013 to identify development priorities of Meru County. Tourism professionals who attended the conference expressed the need to improve tourism in the county and identified making Nyambene Conservancy operational as a key step to towards boosting tourism in the county.

The Meru County Integrated Development Plan (ICDP) identified Nyambene Conservancy as a project that needs urgent attention. The Tigania and Igembe communities have taken the project as a priority for the development of their four sub counties i.e., Igembe North, Igembe Central, Tigania East and Tigania West which share ownership of the area proposed. Operationalization of Nyambene National Reserve by Meru County Government will be fulfilling the demands of the local people.

- **Promotion of Peace and Security**

Using the land as a wildlife conservancy will enhance security in the region due to the presence of armed rangers. There will be no poaching of wildlife and no cattle rustling. The communities around the area will enjoy peace in the region.

- **Vegetation**

Operationalization of Nyambene National Reserve will not cause significant impacts on vegetation as the main objective of the project will be to conserve wildlife and their ecosystems. However, as the infrastructure for conservancy management and tourist service facilities are laid down there will be minimal vegetation clearance. Such developments will avoid areas of unique vegetation which if cleared will either reduce the diversity of vegetation in the area or change the aesthetic characteristics of the area.



Figure 3: Vegetation around Nyambene National Reserve

- **Wildlife**

The area has a diverse population of animal species whose numbers change seasonally as they migrate within the greater conservation area. Historically the fauna in the area is reported to have been much richer than it is now. Significant reductions have reduced both the types of species and numbers per species due to poaching and un-planned land use in the area.

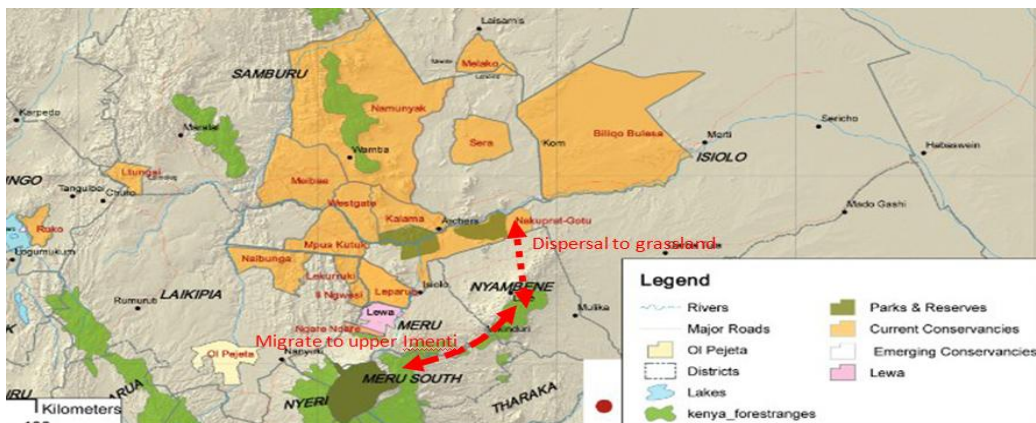


Figure 4: Patterns of animal migration and dispersal (Northern Rangeland Trust - NRT www.nrt-kenya.org)

The most common animal migrations within Meru County are moving from the lowland grasslands to the highland bushlands during the dry seasons when drought depletes pasture resources within the lowlands. During the wet season animals move back to the lowlands after the pastures regenerate following the return of wetter conditions.

Animals move from MCA towards Mt. Kenya along Nyambene Forests, the lower and upper Imenti forests to Mt. Kenya forest. However, it is only the elephants that make this long migration perhaps because elephants can move long distances. The other animals cope with drought by widening their grazing orbits to areas normally referred to as wildlife dispersal areas. Other than elephants movement by other animals could be referred to movement for forage rather than migratory movement. The location of Nyambene National Reserve is in between the Samburu / Shaba ecosystems and the animal protection areas of MCA. It is not known whether animals migrate from MCA to Samburu Shaba ecosystems. For it to be considered as a migration the animals must stay for some period of residence in the new area not just a continuous movement or roaming around for pastures.

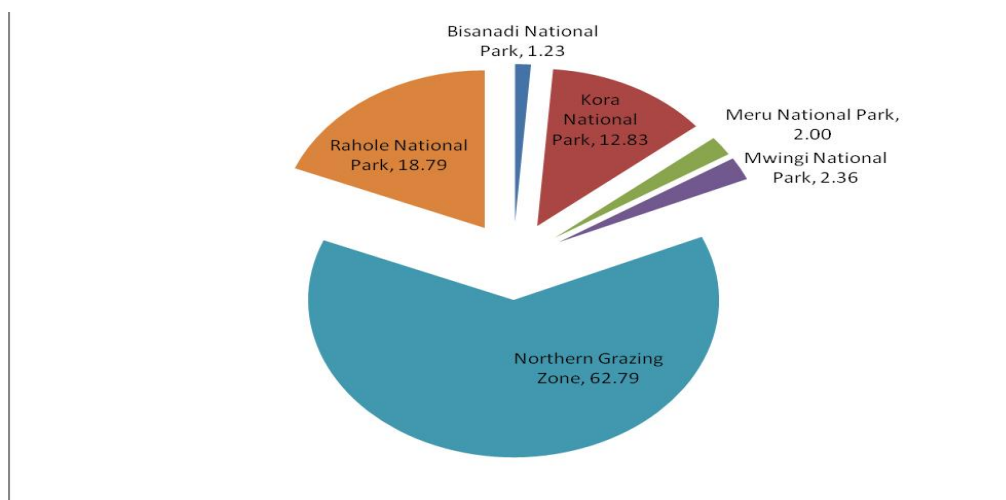


Figure 5: A comparison of wildlife in the Northern Grazing Area with other protected areas in the region as per aerial counts of 2007

- **Soils and climate**

Soils in the area are a mixture of volcanic and alluvial deposits whose distribution across the conservancy varies. Areas with more volcanic rocks are dominated by thickets and undergrowth of succulent herbs, while areas with more alluvial soils are dominated by wooded and open grasslands. The area has numerous volcanic rock outcrops that are not suitable for cultivation.

The climate is hot and dry for most of the year except during the short rainy seasons when it becomes wet and warm. These are the typical climatic conditions of rangelands in Kenya that characterize most of the wildlife conservations areas.

- **Primary productivity and biomass resources**

The conservancy has a good vegetation cover with numerous annual and perennial deciduous plants. They have a high primary productivity capable of supporting a high number of

herbivore populations. Currently the biomass produced in the conservancy is virtually unutilized and its accumulation on the ground is consumed by occasional wild fires that blaze the conservancy during the dry seasons.

- **Water resources**

The area proposed for Nyambene National Reserve is highly water scarce during the long dry seasons. There are numerous seasonal rivers that traverse the conservancy draining water from Nyambene ranges down to Ewaso Ng'iro River to the north but all of them have water only during the rainy seasons. The catchment area for these seasonal streams is quite large and the amount of rainfall in Nyambene ranges that are drained by these rivers is considerably high indicating that the amount of water they carry during the rainy season is also quite high. If this water is trapped into dams with proper mechanisms to control siltation, there can be sufficient water for the conservancy.

The area has an aquifer that is reported to have high ground water potential. This provides another opportunity to develop water resources for the area by drilling water boreholes.

- **Public consultations**

Public participation meetings have been held to gather views of the resident of Tigania and Igembe communities on the establishment of Nyambene Conservancy. Both communities were very enthusiastic and overwhelmed to have the conservancy operationalized. Their only big concern was that the conservancy should not be registered as a National Park but as a National Conservancy that will allow the communities to benefit. These concerns were consistent with the planned development. Some participants were not aware that the area had already been gazetted as a National Reserve.

- **Importance to Millennium Development Goals (MDGs) and international bilateral treaties**

The proposed conservancy will enhance Kenya's efforts in meeting millennium development goal number 7, which calls for increasing environmental sustainability by integrating principles of sustainable development so as to reverse the loss of environmental resources such as wildlife and biodiversity and prevent soil degradation.

Kenya is a signatory to several international treaties in the area of environmental and biodiversity conservation all of which will be enhanced by operationalization of the proposed conservancy. These include convention of biological diversity, UNFCCC – United Nations Framework to Combat Climate Change and desertification, treaty on animal migration, CITES - Convention on International Trade on Endangered Species among others that Kenya has ratified and reports periodically on activities in each one of them.

- **Reasons for establishing the conservancy**

The encroachment by the Borans, Samburus and Turkana's may make the area more insecure and may cause for inter tribal conflicts if this trend is not arrested early. The area is an arena for cattle rustlers, the Conservancy will curb the rustlers activities. The conservancy will turn this currently insecure area into an economic Zone. The project will position Meru County to reap the benefits of the LAPSET corridor, create employment, especially for the Youth and offer investment opportunities in the hospitality sector

- **Benefits to the community and the county**

The Conservancy will be a revenue earner for the Meru County. Tourist attraction sites like Igombe Crater will bring revenue to county. Employment will be created for the youth in particular who will be employed as rangers and wardens. The Conservancy will greatly reduce instances of cattle rustling. Will put an end to encroachment by our neighbours thereby minimize potential inter tribal conflicts. There will be social benefits to the communities living around the conservancy.

- **Final recommendations**

We have considered all potential environmental and social impacts associated with the operationalizing Nyambene Conservancy and found that positive impacts outweigh negative effects.

We have developed an elaborate environmental and social management plan which if implemented will be adequate for environmental conservation. We recommend the proponent to implement the ESMP while setting up the conservancy.

1. Introduction

Meru County is positioning itself to be a tourist destination of choice to make use of the vast landscapes, strong cultural heritage and the diverse flora and fauna in its bounds. This is after years of being in the shadow of the neighbouring Laikipia and Samburu counties who are well known for their tourism facilities. Although endowed with widely known tourist sites such as Meru National Park, Mt Kenya National Park, Lewa Wildlife Conservancy and Rutundu Log Cabins where Price William proposed to Kate, it is yet to reach its full tourism potential (Source: www.standardmedia.co.ke accessed 26th July 2014).

Reason for lagging behind in tourism development are many ranging from lack of advocacy, lack of adequate tourist facilities and low level of support by locals due to lack of awareness of the benefits of wildlife conservation within their neighbourhood. Meru County is in the process of establishing a conservancy in the northern grazing area currently used by wildlife and occasionally used by herders to graze their livestock especially during the dry seasons. The land is owned by the community who for quite some time have wanted to turn the area into a wildlife conservancy where they can share the vast rangeland resources with wildlife in a planned and managed approach.

A conservancy is defined as *"the voluntary association between land owners/users to manage their properties in an environmentally friendly manner without changing the land use."* In this case Nyambene community is voluntarily seeking to use its northern grazing area as a community conservancy.

The area is proposed to be co-operatively managed by the community and Meru County government in an agreed upon formula of sharing the responsibilities of managing the conservancy and also sharing of the revenue accrued from tourism in accordance to already existing structures that are followed by other successful community conservancies in the country. The primary aim for establishing the conservancy is to conserve nature and wildlife and sustainably management these resources in the northern grazing areas of Nyambene. The conservancy will be used for the benefit of the residents of Nyambene area and Meru County in general in accordance to the Wildlife Conservancy Management Act of 2013, and any other legislation from Meru County Assembly that may be put in place.

The area is a rich rangeland that is dominated by open un-grazed grasslands with relatively high biomass of annual short grasses adapted to the dry conditions of the area. There are many parts with thick perennial thickets and short thorny trees especially in the rocky and hilly grounds. The grass species are mainly annuals in the open areas but also with some perennial species in the thickets. The vegetation is occasionally managed by use of bush fires set on by poachers as they hunt the wild animals and sometimes wild honey. Currently these un-subscribed bush fires are not used as an ecosystem management tool but as a hunting strategy by poachers.

The soils in many places are very rocky with numerous loose stones of volcanic origin. The soils are formed from weathering of the volcanic stones and comprise of pumice ash mixed with sand and clay. The ground on the southern end of the proposed conservancy and beyond is raised as it tends towards the higher elevations of the Nyambene Ranges. To the far south

and across the Isiolo-Wajir road, land use is mainly pastoral managed by migratory livestock keepers from both the neighbouring Igembe and Tigania communities. Precipitation in the area is too low to support rain-fed agriculture and the only sustainable land use is pastoralism or wildlife conservation. During the rainy seasons several rivers drain from the wetter highlands in the south into Ewaso Ng'iro River to the north of the conservancy. Observations show that these seasonal rivers carry a lot of water and sediments down to the permanent Ewaso Ng'iro River leaving eroded soils, gullies and rocks on dry river beds.

According to the local residents, the area used to have much more wildlife than now. These included animals like elephants, hyenas, gazelles and impalas among others, but due to poaching these animals have disappeared completely. Currently it is only giraffes that still exist in the area but they too have significantly reduced in number.

The south eastern part of the area proposed for conservancy is inhabited by many species of birds whose nests are seen in almost all acacia trees in the region. Based on records from local residents and some old signboards left around, the area was used for bird shooting safaris in the 1960s. This part of the proposed conservancy is called "*Chiuluni*" a local name that means a place of birds' nests. One ornithologist reported to have spotted a migratory bird in the area during a visit to the site. With the current increase in human population in the area and the increase in grazing intensity, the birds might emigrate due to disturbance and destruction of their nesting habitats. If the conservancy is established, this bird nesting site will be protected from a possible destruction by bush fires and charcoal burners who target the acacia trees that birds' nest on for production of charcoal. These activities of charcoal burning will likely increase in the near future when the Isiolo-Garba Tula road is developed in the ongoing LAPSSSET project as it passes through the area.

Although the area has been set aside for grazing for several decades, it has not been used as such because poachers have made the place insecure. The owners of the land wish to use the area as a community conservancy where wildlife and livestock can co - exist in a planned manner and wildlife protection can keep off the poachers who are also a problem to the neighbouring Shaba National Reserve. The management of both Shaba National reserve and the proposed Nyambene Community conservancy will supplement each other in surveillances to keep the poachers away.

The area is surrounded by a number of conservancies in the bordering Isiolo County and if the proposed site is developed into a conservancy, wildlife in these conservancies will have a much richer and spatially diverse ecosystem to graze, and much wider grazing orbits.

The area of the proposed conservancy is large measuring about 640 Km² forming a long rectangular shaped piece of land that stretches over 50 kilometres along the foothills Nyambene ranges. A land size of this magnitude is large enough to support a good number of wildlife species of both herbivores and carnivores to form a rich food chain in the terrestrial habitats including mammals, reptiles, arthropods, invertebrates and avian fauna as well as below ground biodiversity. For a very long time the area has served as wildlife dispersal area for wildlife from Meru National Park (MNP) and the greater Meru Conservation Area (MCA) which also include Kora National Park (KNP) Bisanadi National Reserve and Mwingi National Reserve. In total MCA has area coverage of about 4,008 Km².

The proposed conservancy will have a migratory corridor for animals to move from the Meru National Park to the proposed conservancy and vice versa along an identified passage

between the two conservation areas. The conservancy will also allow some of the migratory wildlife like the elephants to move to Mt. Kenya National park during the dry periods.

Insufficient hotel accommodation in the county and neighbouring towns has kept tourists away. This has kept the county’s tourism profile low. Meru Governor Peter Munya says lack of enough bed capacity in the Meru National Park has kept away holidaymakers, denying the region employment and better business opportunities. “Creation of a community run conservancy in the northern grazing area of Nyambene will not only be a source of wealth and employment but will also be crucial in mitigating conflict,” the governor said.

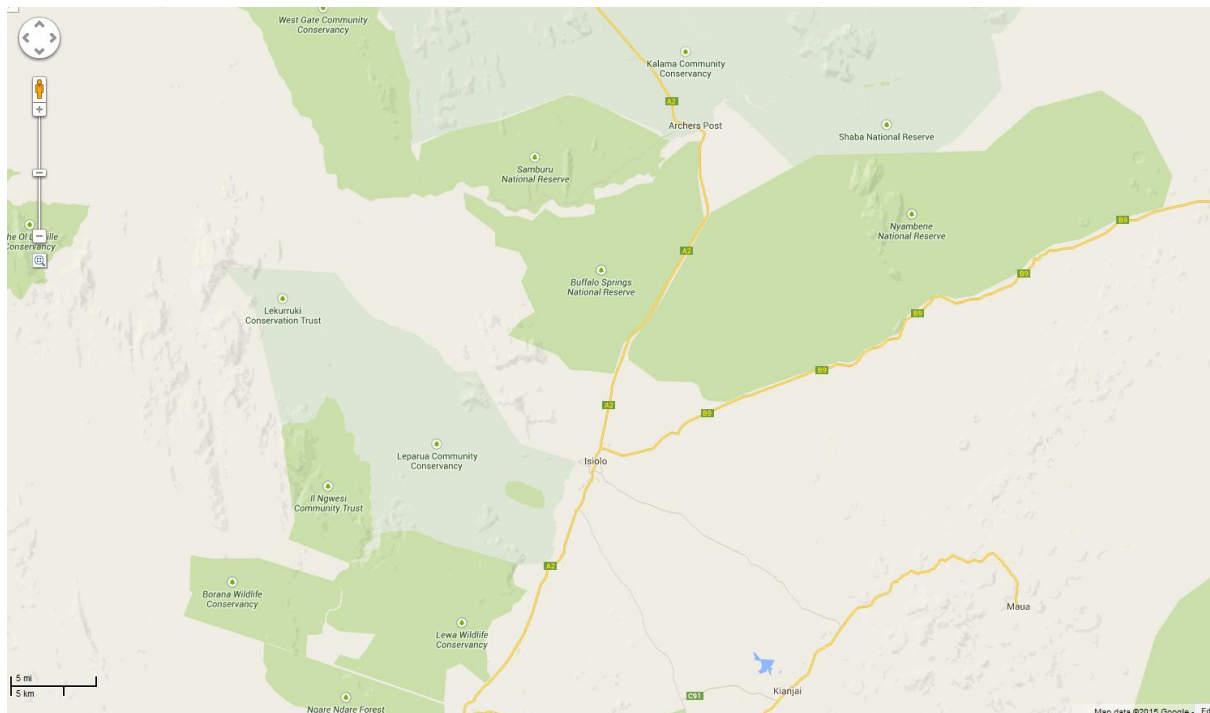


Figure 6: Geographical layout of conservation areas around the proposed site

1.1. Description of the Proposed Area

The proposed conservancy measures 640.6 km² in an area commonly referred to as the Northern Grazing Area (NGA) located north and north-west of the Nyambene Hills. The hills jut out from the hilly landscape of Meru North in a north to north-eastern direction. It covers semi-arid, low lying grazing lands of northern Meru that border Isiolo County to the east, the north and the west. New administrative sub counties have been formed recently and the project area straddles four sub counties, namely Igembe North, Igembe central, Tigania East and Tigania West. The project area stretches between 0 degrees and 40 minutes North and 0 degrees North 13 minutes; 37 degrees and 30 minutes East and 38 degrees and 08 minutes East.

The area is a rich rangeland that is dominated by open un-grazed grasslands with high biomass of annual short grasses adapted to the dry conditions of the area. There are many parts with thick perennial thickets and short thorny trees especially in the rocky and hilly grounds. The grass species are mainly annual in the open areas but also with some perennial

species in the thickets. The vegetation is occasionally managed by bush fires set on by poachers as they hunt the wild animals and sometimes wild honey.

The soils in many places are very rocky with numerous loose stones of volcanic origin. The soils are formed from weathering of the volcanic stones and comprise of pumice ash mixed with sand and clay. The ground on the southern end of the conservancy and beyond is raised as it tends towards the higher elevations of the Nyambene Ranges. To the far south and across the Isiolo-Wajir road, land use is mainly pastoral managed by migratory livestock keepers from both the neighbouring Igembe and Tigania communities. Precipitation in the area is too low to support rain-fed agriculture and the only sustainable land use is pastoralism or wildlife conservancy. During the rainy seasons several rivers drain from the wetter highlands in the south into Ewaso Ng'iro River to the north of the conservancy. Observations show that these seasonal rivers carry a lot of water and sediments down to the permanent Ewaso Ng'iro River leaving eroded soils and rocks on dry river bends.

According to the local residents, the area used to have much wildlife like elephants, hyenas, gazelles and impalas among others, but due to poaching these animals have disappeared completely. It is only giraffes that still exist in the area but they too have significantly reduced in number.

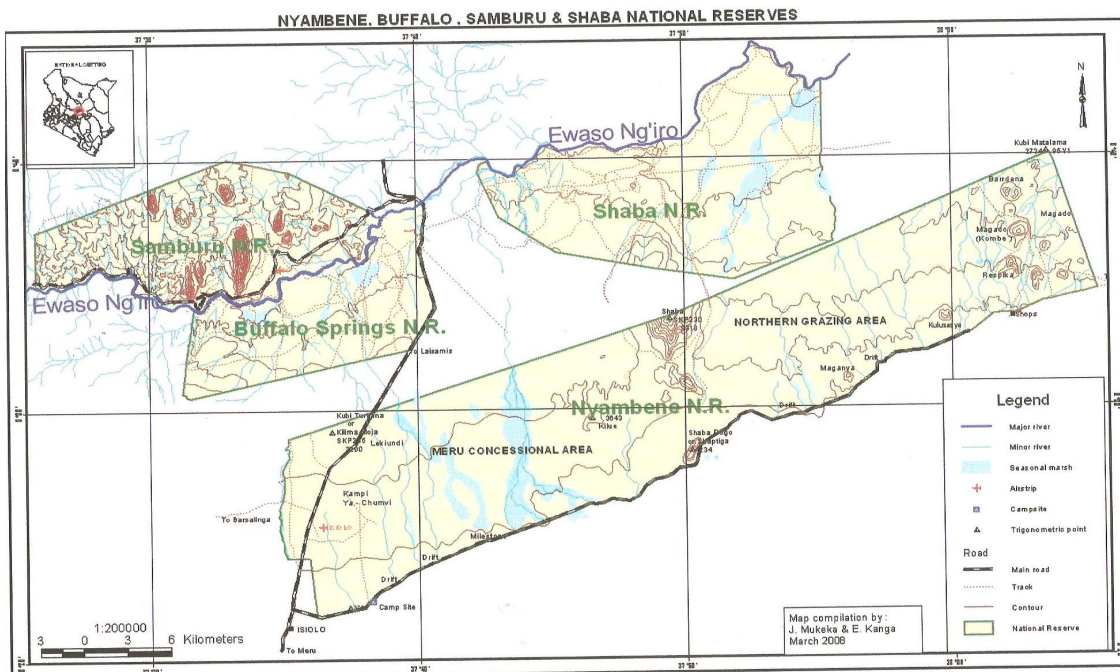
The south eastern part of the area proposed for conservancy is inhabited by many species of birds whose nests are seen in almost all acacia trees in the region. Based on records from local residents and some old signboards left around, the area was used for bird shooting safaris in the 1960s. This part is called "*Chiuluni*" a local name that means a place of bird's nests. One ornithologist reported to have spotted a migratory bird in the area during a visit to the site. With the current increase in population in the area and the increase in grazing intensity, the birds might migrate due to disturbance and destruction of their nesting habitats. If the conservancy is established, this bird site will be protected from a possible destruction by bush fires and charcoal burners who target the acacia trees for charcoal. These activities of charcoal burning are likely to increase in the near future when the Isiolo-Wajir road is developed in the ongoing LAPSSET project.

Although the area has been set aside for grazing for several decades, the area has not been used as such because of poachers who have made the place insecure. The owners of the land wish to use the area as a community conservancy where wildlife and livestock can co - exist in a planned manner and wildlife protection can keep off the poachers.

The area is surrounded by a number of conservancies in the bordering Isiolo County and if the proposed site is developed into a conservancy, wildlife in these conservancies will have a much richer and spatially diverse ecosystem to graze.



Figure 7: Remote sensed map of the proposed conservancy: The rectangular area marked in orange



Topo map showing location Nyambene National Reserve in relation to neighbouring National Reserves

1.2. The proposed project activities

The proposed project is to establish a community conservancy in the area designated above and reserve the area for purposes of wildlife conservancy. To establish a conservancy the proponent will need to do the following:

- Demarcate the area that is to constitute the conservancy
- Set up a network of roads within the conservancy that will be used by tourists and conservancy management service providers as well as the hoteliers.
- Develop physical infrastructure like conservancy entrances, offices, staff houses, and toilets in designated areas within the conservancy.
- Set up sources of electricity either from renewable energy like solar; connections to the main power grid or other as may be considered appropriate.
- Identification of areas for establishing lodges, hotels and campsites.

This report therefore includes activities like

- Roads construction
- Offices including for use by staff including structures for use as gates
- Houses for use staff quarters
- Water reticulation
- Power or electricity supply

1.3. Project Objectives

The objective of establishing the community conservancy are to make a better and more sustainable land use in the northern Grazing Area of Meru North. Meru County Government is spearheading the establishment to assist the local communities to get started and thereafter it will only play a supervisory role. Some of the specific objectives include:

- The project objectives are to increase wildlife conservation areas in Meru County;
- Increase and diversify tourism sites in Meru county and the country at large;
- Make sustainable use of the land for the benefit of the local communities;
- Assist the communities around the area to have a community conservancy they have yearned for several years; and
- Reduce the level of insecurity from wildlife poachers and livestock raiders.

1.4. Background Information

For many generations the study area has been used as a grazing reserve by the people of Tigania and Igembe where they graze their livestock as communal land. Throughout this time they shared the land with wildlife from the neighbouring Meru National Park. Conservationists used to refer to the area as wildlife dispersal area referring to the way wildlife migrate from the park to the grazing area especially during the dry seasons. Recently, in the development of Meru Conservation Area (MCA) which covers an estimated area of about Four Thousand and Eight (4008km²) square Kilometres, the area gained more interest in conservation especially from the Government's decision to develop the Eastern Tourism Circuit and promote tourism in the region in an effort to decongest tourists from Maasai Mara Conservancy. The area proposed for development as a National Conservancy strands in between Meru National park and Shaba National reserve. The area will share a border with the Shaba Wildlife Conservancy and therefore animals will be traversing across the two conservancies without interfering with any developments or human settlements in between.

1.5. Definition of a community conservancy

Community-based conservation is a conservation arrangement that emerged in the 1980s after the escalation of protests and subsequent dialogues with local communities affected by international attempts to protect biodiversity. Older conservation concepts disregarded the interests of local people living around the wildlife protected areas. This stemmed from the Western idea on which conservation movements were founded on nature being separate from culture. The objective of community-based conservation is to incorporate improvement to the lives of local people while conserving areas through the creation of wildlife refuges. To a considerable extent community based conservation movements have been of notable successes, although many have been inefficient due to ineffective management and inadequate resources, uneven implementation, and over-wishful planning.

Community-based Wildlife Management (CWM) is seen as the 'right' approach to conservation, and is defined as '*the regulated use of wildlife populations and ecosystems by local stakeholders*', where local stakeholders "*may be a village, or group of villages; an individual, or group of individuals with a shared interest in the resource*". The important premises of the CWM approach is that stewardship over wildlife resides at the local rather than the national level, and that it is possible to improve rural livelihoods, conserve the environment and promote economic growth at the same time.

In the past, protected areas represented islands managed in isolation from the surrounding areas and human activity. The traditional models of wildlife management favoured the exclusion of users from the resource, imposing restrictions, and resettling people outside protected areas. This paternalistic, top-down approach, took little consideration of social or economic consequences and exclusion gave communities little incentive to manage wildlife sustainably. At the Earth Summit of Rio in 1992, it was concluded that there can be no conservation without development, and that sustainability implies sustainable livelihoods. Increasingly, it was becoming more widely accepted that excluding people from their traditional livelihoods was neither realistic nor ethical.

A common aspect of rural livelihoods in many developing countries is the reliance of people on land use for grazing. It has become increasingly more apparent that excluding traditional

land users from their wildlife resources was often no longer a viable, realistic or acceptable management option. Instead, it was decided that ways had to be found to integrate livelihood resource use patterns with the conservation objectives of a locality. In fact, several studies suggested that community based wildlife management is most effective when all traditional resource users were involved in management and planning, thus enhancing their rights to the resource, improving their livelihoods, considering their needs, encouraging interactive communication and strengthening local institutional capacity. Nevertheless, trade-offs are inevitable and there is a need for balance between protection and sustainable use .

There was a general call to move away from the traditional *biodiversity preservation* approach to nature conservation and adopt instead a *conservation of resource biodiversity* approach, emphasising the need for sustainable management of biodiversity in support of human needs. If a wildlife management programme is to be effective in the long term, it must be based on the active involvement and participation of local people, and provide them with significant and sustainable benefits in terms of both food and income.

1.6. The need to establish a community conservancy

Creation of a community-run conservancy in the northern grazing area of Nyambene will not only be a source of wealth and employment but will also be crucial in mitigating conflict over land use in the area.

The area proposed for conservancy is teeming with wildlife and great landscapes. For example the scenic Igombe crater that recently featured on ‘Africa from the Air’ in the Telegraph’s Travel Magazine, is located in the area. Meru County government plans to build hotels and lease them out to increase the bed space. According to Meru County tourism docket the county has a bed capacity of about 2,500 which is planned to be increased to about 10,000 in the coming years.

The area is a wildlife dispersal area that has wildlife all the time. During some seasons like during droughts the area has more wildlife numbers than Meru National Park. The area straddles between Meru national Park and Shaba National Reserve and wildlife tend to move between the two protected areas across the proposed area.

A visit to the area during the reconnaissance survey for this study revealed that the area was once used for bird shooting due to the numerous numbers of birds in the area. A sign post to show this use still exists in the area.

