REPORT ON THE JOINT WORLD HERITAGE CENTRE/IUCN REACTIVE MONITORING MISSION TO SERENGETI NATIONAL PARK (UNITED REPUBLIC OF TANZANIA) FROM 15 TO 19 JANUARY 2024

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LIST OF ABBREVIATIONS

CBD	Convention on Biological Diversity
CCM	Chama cha Mapinduzi
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on Migratory Species
DC	District Commissioner
EFA	Environmental Flows Assessment
EIA	Environmental Impact Assessment
FMP	Fire Management Plan
FZS	Frankfurt Zoological Society
GCA	Game Controlled Area
GMP	General Management Plan
GR	Game Reserve
GSME	Greater Serengeti Mara Ecosystem
IAS	Invasive Alien Species
IUCN	International Union for Conservation of Nature
LAC	Limits of Acceptable Change
LAU	Limits of Acceptable Use
LVBC	Lake Victoria Basin Commission
MEF	Minimal Environmental Flow
MNRT	Ministry of Natural Resources and Tourism
MoU	Memorandum of Understanding
NBI	Nile Basin Initiative
NCA	Ngorongoro Conservation Area
NCAA	Ngorongoro Conservation Area Authority
NELSAP	Nile Equatorial Lakes Subsidiary Action Program
NEMC	National Environment Management Council
NGO	Non-governmental organization
NISSAP	National Invasive Species Strategy and Action Plan
OUV	Outstanding Universal Value
SEA	Strategic Environmental Assessment
SEDC	Serengeti Ecosystem Development and Conservation Project
SENAPA	Serengeti National Park
SOUV	Statement of Outstanding Universal Value
TANAPA	Tanzania National Parks Authority
TAWA	Tanzania Wildlife Authority
TAWIRI	Tanzania Wildlife Research Institute
ToR	Terms of Reference
UNESCO	United Nations Educational Scientific and Cultural Organisation
WAP	Water Allocation Plan
WMA	Wildlife Management Area

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EXECUTIVE SUMMARY AND LIST OF RECOMMENDATIONS

Serengeti National Park (SENAPA) comprises 1,476,300 hectares of vast savannah plains and open woodland, situated in north-western Tanzania. The property was inscribed on the World Heritage List in 1981 under criteria (vii) and (x). The annual ungulate migration is an outstanding natural phenomenon which takes place in a unique scenic setting of treeless expanses of grasslands dotted with rocky outcrops (kopjes) interspersed with rivers. The Park is one of the most productive ecosystems on earth, sustaining the largest number of ungulates and the highest concentration of large predators in the world. The wildebeest migration is considered to be one of the most impressive nature spectacles in the world.

The property is at the heart of the transboundary Greater Serengeti Mara Ecosystem (GSME), which straddles the border between Tanzania and Kenya. The wildebeest migration moves around the GSME, in a clockwise movement in search of pasture, water and adequate breeding grounds. The migration drives the ecosystem in terms of nutrient flow and is shaping the health of the vegetation and maintaining the grassland areas.

At its 42nd session in Manama, Bahrain (2018), the World Heritage Committee requested the State Party to invite a joint World Heritage Centre/IUCN Reactive Monitoring Mission to the property "to assess threats posed by the dams proposed upstream of the property in Kenya, and any other developments that may impact the property's [Outstanding Universal Value] OUV". The mission was originally planned for March 2020 but had to be postponed due to the outbreak of the COVID-19 pandemic. At its extended 45th session, the World Heritage Committee reiterated its request for the mission to be organised as soon as possible. The mission was also tasked to review the status and plans of further infrastructure developments in and adjacent to the property including consideration of potential impacts on the OUV and to review progress made to implement the 2010 Reactive Monitoring Mission recommendations and assess the management effectiveness of the property.

The mission took place from 15 to 19 January 2024 and the mission team was composed of Guy Debonnet (UNESCO World Heritage Centre) and Daniel Marnewick (IUCN).

The mission concludes that the different attributes which underpin the OUV of the property are being maintained. The migration remains intact and population numbers of wildebeest and other ungulates are stable. Since the 2010 mission, populations of rare and endangered flagship species have been effectively conserved. Rhino poaching has been brought under control, and translocations from South Africa have strengthened both the numbers and the genetic vigor of the population. Wild dog, which had disappeared from the property in 2010, have returned. Elephant numbers have seen an important increase, with no poaching incident reported for the last 5 years.

The mission commends the State Party for the important efforts it has undertaken in implementing the 2010 mission recommendations. The "northern road" project which constituted a major threat to the OUV of the property has been abandoned and the southern bypass is under construction. The addition of the Speke Gulf area to the National Park, providing wildlife access to the permanent water source of Lake Victoria is underway. Both the southern bypass and the Speke Gulf addition require substantial investments which are entirely born by the national budget and are a clear sign of the commitment of the State Party to the conservation of the property.

