



UNITED REPUBLIC OF TANZANIA

**THE MULTIPLE LAND USE MODEL OF NGORONGORO CONSERVATION AREA:
ACHIEVEMENTS AND LESSONS LEARNT, CHALLENGES AND OPTIONS FOR
THE FUTURE**

FINAL REPORT



**Ministry of Natural Resources and Tourism
Dodoma
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Annex 1

PROPOSED MANAGEMENT ZONES, IMPORTANCE AND USES

No.	Area	Management zone	Ecological/Economic Importance	Uses	Remarks
1	Northern Highland Forest Reserve (NHFR)	Core conservation zone	<ul style="list-style-type: none"> • Conservation • Wildlife refuge • Water catchment • Ngorongoro crater • Olmoti crater • Empakai Crater 	<ul style="list-style-type: none"> • Tourism development • Research and training • 	<ul style="list-style-type: none"> • No-go-zone • Protection of wildlife refuge, esp rhinos and elephants is critical
2	Oldupai Gorge and Laetoli footprints	Core conservation zone	<ul style="list-style-type: none"> • Major cultural, historical and archaeological sites • Geopark • Conservation 	<ul style="list-style-type: none"> • Research and training • Tourism development 	<ul style="list-style-type: none"> • No-go-zone
3	Lake Ndutu/Masek Basin	Core conservation zone	<ul style="list-style-type: none"> • Conservation • Water catchment 	<ul style="list-style-type: none"> • Tourism development • Research and training 	<ul style="list-style-type: none"> • No-go-zone
4	Engaruka	Core conservation zone	<ul style="list-style-type: none"> • Cultural, historical and archaeological site • Geopark • Water catchment 	<ul style="list-style-type: none"> • Tourism development • Research and training 	<ul style="list-style-type: none"> • No go zone
5	Setela village forest reserve area	Core Conservation zone	<ul style="list-style-type: none"> • Conservation • Water catchment • Wildlife corridor 	<ul style="list-style-type: none"> • Tourism development • Research and training 	<ul style="list-style-type: none"> • No settlement • No grazing • No crop production • Protection of wildlife refuge

No.	Area	Management zone	Ecological/Economic Importance	Uses	Remarks
					elephants from NCA to Manyara and Tarangire NP is crucial. <ul style="list-style-type: none"> Reducing human-wildlife conflicts
6	Lake Natron and its escapement and basin	Core conservation zone	<ul style="list-style-type: none"> Water catchment Major cultural, historical and archaeological sites Geopark Flamingo breeding sites Wildlife migration – Oryx and other species Irrigation scheme Oldonyo Lengai Conservation 	<ul style="list-style-type: none"> Research and training Tourism development 	<ul style="list-style-type: none"> No settlement No grazing No crop production Protection of irrigation scheme is necessary Protection of L. Natron against siltation is necessary Protection of Flamingo breeding sites is necessary
7	Loliondo GCA (1,038 km ²)	Core conservation sub zone	<ul style="list-style-type: none"> Water catchment Buffer zone to SENAPA Breeding and dispersal area Buffer SENAPA and NCA Wildlife migration Conservation 	<ul style="list-style-type: none"> Tourist development Research and training 	<ul style="list-style-type: none"> No settlement No grazing No crop production Limited tourism activities –

No.	Area	Management zone	Ecological/Economic Importance	Uses	Remarks
					e.g. trophy hunting
8	Loliondo GCA (462 km ²)	Core conservation sub zone	<ul style="list-style-type: none"> Wildlife migration Conservation 	<ul style="list-style-type: none"> Human settlement Livestock grazing Community based tourism 	<ul style="list-style-type: none"> Reducing human-wildlife conflicts through tourist hunting
9	Oldonyo gol & west of kakesio	Transitional zone	<ul style="list-style-type: none"> Buffer zone Maasai pastoralists 	<ul style="list-style-type: none"> Livestock grazing 	<ul style="list-style-type: none"> No settlements No crop production Limited uses - e.g. seasonal grazing
1	East of Endulen, Osinoni, Kakesio and Eyasi	Community development zone	<ul style="list-style-type: none"> Tatoga agro-pastoralists Hadzabe hunter-gatherers 	<ul style="list-style-type: none"> Settlement/registered villages Livestock grazing Establish pasture development programme Crop production Community based tourism 	<ul style="list-style-type: none"> It is necessary to control human development

Annex 2:

PROPOSED RESETTLEMENT PLAN

No.	Current Settlements and area		Proposed settlements and area			Remarks
	Villages	Area	Villages	Areas	Community Development zones	
1	Kakesio, osinoni, esere, endulen, alaetoli, nasporiong, misigiyo, kayapus, kaitekiteng, mokilal, oloirobi, loongojoo	Kakesio, Ngorongoro, Endulen and alaetoli wards	Kakesio, osinoni, esere, endulen, alaetoli, nasporiong, misigiyo, kayapus, kaitekteng, mokilal, oloirobi, loongojoo	East of endulen, osinoni, kakesio, eyasi	Zone A (Kakesio & Endulen)	<ul style="list-style-type: none"> • Settlement, • crop production, • grazing, • pasture establishment, • ecotourism
2	<ul style="list-style-type: none"> i. Ngoile, ii. meshili, iii. sendui, iv. alailelai, v. alchaneiomelock 	Ngoile, Olbalbal and Alailelai wards	<ul style="list-style-type: none"> i. Ngoile, ii. meshili iii. sendui, iv. alailelai, v. alchaneiomelock, vi. nguruman 	Olbalbal and Ngoile wards	Zone B (Olbalbal)	<ul style="list-style-type: none"> • Settlement, • crop production, • grazing, • pasture establishment, • ecotourism
3	LGCA (462km ²)	Excised land of 462km ² from Sale ward	<ul style="list-style-type: none"> i. nainokanoka ii. erkeepus iii. bulati, iv. kapenjiro, v. Itulele vi. naiyobi, vii. Irmelili 	Sale plains (462km ²)	Zone C (Loliondo GCA)	<ul style="list-style-type: none"> • Settlement, • grazing, • pasture establishment, • ecotourism

4	Olpiro, masamburai	Evasi ward	i. oloiro	Zone D (Evasi)	• Settlement
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4	Olpiro, masamburai	Eyasi ward	i. olpiro ii. masamburai iii. endulen,		Zone D (Eyasi)	<ul style="list-style-type: none">• Settlement,• crop production,• grazing,• pasture establishment• ecotourism
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CHAPTER SIX CONCLUSION AND FUTURE MANAGEMENT OPTIONS

6.1. Conclusion

The analysis and discussion has revealed that NCA is an important component of the Serengeti Mara ecosystem (SME). The conservation area harbours natural and cultural resources that provide ecosystem services to humans and biodiversity in general. The area contains water catchment forests, refuge sites of endangered species such as black rhinos, breeding and refuelling sites of a diversity of bird species and calving grounds for wildebeest. Also, is home to indigenous residents (Masai, Tatoga and Hadzabe) and their livestock, contains important cultural heritage sites, contributes to foreign exchange generation, economic growth and livelihoods improvements. Thus, despite the challenges observed in addressing the three components of MLUM, it is worth maintaining the area since the conservation benefits outweighs the cost of losing it.

During consultations stakeholders acknowledged that NCA is experiencing ecological problems to balance natural and cultural resources conservation, community development, and tourism development. Therefore, they proposed options for improvement including: (i) maintain Status Quo and allow people to continue with their activities without interference. According to the suggestion, indigenous knowledge will be applied to achieve the trio objectives of NCA; (ii) Annex some areas on the periphery of NCA to resettle humans and livestock; (iii) Demarcate NCA into two distinctive zones - one for humans and livestock and the other for natural resources conservation; (iv) Reduce humans and livestock to maintain limits of acceptable use; and (v) Disregard MLUM and relocate people and livestock outside NCA (Table 18).

In the first proposed scenario, assuming that total TLUs will remain at 228,955 as it was in 2017, the TLUs per capita will drop to 1.0 by 2038. This means that supplementary food to pastoral community in NCA will increase to about 87%, which is far worse than the current situation of 70%. In scenario two if the area was left solely for livestock, human population will increase over two-fold to about 200,000 people by 2038 and TLUs will grow up to 1,150,000 by 2032, but thereafter start to decline and reach 800,000 TLUs by 2038 due to rangeland degradation and deterioration. The first two scenarios may not sustain people, livestock and wildlife, and therefore, are not feasible options.

Scenario three of controlled human and livestock populations with annexation revealed that population of wild herbivores will increase and exceed the 1994 estimate of 121,742 animals, and the optimal stocking capacity of the area will be over 250,925 Large Herbivore Units (LHUs) as estimated in 1994. Population of small stock will be reduced and controlled at 170,000 animals (12,440 TLUs) and cattle will be reduced to 162,000 animals (116,743 TLUs). An estimated human population of 20,000 people (about 5,000 households) will continue to reside in NCA with strict control. TLUs per capita will,

Therefore, be 6.5 for the entire period up to 2038, implying that pastoral food deficit will decrease from the current 70% to 20%. Therefore, the anticipated deficit will require for alternative sources to complement, which is only possible under this scenario.