The southern part of the area is called *Chiulluni* by the local people meaning ‘place of bird’s nests due to high number of nests found in the area

1.7. Location and access to the area

The area is located in the northern part of Meru County bordering with Isiolo County. It straddles a few kilometres from Isiolo town covering the entire area north of Isiolo – Garba tula road. Coordinates of the place are: 38.063363E and 0366485 N; 38.089837E and 0.574015N; 37.616489E and 0.491419N; 37.606082E and 0.360433N.

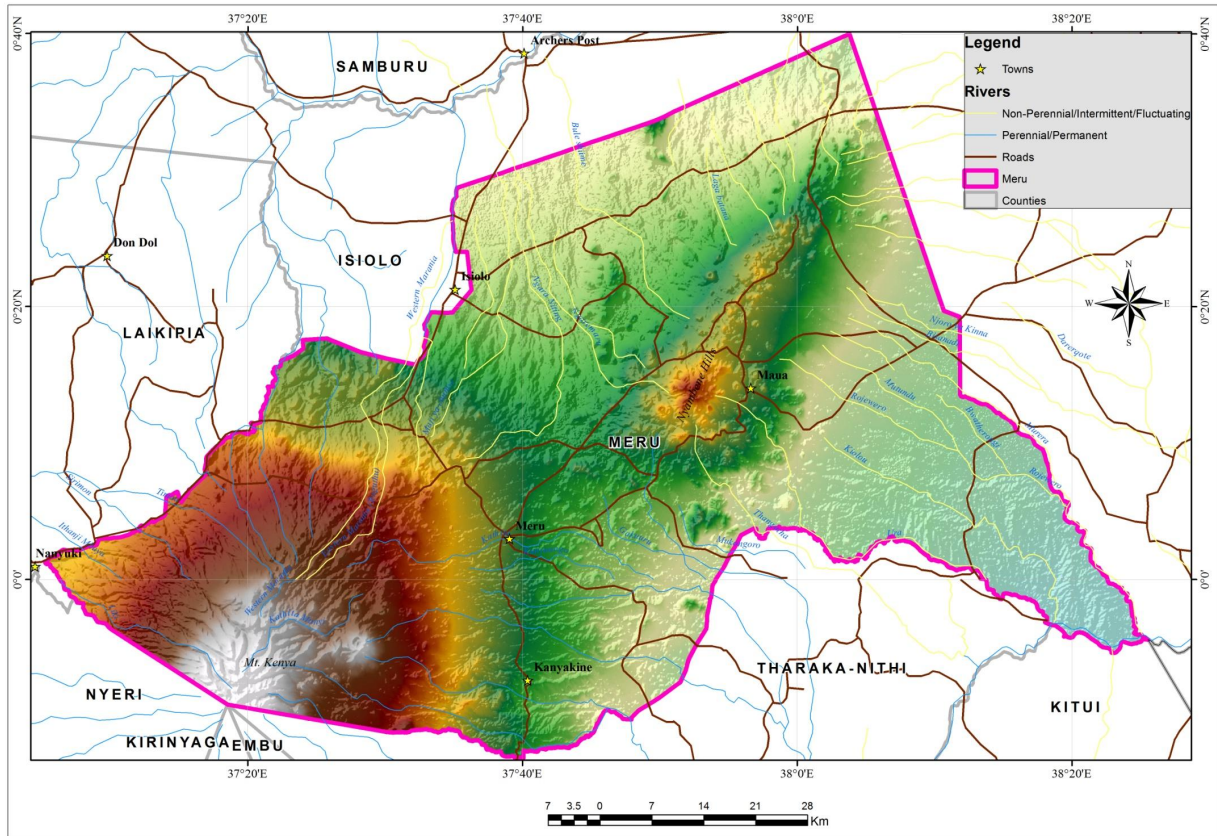


Figure 8: The elevation and drainage patterns of Meru County

Access to the proposed site is by road only best through Isiolo town from where you follow the Isiolo town – Garba Tula road. Approximately 20 - 30 kilometres from the junction of Garba Tula and Marsabit roads you reach the proposed site that runs on the left side of the road and for over 50 kilometres. Access from the opposite direction is possible from Kinna trading center.

1.8.Importance of the area as a wildlife conservancy

The area has unique habitats for wildlife. The locals call one of the sections a name that portrays a place of birds’ nests. This is due to the high number of nests found in the area, making it a potential bird’s sanctuary. The area has pristine ecosystems rich for terrestrial herbivores both grazers and browsers, avian fauna, reptiles, arboreal and earth dwelling arthropods.

The area is far from human settled areas and herders cannot take their flock to feed and get back same day. Herders camp in the areas with their livestock during the dry season and go back to their respective places during the wet seasons. The area is used by bandits and illegal poachers. The poachers hunt animals mainly elephants in Meru National Park, the neighbouring Shaba National Reserve and escape with their loot through this grazing area. Because of this the bandits have made it a tradition to violently steal livestock from the Meru herders in the area in order to cause insecurity in the area so as carry out their poaching

activities. The grass in the area is from time to time set on fire by the illegal users that destroy the ecosystems including the water resources.

As a conservancy this fire can be managed in such a way that it does not destroy the unique ecosystems. Since wild animals have been known to live in the area, the community owning the land have decided to turn the area into a conservancy where wildlife can be conserved to attract tourists.

The areas straddle between three communities, the Merus to south, the Samburus to the north and the Boranas to east. While the Meru community practices mixed crop and livestock farming the other two communities are predominantly pastoralists. The conservancy will create a barrier between the agricultural land use in the south and pastoral land use in the north.

1.8.1. Legal provisions for operationalizing Nyambene National Reserve as a Community Conservancy

The legal framework for establishing a community conservancy in Kenya is provided in the Wildlife Conservation and Management Act 2013.

The Wildlife Conservation and Management Act 2013 became operational on 10th January 2014. The new law has as one of its guiding principles the devolution of conservation and management of wildlife to landowners and managers in areas where wildlife occurs, through in particular the recognition of wildlife conservation as a form of land-use, better access to benefits from wildlife conservation, and adherence to the principles of sustainable utilization. The following are of specific relevance to Community Conservancies as under the new Act. A County Wildlife Conservation & Compensation Committees will be formed that will be in charge of governance and decision-making on Wildlife matters and will be largely devolved to a County level (Section 18 – 20). An appointed officer from KWS will be the Secretary to this committee and the Chairperson will be appointed by the Cabinet Secretary.

Conservancies will have the opportunity to nominate FOUR people to sit on this committee. The CWCCC will be responsible for:

- Registering wildlife user rights;
- Overseeing development and implementation of management plans on community and private land;
- Ensuring benefits from wildlife are accordingly distributed;
- Bringing together stakeholders for effective land use planning;
- Monitoring implementation of management plans for National Parks in their area together with KWS;
- Developing and implementing mechanisms for human-wildlife conflict mitigation;
- Reviewing and recommending on claims for compensation from wildlife damage or loss.

Recognition of Conservancies Wildlife Conservancies is now recognised under the Law as ‘land set aside by an individual landowner, body corporate, group of owners or a community for purposes of wildlife conservation’. Wildlife conservation and management is recognised as a form of land-use that has equal recognition with other land-use types such as agriculture (Section 4(d) and 70).

Wildlife Conservancies will be registered and licensed with KWS through their CWCCC after submission of a Management Plan (Section 39-40; Schedule 5) that outlines:

- membership
- governance structure
- wildlife resources in the area
- type of wildlife conservation activities being undertaken
- wildlife user-rights being proposed
- land-use plan/practices
- methods of monitoring wildlife and wildlife-user activities
- community wildlife-scouts activities in wildlife surveillance and protection, and problem animal control

The CWCC will be responsible for ensuring that management of the Conservancy is up to the required standard and in accordance with the Conservancy's management plan. The Law does not elaborate on how conservancies are going to be governed and managed but Regulations and Guidelines on Conservancies will be developed by the Cabinet Secretary in a participatory process based on the draft regulations developed in 2012.

1.8.2. Existing tourist attraction in Nyambene National Reserve (the Conservancy)

As described elsewhere in this report the area described as Nyambene National Reserve has a rich fauna and flora capable of supporting a thriving tourism business. In addition to the fauna and flora, the proposed conservancy is already known for its scenic sites. The rare Igombe crater has captured international interest for having a spectacular view from the air. The crater was showcased in 2012 in a photo gallery by Martin Harvey titled 'Africa from the Air' that featured on the travel magazine of The Telegraph. The crater is also called *Magado* Crater and is located at the northeast tip of the Nyambene range. The circular crater rises 73 meters (250 ft.) above the surrounding area. It has an average diameter of 800 meters and an average crater depth below the rim of 140 meters. Debris blasted out during the crater eruption formed a rim 80 to 100 meters thick. To the north of Igome is the Uaso Ng'iro river, and to the south is the Nyambene mountain range. A small lake on the floor of Magado crater evaporates to form a soda salt crust where the Meru people have been collecting salt for centuries

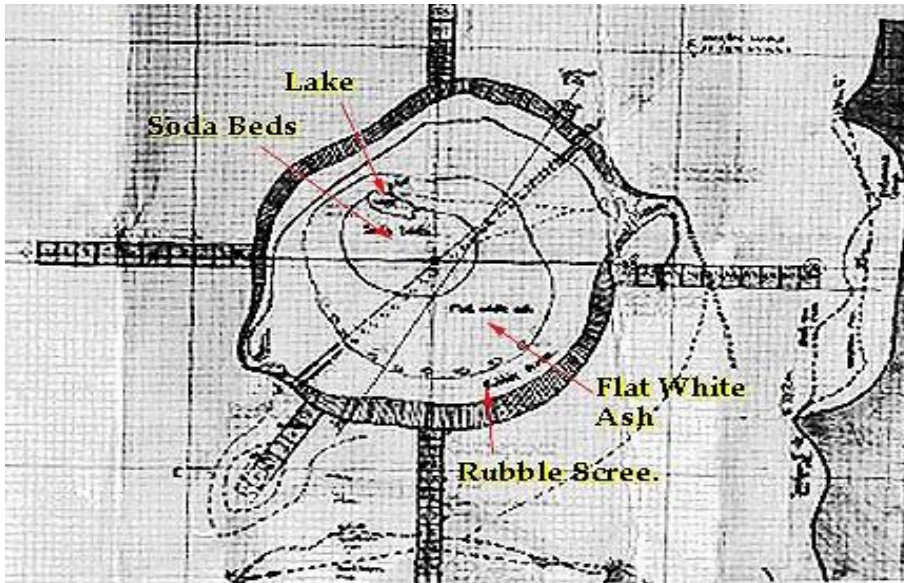


Figure 9: Igombe Crater

The conservancy is also known for its birds that are numerous in the conservancy. A site in the conservancy is used as a breeding ground for birds and at one time in the past it was used as a place for bird shooting. Birds are still abundant in the conservancy and after conservation measures are put in place during the management of the conservancy, these birds will be conserved better.

1.8.3. Relevance to Kenya's Vision 2030

Vision 2030, calls for an increase in the number of tourist destinations in Kenya and in particular turning Isiolo into a tourist attraction and Mega Resort City. Isiolo resort city and the entire Mt. Kenya region is expected to have many tourists who will need places to view wildlife in the region. In addition to developing into a mega city, Isiolo that is in most central town in Kenya, is also planned to be the junction for railway, road and oil pipeline from Lamu to Juba with the branches that will be going to Ethiopia and Nairobi. In addition an oil refinery is also planned to be built in Isiolo. Currently an international airport is already under construction in Isiolo. The proposed conservancy will be a few kilometres from the planned Isiolo Mega city, and will be an attraction to many tourists including the town residents of Isiolo town. The proposed development will therefore enable Kenya to achieve vision 2030.

1.8.4. Relevance to Meru County strategic plan

Meru County strategic plan identifies tourism as one of the areas that the county needs to focus its development agenda both in medium and in the long term plans. The county is planning to improve tourism for all types and classes of tourists including the nature based tourism. The county has two main areas where it can improve tourism, one is the montane and moorland ecosystems of Mt. Kenya and the other one is the lowland rangelands where large numbers of wildlife live. The Meru strategic plan is targeting to increase the number of nature based tourists. Operationalization of this conservancy will help Meru County to achieve the objective of attracting tourists and provide an opportunity for investors to build hotels and other tourist facilities.

1.8.5. Relevance to wildlife conservation and sustainable utilization of natural resources

Wildlife human conflicts in the northern grazing areas are many. Often people get killed by wildlife, but cases of people killing wildlife are more than vice versa. The area has natural resources that can contribute to sustaining wildlife conservation because it will increase the area where wildlife grazes freely without human interference.

The area proposed for the conservancy borders several existing conservancies like Shaba conservancy, the Buffalo Springs National Reserve and the Samburu National Reserve from where animals will roam to Nyambene National Reserve. The area proposed for Nyambene conservancy will increase the area available for wildlife grazing.

1.8.6. Relevance to LAPSSET

The road, railway and oil pipeline for the proposed vision 2030 flagship LAPSSET project are planned to pass along the edge of the proposed conservancy before they enter Isiolo town. According to the already publicised map of the proposed LAPSSET developments will not utilize the land set aside for the conservancy. The road in particular will add value to the conservancy by providing an all weather access to the conservancy by tourists and investors. If the proposed railway will be operating passenger services it will link the conservancy with the Kenya coast tourism.

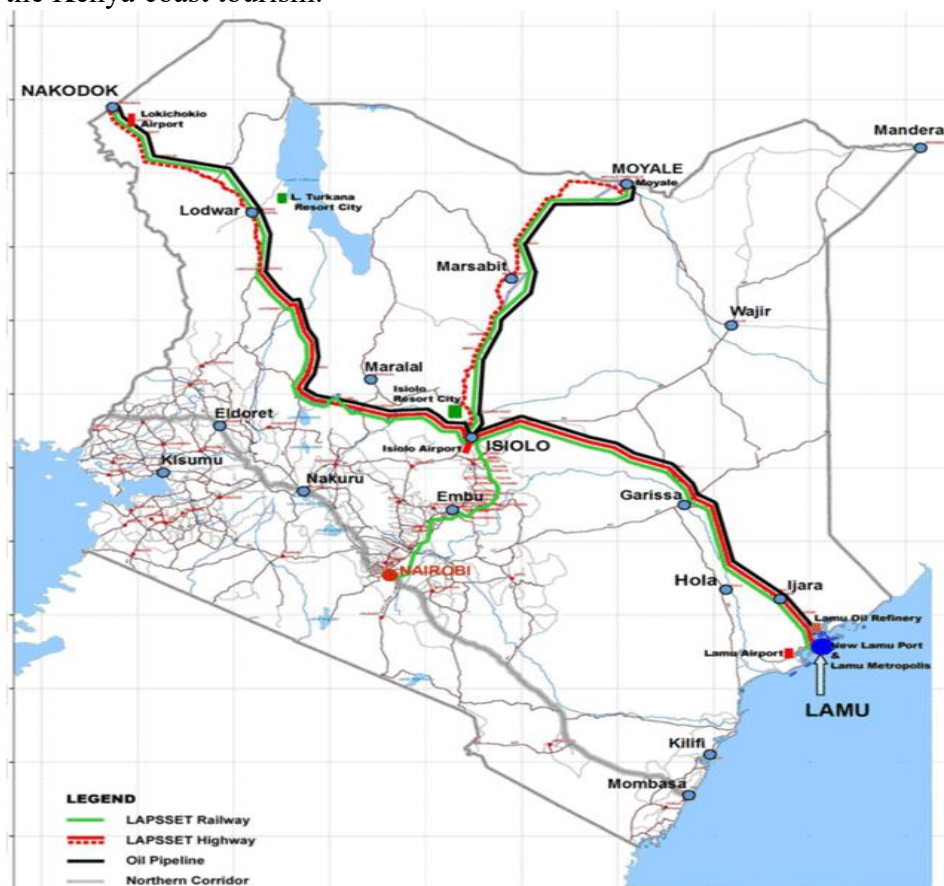


Figure 10: Map of Kenya showing the proposed railway, highway and oil pipeline for the LAPSSET project

1.8.7. Linkages to national priorities, action plans and programmes

The area proposed for establishing the conservancy is already gazetted as national reserve for wildlife by the relevant authorities under the wildlife conservation and management Act. Establishing the community conservancy will contribute to achieving a number of national and county development priorities as outlined below:

- Increasing and diversifying tourist attraction sites across the country
- Facilitate county's plans to increase investments in tourism
- Decongesting tourists in Maasai Mara to reduce environmental degradation.
- Add to the initiatives of improving Meru Conservation Area (MCA) that is earmarked increasing tourism in Mt. Kenya area.
- Increase the county's land area utilized for wildlife conservation

1.8.8. Project Rationale and Justification

During the Meru Rising conference held in June 2013, tourism was identified as one of the areas where Meru County government should focus on in its development agenda. Development of this particular conservancy was identified and a recommendation was made for the county government to move fast in developing it.

The decision to develop this conservancy came from the land owners themselves in a very consultative process involving all the land owners in a number of meetings. The county has evaluated this decision and based on the best land use option for the area and found that wildlife conservation is by far the best land use for the area and has made its own independent decision to support the land owners request for support in establishing the conservancy.

Use of the land as a conservancy will increase the amount of land under natural resources management after the Meru National Park, Mt. Kenya National Park and the land under forest conservation. The national and county quest to increase tourism destinations will be boosted by the establishment of this conservancy.

Justification

The need for operationalizing Nyambene National Reserve is evident as it is expected to bring positive changes to the communities living around it, in terms of improving the level of communication with other parts of the country that would in turn boast the living standards of the community along the project area and the country's economy at large.

The project shall play a major role in opening up the area to new heights of business activities including eco-tourism, industrialization, market diversification financial institutions among others. This shall in turn play a major role in improving the living standards of the people in the area who are adequately urbanized. The development shall also increase access to schools which will in turn reduce the level of illiteracy in the neighbouring community.

The area has unique habitats for wildlife. One of the sections is called by the locals a name that portrays a place of birds' nests. This is due to the high number of nests found in the area, making it a potential bird's sanctuary. The area has pristine ecosystems rich for terrestrial

herbivores both grazers and browsers, avian fauna, reptiles, arboreal and earth dwelling arthropods.

The area is far from human settled areas and herders cannot take their flock to feed and get back same day. Herders camp in the areas with flocks during the dry season and go back to their respective places during the wet seasons. The area is used by bandits and illegal poachers. The poachers raid animals mainly elephants in Meru National Park, the neighbouring Shaba national park and escape with their loot through this grazing area. Because of this the bandits have made it a tradition to violently chase away the Meru herders from the area in order to leave it for illegal poaching. The area is from time to time set on fire by the illegal users that destroy the ecosystems including the water resources.

As a conservancy this fire can be managed such that it does not destroy the unique ecosystems. Since wildlife animals have been known to live in the area, the community owning the land have decided to turn the area into a conservancy where wildlife can be conserved to attract tourists.

The area lies within the county of Meru and straddles between three communities, the Merus' to south, the Samburus' to the north and the Boranas' to the east. While the Meru community practices mixed crop and livestock farming the other two communities are predominantly pastoralists. The conservancy will create a barrier between the agricultural land use in the south and pastoral land use in the north.

2. Steps already taken to establish the conservancy

Gazettement as a National Reserve

The area was gazetted as a National Reserve way back in 2000. Due to lack of financial resources by the then Nyambene County Council, the reserve was not operationalized. The Council was new and as such had not developed sufficient revenue generating activities to enable it have funds to meet all its obligations. Nyambene conservancy was one of the activities earmarked for future development. County councils were disbanded after the creation of County Governments following the promulgation of the new constitution. The former Nyambene county council is one of four county councils that were absorbed by Meru County Government (see copy the gazette legal Notice in the appendices).

Meetings held by communities

At the time that Nyambene County Council existed many community meetings were held to discuss the formation of Nyambene conservancy. Some of the minutes of these meetings are provided in the appendices of this report. All meetings underscore the importance of establishing the conservancy with speakers after speakers expressing the desire to have the area become a conservancy. They all agreed that that establishing a conservancy would be a better use of the land.

3. Objectives for this study Report

The main objective of the study is to provide the Government of Meru with sufficient information on how the development of the conservancy can be done without causing environmental impacts.

The objective of the study was met by:

- Assessing the project's environmental and social aspects,
- Carrying out a preliminary assessment of the current environmental baseline, and
- Carrying out socio-economic study of the project area.
- Conducting public consultations to obtain stakeholders opinions on the impacts of the proposed developments.

3.1. The need for EIA study

Environmental impacts assessments are needed basically to serve three main purposes

1. To enable the project proponent acquire NEMA certification in compliance to EMCA 1999 and the Government of Kenya EIA/EA guidelines of 2003.
2. Provide the project proponent with a tool to identify and manage environmental and social potential impacts associated with the project.
3. Liaise with the local communities on matters of environmental and social impacts of the proposed project on behalf of the proponent and NEMA to make sure that all parties play their roles as stipulated in EMCA 1999 and the EIA/EA regulations.

4. The Terms of reference for the study

These terms of reference constitute the agreement between the proponent (Meru County Government) and the EIA consultant (Dr. Joseph Mworira Maitima of Ecodym Africa Consultants). The agreement is to prepare an EIA study report for purposes of submission to the National Environment Management Authority (NEMA) for evaluation and in accordance to the Environmental Management and Coordination Act of 1999 (EMCA 1999) provide an environmental licence allowing the proponent implement the plans of setting up the conservancy. The subsections below outline the responsibilities for both the proponent and the consultant in this study.

4.1. Duties of the Proponent

It will be the duty of the proponent to ensure that all legal requirements as pertaining to the development are met as specified by the law. The proponent will provide information on the costs of the proposed activities, a map indicating the boundaries of the area, approved structural designs of any development for inclusion in this study report, and further provide logistical support during the public consultations for this study. The proponent will also pay for NEMA fees as required by Kenya government guidelines for environmental impacts assessment and audits of 2003. The proponent will also pay for public disclosures in the local dailies and Kenya Gazette notice as required by law.

4.2. Duties of the Consultant

The consultant will prepare a study report for submission to NEMA and subsequent approval by NEMA. The consultant will be responsible for the material content of the report prepared professionally in accordance to EMCA 1999.

The consultant will submit the report to NEMA and this being a study report, also follow up on advertisements to be made as public disclosures.

As part of the report, the consultant will prepare a comprehensive environmental and social impacts management plan (ESMP) to guide the proponent in managing the environmental and social impacts that are possible to emanate from the implementation of the project in all the phases of implementation.

4.3. Duties of the Contractor assigned to carry out the development activities

Contractor and the project proponent shall be responsible for the following measures to protect the environment:

- Compliance with national and local statutes and regulations relating to protection of the environment. The Contractor will be responsible for familiarising himself /herself with all the existing national and local legislations in this regard
- The Contractor shall at all times maintain the base camp in a clean and tidy condition and shall provide appropriate and adequate facilities for the temporary storage of all wastes prior to disposal
- The Contractor shall be responsible for the safe transportation and disposal of all wastes generated as a result of activities in such a manner as will not give rise to environmental pollution in any form, or be hazardous to human or animal health. In the event of any third party being employed to dispose of wastes, the Contractor shall be considered to have discharged his/her responsibilities under this clause from the time at which wastes leave the sites under his control, providing that he/ she is satisfied that the proposed transportation and disposal arrangements are such as will not give rise to pollution or health hazard
- The Contractor shall be responsible for the provision of adequate sanitary facilities for his workforce, and that of his sub-contractors, at all construction and ancillary sites. The Contractor shall not allow the discharge of any untreated sanitary waste to groundwater or any surface watercourse
- Prior to the mobilisation of the workforce the Contractor shall provide details of proposed sanitary arrangements to the proponent for approval, such as will allow him / her to assess whether or not the proposed facilities are adequate and are unlikely to pollute water resources, and also that the facilities will be properly operated and maintained
- The Contractor shall ensure that fires, except for controlled / prescribed fires for burning rubbish, do not start within the base camp or in the environs thereto as a result of the works or from the actions of his employees. The burning of waste, such as vehicle tyres causing noxious emissions is prohibited. The Contractor shall have available at all times trained fire fighting personnel provided with adequate fire-fighting equipment to deal with all fires.
- The Contractor shall additionally at all times provide sufficient fire protection and fighting equipment local to parts of the Works which constitute particular fire hazards. The contractor in conjunction with line ministries and, organizations such as Ministry of Health, NGOs and Community Based Organization (CBO) should be involved in

creating awareness on HIV/AIDS and other STDs in order to play a role in the control of the spread of the infectious diseases

- The contractor is required to be conversant with artefact preservation procedures in case the road works excavations unearth materials that are considered to be of historic in nature. These procedures require that once excavated materials are considered to be of historic importance the site is sealed off, left undisturbed until a qualified archaeologist verifies if the material is of historical importance or not. If material is found to be of historic importance a rapid evacuation is done to collect the material for further investigation or safe keep by the Museums of Kenya.
- The contractor shall ensure that the safety of the workers and the community in the project area is safeguarded as required by the Occupation Health and Safety Act and the development partner's guidelines on Environment, Health and Safety. This shall include ensuring that the design components and operation procedures minimize exposure of workers and, the general public to risks and, hazards and, ensuring all environmental and social safeguards on air quality, water quality, energy conservation, water conservation, hazardous material management, waste management, and noise and land contamination are maintained within the recommended standards.
- As part of the foregoing, the contractor should ensure that all activities follow the environmental standards for air and water pollution control and disposal of cons waste materials. Occupational health and safety guidelines should be adhered to, with appropriate safety gear provided to all workers. It is advised that the Contractors follows the recommended environmental and safety measures and maintain proper working conditions at construction camps, as per the ESMP, to avoid penalties as stipulated in the national environmental laws, and such others penalties as shall be defined by the contract.

Note: Although in this report we mention responsibilities of the contractor ideally NEMA will not directly hold the contractor liable for any wrong doing. It is the proponent that is expected to work with the contractor and make sure the work delegated to him / her is carried out properly or as recommended.

4.4. The study team

The study team comprises of Dr. Joseph M. Maitima PhD, the team Leader. An ecologist and a certified NEMA lead Expert. Dr. Maitima has worked as a senior environmental scientist at ILRI for over 10 years in addition to other research institutions prior to starting Ecodym Africa consortium. In total Dr. Maitima has over 24 years of postdoctoral research in environmental studies and he currently continues to research on climate change impacts on agriculture and the search for sustainable adaption options to protect livelihoods among the rural communities affected by climate change. In the team will be Mr. Martin Kimathi MSC., an economist with vast experience in social economic studies related to environmental and social impacts assessment among other specialties. The team has a legal professional Mr. Ian Mwirigi, LL.B. Dip. KSL., who specialises in the analysis of the legal frame in environmental and social impacts assessments and institutional roles. Also in the core team is Mr. Richard Ouma Tumba who is database specialist in charge of data management. We also have a programme management assistant Kimberly Kinya B.SC (development Studies) who helps in project management and office administration.

Other than the above core team Ecodym Africa has a network of specialized consultants who join the core team whenever there is work requiring their expertise. These include specialists in GIS, soil analysis, water analysis, biodiversity, IT, geology, toxicologists, and monitoring and evaluation specialists.

For the work in this report we contracted the expertise of Dr. Patrick Kariuki a GIS /Remote Sensing expert and lecturer at South Eastern University of Kenya. Dr. Kariuki conducted the analysis of land use and land cover in the project area produced the GIS maps presented in this report.

5. Scope of the Study

The project assessment involved investigation and analysis of the anticipated environmental impacts of the proposed development in line with the EMCA 1999 and its subsequent supplements the Environmental Impact Assessment and Audit regulations 2003.

Consequently, the study report provides the following:

- Nature of project
- The location of the project including the physical features that may be affected by the project's activities.
- The activities that shall be undertaken during the project construction and operation
- The potential environmental impacts of the project and mitigation measures to be taken during and after the implementation of the project.
- The economic and social cultural impacts to local community and the nation in general
- Any other information that the proponent may be requested to provide by NEMA

All these aspects are considered in details in this report which seeks to ensure that all the potential environmental impacts are identified and that workable mitigation measures are adopted. The report emphasizes the duties of the proponent and contractor during the construction phase as well as the operation phase of this project.

6. Screening

The survey team made a thorough analysis of a high spatial resolution satellite image to identify and map all the vegetation communities in the area. The team made ground observations to identify the major plant species in the various communities mapped from the satellite image. The ground surveys also identified other forms of biodiversity in the area as they were encountered during the ground campaign.

Communities were also consulted to name animals they encounter in the area. This information was packaged or grouped in seasons of observation and the frequency of the observations. This gave the team three sets of data (1) data from remote sensing, (2) data from ground surveys, and data from (3) public information.

These three sets of data were augmented by literature survey from reports done in the area especially within the MCA and any available records on surveys done in the Northern Grazing area

7. Baseline Survey

The purpose of the screening activities described above was to provide baseline data on the types of biodiversity present, their spatial and temporal distribution and their abundances where applicable. Baseline data is important for a number of reasons:

1. to assess the potential of the area to be used for wildlife conservation;
2. to provide information on the status of biodiversity before the proposed development and a baseline data for measuring impacts after the project is implemented;
3. to provide information useful in the management of wildlife in the area especially in relation to relative changes in animal numbers, grazing patterns and pasture dynamics within the proposed community conservancy.

Baseline information is required in all EIA studies in order to show the state of environmental resources before the project is implemented. This enable the EIA expert and NEMA to gauge the impacts of the proposed activities on the environment in order to advice the proponent on best methods to avoid impacts and if they occur the best methods to mitigate the impacts.

7.1. Environmental characteristics

The study area and the entire MCA lies in Eco-climatic zone V (Tropical semi-arid climate) that covers half of Kenya, with moisture index of between -42 to -51; rainfall seldom exceeds evaporation. The main annual rainfall for the study area is 724mm.

The high rate of evaporation is due to low altitudes of MCA (between 850mm - 270mm) and the high temperature that prevail throughout the year. The area experiences desiccation for most of the year due to dry winds that feature during the dry seasons when temperatures rise above 33 degrees Celsius during the day and declining to about 20 degrees Celsius during the night.



Figure 11: Map of land use and land cover in Nyambene Community Conservancy land use areas

Table 1: Land use areas

LANDUSE	Area (Hectares)
Bushland	59481.45
Barren land	2065.40
Agriculture	1384.71

We have conducted a remote sensing analysis to determine the land use and land cover as of October 2014 (fig. 9). Most of the area is occupied by dense bushland with a small area with sparse bush land. Three small sections on the border with Shaba National Reserve have barren land. At the tip close to Isiolo town, there is a section where agricultural activities are going on but this must be outside the area designated for development of Nyambene conservancy.

7.1.1. Weather

The climate of the NGA is predominantly semi-arid with an annual average rainfall of about 500 to 900 mm. Although the long rains are still termed as such between March and May, the reality is that the most reliable amount of rainfall is received during October-December (the short rains). The average rainfall in each season is as follows:

- I. March-May season – 291 mm
- II. October-December – 448 mm

It seems that the area is gradually changing from a bimodal rainfall pattern to a single rainy season. It is evident that the Study Area is located in a rain shadow of the northern Mount Kenya foothills including the Nyambene Hills.

7.1.2. Rainfall

Rainfall is bimodal with the short rains coming between October and December and the long rains between March and May. The annual rainfall can fluctuate considerably with wet years having more than double the mean annual rainfall and dry years less than half or quarter of the mean annual rainfall. Figure 10 shows the rainfall received in the year 2007 compared with 2006. Drought is a feature found in the area and can last anywhere between four and eight months. In 2007 the area received an annual mean rainfall of 700mm compared to 386mm in 2006. 7 months recorded no rain in 2006 and 3 months in 2007.

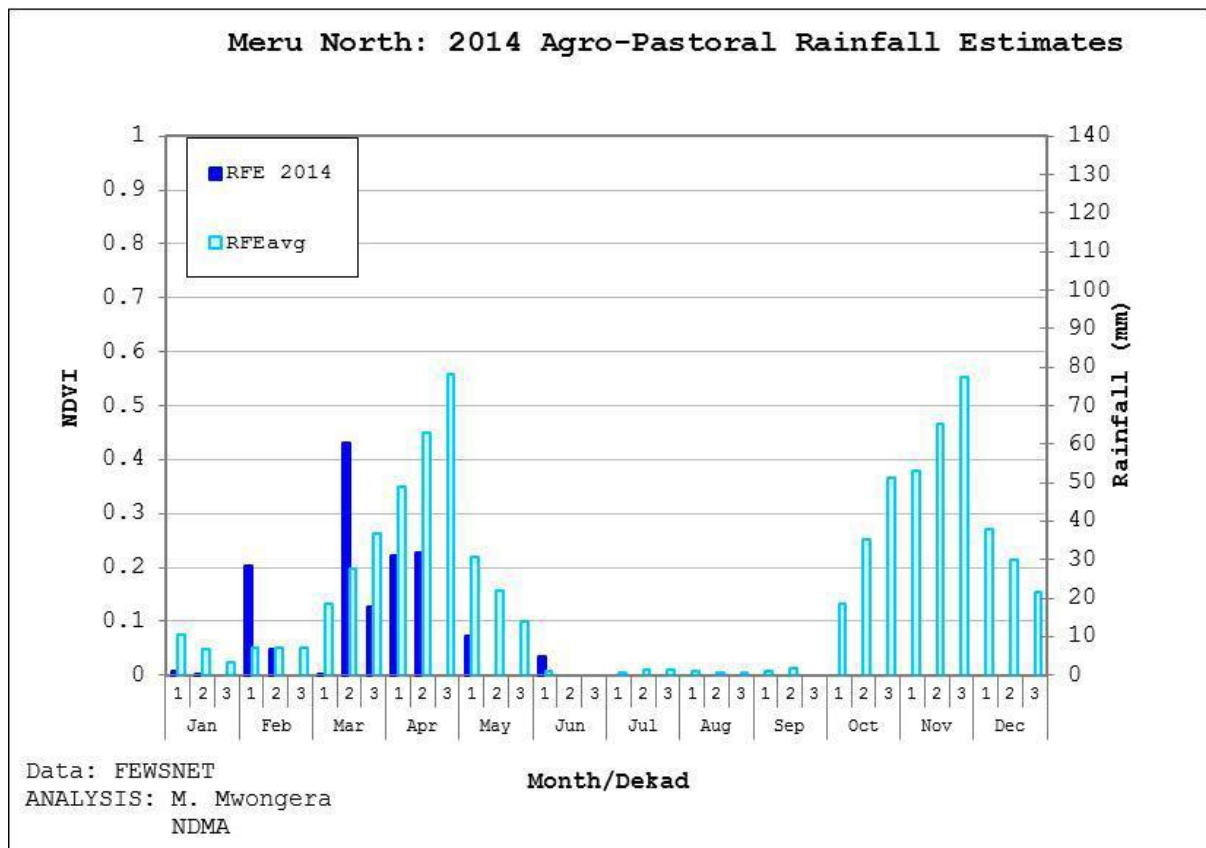


Figure 12: Rainfall totals (RFE) for the Agro-pastoral livelihood zone for June 2014

7.1.3. Winds

The area between the site proposed for the conservancy and Nyambene ranges extending westwards along the foothills of Mt. Kenya experiences strong winds blowing from eastwards towards Laikipia. These winds carry away moisture from both Nyambene hills and Mt. Kenya making the site a rain shadow. The winds are so strong that the ministry of energy identified the area suitable for development of windmills to produce electricity (fig. 11).

The importance of the strong winds to the proposed conservancy is that the winds can provide renewable green wind energy to power installations in the conservancy. What will be needed are a few windmills to provide the energy required without drawing electricity from the national grid.

The same wind energy can be useful in powering boreholes that may be drilled in the area to provide water for the conservancy needs.

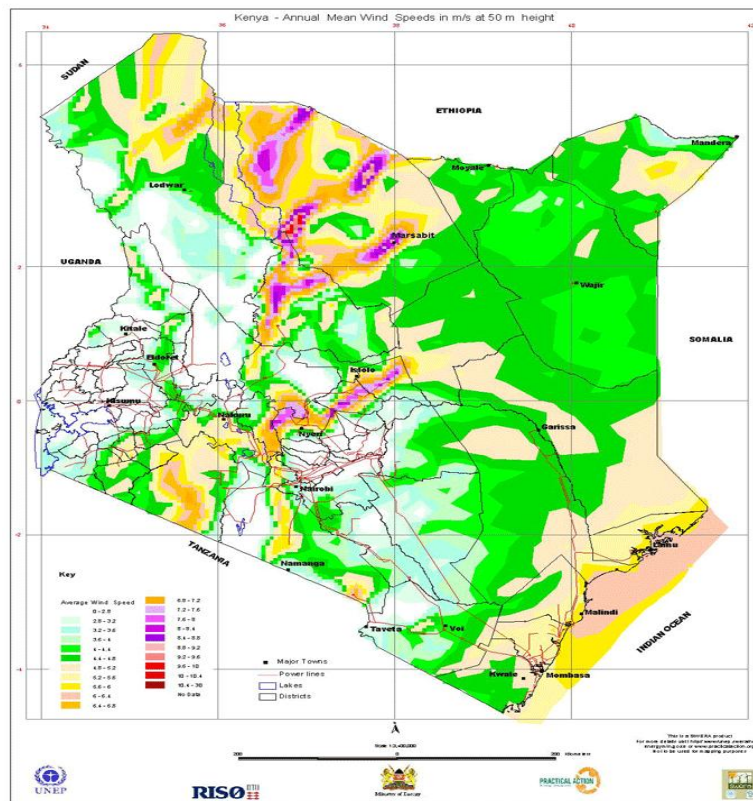


Figure 13: A map of wind speeds in Kenya

There are plans by both the Government of Meru County and KenGen to utilize the strong wind potential surrounding the proposed conservancy to produce electricity and connect it to the national grid. These plans are currently in the feasibility study phase to determine the economic potential of such a project.

7.1.4. Climate change

Climate change is a worldwide phenomenon and has affected all parts of the world. The driving forces of climate change are increasing temperatures and variable precipitation patterns. Climate change has different impacts in different places. A report on a workshop held in Embu in 2012 in preparation of the National Climate Change Response Strategy for the part of Mt. Kenya east had the following for Meru County:

Evidences for climate change in Meru County

- Changes in rainfall patterns
- Drying up of some rivers/streams
- Snow caps of Mt. Kenya receding
- Reported cases of increased drought episodes in Ruiru, Tigania East, and Buuri
- Floods and landslides in some places such as Maua
- Extreme changes in temperature

Impacts

- Unpredictability of seasons
- Destruction of infrastructure such as roads
- Increased inter-community conflicts over resources especially during droughts (areas bordering pastoral communities in particular)
- Increased incidences of diseases such as malaria
- Increased poverty levels
- Equity issues---those rich/less impacted exploiting the poor/most vulnerable

Current Actions

- Afforestation efforts e.g. along River Mutoga, and the whole county in general
- Awareness creation on water conservation methods such as dams, pans and tanks in Mutuati and Buuri
- Climate change awareness efforts
- Replacement of exotic tree species thought to be water thirsty such as blue gum with endogenous species along river channels
- Micro-hydro projects by the tea industry in Kinoro, Imenti
- A carbon offset project by TIST
- Energy saving jikos especially through various women groups
- Briquettes from charcoal and agricultural waste in Tigania
- Development of biogas projects
- New farming technologies such as greenhouse Farming

Recommended Actions

- Awareness on causes, impacts and measures to respond to climate change and environmental degradation in general
- Planting of trees
- Climate and weather information dissemination to the grassroots level
- Alternative sources of energy such as biogas to reduce pressure on forest products/wood fuel
- Energy saving/improved cook-stoves
- Additional and proper drainage systems
- Investment in water catchment technologies for agriculture, e.g. zaipits
- Drought tolerant crops
- Alternative sources of energy/electricity e.g. micro hydro development
- Seeking of alternative livelihoods

7.2. Biophysical characteristics

7.2.1. Soils

Brown heavy clays and black cotton soils dominate the area. Higher elevated areas within undulating topography have lighter clay loams and slightly sandy loams. There is a lot of volcanic stone covering the surface and also buried within the top soil. The tops of the undulating landscape have underlying hard solid rocks. The valleys show deep alluvial heavy soils. The surface of weathered Basement System rocks is covered with coarse, red sand (e.g. in Shaba conservancy area). Volcanic rocks are overlain by fine brown, grey and black volcanic soils. The Northern Grazing Area is part of the Volcanic Low Lands roughly occurring between 600 – 1,500 meters (1,900 – 5,000 ft) above sea level with pre-dominantly heavy soils of volcanic origin.

The soils in many places are very rocky with numerous loose stones of volcanic origin. The soils are formed from weathering of the volcanic stones and comprise of pumice ash mixed with sand and clay. The ground on the southern end of the conservancy and beyond is raised as it tends towards the higher elevations of the Nyambene Ranges.



Figure 14: A map showing parts of the open grasslands in the proposed conservancy

7.2.2. Geology of Meru County

The geology of Meru County comprises of two natural sub-divisions, the volcanic rocks of Pleistocene to Recent and Tertiary eras and the Pre-Cambrian Basement systems. The Basement system, which is in a state of maturity, forms the floor on which all the remaining rocks of the area lie. It is on the southern flanks in the low lying areas mainly in Tharaka and the Meru National Park. Other basement systems found in the county are due to post-volcanic erosion. Those around Mikinduri have exposed Basement complex inliers which were part of a larger hill zone extending discontinuously from Shaba in the north into Kitui County in the south. The Basement system rocks are mainly sediments-grits, sandstones, shales and limestones that have been metamorphosed by heat and pressure or by impregnation by pervading fluids. Other types include heterogenous gneisses, granulites and schists of varied and complex origin

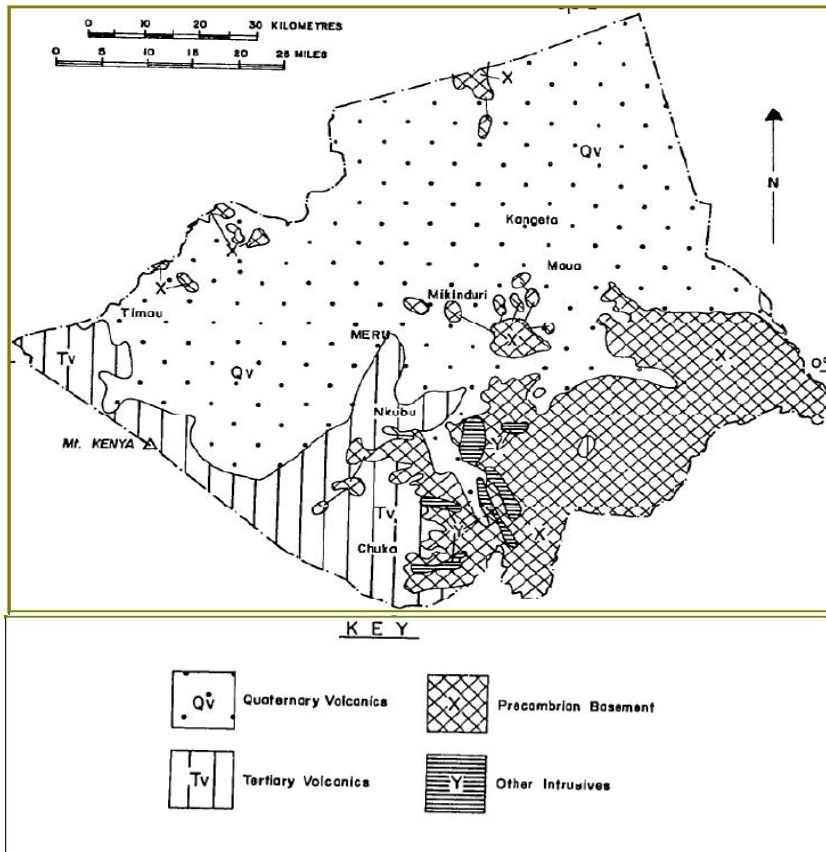


Figure 15: Map showing the Geology of Meru

The rest of the county is made up of volcanic rock, Tertiary volcanics on the uppermost reaches of Mount Kenya and on the southern slopes and Quaternary volcanics in the Mount Kenya forest, North Imenti, Igembe, and the Northern Grazing Area. Mount Kenya volcano was built by an eruption in Tertiary times and was alive as recently as the Pleistocene epoch. Volcanism finally ceased when a plug, the remains of which are the present main peaks. The upper and middle-slopes of the mountain are underlain by basalts, phonolites and kenytes which flowed from the central and subsidiary vents of the volcano. The northern slopes of the mountain are pock-marked with adventive cones and vents of mid-Pleistocene age. Many of these are above the Mount Kenya forest boundary or are in the northern unpopulated areas.

7.2.3. Soils

Mt. Kenya and its foot-hills determine the physiographic setting of the upper part of Meru Central. This mountain of olivine basalts and ashes occupy most of the county, followed by foot-hills. The northern and north-western boundary is taken up by plateaus of Tertiary basic igneous rocks. Non-dissected erosional plains of the same parent rock occur in the north. The southern part of Meru stretches from the Mt. Kenya basalts to the foot-hills and lower, where erosional peneplains are dominant, surmounted by some inselbergs as relicts from the old mountain area.

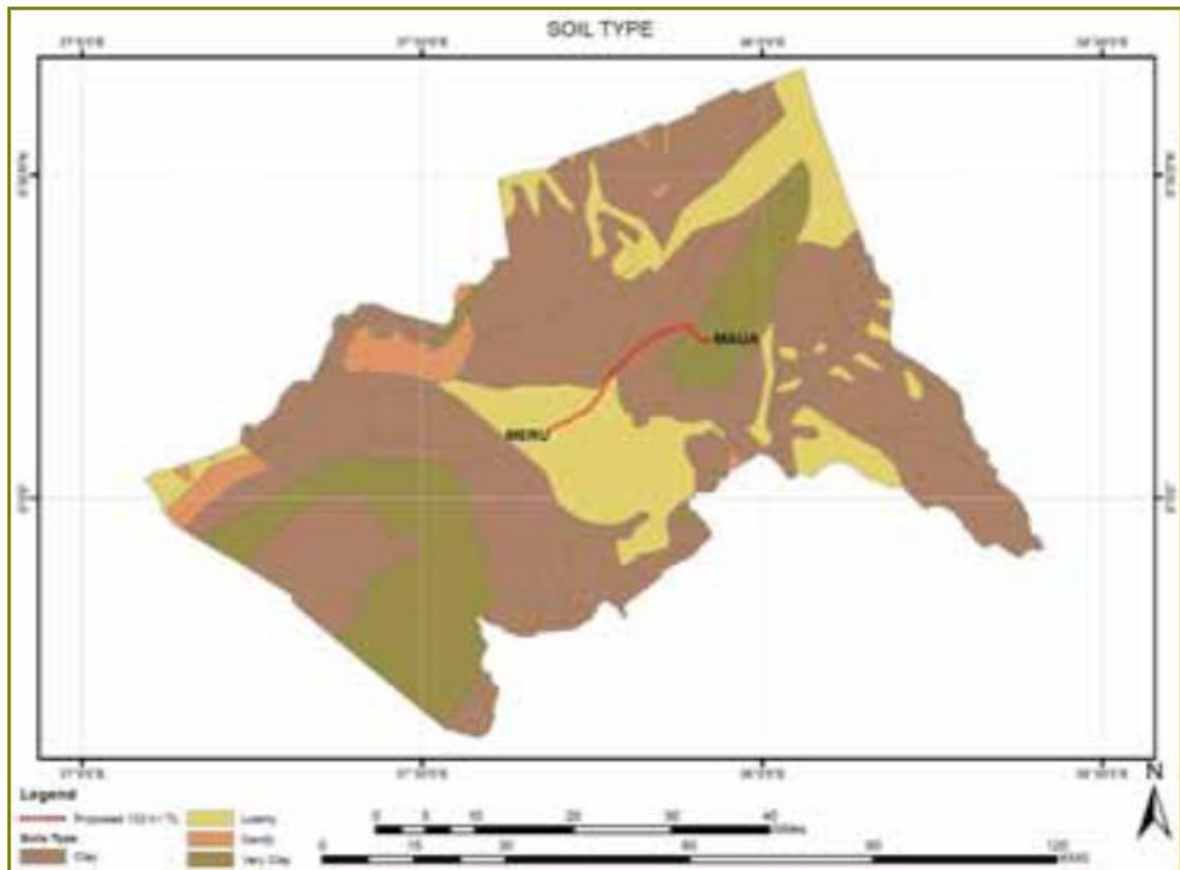


Figure 16: Map of Soil types in Meru County

Soils in the region are closely related to the landforms and are therefore as diverse as the physiography. Of the 21 soil categories identified in Kenya (Kenya Soil Survey 2002), 17 of them are found in Meru. A clear dichotomy exists between soils that have evolved in the highlands from recent volcanic parent and those that are derivative of the ancient basement rocks. Mount Kenya and Nyambene lavas and basalts give rise to clay soils whereas the basement system granites and gneisses, usually of high quartz content, yield sandy soils. This difference has been intensified by climatic contrasts. Not only are the eastern lowlands endowed with a less fertile bedrock, but they also receive little rainfall which does not adequately decompose this parent material.

On the highest parts, soils of variable fertility which are imperfectly drained, shallow to moderately deep, dark gray brown, friable and humic acid to peaty loam to clay loam dystic Histosols, Lithic phase with Lithosols and rock out-crops are found. On slightly lower areas, soils that are well drained, deep, dark reddish brown to dark brown with places shallow to moderate deep and rockyhumic Andosols and partly Lithic.

The volcanic foothills are dominated by soils that are well-drained, extremely deep, dark red brown to dark brown, friable and slightly smeary clay, ando-humic Nitisols with humic Andosols. Two small areas in Southern part of Meru consist of less fertile upland soil well drained, moderately deep to deep, dark red to yellowish red, friable, sandy clay loam to Clay rhodic and orthic Ferrasols; with ferralo-chromic/orthic/ferric Acrisols.

7.2.4. Prehistoric sites

There are no known prehistoric sites in the area proposed for conservancy. An inspection of the list of sites and monuments posted in the website by the National Museums of Kenya shows that there is no listed prehistoric site in the area. A literature search did not yield any archaeological site in the area, but the possibilities of finding a site that has not been recorded is always there. We therefore provide a contingency plan in the event that a site with prehistoric artefacts is identified during the construction or use of the proposed site.

In the event that any material of cultural importance is found in the area, the contractor is required to be conversant with artefact preservation procedures where the site should be sealed off, left undisturbed until a qualified archaeologist verifies if the material is of historical importance or not. If material is found to be of historic importance an emergency excavation is done to collect the material for further investigation or safe keep by the Museums of Kenya.

7.2.5. Topography

The topography of the area is generally flat broken by a few low hills and has a drainage pattern towards the north, away from the Nyambene Hills towards the Ewaso Ng'iro River basin. Notable rivers in the area are Lathima, Muro-mpa, Kalibuuri and Liliaba, which are all seasonal. Another notable stream is Rikiundu that flows from Nyambene hills through Gambela and Ngaremara.

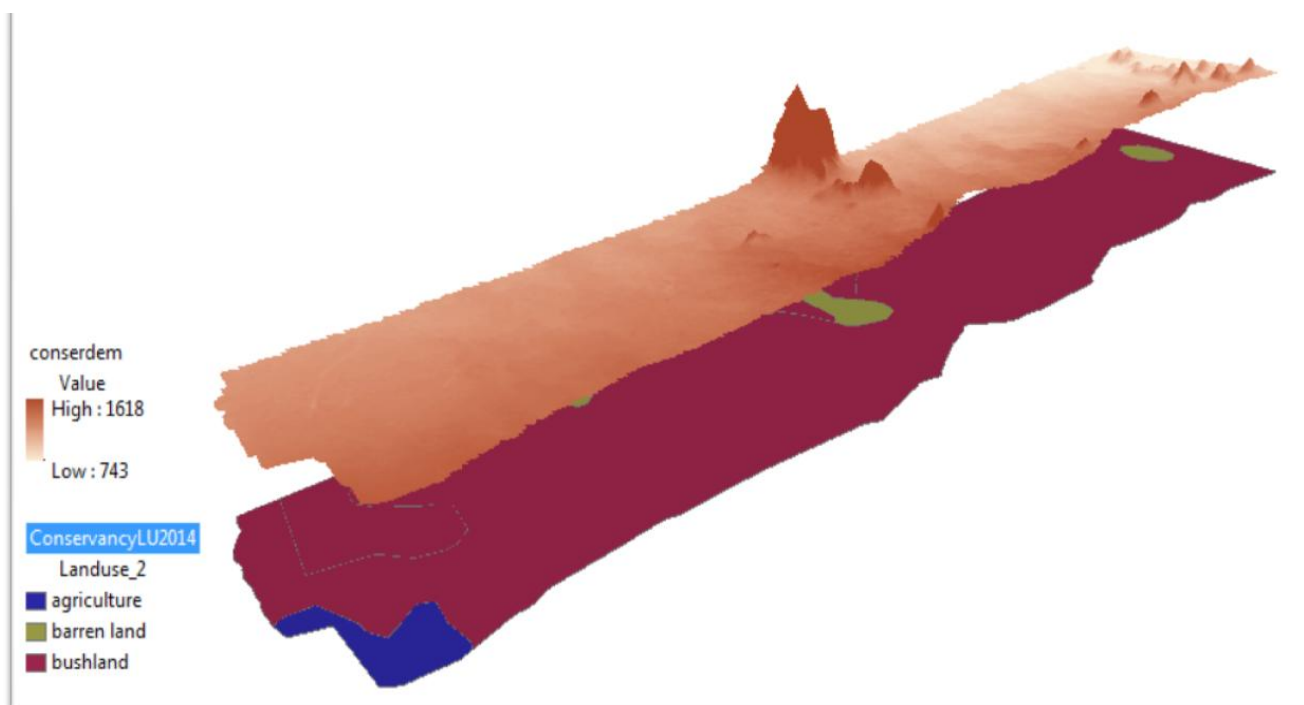


Figure 17: Digital Elevation model of Nyambene Community Conservancy

The upper map in figure 15 is the spatial elevation of the conservancy showing the general topography of the conservancy. The highest peak in the middle of the conservancy is 1618 meters above sea level while the lowest level is about 743 meters above sea level. The elevation of the peak is exaggerated a little compared to the general landscape.

7.2.6. Hydrology

The Northern Grazing Area (NGA) in Meru County has a deficit of water provision for both domestic and livestock use. Although hardly any permanent settlement exists in the area at present, there is an increased tendency for people to settle in a nearby region at the foot of the Nyambene Hills to grow food crops. This is caused by the increase in population pressure around the Nyambene hills in Tigania and Igembe Sub Counties. This is aggravated by the need for food crop production in these areas. For livestock production, the area is more deficient in water than grazing resources (pasture), especially during long dry spells when water in the Ewaso Ng'iro River in the north diminishes.

The area proposed for conservancy has neither permanent rivers nor piped water. There are two boreholes adjacent to the area proposed for the community conservancy that serve both humans and livestock. One of the boreholes was drilled by the community through the CDF funds and the other was drilled by a local church. Within the conservancy a shallow well was dug in an area with a high water table. Although the well was intended to serve livestock grazed in the area, it serves as an important water source for wildlife as well.

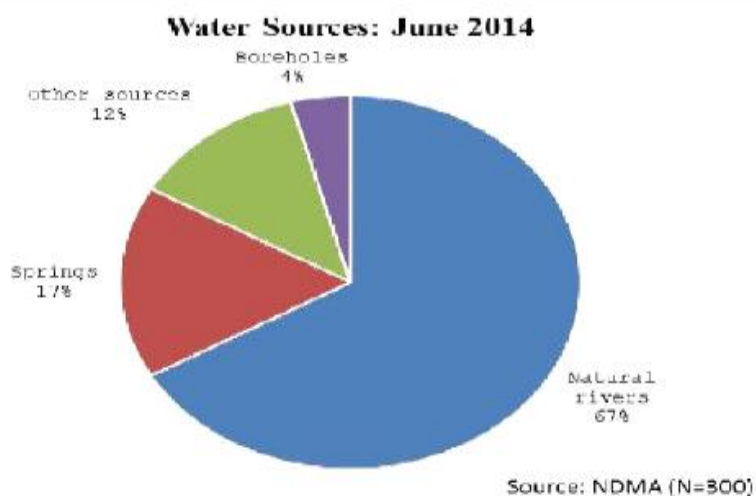


Figure 18: Water sources around the conservancy

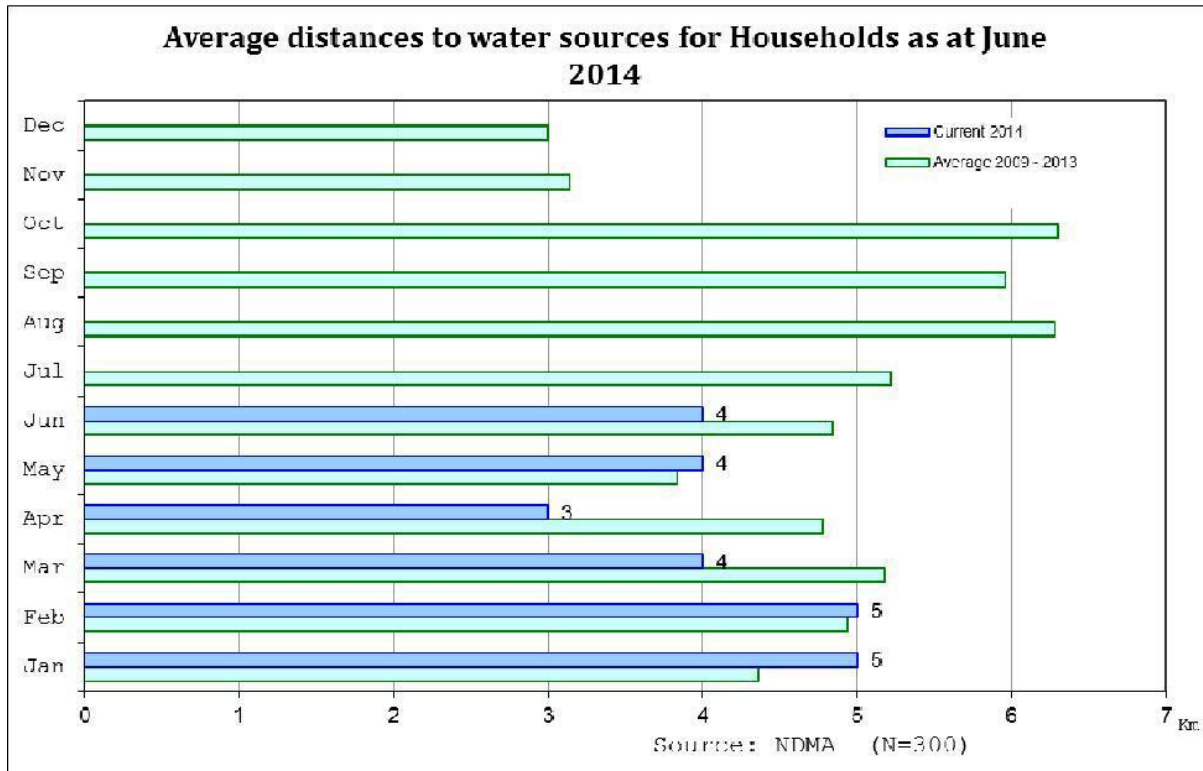


Figure 19: Average distance of distance between households and the water sources

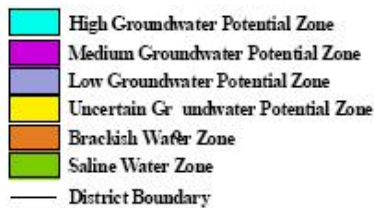
7.2.7. Hydro-Geography and Groundwater Resources

Water bearing layers are expected to be encountered at the surface between the lower Nyambene lava that is located at the base of the hills and surrounding individual hills and the underlying Basement System rocks (Fig 13). This surface represents the end-tertiary pen plain and the upper part consisting of sediments underlain by weathered zone of basement gneisses. The overlying volcanic rocks (Lower Nyambene Volcanic Series) if substantial are of importance as potential water bearing layers. They also serve as an important conduit for transmission of water from the recharge area within the Nyambene range.