Predictions of the fourth scenario of abolishing the model indicated that resettling all people and livestock outside NCA and leave the area exclusive for wildlife and habitat conservation would be costly, and availability of land to accommodate about 100,000 people is challenging.

Table 18: Stakeholders opinions and views on NCA model

S/N	Stakeholders' names	Key Comments	proposed options
1	TFS, WD, CAWM-Mweka, NCAA-Board, TATO, HAT, TTGA, TTB, National Museum, UDSM, WWF-TCO, TWPF, Ngorongoro-DC, Ngorongoro-CMT, Lodges, FZS, SUA, NGOs, NCAA, NPC, Meatu-CMT, MGR, NCA (VEOs, WEOs, VCs), Political Leaders (NDC)	Very high human and livestock population; poor roads; revisit governance issues; GMP & CSP are not followed; MLUM is the selling point for NCA; Invasive plant species is wide spread; Reduce number of small stock; social services e.g. schools be outside NCA; Educate all children in NCA	Retain MLUM but reduce number of people and livestock to acceptable minimum.
2	TAWIRI-HQ, SWRC, National Museum, UNESCO Commission, TANAPA, TAOA, TWPF, TFS, WD, NM-AIST, SUA, TCT, Longido-CMT, Monduli-CMT, Karatu-CMT	Very high human and livestock population, extensive habitat destruction has caused invasive alien & pioneer plant species; Spoon feeding is affecting communities psychologically; Retain cultural bomas; Majority of Maasai families have dual settlements; Resettlement of Maasai in NCA will not be a new event in Tanzania.	Abandon MLUM by relocating people to establish Ngorongoro Nature Reserve. Retain historical bomas for cultural tourism.
3	FZS, TAWA, indigenous residents in NCA, NCAA staff	High human and livestock population; Restriction to cultivate is affecting food security; NCAA is causing poverty; invasive plant species is wide spread; Improve roads; Reclaim original boundary of NCA from Eyasi, Ndotu, Karatu & Sale division; Allow maasai to build decent houses; Involve community in decision making.	Zoning the NCA and de-gazette some areas for people to grow crops and the rest be for conservation and tourism
4	Indigenous residents in NCA, TTGA	There is no serious problem except that NCAA is restricting livestock access to three craters, NHFR and Ndotu marsh	Maintain the status quo

5	SUA, TAWIRI, CAWM-Mweka, TANAPA, Ngorongoro CMT, TAWA	The area is small to accommodate high human and livestock population	Annex some areas like Loliondo GCA.
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6.2. Future Management Options

Based on the key findings, two options can be adopted to guarantee sustainable conservation of NCA. One option is to maintain multiple land use model with some adjustments. An alternative option is to change Ngorongoro Conservation Area to other protected area category. However, key considerations are important for each option.

6.2.1. Key conditions for maintaining multiple land use model with some adjustments

- i. **Alter existing boundary of NCA:** The proposal aims to include Loliondo GCA (1,500 km²) and part of Lake Natron GCA to maintain conservation of core areas, tourism and community development. For example, Engaruka historical site contains important catchment forest which is degraded by overgrazing and resulting into gully erosion. Also, Lake Natron is the only breeding site of lesser flamingo in Eastern Africa. In addition, the Lake shore is an important rangeland for rare species like Oryx and other species. To enhance the ecosystem function, there should be a mechanism to protect NCA – Selela – Manyara Ranch wildlife corridor to connect SME with Lake Natron – Manyara – Tarangire ecosystem (Figure 26).

According to Wildlife Conservation Act No. 5 of 2009, settlements and human activities are not allowed in GCAs; therefore, the proposed alteration will legalize existing settlements and human activities in Lake Natron GCA and avoid inconveniences to residents in those areas. Also, the proposition aims to enable settlement and development to communities as opposed to current situation in GCAs. In terms of conservation, altering of boundaries will enhance gene flow from different wildlife populations between ecosystems. Further, the boundary alteration will increase tourism products under the management of NCAA, which will ultimately increase revenue from tourism.