The volcanic low lands are formed from lavas, which extruded from the Nyambene Hills. These lower most slopes of the Nyambene Hills that include the NGA, have very few springs and no permanent surface water flowing, but it has rich and very productive aquifers (Fig 19). The potential is so high that it may be suitable to exploit groundwater for irrigation purposes.



- LEGEND -



Groundwater Potential - Source: Ewaso Ng'ro North River Catchment Conservation and Water Resource Management Study/ Rural Water Resource Development and Management Project (ENNDA)

Figure 20: Ground water potential sources

7.2.8. Ecosystems

The area proposed for conservancy is a dryland dominated by open savannah ecosystems. In the rocky areas the vegetation comprises of thick shrub lands with an understory of herbaceous plant communities that are hosts for a number of arboreal reptiles, arthropods, and other invertebrate adapted to shaded areas in dry environments. The shaded areas are rocky and beneath the rocks a number of insects are found.

There are many stand alone trees (mainly *Acacia*, *Commiphora*, and *Combretum* species scattered in the grasslands. These trees form a tree canopy that is home for numerous birds and a number arboreal organisms that are abundant during the wet seasons.

Most of the area is occupied by open grasslands that attract wild life grazers like impalas, gazelles, Zebras, giraffes, buffaloes and even elephants. During the dry seasons wildlife migrate to the area from the neighbouring Shaba National Reserve and Meru National Park to come and graze in the area. The area is also a migratory corridor for animal movements from the lowland plains to Mount Kenya in during the dry seasons. The abundance of grasses is

also attractive to livestock and flocks of cattle are taken to the area for grazing during the dry seasons.

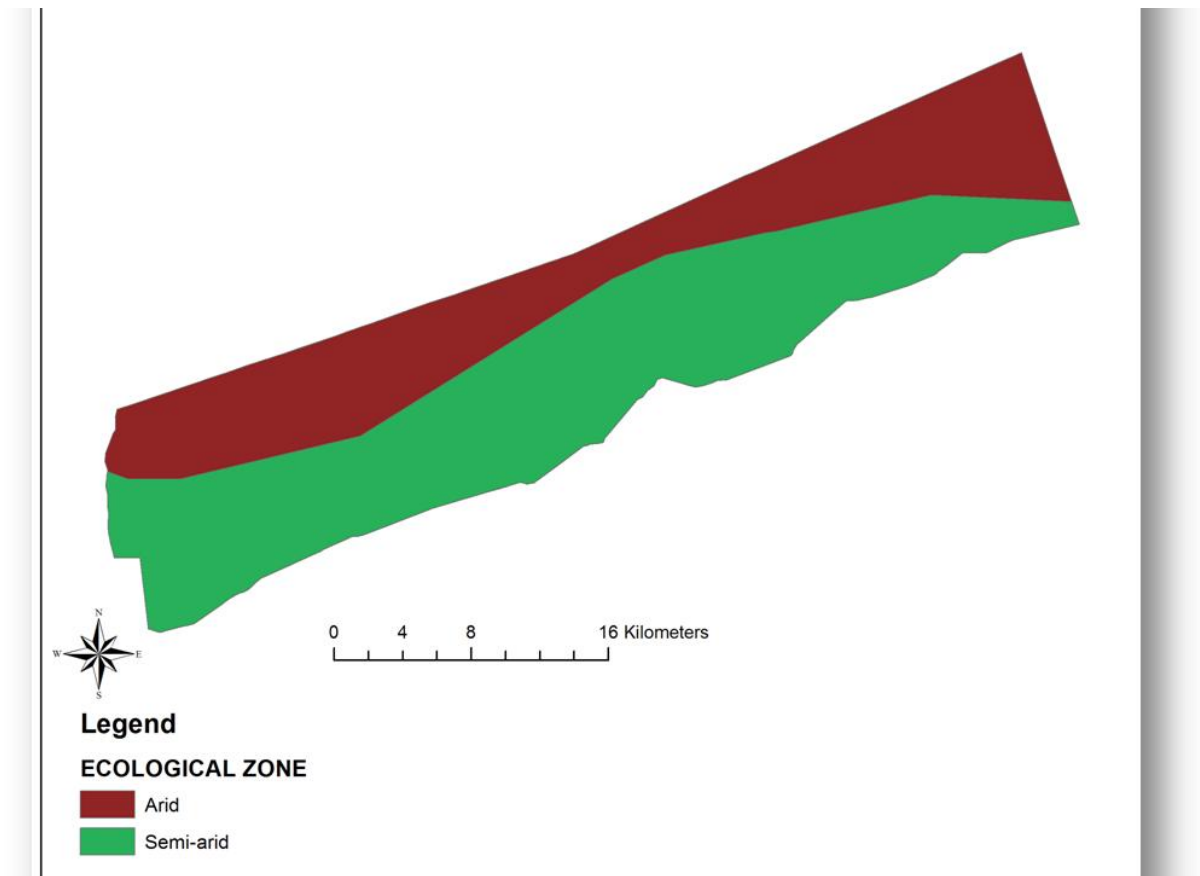


Figure 21: Ecological zones of Nyambene Community Conservancy

Nyambene conservancy occupies two ecological zones based on land cover characterizations. The two ecological zones are semi – arid the area next to the slopes of Nyambene ranges, and arid in the area bordering with Shaba National Reserve.

7.2.9. Vegetation

The study area has different species of flora, which is due to different types of soils and the tropical arid climate of the area. The vegetation type varies from *Acacia-Commiphora* bushland, *Combretum* wooded grassland, and *Acacia* wooded grassland to open grasslands. Other vegetation includes thick bushes on rocky inselbergs and dryland forests. Due to diversification in vegetation, existence of different habitat has brought about different faunal life distribution in the area. *Combretum* wooded grassland has in some parts, *Commiphora* bushland and in other parts *Acacia /Terminalia* wooded grasslands.

Vegetation around the proposed conservancy is dominated by open un-grazed grasslands with high biomass of annual short grasses adapted to the dry conditions of the area. There are many parts with thick perennial thickets and short thorny trees especially in the rocky and hilly grounds. The grass species are mainly annual in the open areas but also with some

perennial species in the thickets. The vegetation is occasionally managed by bush fires set on by poachers as they hunt the wild animals and sometimes wild honey.

This vegetation community comprised grassland with scattered trees. The woody species were conspicuous with a canopy cover of about 30%. Two types of open wooded grassland vegetation were recorded in the project area, namely: *Acacia-Chloris* open wooded grassland and *Combretum-Sehima* open wooded grassland.

***Acacia-Chloris* open wooded grassland** was dominated by such woody species as *Acacia tortilis* and *A. senegal*. Other woody species associated with this community included *A. mellifera*, *A. seyal*, *Balanites aegyptiaca*, *Terminalia brownii*, *T. spinosa*, and *Tamarindus indica*. The grass species *Chloris gayana* was dominant, but *Chrysopogon roxyburghiana*, *Chrysopogon plumulosus*, *Aristida adscensionis* and *Sehima nervosum* were also represented. Some *Acacia* species of this vegetation type were of shrubby habit. Woody species rose to a height of 6-10 metres, while grass species grow to a maximum height of about 1 metre.



Figure 22: *Acacia-Chloris* open wooded grassland

***Combretum-Sehima* open wooded grassland** with *Combretum aculeatum* as the dominant woody species. *Combretum collinum*, *C. fragrans*, *C. hereroense*, and *C. volkensiia* were also common. *Sehima nervosum* was the dominant grass species throughout most of the *Combretum* wooded grassland. However, *Themeda triandra*, *Aristida adscensionis* and *Chrysopogon plumulosus* were also represented. Woody species rose to a height of 8-10 metres, with grasses rising to a maximum height of 1 metre.

This vegetation community was grassland with a basal cover of 85% with scattered or grouped shrubs of about 3 metres in height interspersed within it. This vegetation type extended from the northern parts of Meru National Park into Basanadi National Reserve, extending further into the Northern Dispersal Area.

The vegetation was dominated by *Chloris roxyburghiana*, but *Hyparrhenia filipendula*, *Aristida adscensionsis* and *Blepharis ciliaris* were also represented. Shrubs, most of which were woody species of shrubby habit, included *Acacia seyal*, *A. mellifera*, *A. senegal*, *Combretum aculeatum*, *Bauhinia tomentosa*, *Truimfetta rhomboidea*, *Tephrosia hildebrandtii*, *Combretum volkesia*, *Boscia angustifolia*, *Grewia tenax*, *Cordia sinensis*.



Figure 23: Acacia-Combretum-Chloris Shrub grassland

This vegetation community comprised trees and shrubs. Mainly plants of shrubby habit dominated the vegetation, but trees were always conspicuous forming a single layered canopy cover of about 20% with a height not exceeding 10 meters except for occasional emergents. Dominant species included *Acacia senegal*, *A. tortilis*, *A. mellifera* and *Commiphora africana*. Other species included *Commiphora campestris*, *Barleria taitensis*, *Bauhinia tomentosa*, *Hibiscus micranthus*, *Combretum collinum* and *Combretum aculeatum*. The bush was generally dense with open ground spaces that remained bare of vegetation throughout the year. Small patches of grass such as *Rhynchelytrum repens*, *Tetrapogon tenellus*, and *Hyparrhenia* species were also encountered.

7.3. Wildlife – information from local residents

According to the local residents, the area used to have much wildlife like elephants, hyenas, gazelles and impalas among others, but due to poaching these animals have disappeared completely. It is only giraffes that still exist in the area but they too have significantly reduced in number.

The south eastern part of the area proposed for conservancy is inhabited by many species of birds whose nests are seen in almost all acacia trees in the region. Based on records from local residents and some old signboards left around, the area was used for bird shooting safaris in the 1960s. This part is called “*Chiuluni*” a local name that means a place of bird’s nests. One ornithologist reported to have spotted a migratory bird in the area during a visit to

the site. With the current increase in population in the area and the increase in grazing intensity, the birds might migrate due to disturbance and destruction of their nesting habitats. If the conservancy is established, this bird site will be protected from a possible destruction by bush fires and charcoal burners who target the acacia trees for charcoal

Although the area has been set aside for grazing for several decades, the area has not been used as such because of poachers who have made the place insecure. The owners of the land wish to use the area as a community conservancy where wildlife and livestock can co - exist in a planned manner and wildlife protection can keep off the poachers.

A number of conservancies in the bordering Isiolo County surround the area and if the proposed site is developed into a conservancy, wildlife in these conservancies will have a much richer and spatially diverse ecosystem to graze.

7.3.1. Wildlife Migration

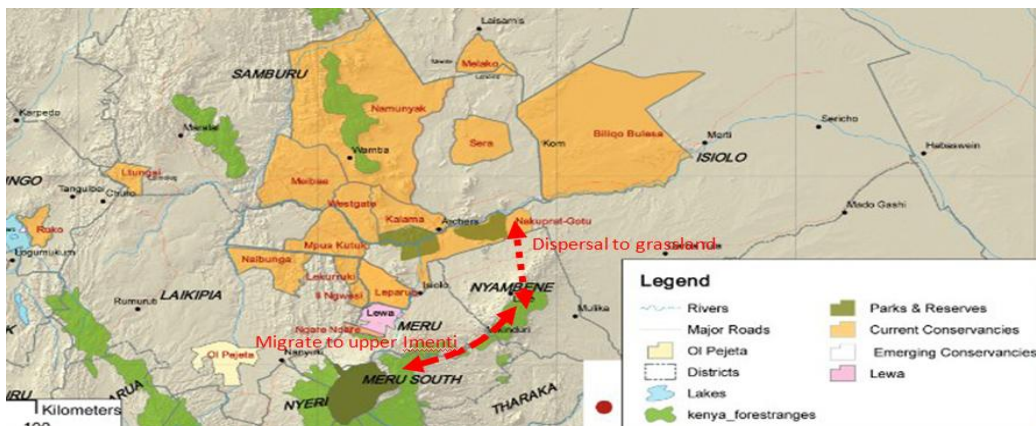


Figure 24: Wild Life Migration and Dispersal Routes from MCA (Northern Rangeland Trust - NRT www.nrt-kenya.org)

The most common animal migrations within Meru County are moving from the lowland grasslands to the highland bushlands during the dry seasons when drought depletes pasture resources within the lowlands. During the wet season animals move back to the lowlands after the pastures regenerate following the return of wetter conditions.

Animals move from MCA towards Mt. Kenya along Nyambene Forests, the lower and upper Imenti forests to Mt. Kenya forest. However, it is only the elephants that make this long migration perhaps because elephants can move long distances. The other animals cope with drought by widening their grazing orbits to areas normally referred to as wildlife dispersal areas. Other than elephants movement by other animals could be referred to movement for forage rather than migratory movement. The location of Nyambene National Reserve is in between the Samburu / Shaba ecosystems and the animal protection areas of MCA. It is not known whether animals migrate from MCA to Samburu Shaba ecosystems. For it to be considered as a migration the animals must stay for some period of residence in the new area not just a continuous movement or roaming around for pastures.

7.3.2. Wildlife information from literature review

The area is commonly referred to as wildlife dispersal area owing to the extent to which wildlife from the nearby-protected areas spread their grazing orbits and migrates to the area. During an aerial animal count for large mammals in Meru Conservation Area, that included the northern grazing area, quite a big number of animals were found in the area. The counts of 1906 and 1907 reported higher numbers of wildlife in the study area than in the protected areas. Currently these animals are at risk from poachers because the area is not a protected wildlife area.



Figure 25: A Photograph showing vegetation and some of the wildlife in the proposed conservation area

In the neighbouring Shaba National Reserve there are some of the rare species that include Aardwolf, Striped Hyena, plentiful of Gerenuk, Grevy Zebra, Beisa Oryx, Ostrich, and Reticulated Giraffe. Leopards are found in the massive *Acacia tortilis* trees, cheetahs are also found in specific areas of the conservancy.

To the eastern side of the proposed conservancy is also Nakuprat-Gotu wildlife conservancy that also borders with Shaba National Conservancy as well. Nakuprat—Gotu operates through the Northern Rangelands Trust and its management is linked to Lewa Wildlife Conservancy and Shaba.

Table 2: The percentage of number of animals in parks and conservancies around Meru

Region	% age Number of animals
Bisanadi National Park	1.23
Kora National Park	12.83
Meru National Park	2.00
Mwingi National Park	2.36
Northern Grazing Zone	62.79
Rahole National Park	18.79
Grand Total	100

This analysis shows that there are some times when northern Grazing Zone has a high percentage of animals, higher than even the protected areas.

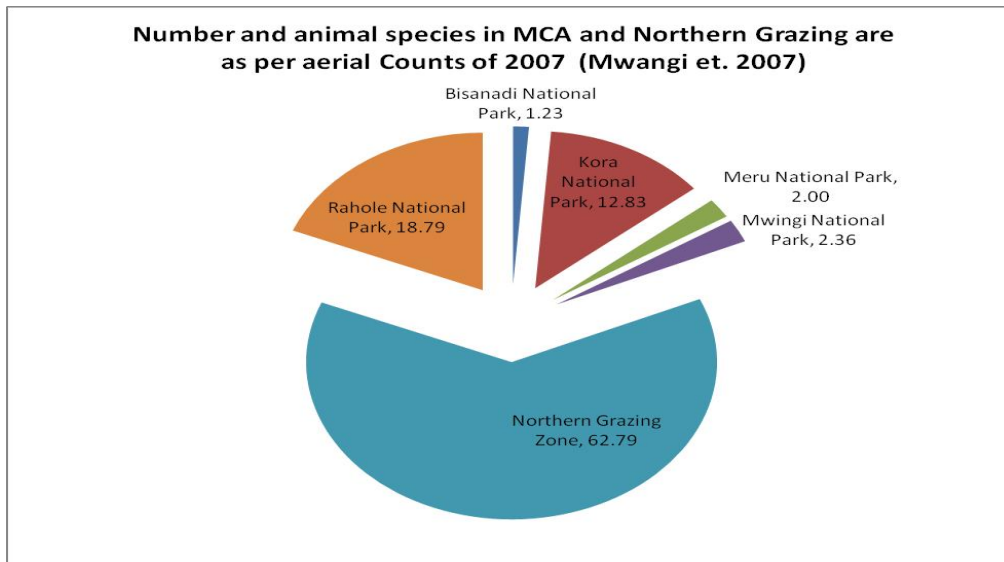


Figure 26: The proportions of animals in MCA including northern grazing area

7.3.2.1. Large mammals

Large mammals are abundant in MCA covering a wide range of animal species. The list below presents some of the common large mammals found in MCA. These animals are also found in the northern Grazing areas both during the wet and dry seasons

Some of the large mammals found in MCA and indeed the area proposed for conservancy are as follows:

Name		
Buffaloes	Eland	Reed Back
Bushbuck	Giraffe	Rhinos
Baboons	Grant's gazelle	Waterbuck
Cattle	Gerenuk Ostrich	Warthog
Camels	Guinea Fowls	Plain Zebras
Crocodiles	Hippo	Gravy's zebra
Dik Dik	Impala	Honey badger
Duiker	Lesser Kudu	Jackal
Donkeys	Ostrich	
Elephants	Oryx	

An aerial count of large mammals in MCA protected area and the Northern Grazing Area (NGA) of Meru was conducted by KWS in 2007. The study reports the abundance of a number of animals and compares their percentage presence between the protected areas and outside the protected areas.

Wet season distribution of wildlife in the MCA Protected Area (PA) and outside protected area

The area referred to as outside the protected area mainly refers to the northern grazing area which is the area is proposed for establishment of a conservancy

There are a higher number of individual animals inside protected areas than outside (72% and 28% of the total number counted respectively). With the exception of buffalo population that is quite high in Meru Park and not comparable to most other species. The ratio of inside PA to outside PA is 13:7. Elephants were more outside than inside. Other species with more individuals outside include Oryx, lesser kudu, gerenuk, warthog, ostrich and gazelles. The occurrences of species both inside and outside PAs in MCA remain the same but the abundant varies with species inside being more abundant than outside. The two tables below summarize the occurrence and abundance of the species in the dry and the wet season.

Table 3: Wet Season Counts 2007 of Wildlife

Species Name	Estimate Inside PA	Estimate Outside PA	Total Count Estimate	% age inside PA	%age Outside PA
Elephants	356	391	747	48%	52%
Giraffes	784	33	817	59%	41%
Zebras	436	178	614	71%	29%
Grevys	2	12	14	14%	86%
Impalas	196	4	200	98%	2%
Buffaloes	1609	223	1832	88%	12%
Elands	38	21	59	64%	36%

Oryx	15	33	48	31%	69%
Waterbucks	62	3	65	95%	5%
Lesser Kudu	17	56	93	40%	60%
Gerenuk	65	144	209	31%	69%
Ostrich	30	37	67	45%	55%
Warthog	63	78	141	45%	55%
Gazelles	123	244	367	34%	66%
Hippos	54	0	54	100%	-
Total	3870	1457	5327	72%	28%

During the wet season, about 28% of wildlife in MCA is in the Northern Grazing Area while 72 % are in the protected area. There were higher percentages of animals outside the protected areas during the wet season than during the dry season.

Table 4: Dry season Counts 2007 of wildlife

Species Name	Estimate Inside PA	Estimate Outside PA	Total Count Estimate	% age inside PA	% age Outside PA
Elephants	597	136	703	80%	20%
Giraffes	327	96	423	78.3%	22.7%
Zebras	163	55	218	74.8%	25.2%
Grevys	8	20	28	30%	70%
Impalas	30	0	30	100%	-
Buffaloes	2139	149	2288	93%	7%
Elands	28	0	28	100%	-
Oryx	83	23	106	21.7%	78.3%
Waterbucks	173	10	183	94.5%	5.5%
Lesser Kudu	5	89	94	5.3%	94.7%
Greater Kudu	4	102	106	3.8%	96.2%
Gerenuk	78	124	202	38.6%	61.4%
Ostrich	28	48	76	36.8%	63.2%
Warthog	36	27	63	58.7%	41.3%
Gazelles	40	45	85	47%	53%
Hippos	386	6	392	98.5%	1.5%
Total	4125	930	5055	82%	18%

During the dry season there fewer wildlife animals outside the protected areas than inside the protected area.

7.3.2.2. Small mammals

There is a multitude of smaller mammals in the study area, belonging to different orders. Small mammals are not easily seen like the elephants, lions and other larger species. You may see the small ones such as hares, squirrels and shrews mainly by chance. To see them,

you need to look for them. A good example is the ground squirrel. Ground squirrels are numerous in the study area. They have claws adapted for digging rather than for climbing. They dig holes for themselves and their babies to shelter in, and where they can stash abundant food, such as seeds and nuts.

7.3.2.3. Birds

Birds are common in the Meru North with their habitats ranging from the high and cooler altitudes on Nyambene hills down to the plains of Meru National Park extending to northern grazing areas of the proposed conservancy. The eastern part of the area proposed for the conservancy bird nests are abundant with colonies of birds nesting on every single Acacia tree in the area. Due to the abundance of nests, the local area is called “Chiuluni” a name that locally means the place of bird’s nests. During the colonial times Chiuluni was a place for bird shooting. During a field survey for this work an old signpost indicating a bird shooting area was seen on the roadside near two old *Ficus* trees that have ancient writings on their barks.

The adjacent Meru National Park has a diverse avifauna, with over 300 species recorded. The threatened Jungle Babbler, which has a very restricted-range in central Kenya, has recently been recorded in the south-west part of the park. Meru has one of the eight species of Kenya Mountains Endemic Bird Area and fifty nine of the 94 Somali-Masai biome species that occur in Kenya. Regionally threatened species recorded here, include the Martial Eagle, African Finfoot (an Intra-African migrant), Pel's Fishing-Owl, Grant's Woodhoopoe and the Saddle-billed Stork which is known to breed in this area. During the wet seasons, one can find Green-backed Herons, Black-crowned Night Herons, White-browed Coucal, Malachite Kingfisher and Black Crake, plus (at the right time of the year) many migrant waders. Most years there is at least one migrant Great Snipe present. In 1997 it is reported that thousands of Chest-nut Weavers and Chestnut Sparrows nested along the river in this same area.

There is a possibility that some of these birds are migrants from the temperate regions of either north Africa or Europe.

Common Name	Scientific Name
Black-throated Barbet	<i>Tricholaema melanocephala</i>
Red-and-yellow Barbet	<i>Trachyphonus erythrocephalus</i>
Vulturine Guineafowl	<i>Acryllium vulturinum</i>
Yellow-necked Francolin	<i>Pternistis leucoscepus</i>
Eastern Chanting-goshawk	<i>Melierax poliopterus</i>
Black-faced Sandgrouse	<i>Pterocles decoratus</i>
Red-bellied Parrot	<i>Poicephalus rufiventris</i>
White-bellied Go-away-bird	<i>Criniferoides leucogaster</i>
Sombre Nightjar	<i>Caprimulgus fraenatus</i>
Donaldson-Smith's Nightjar	<i>Caprimulgus donaldsoni</i>
Somali Bee-eater	<i>Merops revoilii</i>
Abyssinian Scimitarbill	<i>Rhinopomastus minor</i>
Eastern Yellow-billed Hornbill	<i>Tockus flavirostris</i>

Von der Decken's Hornbill Tockus	<i>Tockus deckeni</i>
Rosy-patched Bush-shrike	<i>Rhodophoneus cruentus</i>
Three-streaked Tchagra	<i>Tchagra jamesi</i>
Pringle's Puffback	<i>Dryoscopus pringlii</i>
Long-tailed Fiscal	<i>Lanius cabanisi</i>
Taita Fiscal	<i>Lanius dorsalis</i>
Somali Tit	<i>Parus thruppi</i>
Mouse-coloured Penduline-tit	<i>Anthoscopus musculus</i>
Red-winged Lark	<i>Mirafra hypermetra</i>
Pink-breasted Lark	<i>Mirafra poecilosterna</i>
Chestnut-headed Sparrow-lark	<i>Eremopterix signatus</i>
Ashy Cisticola	<i>Cisticola cinereolus</i>
Tiny Cisticola	<i>Cisticola nanus</i>
Grey Wren-warbler	<i>Camaroptera simplex</i>
Yellow-vented Eremomela	<i>Eremomela flavicrissalis</i>
Somali Crombec	<i>Sylvietta isabellina</i>
Banded Warbler	<i>Sylvia boehmi</i>
Scaly Chatterer	<i>Turdoides aylmeri</i>
Rufous Chatterer	<i>Turdoides rubiginosa</i>
Northern Pied-babbler	<i>Turdoides hypoleuca</i>
Hinde's Pied-babbler	<i>Turdoides hindei</i>
White-breasted White-eye	<i>Zosterops abyssinicus</i>
Shelley's Starling	<i>Lamprotornis shelleyi</i>
Hildebrandt's Starling	<i>Lamprotornis hildebrandti</i>
Golden-breasted Starling	<i>Cosmopsarus regius</i>
Fischer's Starling	<i>Spreo fischeri</i>
Bare-eyed Thrush	<i>Turdus tephronotus</i>
African Grey Flycatcher	<i>Bradornis microrhynchus</i>
Kenya Violet-backed Sunbird	<i>Anthreptes orientalis</i>
Hunter's Sunbird	<i>Nectarinia hunteri</i>
Shining Sunbird	<i>Nectarinia habessinica</i>
Black-bellied Sunbird	<i>Nectarinia nectarinioides</i>
Black-capped Social-weaver	<i>Pseudonigrita cabanisi</i>
White-headed Buffalo-weaver	<i>Dinemellia dinemelli</i>
Golden Palm Weaver	<i>Ploceus bojeri</i>
Fire-fronted Bishop	<i>Euplectes diadematus</i>
Blue-capped Cordonbleu	<i>Uraeginthus cyanocephalus</i>
Purple Grenadier	<i>Uraeginthus ianthinogaster</i>
Red-rumped Waxbill	<i>Estrilda chamosyna</i>
Grey-headed Silverbill	<i>Lonchura griseicapilla</i>
Steel-blue Whydah	<i>Vidua hypocherina</i>
Straw-tailed Whydah	<i>Vidua fischeri</i>
Golden Pipit	<i>Tmetothylacus tenellus</i>
Pangani Longclaw	<i>Macronyx aurantiigula</i>
Somali Golden-breasted Bunting	<i>Emberiza poliopleura</i>

short lived and they die as dry conditions return with the disappearance of water from the temporary pools. Some of the common reptiles include Python, Puff adder and Cobra.

No study has ever been done to document fully the species of reptiles and amphibians in the area proposed for conservancy. We here refer to a study conducted in Meru National park in 2003 that showed a total of 430 individuals of amphibians comprising eleven species and six families were observed. Although climatically Meru National park and northern grazing area are typically different, there are areas with some vegetation similarities that may host similar species of reptiles and amphibians. Amphibian species diversity was found to correlate with plant species cover and abundance in three vegetation communities. Acacia wooded grassland had the highest amphibian species diversity ($H' = 2.071$, $D = 6.74$). Acacia-Commiphora bushland ranked second with ($H' = 1.858$, $D = 5.88$) while Combretum wooded grassland had the least diversity ($H' = 1.581$, $D = 5.076$).

The Acacia wooded grassland had the highest abundance (173 individuals) as well as species richness (10 species). Combretum wooded grassland had eight species (1 13 individuals) while the Acacia-Commiphora bushland had seven species (144 individuals).

The study showed a positive linear correlation between amphibian species diversity and plant species diversity in all vegetation communities. *Hemisus marmoratus* and *Phrynomantis bifasciatus* were exclusively recorded in the Acacia wooded grassland. (Fig 24) the figure below shows some of the reptiles and amphibians found in the area.



Figure 28: Types of reptiles found MCA

7.3.3. Socio economics Characteristics

The proposed area has been utilized as grazing area with no human settlements. Livestock are brought in for grazing during dry seasons. The herders make temporary structures and bring in their food for use during the grazing period. They come in groups that graze together because of insecurity. Use of the area for grazing is limited by the high risks of being attacked by raiders of livestock who come from the neighbouring communities. The raiders are usually heavily armed and in most cases they get away with large numbers of livestock stolen from their owners.

One farmer told the EIA team that he lost about 180 heads of cattle to raiders worth an estimated value of K. sh. 1.8 million in 2009. He is reluctant to re-stock his herd due to fear of being stolen.

There are no permanent residents in the area except in two small towns along the road to Garba Tula. These are Ndamulu and Gachiulu market centers along the Isiolo- Garba Tula road. Within these centers there is a thriving business of providing supplies to the herders and the farmers on the other side of the road away from area proposed for conservancy.

7.3.3.1. People and gender

There are very few people permanently settled in the NGA apart from around the fringes of the lower Nyambene Hills in the south. In the far south west around the Mula Hills, dry land smallholder farming is common and has been present for more than 20 years. Some dry land farming in the vicinity of Isiolo in the far west and north-west is slash and burn and from the non permanent dwellings, people are not really permanently settled. Farmers are mostly from Meru, while the NGA is also utilised by the Turkana, Borana and Somali for their livestock grazing. A mixture of pastoralists and farmers is usually a formula for conflict and the NGA is no exception.

Population figures for the area are difficult to assess because the high mobility of the people. Statistics are per administrative units and since most of these are only partly within the NGA it is not simply a matter of extrapolation since hardly any people are settled in most of the NGA. The people using the grazing area are mostly transient and depend on seasonal availability of pasture and water. Even the limited smallholder dry land farming east of Isiolo along the Isiolo – Kula Mawe road is seasonal and people do not stay in one place the entire year. The NGA section that lies in the now Buuri sub county is more populated and settled compared to Tigania and Igembe Sub Counties . The farm sizes increase as one moves from the higher potential zones in the NGA to the more arid sections. In Mumui area of Mituntu in Tigania, farmers in Rarani settlement scheme own lands ranging from 12 acres in higher potential zones, 14 acres in medium potential and 16 acres in low potential zones according to a farmer,

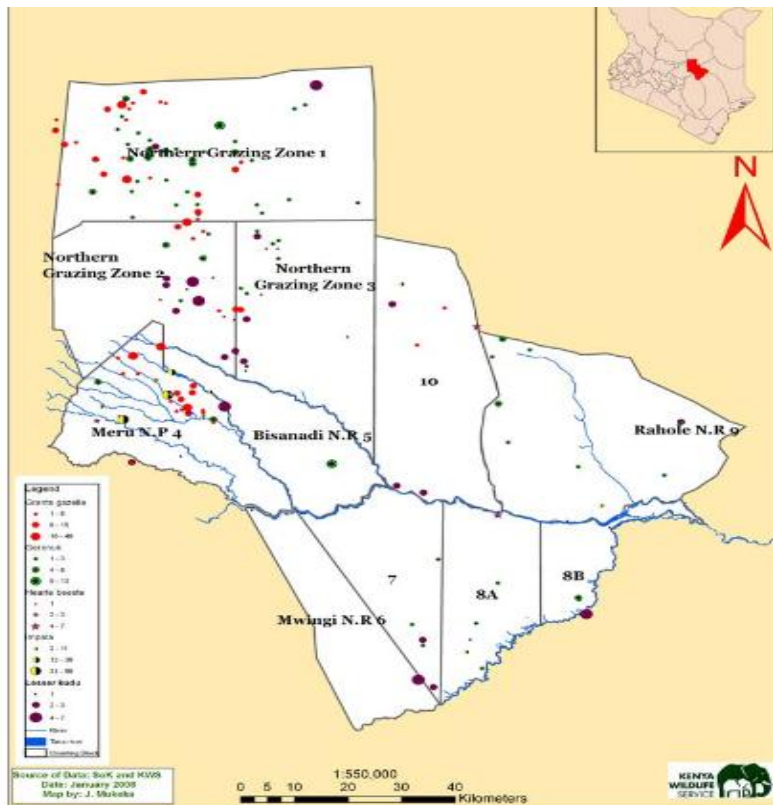


Figure 29: Distribution of Impalas in MCA

7.3.3.2. Land tenure

At present, the NGA is Trust Land used freely and communally. According to interview sources, land adjudication process has been ongoing since 1966. A lot of pressure is exerted by people in the higher potential areas of Meru to settle in the low lands commonly known to the community members as “*jangwani*”, Swahili for “desert”. Land adjudication committees have been formed in areas such as Mutuati. The adjudication process however, seems to be plagued by irregularities and more land has been preliminary allocated than exists. Those who have been allocated are in turn selling to unsuspecting buyers without physical verification. There is a very high likelihood that land adjudication could ignite serious crisis as not all those who have lived in the NGA are likely to benefit. The Meru North District Development Plan 2002-2008 confirms that the provision of land adjudication for all land is a priority. The “Meru Concessional Area” in the north-west of the project area was initially not included in the NGA. The reason for this was that its status was unknown. It was confirmed by the Study Team that the area was a concession from the Meru District to the Isiolo District before Independence. The reasons behind the original concession could not be ascertained. However, in 1992 the concession was revoked through an Act of Parliament and now belongs officially to Meru North. It therefore forms part of the study area, the Meru Northern Grazing Area (NGA).

7.3.3.3. Land use practices

The land use in the NGA is predominantly free grazing. The rangelands are communally grazed. The main determinant of animal movements is the availability of water and security concerns from occasional livestock raiders. Land use on agriculture is restricted to the

transition zone between the foothills of the Mount Kenya and Nyambene foothills and the low lands towards Isiolo. There is also some limited irrigation going on near Isiolo where permanent springs exist e.g. at Ngarenaite/Lailubua along the Isiolo – Kula Mawe Road and Ngaremara Location. Other notable small-holder irrigation activities are carried out in Ngarendare area in Meru Central (Imenti North) where crops such as tomatoes, onions and French beans are irrigated with water from permanent streams emanating from the higher areas towards Mt. Kenya forest. In very few places, enclosures of livestock can be seen in grazing camps in the hinterland of the NGA. Permanent settlements are sparse due to insecurity. A few small centres exist such as Ndumuru or Sharp (Shaba Ndogo) and Kachiuru along the main road from Isiolo towards Kula Mawe. The whole NGA section in Imenti North (Meru Central) District and parts of Tigania North, Akithi, and Mituntu Divisions are mostly settled and farmed by smallholders.

7.3.3.4. *Livelihoods*

The farmers in the high potential areas of the Meru region who are the well-to-do also own livestock that is grazed in the NGA. Family members and hired hands take care of the large herds of cattle. One herd is often composed of animals belonging to many owners in the highlands who are related through family kinship and clan or just friends or neighbours. Herders are rarely the owners although some herders who were interviewed by the Study Team claimed to own some of the cattle. Since the high potential areas are up to 90% used for *miraa* cultivation, which provides a significant cash income to farmers, food security in the area is in a precarious situation. The area imports most of its food from outside the region and sometimes even outside Meru region. The area is highly food deficient with regard to its own production. This reflects on the nutrition status of many households. Since *miraa* is a “cash crop” as in the coffee zones of Kenya, the revenue does not always benefit the women and children of the household. Land for subsistence farming is hardly available. In this rural “export and import” cash economy, poverty levels are lower than the estimated national average and is set at 45%.

The Meru farmers perceive the NGA as an expansion zone for agriculture and are advocating for land adjudication. There are two visions fuelling expansion of farming towards the lower parts of the highlands surrounding the southern part of the NGA. Those farmers producing *khat (miraa)* see an opportunity to get land for the production of food crops and where water is available for further expansion of *khat (miraa)* production. Poor households see an opportunity to obtain land for subsistence farming in the NGA since no land is within their financial reach in the highlands, even if there was any land to be acquired. In addition, the more affluent farmers see an opportunity to have large tracts of land enclosed for intensified livestock production. These hopes and visions on the side of the people living in the highlands are causing increased pressure on politicians and leaders to sub-divide land that is “ours”. It was suggested to the Study Team that the NGA in the mind of the people is already fully booked and everybody knows their prospective plot. Actually, people are already fencing off their prospective plots as they wait for adjudication process to seal the deal.



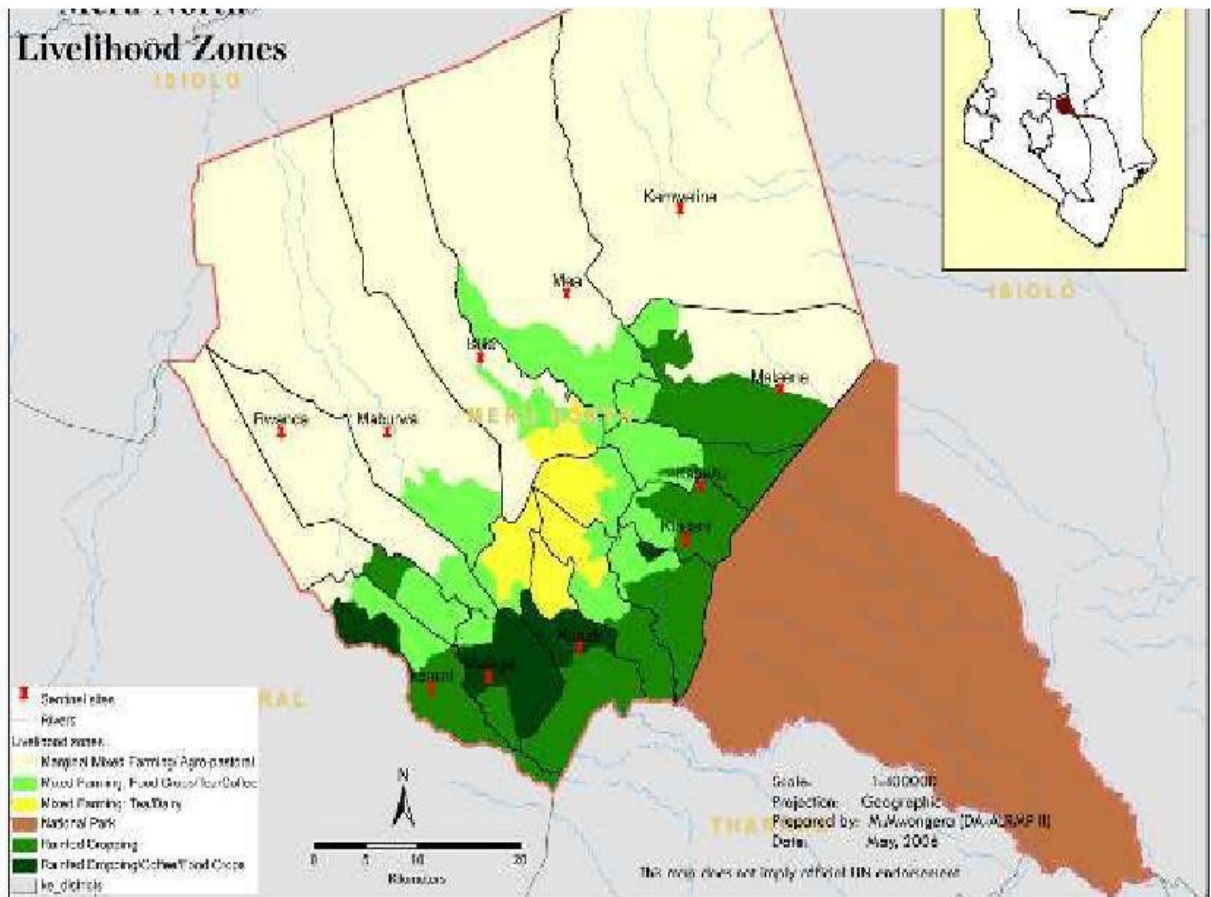


Figure 30: Map of Meru North Showing Livelihood zones

The livelihoods in the northern part of Meru North are predominantly pastoral and the common types of livestock kept are beef cattle, goats and sheep. The other parts of Meru north are used as agro-pastoral areas; mixed cropping areas with monocrops of tea plantations. The top of the ranges are protected forests. Within the northern grazing area the Borana and Somali communities in also keep camels especially in the eastern part of the area around the Magado (Igombe) crater.

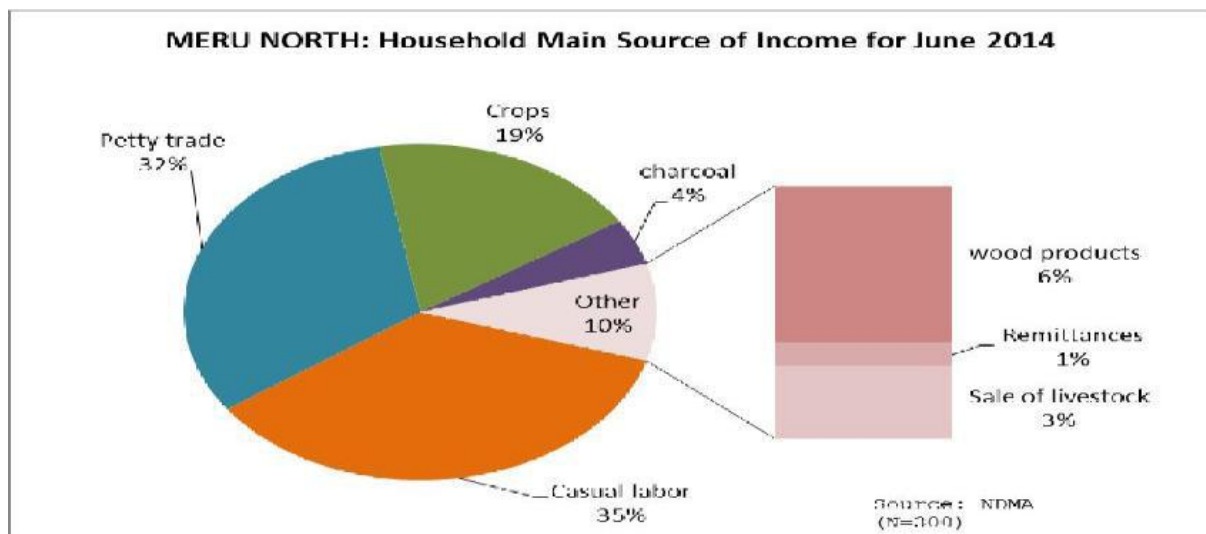


Figure 31: Chart showing the main source of income for households as in June 2014

This figure shows that the two most important source of income in Meru North is providing of labour 35% and petty trade 32%. Only 19% of people are engaged in crop production. Most of the people engaged in farming are in the upper regions of Meru north.

7.3.3.5. Farming

The Meru North people practice crop farming as their main form of land use for economic and domestic purposes. Crops grown include maize, beans, green beans and miraa (*Catha edulis*).

Near Maua town, tea is the major cash crop grown. This area (Maua) has a higher human population density hence creating pressure on wildlife. KWS has taken the steps to reduce the level of these conflicts between local people and wildlife by putting up electric fences as barriers to separate the two.

7.3.3.6. Grazing

The people from Meru are farmers at heart and the diversification into cattle ranching in the NGA is basically a financial investment and not a mainstay of existence. The cattle owners belong to the richer strata of the Meru community. On the other hand, the NGA is utilised by a variety of pastoralist groups with the Borana most obvious in the north-eastern part of the NGA where they have permanent settlements. There is also Turkana settlement north of the centre of the NGA in Isiolo, next to the Shaba National Reserve. Turkana are also present in the Area, north of Isiolo. The pastoralist groups, including the Somali move in and out of the NGA depending on the availability of grazing pasture and the water. For the neighbouring pastoralist communities the NGA is part of their common and seasonal grazing resources.

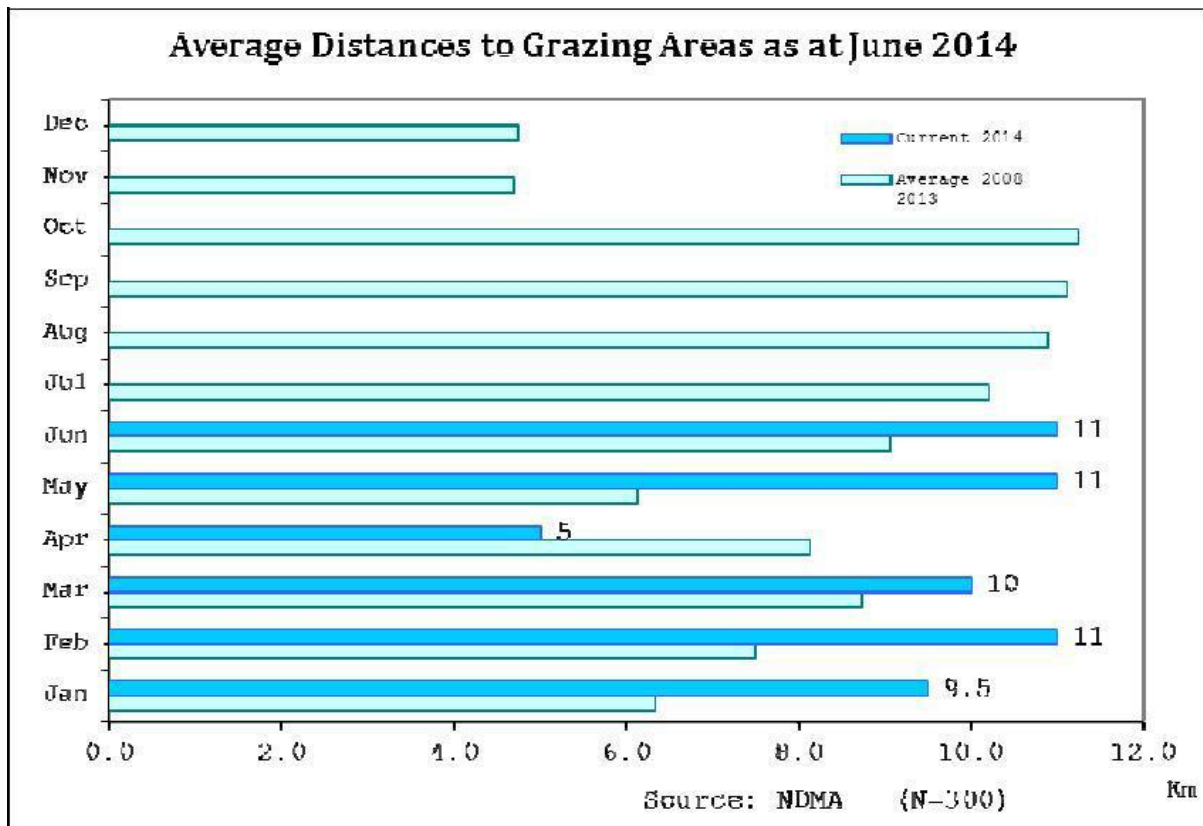


Figure 32: Average Distances to Grazing Areas as at June 2014

7.3.3.7. Food security

Meru County is generally a food secure county given the fact that the county is one of the agricultural rich counties in Kenya that produces a wide variety of food crops. Some parts of the county that borders with Isiolo and Garissa receive very little rainfall and are therefore dry to the extent of not being suitable for crop cultivation. The area proposed for establishing a National Conservancy is one of these places. Food security in this area is a challenge at all times as people always depend on food brought from other places. The reliable source of income from which they can buy food is livestock. During droughts lack of pastures and water lead to high livestock mortality leaving the herders with no source of income and therefore no economic power to purchase food. The area is categorized as food insecure due to the frequent drought experienced in the area. The Kenya humanitarian response information of 2013 classified food security in the area as phase two implying to have a stressed situation.

Factors Affecting Food Security in the area includes:

- Livestock diseases that reduce animal productivity
- Heightened cattle rustling and banditry especially in the Northern Grazing Area
- Poor temporal distribution and early cessation of the long rains season

- Reduced yield as a result of flooding that occurred during the season in some parts of Meru North

7.3.3.8. Poverty

The area has high rates of poverty due to lack of sustainable source of income. The main causes of poverty in the area are low agricultural production causing food shortage, poor infrastructure, insecurity, lack of land title deeds, environmental degradation, and high disease incidence. The Welfare Monitoring Survey Report of 1997 showed that 44.65% of the populations live below poverty line while the total numbers of actual individuals who are poor are 45.27%. The household below poverty line are projected to increase from 50,561 in 1997 to 68,496 in 2008 while the individual below poverty will rise from 258,767 in 1997 to 350,560 in 2008. Table 4 below summarizes some of the socio-economic indicators of Meru North District where the proposed conservancy is located.

Table 5: Socio-economic indicators

Socio economic Indicators	
<i>(based on Meru North District Strategic Plan 2005-2010)</i>	
Total number of households	129,994
Average household size	5.1
Number of female headed households	33,408
Number of disabled	63, 076
Children in need of special protection	5,000
Absolute poverty (Rural and Urban)	47. 29%
Income from Agriculture (Crops and Livestock)	44.5%
Income from Rural Self Employment	24.1%
Wage employment	9.9%

7.3.3.9. Communication

Communication to the area is by road through Isiolo town. From Isiolo town you turn to the road to Graba Tula and a few kilometres along this road human settlement ends into a vast grassland of grazing area. The proposed site extends to the left all along the road up to the border of Meru and Isiolo towards Kinna. It is also possible to access the area from the eastern side connecting Meru national park and Bisanadi National reserve with the proposed conservancy. The proposed area is very close to Isiolo airport thus making it accessible by air. Now that Isiolo is becoming an international airport, the proposed conservancy will be accessible internationally. The proposed conservancy will be the nearest to the proposed Isiolo resort city under the Vision 2030 LAPSSSET flagship project.

7.3.4. Peace and Regional Security

The proposed area is a frontier zone for the three major communities; 1) the sedentary agricultural Meru Community; 2) the pastoralist nomadic Borana community; and the pastoralist nomadic Samburu community. These communities mix up in Isiolo town where they live harmoniously most of the time, but there are some sporadic ethnic tensions within the town that occasionally result into violence and group or individual confrontations fuelled by ethnic tensions.

The area proposed for establishment of conservancy is bordered by these communities. The Meru community owns the area and use it for livestock grazing. The Borana and the Samburu who live across the grazing area do occasionally get into cattle rustling with Meru people causing a chain of revenge missions from one community to another. These activities results into serious security problems especially to the wildlife. Poaching is rampant in the area because of insecurity.

The proposed conservancy will be protected by trained and armed rangers. This will bring security in the area not only to the owners of the land but also wildlife in the conservancy.

7.3.4.1. History of Administrative Structure in the area

The Northern Grazing Area used to belong to the Meru North District. The District was later subdivided into the Igembe and Tigania Districts. The sub-divisions were later taken over by the County structure of governance where by Sub Counties, Wards and Villages are the basic units of County Government administration. The project area now falls under Tigania Tiganis East, Igembe North and Igembe Central Sub Counties. Each of these sub counties are headed by a Sub County Administrator. In each Sub County there are several wards and each ward is headed by a ward administrator.

All administrative units in the NGA run in relatively narrow bands from south to north and incorporate the escarpments, foothills and the highlands.

During the second half of 2008, the three districts mentioned above underwent further sub-divisions; hence the new district boundaries and the constituency boundaries are the same. For instance, the new Buuri District was curved out of Meru Central (Imenti North) District. The new Buuri District has two divisions namely; Buuri and Timau. On the other hand, Tigania District has been sub-divided into Tigania East and Tigania West Districts. Tigania East District Comprises Karama and Muthara Divisions while Tigania West comprises Mituntu, Akithi and Uringu Divisions. Karama Division has Mula, Karama and Antuanduru Locations while Muthara Division has Buuri, Ngaremara and Muthara Locations. On the other hand, Igembe District was subdivided into two districts namely: Igembe North and Igembe South Districts. The statistics for the administrative units of the former Meru Central and Meru North Districts exist, but are difficult to sub-divide for the NGA alone. There are very few people and no permanent settlement in the NGA apart from in the far west and southwest where smallholder farmers have settled. But even in the surrounding area due north-east of Isiolo Town (Ngaremara area), most farming is on a slash and burn basis and no permanent residence can be identified.

7.3.4.2. Livestock Rustling

The area is a conflict prone zone between the Meru, Borana, Samburu livestock herders and to some extent Turkana herders. Conflicts are about grazing and water resources, while the

Samburu carry out raids occasionally stealing cattle from Meru and Borana herders. Sometimes, cattle are also raided by the Turkana. According to some sources, while the Turkana or Borana may raid for the sake of livelihoods, the Samburu *morans* raid not only for livelihoods but also as part of a cultural activity that elevates the successful raiders to heroic status and recognition from peers and the Community.

7.3.4.3. Poaching

Currently poaching is big problem in the proposed area. Armed poachers from neighbouring communities roam in the area hunting for wildlife. Sometimes they follow herds of elephants from the neighbouring Shaba national reserve and kill them when they get to area because there is no security in the extensive grazing area.

7.3.4.4. Human wildlife conflicts

Human–livestock–wildlife interactions have increased in Kenyan rangelands in recent years, but few attempts have been made to evaluate their impact on the rangeland habitat. This study identified drivers of increased human–livestock–wildlife interactions in the Meru Conservation Area between 1980 and 2000 and their effects on the vegetation community structure. The drivers were habitat fragmentation, decline in pastoral grazing range, loss of wildlife dispersal areas and increase in livestock population density. Agricultural encroachment increased by over 76% in the western zone adjoining Nyambene ranges and the southern Tharaka area, substantially reducing the pastoral grazing range and wildlife dispersal areas. Livestock population increased by 41%, subjecting areas left for pastoral grazing in the northern dispersal area to prolonged heavy grazing that gave woody plant species a competitive edge over herbaceous life-forms. Consequently, open wooded grassland, which was the dominant vegetation community in 1980, decreased by c. 40% as bushland vegetation increased by 42%. A substantial proportion of agro pastoralists were encountered around Kinna and Rapsu, areas that were predominantly occupied by pastoralists three decades ago, indicating a possible shift in land use in order to spread risks associated with habitat alterations.

7.3.4.5. Education

There are no people living permanently in the area proposed here for conservancy. Therefore there are no schools in the area. People use the area as a grazing area for livestock brought in from the neighbouring Tigania and Igembe communities of Meru County. The sub counties neighbouring proposed conservancy are the Tigania East, Tigania West, and Igembe North Sub Counties.

The Education sector in Meru County has achieved remarkable development in the previous years and transition from Primary to Secondary Schools has been on an upward trend. As per 2014 statistics, plenty of secondary schools in the region have had to lower their intake grades to absorb students and adequately have the required enrolment. For instance Only 1143 candidates who sat last year KCPE exams in Imenti North Sub County had scored 250 marks and above leaving secondary school teachers to complain that there are many secondary schools making it difficult to fill their classes.

Meru North has 354 primary schools. The population in the primary school age increased from 87,824 boys and 88,722 girls in 2006 to 92,808 boys and 93,757 girls in 2008. This increase required establishment of educational facilities such as classrooms, hostels, textbooks and provision of more qualified teachers. Measure have been taken to increase the

primary school enrolment rate that was then at 78% and also reduce the high dropout rate that was at 45%. This was in a bid to achieve the universal goal of education for all in line with Millennium Development Goals (MDG).

For the secondary schools, there are 40 schools, 36 public and 4 private. The number of persons expected to be in secondary schools in year 2006 is 74,237. The number increased to 78,451 by year 2008.

7.3.4.6. Health

Meru North has 41 health facilities that are operational and spread all over the district. Accessibility of the health facilities by the locals is a big problem since on average the nearest health facility is 10 Km. away which is a long distance. There is also likelihood of poor quality of service given that there are very many people to be catered for by a doctor (Doctor/patient ratio 1:65,620). This therefore implies that most of the health facilities in the area are manned by other cadres of health workers. Most of the facilities in the area are government owned.

The most prevalent diseases in the district are Malaria, Diseases of Respiratory Systems, rheumatism/joint pains, skin disease, intestinal worms, and diarrhoea. Thus programmes of Primary Health Care (PHC); and STI/STD including HIV/AIDS should be put in place.

The HIV/AIDS is a major health challenge in the district. The current prevalence rate is 15 per cent in the age group 15-19 years who are most vulnerable to infections. The high prevalence in the district has been attributed to slow pace of behaviour change, irresponsible sex, breakdown of social structure and poverty.

Measures being taken to prevent the spread include early treatment of STIs so as to reduce the probability of HIV/AIDS transmission, screening of blood before transfusion and holding of awareness campaigns and training of opinion leaders. There is need for hospitals to be able to prescribe and offer anti retroviral drugs to those with HIV/AIDS at affordable Meru North District Strategic Plan 2005-2010 Implementation of the National Population Policy for Sustainable Development cost to delay progression to fully blown AIDS status. Drugs should also be provided to cure the opportunistic infections associated with AIDS. Voluntary Counselling and Testing (VCT) centres should also be established all over the district to help most people know of their HIV status.

Table 6: Health Indicators (based on District Development Plan 2005-2010)

Crude Birth Rate (CBR)	45.4/1000
Crude Death Rate (CDR)	6.3/1000
Life Expectancy	62.8
Infant Mortality Rate (IMR)	40/1000
Under 5 Mortality Rate	56/1000
Total Fertility Rate	5.1

HIV Prevalence Rate	15%
Doctor/Patient Ratio	1:65,620

7.3.4.7. Security of property

The area proposed for establishment of Nyambene Community conservancy is a relatively insecure place due to a number of factors: a) it borders with Isiolo and forms a border between agriculturalist and pastoralist communities; b) disputed border – although according to all records and maps available the area is located in Meru County, the neighbouring Borana and Turkana communities in Isiolo County also claim ownership; c) the communities in both counties deny each other access to pastures and water in the area and thus conflicts over access to resources.

There are also frequent attacks by cattle rustlers and armed poachers from the pastoral communities in Isiolo and also in Samburu counties. These attacks have made the place to be insecure for any formal land use.

8. Project Alternatives

One of the objectives for conducting an EIA is to assist the proponent in making a judgement as to whether implementing the project is the best option given the prevailing environmental and social circumstances as outlined in the assessment report. In order to do this the assessor presents a consideration of all possible options with discussions on pros and cons on environmental and social dimensions for each option or project alternative.

No project alternative

This option would imply that the project to establish a conservancy does not take place and that the area remains as it is now. Currently the area is used as a grazing area by the people of Igembe and Tigania the two main neighbouring communities. Due to the prevailing climatic conditions the area cannot be used for crop production. It is only useful for grazing. Livestock keeping in the area has been found to be unsustainable due to rampant livestock theft raiders. Across the border on the Isiolo side is the famous Shaba National Reserve and to the northern side is also the famous Samburu National Reserve. Not too far on the southern side is the conglomerate of national parks and national reserves commonly referred to as Meru Conservation Area (MCA). The area proposed is in the middle of wildlife protected areas. These create two big challenges:

- a. Protecting livestock and crops from wildlife in all directions. If the area will continue to be used for livestock grazing as it is now, poaching will continue and insecurity for livestock will also continue.
- b. Wildlife roams around a wide range of grazing orbits. Some migrate from one protected area to another and many times traversing the area proposed for wildlife conservation. Use of this area in any other way other than conservancy will create barriers to wildlife movement and cause human wildlife conflicts. This will increase killing of wild animals by people, killing of humans by wildlife and also colossal damage of people's property by wildlife.