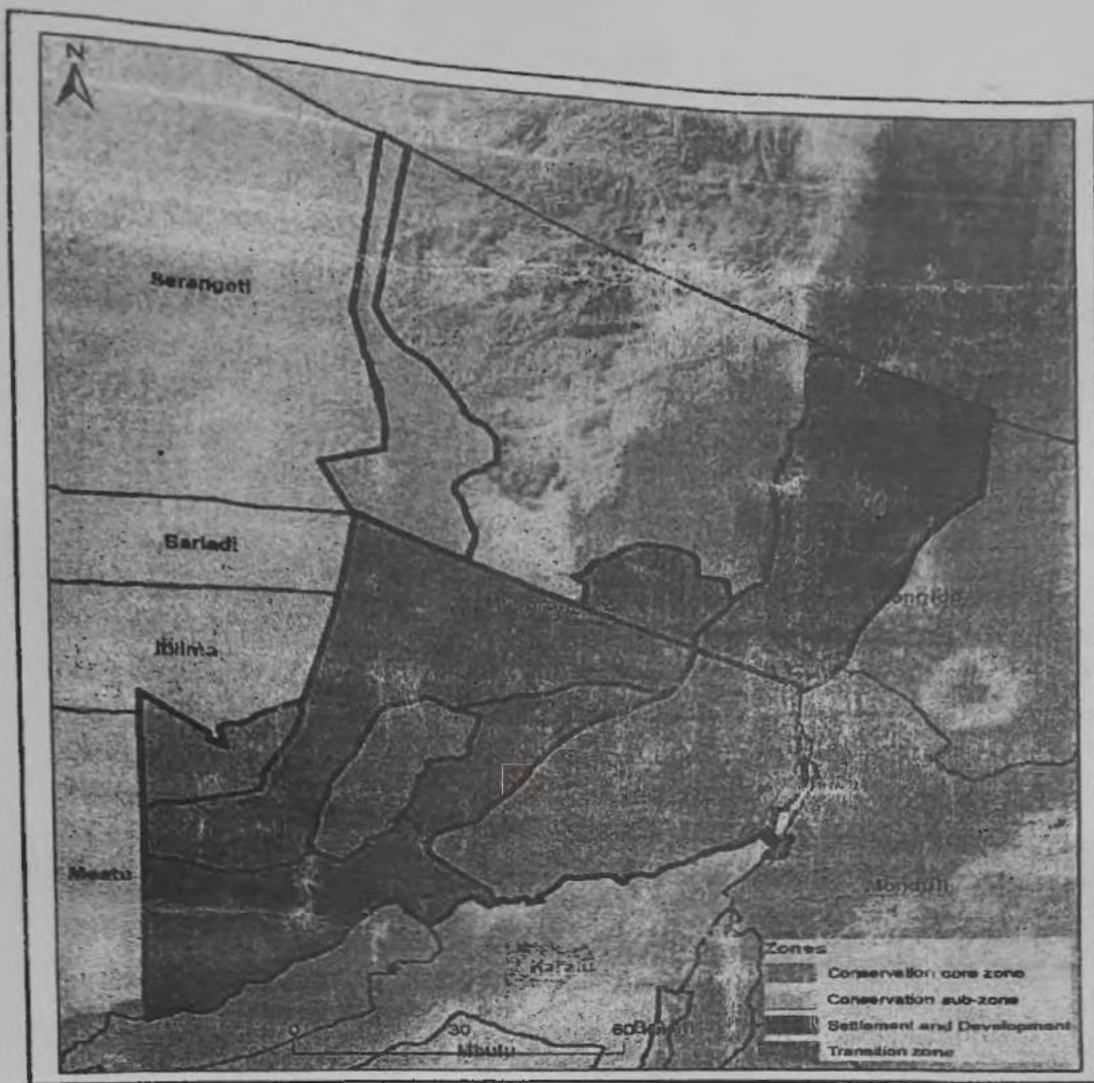


Figure 27: Proposed boundary alteration and management zones

The boundary alteration will increase the size of NCA from the current size of 8,100km² to 12,083 km², which is an increase of about 3,983 km² (49.2%) (Table 20).

Table 19: The new size of NCA after boundary alteration

Proposed management zones	Area (Km ²)	Percentage
Conservation core zone	3,494	29
Conservation sub-zone	1,053	9
Settlement and Development	2,140	18
Transition zone	5,396	45
Total	12,083	100

- ii. Reduce human and livestock population based on scientific recommendations (Boone et al., 1994; UNESCO 2009), and Grazing Lands and Animal Feeds Resources Act No. 13 of 2010.