It is the people themselves who have found that that the best way to utilize the area is by establishing a community conservancy.

Re-locating the project alternative

Re-locating the area for establishing the conservancy is not an option because there is no other place like it in Meru County. The need to establish a conservancy in the Northern Grazing Area, came as a result of discussions on how best to utilize the place and NOT where to locate a conservancy.

Use as a suburb for the expanding Isiolo town.

A few politicians from Meru have made a suggestion to reserve the place for the development of Isiolo town that is developing as tourist resort city. This suggestion would lead to subdividing land into smaller holdings (plots) and allocating it to individual developers. Land development usually favours the rich investors and ignores the rural poor. This move will among other things deprive the current poor land owners the right to benefit from their land.

Since the area is already a wildlife dispersal area as demonstrated in this report and other publications, converting it into urban development area will interfere with wildlife in all the surrounding reserves and risk repeating the problems of Nairobi City housing expanding into Nairobi National. These problems will be repeated in Isiolo if measures are not taken at these early stages. Isiolo town is planned and areas for development are already mapped.

The area is also a wildlife migratory corridor. Migratory animals like elephants move through the area from the lowland protected areas to Mt. Kenya National Park during drought and back during the wet season. If the area is developed into urban houses, these annual and seasonal or occasional migratory routes will be disrupted and many animals risk starving to death during dry seasons.

Use of the place as Community Conservancy

For several years since the time of the then Nyambene County Council the area has been preferred for establishment of a conservancy. The area was gazetted as a Nyambene National Conservancy way back in 2002 long before the national dissolution of county councils and the formation of County Governments. What Meru County government is doing is taking up an activity that had been started by the defunct Nyambene County Council. The acceptance by Meru County Government to pursue establishment of the conservancy is also in response to the wishes of the people of Meru who in many forums have expressed the desire to accomplish this establishment. This request has been made in many forums including the Meru Rising Conference that was held in June 2013, and the consultative meetings held to develop the Meru Integrated County Development Plan.

By all considerations the option to use the area as a community conservancy appear to be the most popular both by people's opinion and also by scientific consideration in regards to wildlife conservation and sustainable land use analysis.

9. Legal framework

History of legislation and establishing of parks

During the colonial time, Kenya was very much a free ground to take what so ever the British Empire needed. Industry started to abuse all the reasonable deposits and stocks. Hunters were hunting wildlife and restrictions for white men were quite close to zero. Part of the well being of the British Commonwealth was due to natural resources and wealth of the colonies. The legislation of nature conservation began to develop in 1945 in Kenya with National Park Ordinance. This and the Wild Animal Protection Ordinance of 1953 were not very effective. In 1976, the Wildlife Conservation and Management Act replaced the former ordinances and started to create changes in conservation policies. The 1976 act was also unable to achieve efficient conservation measures. Reforms were made mostly in policies and legislation but there were no major impact on the real world. Credit to the act was that wildlife and natural resources were mentioned to have relevant economical potential (Kelvin 2001).

In 1989, when the weaknesses of existing legislation were finally realized, the KWS was established by a new act. KWS replaced all the former conservation-aimed organisations and it was secured to have a more independent position on its own field. In 1994, KWS imposed a five-person review group to solve public opinion on human-wildlife conflict. Report of the group and four other more technical studies led to a new wildlife policy strategy in 1996. The strategy introduced new formulations. For example, instead of the word wildlife, biodiversity was used, since the aim was to widen the field of conservation. It was also stated that more actors have to be involved in evaluation of use and managing of the conservation areas.

The measures and objectives of the strategy seem to be proper and acceptable. Problems might arise when trying to adapt the strategy into practice. The jargon of strategy may not open to normal people and it may cause a lot of dispute when enforcing new ideas.

10. Environmental issues of concern in establishing a conservancy and mitigation measures

Environmental issues associated with the proposed activities are all those that come with establishing a wildlife protected area, construction of conservancy dust roads and tracks, construction of service facilities like offices, homes for workers, tourist hotels and all the facilities associated with tourism. There may be need for drilling boreholes in the conservancy to provide water for people livestock and wildlife within the conservancy. Table 7 shows how each of the impacts has been evaluated and scored. The scores are then analyzed to give the proponent the overall impression on the impacts of the proposed activities.

Table 7: Impact Evaluation and Scoring

Nature of impact	Symbol	Significance Categories scale 1 = Low significance; 5 = High significance
Temporary	t	S=1-5

Permanent	T	S=1-5
Short term	St	S=1-5
Long term	Lt	S=1-5
Specific or localized	w	S=1-5
Widespread	W	S=1-5
Negligible or Zero	O	S=1-5
Significant	S	S=1-5
Reversible	R	S=1-5
Irreversible	IR	S=1-5

The following are the environmental and social impacts associated with the proposed activities assessed based the table above.

Soil disturbance (t,w,O, R)

The proposed activities will scoop out the top soil from the site of construction site and either deposit it to another site or throw it away altogether. The determinant of whether it will be re-used or discarded will depend on the type of soil itself. There are some soil types that are of much value in gardening like the Red Soil which is highly priced as it is in high demand as a farm input. Other soils like the black cotton soil are not manageable in the gardens or pathways due to its sticky nature.

Mitigation Measures

The soils excavated during construction should be re – used either in construction elsewhere or sold or given to other users whichever is applicable.

Vegetation (T,w,O, R)

Vegetation is one of the descriptive features of the environment in a place. Vegetation in conservancy is great importance and every care must be taken to preserve it in its original form. However construction of roads, hotels, offices and other infrastructure facilities will lead to removal of vegetation in some sites. The vegetation in the area comprises of indigenous plant species all of which have evolved within the place and are the most adapted to the local conditions. Vegetation should not be removed by way of burning where all plants are destroyed.

Mitigation Measures

Where vegetation must be cleared we recommend re use of the materials removed in the construction work that will be going on or are recycled for use elsewhere.

We recommend planting of indigenous trees in places where original plants have been removed. On the ground floor within the modified areas we recommend planting of grass from the same area to serve as a ground cover to prevent soil erosion and also prevent dust from blowing into the air. There should be no introduction of exotic species of plants.

Surface water drainage (*T,w,S,R*)

Surface water drainage in conservancy area is not a big challenge due to the topography of the area. Rain water drains on the seasonal rivers and streams within the area. The proposed development of roads network might increase surface runoff and ground seepage of water into the ground. The soils in the conservancy area are not good for agriculture and they do absorb water to great deal. However, surface water do not collect on the ground as it drains into the streams and finally into the river.

The location of the conservancy is very hot even during the rainy seasons. Rainfall in the area is very low and hardly any water collects on the ground. Due to these factors no water collects on the ground surface and if it does it is usually very little and for very short times.

Mitigation Measures

We recommend the proponent to make observations of surface water flows to identify areas water ways and quantify the amounts of water to find out if any areas are forming gullies that need to be controlled. If erosion gullies are identified, loss of soil should be controlled by planting appropriate vegetation to check soil transportation by water

Water quality (*t,w,S*)

Most of water to the proposed conservancy is drawn from rivers. The rivers originate from the mountain ranges and flows down to the conservancy area. The water is clean and suitable for use by the local people. The biggest source of contamination to rivers in the area is from the chemicals used in the farms either as pesticides, herbicides or fertilizers. However, the water in Meru town is treated. The town is supplied with piped water tapped from higher up in the forest zone.

The Meru town is a source of contamination for water especially during the rainy seasons as liquid wastes from the town are washed into the rivers flowing to the human settlement areas. The town has a sewerage system but due to the rapid growth of the town most of the town is without sewer. Many houses in the town septic tanks and even some homes use pit latrines. During the rainy seasons the possibility that some pit latrines may fill up from surface runoff and overflow into the river cannot be ruled out but it should be noted that that this is not as a result of the proposed development.

Mitigation Measures

Meru town requires major investments in water management to prevent municipal liquid wastes from contaminating the surface water that ends up into the rivers and eventually into people's homes and gardens. Surface water is usually consumed or used by people and

domestic animals even within the town. Even before major surface water management plan is undertaken, it is important to separate contaminated water from the storm water.

We therefore recommend that water from facilities along the constructed road be separated into specific drainage and carried away to a disposal site where is evaporated or treated.

Air quality (*t,w,S,R*)

Meru town is in an open area that has no hindrances to wind flow. The proposed activities are likely to increase the amount of particulate matter in the air around the town during the construction as trucks move around with soils and construction materials. After construction movement of vehicles and trucks will increase as the developed facility will be in use.

Mitigation Measures

To reduce air contamination we recommend water to be poured in the area of construction so that dust does not get into the air. We also recommend planting of grass to serve as a ground cover to prevent dust from being blown up into the air. We also recommend planting of trees along the roads to act as traps for dust generated from the roads.

Noise (*t,w,S,R*)

The project area is in the middle of the town and the place is already a very noisy place from the vehicle and people movements in the town. The proposed developments will increase noise in the town as the heavy construction trucks move around dropping building materials like sand, stones, soil and others. Even after construction increased use of the roads resulting from the improvements will increase noise generation. The town is small and given the amount of business and population, noise can be not only a nuisance but a course of health hazard for the people living in the town.

Mitigation Measures

We recommend that machineries used in construction be of good mechanical condition and that there should be regular maintenance of the machineries and equipment. During operation or use of the roads, Meru County government should maintain noise level of the vehicles in the town to prevent nuisance from excessive noise.

Solid Wastes (*t,w,S,R*)

Meru town is a fast growing town with the volume of solid waste increasing rapidly. The higher the population of a town, the more is the amount of solid waste generated. The area around the town is mainly agricultural generating substantial amounts of agricultural wastes comprising of banana leftovers and cabbage peels in addition to processed package materials like foodstuffs and household goods. The town has no solid waste management plan as wastes are occasionally transported to landfills outside the town.

The proposed improvement of the roads may increase the number of commuter vehicles and thus more waste generation.

Mitigation measures

We recommend that all wastes generated during construction should be collected and disposed off to the designated waste disposal sites. The contractors should put in place waste bins or receptacles in appropriate sites where garbage collectors can pick them and dispose accordingly. This should use only NEMA licensed garbage handlers who know how garbage is collected and transported safely.

In general the solid wastes generated from the project area should be managed in the 4R approach as outlined here below in figure 31

1. Reduce production of wastes
2. Re-use the wastes
3. Re-cycle the wastes
4. Recover

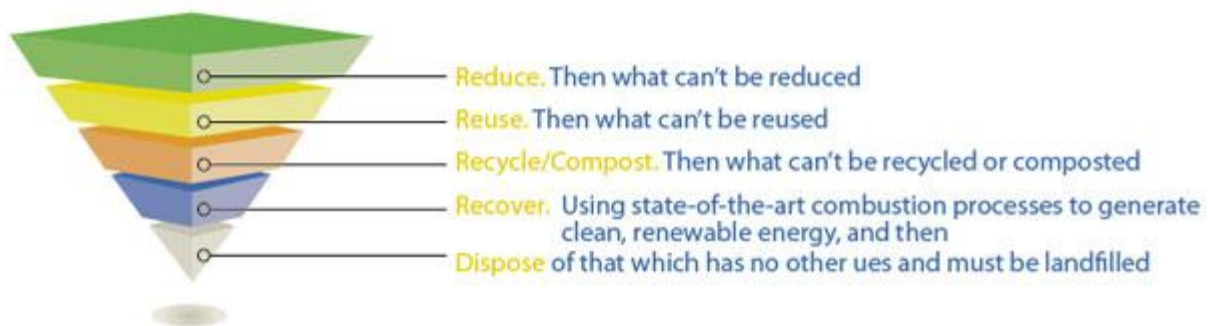


Figure 33: Schematic diagram of 4R Waste Management before Disposal

Liquid Wastes (*Lt,W,S,IR*)

If humans will live in the conservancy and hotels set up in the conservancy, liquid wastes will be generated from kitchens, bathrooms and sewerage. Other forms of liquid wastes are likely to come from oil changes in garages located in the conservancy. With the increase of people and the number of vehicles in the conservancy, the amount and types of liquid wastes should be expected to increase.

Mitigation Measures

Management of liquid wastes is a challenge for every organization. We recommend that the conservancy management should consider developing a sewerage system or a waste water treatment plans especially if the conservancy will have tourist hotels in addition to other facilities in the conservancy. It is recommended that each establishment can have its own small sewerage or a small liquid waste treatment plant that fits its volume of waste water generated.

11. Main social economic aspects to be affected by the proposed activities

Population numbers (*T,w,IR*)

Conservancies are inhabited by people from different areas in addition to the local people. The nearby Isiolo and Meru towns are currently inhabited mainly by the local people but has also many people from other regions engaged in business or employment of some sort.

With the improved conditions of the conservancy the number of people coming to see animals in the conservancy will obviously increase, improved security of the conservancy may increase the volumes of business thus increasing the number of people visiting the area. With the increase in population numbers, the small unpopulated areas around the conservancy will slowly turn into populated areas and the original cultures of the local people will be influenced by foreign cultures.

Mitigation measures

The proponent and the local people should identify the traditional cultural values that may be affected by the influence of the foreigners and take actions to preserve them. The workers in the conservancy, who have contacts with the local people for longer periods, should be sensitized to respect cultures of the local people to avoid conflicts.

Shelter (*T,w,O,R*)

In Kenya housing is a major issue in every town today. Some people may have to live in Isiolo or Meru town and commute daily to the conservancy. Availability of houses is always a major problem. In Meru County the number of people in need of housing is big considering the high number of residents and traders in the town. A quick look around the town shows that there are no decent houses for the increasing number of middle income class of people in the town. With the devolved structure of development in Kenya where county governments are spearheading the development agenda, towns like Meru should be expected to be a major focus for the development of tourism and commercial agriculture in Meru County.

The number of houses in different classes including the higher income levels in the town should be expected to increase in the coming years. Developments such as the proposed upgrading of roads in towns are a first step towards this direction. The county also has efforts to improve tourism industry and obviously Meru town should serve as the centre for these developments.

Mitigation Measures

The county government should develop measures to attract investors in real estate in Meru County so that enough houses are made available to the growing population. Although no estates can be built in the conservancy, if good standards housing is available in a near town where facilities like schools and social amenities can be found, some of the workers in the conservancy can reside their and commute to daily.

Communication (T,W,S,R)

Communication will have a direct impact from the proposed activities in that the primary envisaged business of the conservancy will be providing hospitality to visitors. Increase in the number of visitors using the conservancy will have positive impacts because they will spend money in the conservancy. As communication improves, there will be some local investors in the transport industry who might take up the opportunity of setting up a business. For example there are people who use boda bodas/ taxis, and matatus to travel to work who can create business to investors in this field. With the establishment of roads network in the conservancy it is likely that transport business will be introduced by members of the higher income groups.

Mitigation Measures

The proponent should identify local businesses that may be affected by the developments and provide support to improve them to increase their competitiveness.

Trade (T,W,S,R)

Isiolo town, the nearest trading centre to the conservancy is a commercial centre for many different kinds of commodities from farm harvests, food stuffs, hardware and all other stocks in shops and stores. Establishment of the conservancy and the subsequent use of it by tourists will increase the number sellers of certain commodities because of the increased market. This will be a positive impact to business in the area.

Mitigation Measures

The proponent should identify local businesses that may be affected by the developments and provide support to improve them to increase their competitiveness.

Food Security (T,W,S,R)

The area around the conservancy is not an agricultural area. Food consumed people who come to graze animals come from the higher potential areas around Nyambene ranges. When trade improves, the market for their produce will also increase. Within the neighbouring areas where people live, food security is very poor because whenever there is insufficient rainfall this part of the county is always the first to suffer.

Mitigation Measures

We encourage Meru County government to identify strategic crops for food security in Meru North and areas surrounding the conservancy and make efforts to preserve them and also make efforts to promote cultivation of these crops. One way would be to popularize their use by value addition on the produce.

Employment (T,W,S,R)

The proposed development will obviously generate employment for the local people especially during the construction stage. Many people will be hired by the contractor to provide labour in the constructions. Although this will be short lived for most of the workers there are some who will be retained by the county to support activities in the conservancy. Management of wastes to be generated in the conservancy will also create more jobs for the local people. The improved status of tourism in the area will attract more and thus create more jobs for the local residents.

12. Main social cultural aspects to be affected by the proposed activities

Religion (*T,W,O,R*)

The dominant religion in Meru is Christian but there are a good number of Muslims in the county. As the town grows other religions or sects of the same religion will be introduced. This might make some people to migrate other sects or interact with different believes or faiths and thus cause collision with the previous local settings.

Mitigation Measures

The proponent will undertake to teach the local people to co- exist and be tolerant to other beliefs while they conserve theirs that are compatible with modern ways of life.

Table 8: Environmental and Social Impact Valuation Matrix

Impact	Categorization	Valuation S= value
Soil disturbance	t,w,O, R	1
Vegetation	<i>T,w,O, R</i>	1
Surface water drainage*	<i>T,w,S,R</i>	2
Water quality	t,w,S	1
Air quality	<i>t,w,S,R</i>	1
Noise	<i>t,w,S,R</i>	2
Solid Wastes	<i>t,w,S,R</i>	1
Liquid Wastes	<i>Lt,W,S,IR</i>	2
Population numbers*	<i>T,w,IR</i>	2
Shelter*	T,w,O,R	2
Communication*	<i>T,W,S,R</i>	4
Trade*	T,W,S,R	4
Food Security	<i>T,W,S,R</i>	1
Employment*	<i>T,W,S,R</i>	4
Religion*	<i>T,W,O,R</i>	3
Negative Impacts Score = 10		
* Marked indicate Positive impacts		
Positive Impacts Score = 21		
Overall Performance on Impacts Evaluation		
Positive impacts outweigh the negative impacts.		

13. Ratings of potential impacts at different phases of the proposed project

Table 9: Anticipated impacts at different phases of the development

Planning	Biophysical							Social Economic & Cultural		
		Soil	Water	Flora	Fauna	Noise	Dust	ECONOMY	HEALTH	EDUCATION
	Field assessments	-I	-I	-I	-I	-I	-I	+I	+I	+I
	Stakeholder consultations & EIA Report Preparation							+I	+I	+I
Construction and operation	Vegetation Clearing	-I	-I	-II	-I	-II	-II	+I	+I	
	Excavation	-I	-I	-I	-II	-I	-I	+I	+I	
	Fencing the campsite	-I		-II	-I	-I	-I	+I	I	
	Setting of structures	-I	-I	-I		-II	-II	+I	-II	
	Soil Movement	-II		-I	-II	-II	-II			
	Drilling of boreholes	-I	-II			-II				
	Waste generation	-II	-II	-I	-II					
	Movement of vehicles	-I	-I		-III	-II	-III	+III		
	Movement of tourists and other visitors	-I	-I	-I	-III			+III		
Decommissioning	Decamping		-II	-I	-I	-I	-II	-II	-II	
	Waste Generation		-II	-III	-II	-I			-I	
	Traffic		-I I		+I		-I		+I	

Key: Categorization of impacts (+) Positive (-) Negative: I low; II medium; III High

A) Levels of potential negative impacts

Table 10: Analysis of Environmental issues and their Potential Impacts

ENVIRONMENTAL ISSUES	POTENTIAL EFFECTS	DURATION	REMARKS
Land terrain alteration	Medium	Medium term	As roads are made and vehicle move to and from the conservancy there will be some soil disturbance.
Soil erosion	Low	Short term	At start of construction, but as we move to operation stage there will be no exposing of soil except along the vehicle tracts
Soil quality	none	-	Insignificant effect
Surface water	Low	Medium term	Contamination from liquid waste if not well managed, during the operation phase.
Underground water	Low	Medium term	We anticipate the project will drill a number of water boreholes from which much of the water for animals and people will come from. Contamination of ground water from liquid waste if not well managed is a potential risk.
Storm water drainage	Medium	Medium term	Run off drainage management needs to be put in place to make the water available for wildlife during the dry months
Vegetation cover	Low	Medium term	The current low vegetation cover and scattered trees likely to be impacted upon within the construction areas and the road network areas. The project should not interfere with vegetation outside the constructed areas. No introduction of exotic species.
Bio-diversity	Low	Long term	Wildlife will be protected at all times and in all habitats.
Micro climate	High	Medium term	The micro-climate around the construction areas should not be altered from its current state.
Air soil particles	Low	Short term	To happen especially during construction
Noise	Med. /high	Short term/long term	During construction and some during the operation due to movement of vehicles. The contractor should use vehicles in good mechanical condition
Water demand	High	Long term	The demand will be high especially when hotels are constructed. Boreholes will provide water for the drilling but the fresh water for use in the camp will be supplied from elsewhere.

Table 11: Impact on Water Resource

Activity	Environmental Aspect	Potential Environmental Impact	Mitigating Measures	Time Frame & Responsibility	Indicators to be monitored
Site evacuation and grading; and offloading of construction materials at the site	Oil, chemical and material spills	Soil contamination	Establish site spill control procedures Training of workers on spill control procedures/ preparedness Off-site maintenance operations Spill control kit be availed at the site	Main contractor Prior to construction	Spillage incident records/ complaints from workers/ neighbours Training records Visual observation
Occupancy of the residential houses	Sewage disposal Waste water disposal	Contamination of soil	Sewage & waste water to be discharged into the septic tanks	Proponent during occupancy phase	Complaints from neighbours/ occupiers Visual inspections Contract documents

Table 12: Impacts on Biodiversity

Activity	Environmental Aspect	Potential Environmental Impact	Mitigating Measures	Time Frame & Responsibility	Indicators to be monitored
Clearing while building occupation sites, roads and	Changes in plant and animal biodiversity	Loss of above and below ground biodiversity	Preserve indigenous plants as much as possible	During site preparation and operation Responsibility: The contractor	Changes in the number of indigenous plants, birds and insects
Constructions, grading; and offloading of construction materials at the site.	Changes in biodiversity and landscape	Loss of above and below ground biodiversity	Preserve indigenous plants as much as possible	During site preparation and construction Responsibility: The contractor and proponent	Changes in biodiversity
Noise	Noise to wildlife within	Disturbance to	Maintain low noise	During and construction and	Complaints from people

	the conservancy and the surrounding areas	wildlife in the neighbouring bushes	(to the recommended levels of decibels)	operation Responsibility: The proponent and contractor	in the neighbourhood or visitors
Solid Waste Management	Dumping of construction or household materials	Contamination	All solid wastes must be disposed to designated sites and handled by licensed individuals or firms	During construction and operation. Responsibility: The proponent and contractor	Visual observation or complaints from people in the neighbourhood or visitors
Liquid Waste management	Disposal of hazardous liquid wastes in undeveloped areas	Contamination	All solid wastes must be disposed to designated sites and handled by licensed individuals or firms	During construction and occupancy. Responsibility: The proponent and contractor	Visual observation or complaints from people in the neighbourhood or visitors
Use of fire during construction and occupancy	Ignition of wild or unmanaged fires within and outside the site	Destruction of habitats for wildlife and property	Installation of fire warning signs and fire fighting equipments	During construction and occupancy. Responsibility: The proponent and contractor	Presence of dry matter and litter
Movement of tourist vehicles during the operation phase	Interfering with wildlife by driving off road	Destruction of habitats for wildlife and terrain	Install signs to stop driving off road at all times	During construction and occupancy. Responsibility: The proponent and contractor	Regular monitoring of illegal tracts / paths
Vehicle movement at the wrong times and to the wrong places	Interfering with wildlife	Chasing animals from their places of rest at night	Install signs to stop driving at night and driving off road at all times	During construction and occupancy. Responsibility: The proponent and contractor	Regular monitoring of tourist vehicles

Table 13: Impacts on humans and socio-economics

Activity	Environmental Aspect	Potential Environmental Impact	Mitigating Measures	Time Frame & Responsibility	Indicators to be monitored
Noise	Noise pollution	People or wildlife affected negatively	Observe recommended noise levels	During construction, occupation and decommissioning Responsibility: Proponent	Noise levels

Air Quality	Pollution by particulate matter	Contamination by dust and other aerosols	Wet the ground if excavating during dry seasons	During construction, occupation and deco Responsibility: Proponent	Particles in the atmosphere
Water quantity and quality	Effects on water quality and quantity	Poor and scarcity of water for domestic uses	Rational use of water resources, and avoid contamination. Maintain 6 m riparian vegetation around dams	During construction, occupation Responsibility: Proponent	Water flow, quality (chemical and solutes composition)
Security	Dangers to people and property	Impacts on land use, property ownership, and freedom of association	Enhance security	During construction, operation and decommissioning Responsibility: Proponent and contractor	Incidences of insecurity
Access to markets	Blockage of movements for people and livestock	Impacts on prices on farm produce	Provide access across the developed site, while maintaining security	During construction, operation Responsibility: Proponent and contractor	Complaints of people on changes in movements
Cultural and social activities	Interference with local social and cultural events	Impacts on freedom of association and movement	Rights of people observed	During construction, operation and de-commissioning Responsibility: Proponent and contractor	Complaints of people on the effects on their social and cultural events

14. Legal framework for managing community conservancies

According to Wildlife Management act of 2013, communities are entitled to manage wildlife conservancies in Kenya. The law stipulates that:

Any person or community who own land on which wildlife inhabits may individually or collectively establish a wildlife conservancy or sanctuary in accordance with the provisions of this Act as follows:

(1) Communities, landowners, groups of landowners and existing representative organizations may establish a community wildlife association and register under the appropriate law or in the case of an individual owner may be registered as a recognized wildlife manager by the County Wildlife Conservation and Compensation Committee.

(2) The object and purpose for which an association is established is to facilitate conflict resolution and cooperative management of wildlife within a specified geographic region or sub-region.

(3) The application for registration referred to above shall be in the prescribed form and shall contain among other requirements;

- the types of wildlife resources in their area and type of wildlife conservation initiatives being undertaken;
- measures and type of wildlife conservation activities that are being proposed;
- type of wildlife user rights being proposed that will enhance conservation and survival of wildlife in their area;
- land use practices in the area and proposed measures to ensure land use compatibility with wildlife conservation;
- methods of monitoring wildlife and wildlife user activities: and
- community wildlife scouting scheme that will help to provide wildlife surveillance and assist in addressing problem animal control.

14.1. Encroachment into the conservancy areas

According to the wildlife conservation act of 2013, the community is required to make sure that land use practices within the conservation area is compatible with wildlife conservation. The community will enforce adherence to acceptable land use practices through its conservancy management structures. The practices will be arranged and zoned spatially in consultation with all stakeholders and conservation experts and accordance to the law.

There will be no unauthorized encroachment into the conservancy allowed. As a conservancy however, the communities will have controlled access to pastures for grazing from time to time and in accordance to rules and regulations that will be made to manage the conservancy.

14.2. Co existence of wildlife and livestock

In wildlife conservancies livestock co exist with wildlife and share forage and habitats in the reserve. Depending on the management plans, livestock grazing is controlled in various ways either by the time of the year grazing is allowed, the area allowed at different times, or by the number of animals allowed to graze in certain areas. A reason for this is that some forage must be reserved for the wildlife.

In some area where the types of wildlife present pose a threat to livestock – predation by carnivores, the management may put some restrictions for the livestock not to graze in some areas of the conservancy.

14.3. *Competition for forage, water and other resources*

In some cases or in some areas of the conservancy, resources may become scarce and completion for resources between livestock and wildlife may increase. Such cases include times of drought, floods wildfire and other disasters that reduce abundance of forage resources. In such cases the management may institute measures to reduce the competition by requesting the communities to keep the livestock out of the conservation area.

14.4. *Disease transition*

Transmission of diseases from livestock to wildlife is common. There are some livestock diseases that mat reside among the wildlife as reservoirs without affecting the wildlife but having lethal effects on the livestock e.g., animal trypanosomiasis transmitted by tsetse flies. It is safer to break the wildlife-livestock transmission cycle by keeping livestock away from conservancy areas until the disease challenge in the conservancy is reduced.

In some cases there may be new disease outbreaks affecting both the livestock and wildlife. In such cases movement of livestock in and out of the conservation area may be restricted in order to allow disease control measures to be effectively implemented either among the livestock populations or among the wildlife populations.

14.5. *Sharing of commercial benefits from the conservancy*

All wildlife in Kenya either in the protected areas or in the non protected areas belong to the central government of Kenya. Management of wildlife is mandated by Kenya government to the Kenya Wildlife Services. KWS is directly responsible for wildlife in the National Parks and only indirectly responsible to wildlife in other protection categories. Wildlife in the national reserves, conservancies and other forms of protection are managed directly by the owners of the land where the wild animals are located. These land owners are formerly licensed by KWS through a formal agreement where KWS monitors the management of wildlife by the land owner or the land manager. The national reserves have been traditionally managed by the local governments and now by the County Governments. The conservancies have been traditionally managed by land owners either as individuals, company, or associations like the group ranches.

The proposed conservancy will be a community conservancy. The ownership will be between the County Government and the local communities. The local communities will form an association with elected leaders who will manage the conservancy. The level of involvement of the County Government in the management of the conservancy will be negotiated between the community and the county government. It is envisaged that all commercial benefits accrued from the running of the conservancy will be shared between the community and the County government but this remains to be discussed in accordance with the laws of the land.

Borrowing from other conservancies where local governments are involved a percentage of the revenues accrued becomes property of the local communities.

14.6. Responsibilities in protection of wildlife

It is a well known factor that wildlife does not reside only in the protected areas. Wildlife does not know boundaries and many times they are found in areas outside the protected areas. Responsibility of protecting wildlife does not belong to the wardens and rangers only, it belongs to all people especially those living around the protected areas. It is the responsibility of the public to report people who are killing wild animals for whatever reason. People are not only responsible for the wellbeing of wildlife but for avoidance of conflicting with wildlife. People are supposed to avoid as much as possible to avoid practicing land uses that can be damaged by wildlife and if they do they must take measures to protect their property from damage by wildlife.

14.7. Managing ecosystems in the wildlife areas

A **conservation management system (CMS)** is a procedure for maintaining a species or habitat in a particular state. It is a means whereby humankind secures wildlife in a favourable condition for contemplation, education or research, in perpetuity. It is an important topic in cultural ecology, where conservation management counterbalances the unchecked exploitative management of natural resources. Conservation management systems are vital for turning sustainable development strategies into successful operations

14.8. Use of fire as a tool for ecosystem management

In many wildlife management services especially within the tropics, fire is used to burn grass to induce vegetation regeneration by replacing the turf dry grass with young sprouts that the wildlife can feed on. If left unburnt the old dry grass forms a heavy ground cover mat that prevents germination of young seeds and also sprouting of young sprouts.

Burning of vegetation in wildlife management is done in such a way that some sections are burnt in alternating years so that wildlife have a place to graze while grass in the other sections has been burnt. The proposed conservancy will be managed by experienced wildlife professionals who will use acceptable wildlife management practices

14.9. Infrastructure development

Infrastructure facilities like roads, water and electricity will be developed in the proposed conservancy so as to enable investors to put up tourist hotels. Infrastructure development will be conducted as follows:

14.10. Roads

A roads network will be developed within the conservancy from the area to be identified as the conservancy entrance to the headquarters and to all the sites where tourist facilities will be developed. From the entrance there will be roads for game watching or game drives.

The LAPSSET road from Lamu to Isiolo will pass along one side of the conservancy and therefore will serve to link the conservancy by road to other places. Within the conservancy roads will be constricted of murrum like in all other wildlife conservation areas.

14.11. House constructions

The proponent will construct houses for the staff of the county assigned duties at the conservancy. The houses will be constructed at an appropriate place where they will not disturb the wildlife or be an obstruction to tourists. In addition to the residential houses office blocks for the park headquarters will be built and since there will be people living in the conservancy, there will also be other facilities like shops, restaurant, and recreation facilities. There will be a hall for use as an educational facility by students who will be visiting the conservancy.

14.12. Fences and zoning

It is anticipated that the conservancy will not be fenced to allow animals to move in and out of the conservancy. There is need for free movement of animals as most are not permanent residents of the conservancy. They graze in Meru National Park, Shaba National Reserve and in another conservancy proposed by Isiolo County by the Name Ngutu –Naku Purat which also borders the conservancy proposed in this report.

Fencing will be done only around the hotels, offices and the residential places to keep off animals from people and vice versa. However, if the management of the conservancy decides to erect a fence to separate the human occupied areas with the conservancy, they may do so making sure that there will no barrier for animals to move to other neighbouring conservancies or if there is any animal movement corridor between the conservancy and Meru National Park it should not be blocked by the fence. At all times the fence is only to minimize human contacts with wildlife and not to restrict animal movements between conservancies.

14.13. Water reticulation

Water will be required in the proposed conservancy. However, there are no permanent rivers within the area. The proponent will have to pipe water from a far distance in the mountain ranges or from Mt. Kenya. Meru County could obtain water from Isiolo town. An alternative is to build dams within the park to trap water during the rainy seasons. Substantial amounts of water pass through the conservancy flowing down to Ewaso Ng'iro.

The proponent will also consider drilling boreholes to extract ground water for use in the park both for the wildlife and for people living in the conservancy. The proponent will have to provide water for the wildlife especially during the dry seasons when all the streams dry up.

14.14. Electricity transmission

Electricity will be needed in the conservancy for day to day running of facilities in the conservancy. The conservancy is very close to Isiolo where connection to the national grid can be made. The conservancy is in an area with lots of sunshine capable of generating solar energy to run facilities in the conservancy. The proponent will choose whether to connect to the mains or to install solar panels.

14.15. Transportation

Transportation to the proposed site is currently by road and depending on where one is coming from it is also possible to access the site by air by flying to Isiolo airport and moving by road to the proposed conservancy. The government of Kenya is planning to make Isiolo an international airport. The conservancy will therefore be well placed in transportation. When the LAPSSSET project is completed a third means of transportation will be available which is by rail. Isiolo is to be connected to Lamu, Nairobi, Addis Ababa and Juba by railway.

14.16. Waste generation and management

The proposed project will generate wastes both during the construction phase and the operation phases as well as decommissioning. Wastes will be generated from the transportation and use of building materials, packaging materials and wastes from consumables used by people in the construction.

During the operations wastes will be generated from tourism especially in the hotels, garages and also from the residential places and offices.

14.17. Protection of wildlife and habitats

Wildlife will be protected from disturbance by humans and being killed by poachers. Every species requires a certain set of environmental conditions to be able to move around, feed and reproduce. Whether it's in the forest, grassland, desert, or ocean, the place where each species finds the conditions it needs to live and thrive is called its habitat. By protecting habitats, we're protecting wildlife from major threats like climate change, habitat loss and degradation in addition to direct disturbance by man.

Our warming planet is playing havoc habitats around the world. Drying up or rivers and lakes for example, destroys the habitat for fish, while changing rain patterns put forests and the animals that live there at greater risk from wildfires.

Agriculture, Industrial development, and Urban sprawl are all factors that have contributed to the extensive loss and fragmentation of prime wildlife habitat, which in turn has brought many animals to the brink of extinction. Even habitats that are large enough to support the wildlife living there can suffer negative impacts that affect wildlife. Every day, habitats are subjected to pollution from pesticides, oil spills and agricultural runoff.

For decades, defenders of Wildlife have played a leading role in helping shape smart conservation policies for managing national wildlife refuges, national forests, and other public lands because these areas, represent some of the last best places for wildlife to thrive.

14.18. Conservation of wildlife

Wildlife conservation is the practice of protecting *endangered plant and wild animal species* and their *habitats*. Among the goals of wildlife conservation are to ensure that nature will be around for future generations to enjoy and to recognize the importance of wilderness to humans. Kenya Wildlife Service (KWS) is the government agency dedicated to wildlife conservation, which help to implement policies designed to protect wildlife. Numerous independent *non-profit organizations* also promote various wildlife conservation causes.

Wildlife conservation has become an increasingly important practice due to the negative effects of human activity on wildlife. An endangered species is defined as a population of a living being that is at the danger of becoming extinct because of several reasons. Either they are few in number or are threatened by the varying environmental or prepositional parameters.

15. Public Participation

Environmental Management and Coordination act of 1999 requires that the general public living or having interest in and around the area proposed for project development should be informed of the development activities. This is in view of the fact that if there are ant impacts they would be the first to be affected. The law requires that the EIA expert should explain the in details the proposed activities and let the residents discuss on how these activities will impact on their environment and their day to day work. These discussions are usually called public consultations or public participation. If there any impacts envisaged by the participants the EIA expert discusses with them on how the envisaged impacts can be avoided, or mitigated. The most common method for holding public consultations is by holding workshops with participants comprising of men and women from the project area for discussions with the EIA experts

These discussions are usually guided by a questionnaire prepared based on the anticipated environmental and social impacts likely to emanate from the proposed project activities. The questionnaire serves to collect participants' views to guide in the analysis of people's views.

Two public participation workshops were held for this analysis. One was held at Lare and was attended by leaders from the entire Igembe community. The other one was held at Muriri and included participants from the Tigania community. The following are the views collected from people during the two workshops.

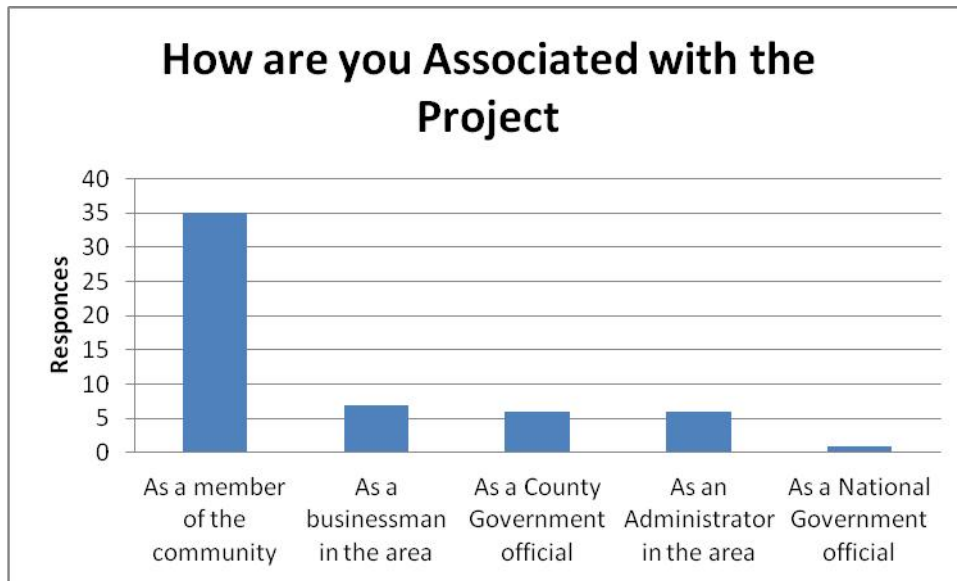


Figure 34: An analysis of how the participants are involved with the project.

The participants ranged from national and county government administrators, business people and ordinary members of the community. The ordinary members of the community were mainly the farmers or herders who have interest in the area. The list of those who were invited for the workshop was much longer and included more people like politicians both at the county level and at the national level. The reason for not attending the workshops was due to engagement activities.

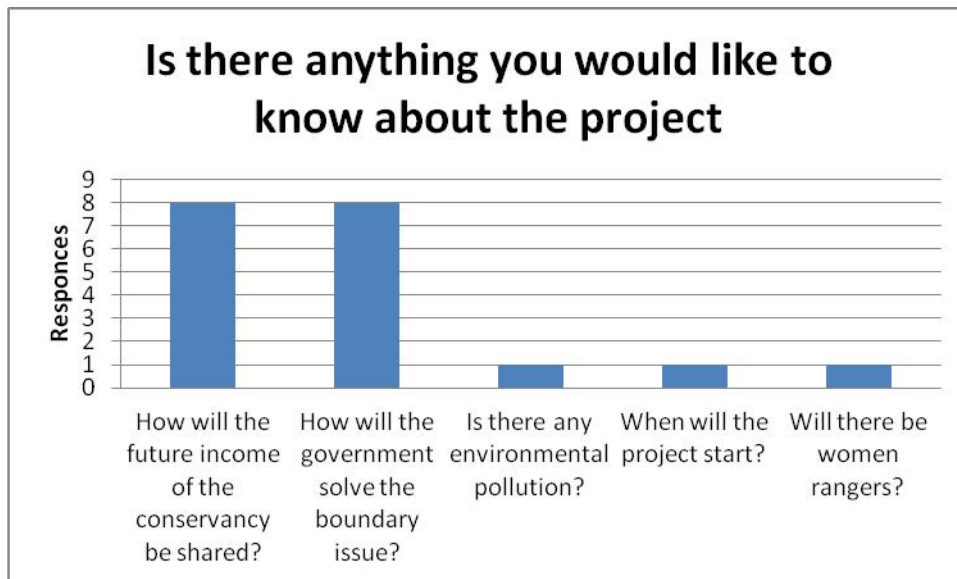


Figure 35: Knowledge of the project activities by the public

It was important to not if all the participant's concerns were addressed by the the questionnaire. To know there was any issue not addressed in the discussions, we asked the apticipants if there was anything they would like to know in additin to what was presented by the EIA team. Majority of the respondents to this question wanted to know how the proceeds from the conservancy would be shared among the land owners, the county and the national government. They also wanted to know how the government will resolve the conservancy boundary issue. About the sharing of revenues the participants were informed that the share that will be entiled to the community will be channelled through the community organizations that will be led by elected leaders. It will be the responsibility of the community organization to decide how the part of the revenue entitled to them will be shared. Both the county and the community organization will consultatively decide on the formula for sharing between the two. The participants were informed that sincee there are many other conservancies in the country advice will be sort from them on how revenues are shered. On the issue of the boundary the participants were informed that the land is already demarcated and bondaries established.

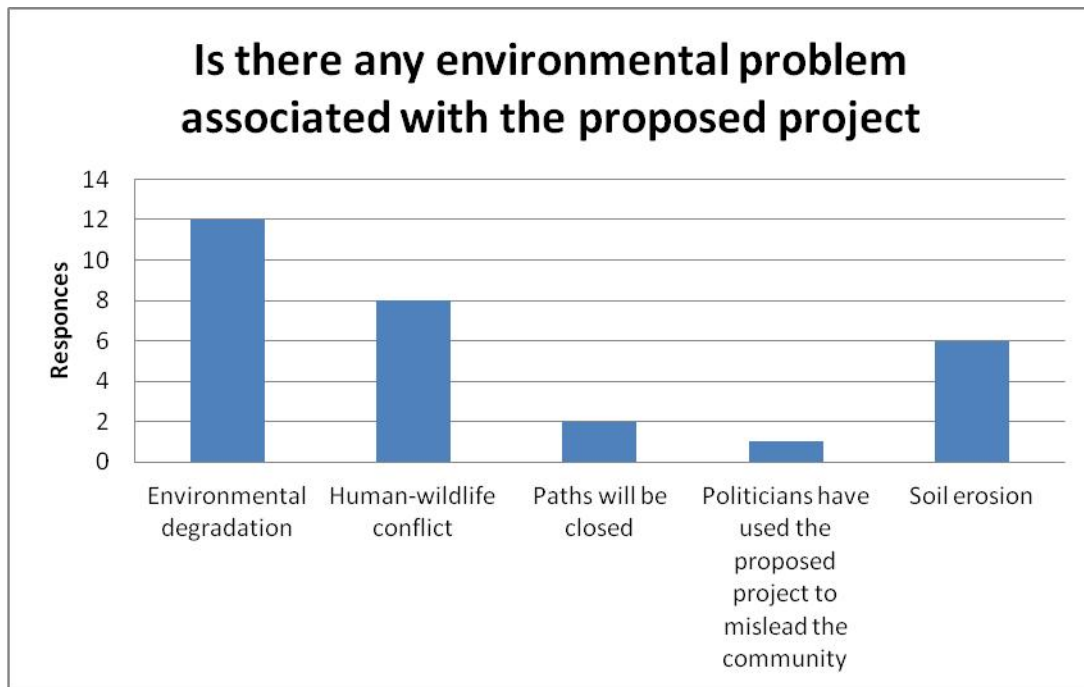


Figure 36: Knowledge of environmental issues from the proposed development

Environmental degradation was the environmental impacts of the highest concern to the public followed by human wildlife conflict. Environmental degradation is usually a collective term especially in respect to causes. Several kinds of activities can cause environmental degradation and degradation itself could mean different things like loss of habitat complexity, soil erosion or loss of soil fertility. Looking at the importance of soil erosion in the above diagram suggests that soil erosion is the cause of their concern.

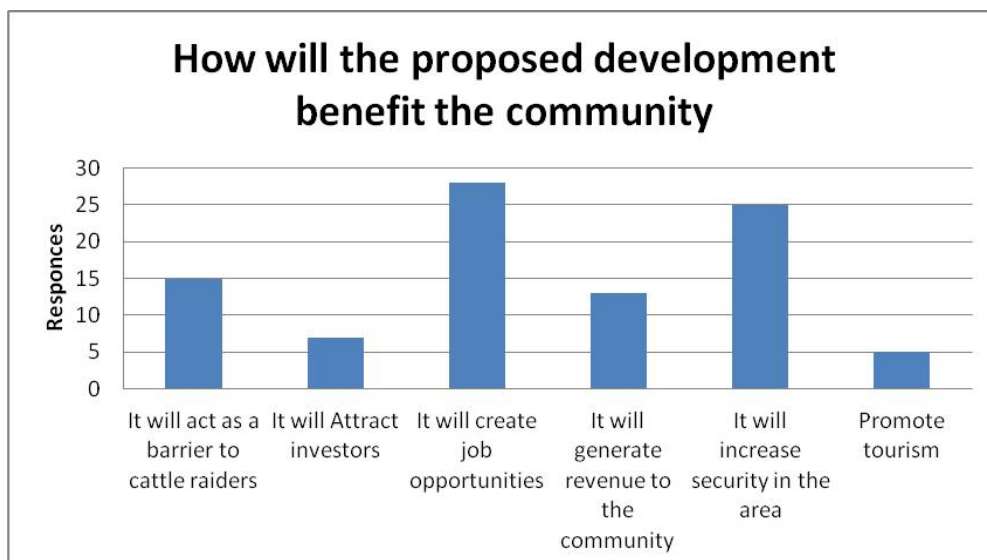


Figure 37: Community benefits expected from the proposed development

The two most important beneficial expectations from the communities are job creation and increase in security in the area. The third highest concern is also related to the second because it talks of prevention of cattle rustlers. From these public disclosures there is a lot of unemployment and the locals would like to see the proposed project create job opportunities for them. The locals requested that they be considered first when jobs are available to work in the proposed conservancy. At the same time the area is quite insecure due to cattle rustling. The locals would like to project to proceed as soon as possible so that the county government can employ wildlife rangers who as they protect wild animals will also maintain peace in the area.

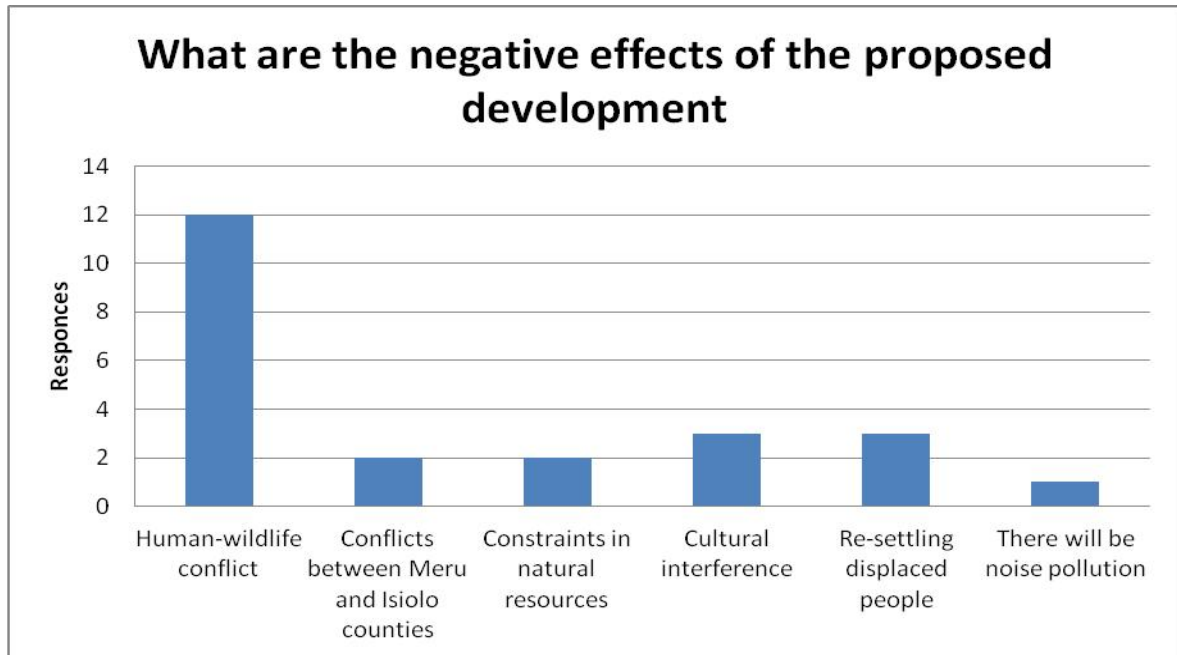


Figure 38: Perceptions on negative environmental effects of the proposed project

Human wildlife conflict is perceived as the most important negative effect they expect. This is in respect to the area being developed as a wildlife conservancy. They fear that wild animals will get out of the conservancy and disturb them in their homes or destroy their crops in the fields. They therefore requested the conservancy management to develop programmes to keep the wildlife into their designated areas day and night.



Figure 39: The effects of the proposed project on the local cultural activities

A number of respondents were concerned that the proposed project will interfere with their cultural activities and make them adapt to foreign cultures brought about by visitors and foreign workers in the conservancy. Some mentioned that tourists will bring in bad influence to the local residents. However, one person was of the opinion that interaction with foreigners will promote their cultural activities.

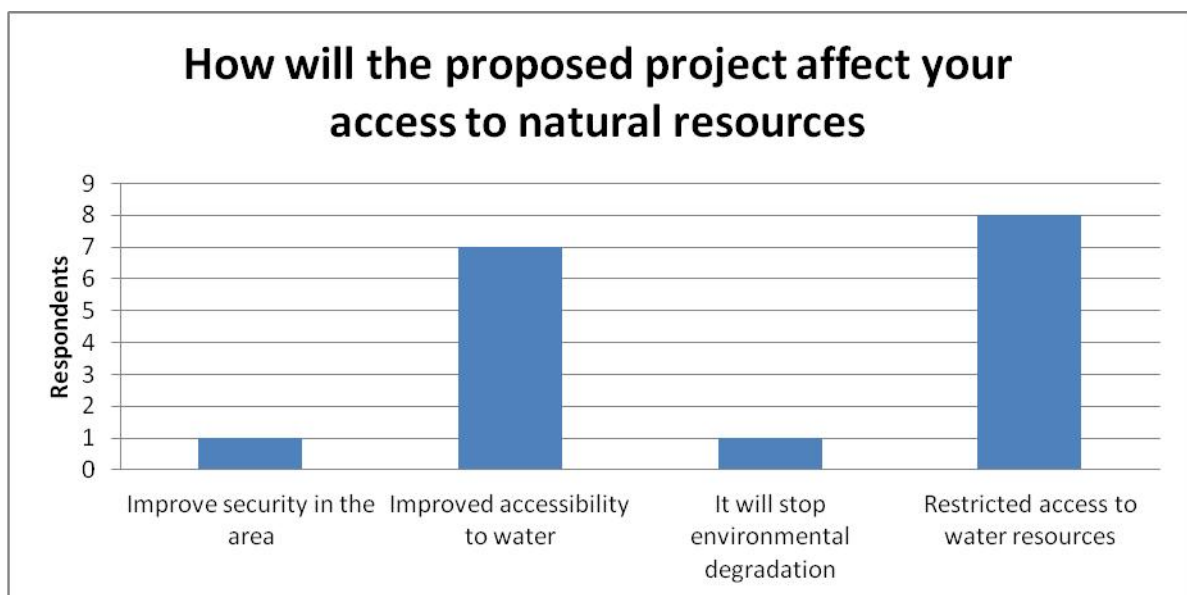


Figure 40: Effects of the proposed project on the access to natural resources

A good number of respondents were of the opinion that the proposed project will restrict their access to water resources while almost a similar number was of the opinion that same project will improve their accessibility to water.

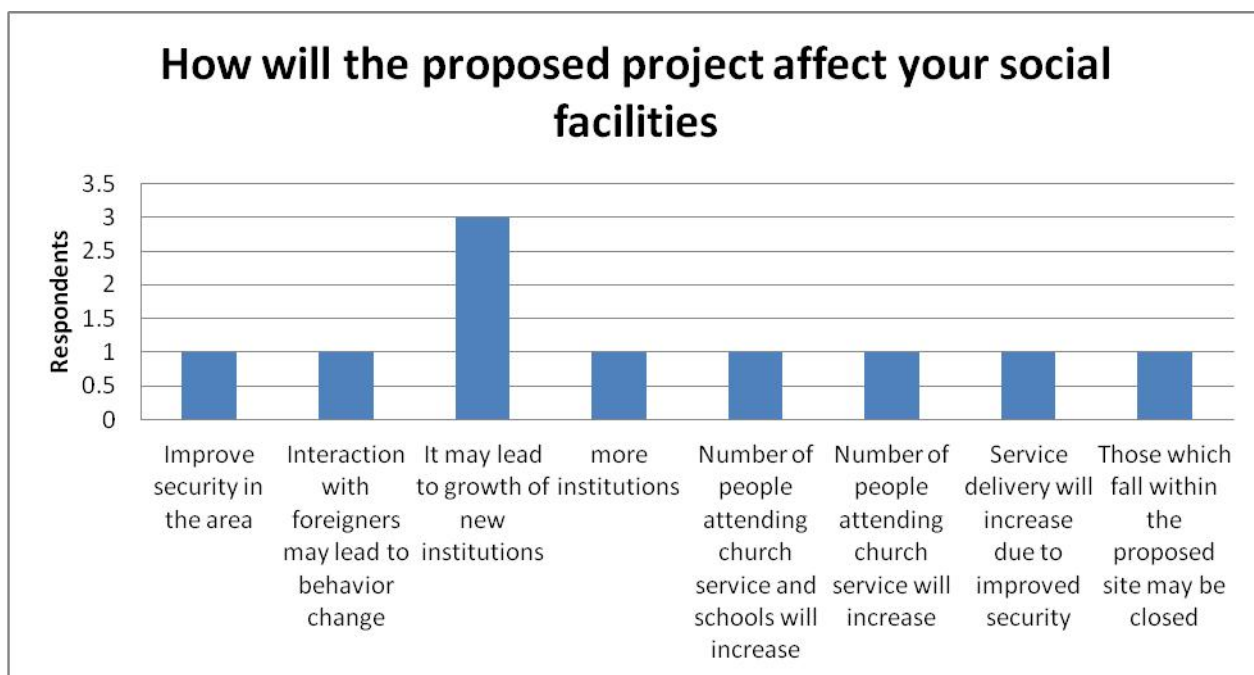


Figure 41: Effects of the proposed project on the social facilities

Three respondents said that the proposed project will increase the number of social facilities in the area. They said that proceeds from the investments will go towards contributing to the local people and such contributions can go to building of social facilities. All other concerns were held by single individuals as shown in the graph above.

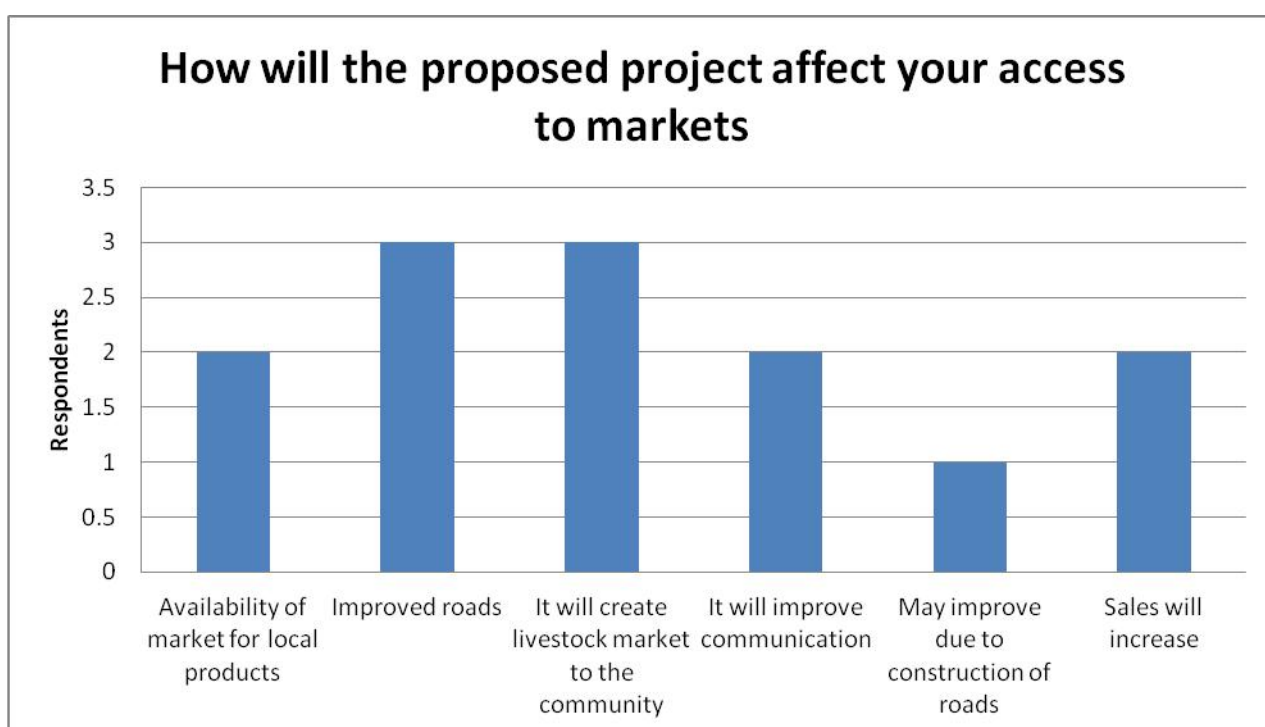


Figure 42: Effects of the proposed project on access to markets

On the issue of accessibility to markets all the respondents were positive that the proposed project will be beneficial to them by improving the roads to markets and creation of new markets for their livestock and other products and also increase their sales of all commodities.



Figure 43: Areas people would like to be involved

Quite a high number of participants would like to be involved in the management of the conservancy while others would like to be involved in carrying out some business within the conservancy. Some others also said that they would like to be employed in the conservancy.