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- a. **Non-indigenous residents:** Based on the requirement of Ngorongoro Conservation Area Act, this group of people should be asked to return to their original homelands;
 - b. **Resettlement scheme:** The scheme should be handled in three levels – i) resettlement within NCA should be strictly for indigenous residents (Annexes), ii) resettlement in altered boundaries, and iii) voluntary resettlement whereby compensated indigenous residents will move to other places of their choices; and
 - c. Develop social services infrastructure in community development zones (Figure 27).
- iii. **Strengthening institutional collaboration:** to improve capacities of different Management Authorities and institutions and other collaborating organizations to effectively manage natural resources, community development and tourism in NCA and neighboring areas. Specifically, there should be a consideration to establish collaboration between Tanzania and Kenyan institutions to address natural resources management, human livelihoods and livestock development issues in SME. Maasai is a cross border tribe; hence, the challenges experienced in NCA are likely to exist in areas adjacent to Masai Mara National Reserve.
- iv. **Review the existing Ngorongoro Conservation Area Act to:-**
- a) Embody GMP into Ngorongoro Conservation Area Act to recognize natural and cultural resources conservation zone (no-go-zone), transitional zone (regulated use zone – i.e. grazing only and no settlement), and community development zone (settlement, crop production, grazing, and other regulated uses).
 - b) Restructure and embody NPC into Ngorongoro Conservation Area Act to guide establishment, appointment of members, functions, and the link with NCAA and Ngorongoro District Council.
 - c) Strengthen legal compliance and enforcement;
- v. Enhance natural resources and environmental education and awareness to indigenous residents;
 - vi. Introduce adult education to indigenous residents to reduce illiteracy level;
 - vii. Regulate tourism development by encouraging construction of hotels and lodges outside NCA, development of tourism products to diversify tourism activities inside NCA (including activities that involve communities);
 - viii. Introduce rangeland rehabilitation programme; and
 - ix. Enhance participatory management in conservation, community development and tourism.

6.2.1.1. Strengths

- i. Existence of political will to address challenges facing NCA;
- ii. Assurance of maintaining co-existence of conservation, tourism and community development in NCA;
- iii. The existing NCA Act, Cap. 284 and GMP impress multiple land use model;
- iv. Revised NCA Act will resolve conflicting policies and laws;
- v. Retain its national and international recognition and designation;
- vi. Avoid community unrest from the fear of unknown with regard to government decision on their existence in NCA;
- vii. Minimize human-wildlife conflicts;
- viii. Improved revenue generation through diversification of tourism products;
- ix. Improved social services and livelihoods;
- x. Possibilities to acquire land for voluntary relocation, removal of immigrants, and establish special resettlement scheme. For example, replicating Jema resettlement scheme with improvements;
- xi. Improve human settlement and livestock grazing in designated community development zones;
- xii. Existing NCA capacity to execute conservation, tourism and community development activities;
- xiii. Enhanced community participation in conservation and tourism development;
- xiv. If the Kleins-Mto wa Mbu Road that traverses Loliondo and Lake Natron Game Controlled Areas were not annexed to NCA, 30% of expected revenues may get lost by 2038; and,
- xv. If the two proposed options are ignored in favour of maintaining the status quo or leaving NCA to indigenous pastoralists the government will lose 50% of expected revenue by 2038.

6.2.1.2. Weaknesses

- i. If not controlled, increased human population will affect conservation, tourism and humans;
- ii. If not controlled in terms of numbers per household, increased livestock will affect conservation of natural resources and environment;
- iii. If not appropriately handled, resettlement may not be desirable to some pastoralists, politicians and Civil Society Organizations (CSOs); and
- iv. If not controlled, conflict of interest among NCAA staff and other non-residents will affect execution of NCAA obligations.

6.2.2. Key conditions for Changing Ngorongoro Conservation Area to other protected area category

- i. The area can be designated as a National Park, or Game Reserve. The category of national park permits photographic tourism, game viewing and research, while the

category of GRs permits photographic tourism, tourist hunting and research. Both categories prohibit human settlement and development such as livestock grazing and crop production. As such designating NCA into either of the two will mean abolishing MLUM and relocating people to other places;

- ii. Redefine the management of NCA based on the conservation category that will be adopted; and
- iii. Review the existing NCA Act to reflect other protected area category.