Table 14: Additional comments from the participants

Additional comments on the project	Count
County government should support the project	1
Criteria for selecting committee members	1
Employ locals	1
How will the larger community be involved	1
I support the project	1
Poor people should be hired	1
There is need for community sensitization	4
There should be clear demarcation of boundary	3
Who will be involved in the management?	1
Who will take care of our cattle in the conservancy?	1
Total	15

16. Environmental and Social Management Plan (ESMP)

We here present an environmental and social management plan for the proposed community conservancy. This management plan is intended to assist the project proponent in identifying and mitigating all anticipated environmental and social impacts from the proposed project. It is also intended to assist the proponent with indicators of the satisfactory mitigation, the person to be held responsible for mitigation and the approximate cost of mitigation based on the assessors judgement.

16.1. Anticipated potential Impacts and Mitigation Measures

General Overview

Risks emanating from the project development are in the social and physical environment as well as economic aspects.

The linkages can be explained as follows;

- Natural resources (land and soil, water resources, vegetation cover, wetlands, escarpment, wildlife, etc.)
- Natural resources are linked to the environmental status and composition and the welfare of people is directly affected by the type and abundance of natural resources.
- Physical environment (hydrology, physiology and drainage)
- Physical environments affect the welfare of people like for example in terms of sanitation, soil type and fertility and are determinants of economic status.
- Social aspects (population and settlement trends, land use patterns, institutional distribution, water sources, health and safety among others) are interlinked.
- Economic issues including income generation, trading opportunities, transportation, agricultural productivity, mining, livestock production, etc. are also interlinked.

The key linkages are summarized in the table below

Table 15: Linkages and Concerns

No.	Focal Areas	Linkages/Environmental Concerns
1	<ul style="list-style-type: none">• Natural Resources (wildlife, forests, vegetation/plant species, water sources, land, air,	<ul style="list-style-type: none">• Land degradation through disturbance of the soil and the flora and fauna in the soil,• Pollution of sources of water e.g. springs, stream, rivers, wetlands, etc.,• Underground water quality degradation from development of

	wetlands, etc.)	<p>the cut-lines and use related pollutants (oil, grease, paint and asphalt),</p> <ul style="list-style-type: none"> • Permanent destruction of vegetation cover along the cutline routes, diversions, contractors camp sites, materials holding areas and/or borrow pit sites (quarries), • Disruption of wildlife and general biodiversity. Effects may also be felt in this wildlife and drought resistant biodiversity rich area or Emissions into the air of dust (during earth moving and machinery movement) and smoke/hydrocarbons from equipments being used during the proposed exercise • Degradation of wetlands and other hydrological regimes in the project area. Other aspects as may be identified in the field, • Interference with the wildlife habitats and migratory corridors
	<ul style="list-style-type: none"> • Physical Environment (topography, land forms, geology, hydrology, climate) 	<ul style="list-style-type: none"> • Interference with the hydrological trends and hence surface runoff, • Effects on the drainage systems and hydrological regimes, particularly with increased magnitude in surface runoff, • Effects on sub-surface geological formations as a result of earth moving activities, • Interference with sensitive features such as old trees, public amenities, cultural features, etc
	<ul style="list-style-type: none"> • Social and economic • Environment • (Populations trends, settlement, land use, infrastructure, economic activities etc 	<ul style="list-style-type: none"> • Population and settlement trends upon commissioning of the road, • Migration of outsiders for to seek employment, • Increased moral decay during operations due to migration of different people, • Changes in land use and urban growth trends, • Changes in major economic activities e.g. Settlements. • Benefits of the proposed project to the country, • Changes in socio-cultural practices and lifestyles due to external influence, • Additional issues anticipated from social interactions.

16.2. ESMP for the Planning Phase

Table 16: EMP for the Planning phase

Possible Negative Impact	Recommended Mitigation Measures	Indicators Mitigation	Estimated cost of mitigation Ksh.	Responsibility	Time schedule and Monitoring frequency
Biophysical impacts and Mitigation					
<ul style="list-style-type: none"> Vegetation loss in construction sites, and along the road paths Soil erosion within the vegetation cleared areas 	<ol style="list-style-type: none"> Wherever possible vegetation within the conservancy should be preserved and where plants must be uprooted they should be recycled into use as construction materials, firewood or converted into soil manure The developer will undertake grass planting as the construction progresses to avoid the soil being washed or carried by wind. Places of least vegetation cover will be identified for the construction of hotels and campsites. Vegetation will be cleared only on the construction areas and care must be taken to ensure minimum vegetative disturbance outside these sites. Proper roof catchments and gutters will be put in place to trap water for use. Storage tanks should be installed to trap this water and make it available for use by wildlife and humans. 	<p>Minimal removal of vegetation</p> <p>Areas not constructed planted with indigenous vegetation</p>	500,000/=	Site Engineer	As project progresses, Audited annually

		3. During construction movement of vehicles carrying materials is likely to be comparatively high. The contractor can minimize vehicle movement outside the camp as much as possible. Alterations of soil surface should be avoided as much as possible	No vehicle tracts outside construction designated areas	50,000	Contractor	all the time during construction
• Preservation of archaeological materials		1. The contractor should be observant when excavations are made during the construction to note presence of archaeological materials and other materials of cultural value buried in the soil. Where such materials are found the contractor should liaise with the National Museums of Kenya in Nairobi on how they can be removed or preserved.	No exposed archaeological materials on site	100,000	Contractor / Proponent	All the time during construction
• Air pollution from moving vehicles		1. Pour water on vehicle paths to reduce dust 2. When possible vehicles should be used when most people and livestock are indoors	No dust is blown in to the air	100,000	Contractor	All the time during construction
• Noise from movement of Vehicles		1. Use vehicle and machinery equipment that are of good mechanical conditions 2. Ensure the machines used are adequately serviced	Machines are in good mechanical condition	200,000	Contractor	All the time during construction
• Interference with livestock when		1. Make sure livestock are not in the area of	No livestock in construction area	20,000	Contractor	All the time during construction

grazing	construction				
<ul style="list-style-type: none"> Vibrations on the ground 	No use of un authorized explosives during construction. If explosives must be used, the user must seek permit from Ministry of mines specifying the proper explosives to use			Contractor	All the time during construction
<ul style="list-style-type: none"> Constraints on local hydrology 	Avoid blockage of surface runoff and seasonal rivers	Water flows to Ewaso Ng'iro River without impediments	200,000	Contractor / Proponent	All the time during construction
Socio-economics					
<ul style="list-style-type: none"> Interference with movement patterns of people 	Map out movement patterns of people in such a way that there are not paths in the wildlife conservation areas.	no human movements in the conservation areas	200,000	Proponent	All the time during construction
<ul style="list-style-type: none"> Cultural conflicts between locals and the incoming workers 	Train workers to respect the cultural practices of the local people.	No conflicts between local people and the workers	100,000	Proponent / Contractor	All the time during construction
<ul style="list-style-type: none"> Competition on the supplies in the local 	The contractor should facilitate transportation of domestic supplies to the workers	Local people are not deprived of their local supplies	200,000	contractor	All the time during construction

markets					
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16.3. EMP for the Operations Phase

Table 17: EMP for the operations phase

Negative impact	Proposed Mitigation Measures	Monitoring	How Monitor to	Responsibility	Time schedule and Monitoring frequency	Estimated costs for mitigation K.Sh.
Biophysical impacts and Mitigation						
<ul style="list-style-type: none"> Soil disturbance Landscape interference at the construction sites, hotels and camp sites. 	Care should be taken to avoid interference with the landscape at the construction sites. Should leave a clearance of at least 30m from the rivers or any unique habitats.	Soil condition and dislocation soil perimeter wall	Observations on the soil surface, exposures, stream blockages undisturbed flow of surface runoff	Site Engineer	Daily monitoring and Annual Audits	200,000/=
<ul style="list-style-type: none"> Creation of ponds from constructions and excavations 	The proponent will do landscaping, and fill the depressions including borrow pits. Sporadic torrential rains may fill up pits still in use with water.	surface soil conditions Quality of discharge water	Observe soil translocation	Proponent	Monthly	
<ul style="list-style-type: none"> Loss of plant life and associated bio- 	Although plant diversity is low at the proposed site, the proponent will	Vegetation cover around the camp	Site Engineer and the proponent	Proponent	Monthly	350,000/=

communities	incorporate greater species diversity in their rehabilitation and landscaping programmes. The services of knowledgeable curator/botanist will be employed to implement this feature. Close collaboration and assistance will be sought and built with the Kenya Forest Service and for supply of appropriate forbs seeds and establishing tree nurseries in the rehabilitation programme					
<ul style="list-style-type: none"> Increased surface runoff and soil erosion 	Since the area is arid and semi-arid the amount of continual Run-off will be minimal and therefore of little impact. However, the proponent will construct surface rainwater trap pits and cut-off drains to check occasional runoff. Roof catchment's gutters connected to tanks will harvest excess rainwater in the campsite. The water would also be used for irrigating planted vegetation, outdoor cleaning such as of vehicles and toilet cleaning, thereby reducing demand on water supply.	Surface water movements and Soil trans location	Note changes in volumes of surface runoff. Amounts of soil deposition by surface water	Proponent or contractor	Quarterly inspection and Annual Audit	510,000/=
<ul style="list-style-type: none"> Air pollution from dust and engine exhaust gases 	Prompt compaction of loose soils and aggressive grass replanting will be implemented. Water will be sprinkled onto the disturbed soil to reduce flying dust. However, the drilling operation will produce no dust as the disturbance will be occurring underneath the soil surface. Employees/ construction	Presence of dust on the roads and the exposed surfaces within the camp	Observe for the presence of dusts on the roads	Contractor / proponent	Occasionally	500,000/=

	workers will be provided with personal protective equipment (PPE), to reduce possible dust and noxious gas inhalation.					
• Obstruction by disposed excavated Soil	Public movement through the conservancy area will generally be limited. However, emergency responses, which might be hindered by the obstruction, will be provided for by clear operating procedures. Most of the excavated materials will be used for fill-ups and some will be applied in landscaping.	presence of excavated soils on the surface, paths and movement areas	checks and observations	Proponent and contractor	Regularly	Cost combined as above
• Waste into the Environment	This area is not connected to any organized sewerage network. The area to be developed will be equipped with toilet and washing facilities fully connected to licensed septic tanks. Appropriate sized portable toilets will be availed to the field staff during their working hours and to keep with the movement of operations. The proponent will ensure that it engages a licensed private company specialized in the handling wastes. Biodegradable kitchen waste will be composted on site for tree planting manure. A Good housekeeping as part of the company policy will be implemented at the facility.	Inspection	Noting any improper waste disposal	Proponent	Regular	500,000/=
• Surface and Ground	The project area does not have	Checking and	sampling water	Proponent	Regularly	200,000

Water contamination	permanent surface running river or stream. The seasonal streams on site are dry beds holding water only during the wet rainy season. The project will have an adequate drainage on site containment to minimize uncontrolled storm water. Well documented procedures for maintenance of the drainage system will be implemented and staff will be trained accordingly.	inspection of surface water and ground water	for testing			
• Air pollution	The amount of dust getting into the air will be minimized by pouring water during the dry days. Air pollution by gaseous wastes from machineries will be minimized by making sure that machines in operation are in good mechanical order and are serviced	dust particles gaseous emissions from machineries	the amount dust particles in the air the gaseous emissions from machineries	Proponent Contractor	Regularly	300,000
• Movement of vehicles and individual	People should be instructed to walk, and drive vehicles only on the designated routes.	Movement of vehicles	Checking on the paths used by vehicles	Proponent / conservancy management	Regularly	200,000
• Obstruction on animal movements to watering points	Avoid making paths or vehicle tracts through animal movements passages to watering points	make sure vehicle tracts are not close to animal watering points	Checking and directing traffic to keep off animal sensitive areas	Proponent / conservancy management	Regularly	200,000
• Obstruction of animal movement to grazing areas	Erect no barriers like houses, hotels and gates on animal movement or migration corridors	Mapping and observation	Check on animal movement patterns	Proponent / conservancy management	Seasonally	300,000

• Obstruction on animal migration corridors	Erect no barriers like houses, hotels and gates on animal movement or migration corridors	Mapping and observation	Check on animal movement patterns	Proponent / conservancy management	Seasonally	300,000
• Overcrowding of hotels and houses in the conservancy	Identify areas to locate all proposed developments to make sure no overcrowding in one place	Mapping of constructions	Checking of developments to make sure they are as planned	Proponent / conservancy management	Regularly	50,000
• Too many tourists vehicles in the conservancy during the day and during the nights	Movement of vehicles within the conservancy should be monitored No movement of vehicles during the night	maintain records of vehicle and tourist movements within the conservancy	Regulate the number of vehicles moving to certain critical / sensitive area	Proponent / conservancy management	Regularly	100,000
• Water pollution	Prevent contamination of water resources in the conservancy	water quality	Sample testing for chemical contaminants	Proponent	Regularly	100,000
• Overstocking and overgrazing by livestock	Livestock grazing within the conservancy should be managed according to laid down plans	Map out livestock grazing patterns per season per year	Checking on grazing areas, livestock numbers and pastures growth	Proponent / conservancy management	Regularly, seasonal or annually	200,000
• Human settlements	No human settlements either for shelter or for business within the conservancy area	un authorized structures along the border of the conservancy	Observe development of illegal structures along the border	Proponent / conservancy management	Regularly	-
• Poaching in and around the conservancy	Make sure no hunting or poaching of wildlife within and outside the conservancy at all times	Monitor movement of humans in the conservancy and	Keep records of poaching and hunting in the	Proponent / conservancy management	Regularly and when they occur	500,000

	maintain surveillance by trained and armed rangers around the conservancy Liaise with KWS for reinforcement in surveillance	killing of animals in and around the conservancy	conservancy Prompt response to poaching incidences			
• Damage of crops by wildlife	Land use around the conservancy should be controlled Movement of wildlife to agricultural areas should be controlled	Monitor movement of wildlife	Regulate movement of wildlife into agricultural areas	Proponent / conservancy management	Regularly	200,000
• Injuries or deaths to humans caused by wildlife	Public awareness on how humans can co-exist with wildlife without conflicts Training on how to gourd crops from attacks by wildlife	Assess human awareness on dangers from wildlife	Conduct training	Proponent / conservancy management	Regularly	-
• General human-wildlife conflicts	Hold public awareness meetings and public barazas on how humans can co-exist with wildlife without conflicts Training on how to gourd crops from attacks by wildlife	Assess human awareness on dangers from wildlife	Conduct training	Proponent	Regularly	-
• Attacks on livestock by wild carnivores	Train public on how to protect wildlife from attacks by wild carnivores Conservancy management to control movement of wild carnivores to human settled areas	Assess human preparedness to deal wild carnivores Monitor movement of wild carnivores in and outside the conservancy	Conduct training	Proponent / conservancy management	Regularly	-

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• Disposal of sewer from the hotels and settled areas	A sewer treatment plant to be installed	all the sewer to be treated to adequate standards be discharge	checking the sewer to make sure that it is treated before discharge	Proponent	Regularly	100,000
• Disposal of waste water from washings	Waste water should be collected into one place where it can evaporate or be treated and recycled into agricultural use	Monitor the flow of waste water from kitchens and washing areas	Checking where waste water is disposed	Proponent / conservancy management	Regularly	100,000
• Barriers to wildlife movement	The campsite should not be located in unique habitats where rare wildlife inhabit or go to feed or take water	Presence and movement of wildlife	Observe and inquire from residents the presence and movement of wildlife.	Proponent / conservancy management	Before setting up the camp	100,000
• Threats on biodiversity – loss of habitat	Hotel and facility users should not disturb wildlife outside the camp during the day and at night	Monitoring the movement of camp users outside the camp	Checking the movement of people outside the camp	Proponent / conservancy management	Regularly	100,000
• Feeding of wildlife by residents	Residents and tourists should not feed wildlife at all time and for any reason at all.	Monitor tourist movements and behaviours	Observations	Proponent / conservancy management	Regularly	100,000
• Contaminated soil	Labelled, containerized and sent off-site for further handling/disposal	movement of soils should be to designated areas	Observations on the where contaminated soils are put	Proponent	regularly	100,000

• Wastes from electronics	Labelled, containerized and sent off-site for further handling/disposal	Make sure waste electronic equipments are disposed into the designated containers disposed professionally	Checking and Observations	Proponent / conservancy management	Regularly	100,000
• Liquid wastes from hotels and residential houses	Liquid wastes from kitchens and wash areas must be re-cycled to water plants in the compounds or drained into pits where water can evaporate	making sure no liquid waste is running on the ground	Observation	Proponent	Regularly	50,000
• Solid wastes from hotels and residential areas	Household and office solid wastes must be separated at source into glasses, metals, paper, polyethylene and biodegradable materials and re-used, recycled appropriately. The little residue left must be disposed into a designated land fill.	Making sure no solid wastes are littered on the compound	Observation	Proponent	Checking regularly	500,000
• Used medical wastes	Collected, labelled as biomedical waste, and sent offsite for disposal. Review possibility of safe incineration for readily combustible items	Monitor the handling and disposal of medical wastes	make sure medical wastes are always disposed off professionally	Proponent and contractor	Regularly	50,000
Socio-economic Impacts and Mitigation						
• Disease transmission through social interaction	1. Special trainings will be conducted for employees on HIV, and related social health risks. The company, through its social responsibility, will extend	Employees trained	Maintain records of disease occurrences	Proponent		Quarterly and at Annual Audit

	community education into the surrounding areas		Liaise with the nearest health facility for provision of medical services			
• Noise pollution nuisance	1. The contractor will ensure that the operations of most of the machinery such as vibrators, loaders graders are well serviced and that all workers are provided with and using PPE such as earmuffs. Although there are only a few and scattered residential dwellings in the project area noise surveillance instruments will be availed periodically to check on any excesses.	In-house	Site Engineer			Annual Audit and Daily monitoring
• Traffic congestion and accidents	1. The earth road network is not a busy one. Logistical procedures will ensure ease of movement. Materials will be packed properly in specialized carriers to reduce chances of falls.		Site Engineer			Daily monitoring
• Cultural conflicts with foreigners	1. Proponent should instruct the workers at the camp not to interfere with the cultural practices and religious beliefs of the local people.	Monitor the interactions between the workers and the locals	Make sure all workers have received the instructions and training	Proponent and contractor	Regularly	100,000

<ul style="list-style-type: none"> Impacts on local infrastructure 	<ol style="list-style-type: none"> Make sure the local infrastructure is not constrained by activities of the proposed project Construction of infrastructure should use locally available materials as much as possible 	<p>monitor efficiency operations of the local infrastructure e.g. roads, mosques, recreation centers etc.</p>	<p>Check or inquire from local to identify and rectify and constraints arising from the presence of the project in the area</p>	Proponent	at the beginning of the project	200,000
<h3>Health and Safety Impacts and Mitigation</h3>						
<ul style="list-style-type: none"> Health deterioration of workers 	<ol style="list-style-type: none"> Dust containment and suction systems will be installed on the campsite. Use of PPEs will be strictly enforced. Welders will be provided with respirators, eye protections and dustcoats to minimize inhalations. Staff working at the plant will have medical cover. Sanitation related education and practice would form part of the facility's regular routine, to avoid incidences of infections such as cholera, bilharzias and malaria. 	<p>Medical checks</p> <p>Checking on use of PPEs.</p>	<p>Regular medical checks will be done and records maintained of the employees.</p>	Contractor	at all times	200,000
<ul style="list-style-type: none"> Challenges for foreign disease 	<ol style="list-style-type: none"> The camp should have a clinic equipped with drugs and qualified medical personnel so as to contain any diseases among the workers. 	<p>Make sure all ailments are treated within the camp</p>	<p>Disease screening and tests</p>	Proponent	regularly	500,000
<ul style="list-style-type: none"> Insecurity due to 	<ol style="list-style-type: none"> The proponent should organize 	<p>Monitor security</p>	<p>Inquiries from</p>	Proponent	Regularly	300,000

presence of many people	with local administration to make sure that presence of the camp occupants (workers) in the area does not cause insecurity inside and outside the camp.	situation in and around the camp	the local administration Checking with camp managers			
<ul style="list-style-type: none"> Exposure of foreigners to zoonotic diseases or similar outbreaks or vice versa – foreigners passing zoonotics to local livestock 	1. Contacts with local livestock should be minimized and it has to happen disinfection should be done beforehand	monitor occurrences of zoonotic diseases	discussions and checking with local Vets	Proponent	Regularly	200,000

16.4. EMP for the Decommissioning Phase

Table 17: EMP for decommissioning phase

Negative impact	Proposed Mitigation Measures	Monitoring	How to monitor	Frequency and time to monitor	Responsibility	Estimated cost of mitigation Ksh.
Biophysical Impacts and Mitigation						
Un-aesthetic derelict land drainage	Proper site restoration or reconstruction measures will be carried out in the event of complete phase-out of the project campsite. Landscaping and plant enrichment will be done at phase-out. Environmental, health and safety legal requirements will be followed	Monitor vegetation types and landscapes	Post-check evaluation Compare with un developed areas	In case of decommissioning	Proponent	1,000,000

Soil chemical composition and poisoning	The contractors will immediately identify areas in the campsite where soils have been contaminated, scoop it and bury it in a pit where it is not exposed to people, livestock and wildlife including the below ground organisms as explained in the oil spill contingency arrangements	Check soil chemical composition	Laboratory analysis and visual observations	During decommissioning	Proponent	200,000
Re-vegetating the abandoned land	The proponent will take the responsibility of re-vegetating the abandoned areas only with indigenous plant species.	Checking the plant species planted	Observing	During decommissioning	Proponent	300,000
Ground levelling	Before abandoning the decommissioned areas, the ground should be levelled by spreading heaps of soil and the soil fence	Make sure the ground is level – no heaps of soil left behind	Observation	During decommissioning	Proponent	200,000
Burying of pits and dumps	The pits used for wastes for various purposes should be buried and covered with clean soil.	make sure pits are buried	Observation	During decommissioning	Proponent /	200,000
Socio economic Impacts and Mitigation						
Loss of jobs and livelihoods in case of decommissioning	The proponent will implement a comprehensive layoff and severance package for those who may not be redeployed.	Training of laid off staff on self employment	Training sessions held	In-house	Proponent	200,000
Noise pollution	The contractor will ensure that the required noise levels are observed during the decommissioning phase.	Noting levels of noise pollution	Keeping records of	Throughout the decommissioning	Proponent	50,000

	Noise surveillance instruments will be availed periodically to check on any excesses.		noise emission	period		
Health and safety Impacts and Mitigation						
Loss of hearing	Use of PPE like earmuffs will be enforced	Medical records	Medical check ups	Throughout the decommissioning period	Proponent	100,000
Bodily injuries and accidents	The contractor will ensure supervision of work and handling of equipment is restricted to only skilled and experience personnel to prevent accidents. Debriefing on safety procedure for site workers will precede any such works. Both the contractor and proponent will observe work ethics and worker's compensation in case of injury or loss. PPE like helmets, overall, nose and eyes protection hand gloves and boots, all of suitable quality will be used.	Use of PPE like earmuffs, helmet and gumboots will be enforced.	Use PPEs	Throughout the decommissioning period	Proponent	200,000

17. Conclusions and Recommendations

This study has analyzed all environmental and social impacts associated with the operationalization of Nyambene National Reserve. The study outlines these impacts as they affect the planning, operational and decommissioning phases of the project. An elaborate Environmental and Social Impacts Management Plan has been presented that will guide safe implementation of the project by avoiding most of the negative impacts and gives ways to mitigate the negative impacts that are unavoidable.

The project will be beneficial both nationally and locally in many ways. At the national level, the project will move the country further into achieving some of the Millennium Development Goals, help to meet a number of bilateral and multilateral agreements which Kenya has ratified, and above all make significant contribution to towards realization of Vision 2030 goals and enhance national economic growth. Locally the project will contribute to poverty eradication among the local communities by creating employment, providing opportunities for business, and create markets for their produce. Implementation of the project will increase security in the area and help the communities to live together in harmony by putting to an end cattle rustling and inter ethnic conflicts.

The project will put to an end wildlife poaching in the area and reduce the problems of wildlife – human conflicts, reduce crop damages and help KWS on the burden of taking care of wild life.

Grazing is the only viable land use for the area and experiences have shown that livestock grazing has many problems because of insecurity. Wildlife remains the only land use that is sustainable and beneficial to the land owners. If implemented well, the proceeds from tourism can benefit all members of the communities including children, women, members of the community who have disabilities of one form or the other, and the poor who have no resources to invest in individually owned land parcels.

From interviews and workshops with different stakeholders in the area, it is very clear that most of the people welcome the idea of operationalizing the conservancy. Only a few people seem to have a different opinion but if the majority will be allowed to have their way democratically, then the conservancy should be operationalized as soon as possible. We here report that there are no technical problems in setting up the conservancy and by far benefits at all levels of participation outweighs the negative impacts (tradeoffs).

We therefore recommend operationalization of the conservancy. Meru County Government should work with the communities in accordance to the new Wildlife Management Act 2013 to ensure that protection of wildlife is done in the most participatory way and is beneficial to the entire community.

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19. Appendices

19.1. Minutes of meetings held

MINUTES OF PUBLIC PARTICIPATION MEETING FOR THE ESTABLISHMENT OF NYAMBENE COMMUNITY CONSERVANCY, MERU COUNTY HELD AT LAARE SPRINGS ON 20TH AUGUST 2014 AT 1000 HOURS

ATTENDANCE

(REFER TO ATTACHED LIST)

AGENDA

- i. Presentation**
- ii. Issues and Clarification**
- iii. Matters Arising**
- iv. AOB**

PRELIMINARY

The meeting was called to order and a member of the attendants opened with a word of prayer.

MIN 1/14: PRESENTATION BY CONVENOR

The EIA expert proceeded to make his presentation to the members for an hour where after the forum entered its second question and answer session.

MIN 2/14: ISSUES AND CLARIFICATIONS

After the presentation, the forum entered its second session wherein the following were the raised concerns:-

- i. Clarification of the operations of the Conservancy**

Some members sought clarification as to the operations of the proposed conservancy will be like of the Meru National Park. Their fear was that they will be outlawed from grazing their flocks in the conservancy area. The convenor emphasized that the conservancy will not operate under the National Government. It was further emphasized that the conservancy will operate like the Maasai Mara which is collective administered by the local community and County government.

Therefore, this translated to them being allowed to graze their animals within the conservancy as per the conservancy rules, which they will be involved in drafting.

ii. Clarification as to the name of the proposed conservancy

There was question raised seeking to alleviate rumours that a park was the gazetted name of the establishment. The convenor clarified that the actual gazetted name was that of Nyambene Community Conservancy and not any other and that the term ‘community conservancy’ was started by the county government of Meru in place of game reserve so as to adopt a more inclusive structure.

iii. Security and Conservancy Rangers deployment

Members unanimously welcomed the recruitment of Rangers to keep guard of the conservancy for various reasons, key amongst them being: the fact that a majority of the recruited Rangers were youths of the Laare area which consists of the largest part of the conservancy and the more marginalized parts of the conservancy. Further it was appreciated that the presence of rangers will ward off poachers and cattle rustlers from neighbouring communities.

MIN 3/14: MATTERS ARISING

- i. There was a request by the members present for the production and public display of a survey plan of the boundaries of the conservancy.

MIN 4/14: AOB

The conveyor notified the members that the report would be made available at the local county ward’s and District Officer’s offices for scrutiny for their inspection and review. Their comments would be highly appreciated. To increase the awareness, the county ward representative undertook to notify all members of the local community once the report is in hands.

ADJOURNMENT

There being no other business the meeting was called to an end at 1300 Hours.

MINUTES FOR PUBLIC PARTICIPATION MEETING FOR THE ESTABLISHMENT OF NYAMBENE COMMUNITY CONSERVANCY, MERU COUNTY HELD AT COUNTY WARD OFFICES MURIRI ON 20TH AUGUST 2014 AT 1430 HOURS

ATTENDANCE

(REFER TO ATTACHED LIST)

AGENDA

- i. Presentation**
- ii. Comments**
- iii. Matters Arising**
- iv. AOB**

PRELIMINARY

The meeting was called to order and a member of the attendants opened with a word of prayer.

MIN 1/14: PRESENTATION BY CONVENOR

The EIA expert proceeded to make his presentation to the members for an hour whereafter the forum entered its second question and answer session.

MIN 2/14: COMMENTS

The following were the comments of the members of the public in attendance after the presentation.

- i. Security**

Members welcomed the initiative and requested that the conservancy rangers should not limit their role to wildlife conservation but also address the issue of stock theft between neighbouring communities. It was noted that the rangers could help alleviate cattle rustling as rustlers are notorious for seeking refuge within the expansive conservancy area.

ii. Economic and Cultural heritage

Members were upbeat of the potential of economic fortune that the conservancy will bring to them. Some contributed that the conservancy will showcase their communities' practices not just to nationally but internationally.

iii. Conservancy management

Participants requested to know how the management committee if the conservancy would be appointed. The area ward representative mentioned that the relevant officials of the county government were handling the matter. Tentatively he allayed any fears of a non-democratic process by confirming to them membership will consist of the relevant stakeholders and that the chair position would be reserved to the community member who is to be directly elected by the local community.

MIN 3/14: MATTERS ARISING

Members requested that a survey plan of the gazetted conservancy be furnished for their consideration, review and records.

MIN 4/14: AOB

The conveyor notified the members that the report would be made available at the local county ward's and District Officer's offices for scrutiny for their inspection and review. Their comments would be highly appreciated. To increase awareness, the county ward representative undertook to notify all members of the local community once the report is in hands.

ADJOURNMENT

There being no other business the meeting was called to an end at 1430 Hours.