6.2.2.1. Strengths

- i. ✓ Existence of political will in addressing challenges facing NCA;
- ii. Increased protection status in favour of conservation and tourism;
- iii. Removed communities will diversify socio-economic activities outside NCA. For example, livestock, crop production and other Income Generating Activities;
- iv. ✓ Minimize human-wildlife conflicts to neighboring communities;
- v. ✓ Improved quality of social services and livelihoods in resettled areas;
- vi. ✓ Improved human settlement and livestock grazing in resettled areas;
- vii. Maintain ecological integrity and biodiversity;
- viii. ✓ Possibilities to acquire land for voluntary relocation, removal of immigrants, and establish special resettlement scheme (i.e. replicating Jema Resettlement scheme with some improvements); and
- ix. Existing experience of relocating people (e.g. Ujamaa villages 1974, naturalization of Somali-Zigua at Chogo village in Handeni, and resettlement project by NCAA in Jema village).

6.2.2.2. Weaknesses

- i. Total removal of people from NCA may not be accepted by some pastoralists, politicians and Civil Society Organizations (CSOs);
- ii. Ignore co-existence of conservation, tourism and community development in NCA;
- iii. Ignore Ngorongoro Conservation Area Act in favour of other existing conservation Acts;
- iv. Loss of international recognition as a multiple land use area; and ✓
- v. Discourage community participation in conservation and tourism development.

6.3. Strategies for the Future

Based on the proposed management options, the following short, medium and long term actions are proposed: -

6.3.1. Short term actions (2019 - 2022)

- i. Implement natural resources and environmental education and awareness creation programmes.
- ii. Enhance NCA and sectoral capacities and coordination. There is need to adhere to the objectives of NCA through enhancement of NCA, districts, local communities and other stakeholders' capacities to effectively manage and benefit from the ecosystem. The following areas need considerations
 - a. Strengthening staff (i.e. sector ministries, NCAA and Ngorongoro Local Government Authority) capabilities for management and field operations especially extension services.
 - b. Improving communication and information delivery.
 - c. Developing monitoring and evaluation frameworks.
 - d. Improving mechanisms to engage and benefit indigenous residents; and
 - e. Enhancement of training and awareness creation on policies and legislation, regulations and guidelines (wildlife and other natural resources) to indigenous residents.
- iii. Review the Ngorongoro Conservation Area Act to adequately address relevant issues related to conservation, tourism development and community development. The solution to challenges facing NCA depends on how these relevant issues are taken care of in the Act.
- iv. Enhance law enforcement by developing regulations to operationalize Ngorongoro Conservation Area Act according to approved GMP and other emerging issues;
- v. Restructure NPC and its mandate.
- vi. Enhance participatory management to engage indigenous residents and neighboring communities.
 - a. Develop and implement community based conservation (CBC) framework in collaboration with other conservation institutions and stakeholders (e.g. TANAPA, private sector and NGOs) through
 - b. Establishing natural resources and environment management institutions/committees in neighboring villages,
 - c. Introducing and supervise various CBC scheme including WMA, Community Based Tourism and other benefit sharing mechanisms; and
 - d. Promote sustainable use of natural and cultural resources.
- vii. Introduce adult education to indigenous residents to reduce illiteracy level in collaboration with the respective Ministry and Local Government Authorities;
- viii. Regulate tourism development and activities, in accordance to GMP.

6.3.2. Medium term actions (2019 – 2023)

- i. Implement education and awareness creation programmes;
- ii. Alter existing boundary of NCA to include Loliondo GCA (1,500 km²) and part of Lako Natron GCA to increase land size for conservation, tourism and community development;
- iii. Comply with GMP requirements;
- iv. Relocate people and livestock to designated areas based on acceptable limits and the requirement of GMP by respective management zones;
- v. Develop social services in community development zones according to GMP;
- vi. Enhancing capacity and coordination to effectively manage the conservation area; and
- vii. Implement participatory management programmes especially in community development zones and communities neighboring NCA.

6.3.3. Long term actions (2019- 2026)

- i. Implement education and awareness creation programmes
- ii. Develop social services infrastructure in community development zones according to GMP;
- iii. Establish and operationalize institutional collaboration between NCAA and other collaborating authorities and institutions in Tanzania and Kenya;
- iv. Strengthen border control to regulate the movement of people, livestock and business and trade between Tanzania and Kenya.
- v. Strengthen communication among institutions and other stakeholders particularly indigenous residents;
- vi. Implement participatory management programmes; and
- vii. Promote good governance practices through:-
 - a. Transparency and accountability,
 - b. Access to information,
 - c. Rule of law,
 - d. Bureaucratic efficiency, and
 - e. Avoiding conflict of interest among staff, non-residents and other participating stakeholders. .

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