The mission also wants to specifically highlight the quick response of the State Party and the German Development Cooperation to address the impacts of the COVID-19 pandemic, which

temporarily resulted in a complete loss of tourism revenue. Without this intervention, the conservation of the property could have been jeopardized.

The mission further welcomes the important work undertaken since the 2010 mission to strengthen law enforcement in the property and address the human wildlife conflict including efforts to engage local communities through innovative approaches. The mission takes the opportunity to recall the importance of ensuring a participatory human rights-based approach to the protection and management of the property that is in line with international best practice standards.

In spite of these positive developments, the mission remains concerned about the long term integrity of the property. As already noted at the time of inscription on the World Heritage List, the integrity of the property is dependent on the ecological health of the wider transboundary landscape of the GSME. The mission notes that recent research clearly documents that the **pressure on the natural resources in and around the GSME has increased substantially over the past decades**, driven mainly by human population growth in the wider area. This has led to expansion of crop agriculture and a steep increase in livestock numbers in and around the GSME, leading to degradation of rangelands in the multiple use protected areas and increasing pressure from illegal grazing in the other protected areas within the GSME. These notable edge effects are increasingly inducing spatial compression of wildlife across the GSME and could directly impact the integrity of the property. Unsustainable activities in the multiple use areas outside the property spatially compress wildlife, leading to more intense use of the property by wildlife and multiple consequences for the magnitude and stability of ecosystem services. Changes are already being observed in the temporal and spatial distribution of wildebeest inside the property and the future effects of these changes on animal numbers are uncertain and of potential concern. To address these increasing external pressures on the GSME, transboundary management strategies need to be developed and transboundary cooperation improved. In the Tanzanian part of the GSME, the coordination between the different agencies responsible of the protected areas needs to be increased.

The mission is especially concerned by **changes in the hydrology of the transboundary Mara River** as a result of catchment degradation and irrigation. As the only perennial river in the GSME, the Mara River is the lifeline of the ecosystem, providing crucial access for the migrating herbivores to water in the dry periods within a large area with ample grassland available. If the Mara River would stop flowing, it could lead to an immediate and steep decline of the wildebeest population as a result of lack of water and food. Along the river there is competition for water and widespread conversion of fertile riverine habitats for agriculture. Major forest loss and degradation is taking place in the upper watershed in the Mau Forest in Kenya. Commercial irrigation in the Kenya part is also expanding. Climate change could further play a role with rainfall arriving at different times and intensity. These factors could lead to less reliable water flows, and a level of water abstraction that exceeds the Minimum Ecological Flow (MEF) needed to prevent the river from drying up for a period of time in years of drought.

The proposed construction of a series of dams on the Mara and Ewaso Ngiro could further alter the hydrology of the Mara River. The mission considers that, based on the available data, **the construction of the proposed dam projects would inevitably result in significant modifications of the Mara River flow and could potentially have devastating impacts on the OUV of the property and the GSME in general**, with the risk of significant mortality of large numbers of wildebeest and other herbivores in years of drought and a possible collapse of the migration if these drought periods occur over several consecutive years.

The mission notes that, at this stage, there do not appear to be plans to proceed with the proposed dam projects, however this needs to be officially confirmed by the State Party of

Kenya. The mission is further encouraged by the on-going efforts to strengthen transboundary management of the Mara Basin. The need to reverse degradation of the Mara Basin by 2030 is recognized by both States Parties and that mechanisms for joint cooperation and decision making have been put in place to achieve this. The mission considers that the proposed joint water allocation plan for the transboundary Mara River needs to ensure the MEF as established by the 2008 Environmental Flows Assessment (EFA) even in the years of drought, considering climate change scenarios for the region. A joint framework for compliance and enforcement also needs to be included.

In addition to the increasing external pressure on the property by the developments in the GSME, the mission is also concerned about the **growing impacts of tourism inside the property**. Given the ambitious objective of Tanzania to grow national tourism arrivals from the current 1,500,000 to reach 5,000,000 visitors by the year 2025, it can be reasonably anticipated that the growing national tourism industry will converge on SENAPA and the neighbouring NCA. This is apparent from the proposed growth of tourism facilities outlined in the SANAPA General Management Plan (GMP), increasing the number of lodges by 250% and permanent tented camps by 300%, and expanding the human footprint across the park. Ambitious tourism infrastructure projects in the vicinity of the property such as the planned construction of a golf course at Fort Ikoma and the establishment of an international airport in Serengeti District are further examples of this policy. The mission notes that the planned growth of tourism facilities seems to be at odds with the principle of “low impact low volume” tourism that ensures conservation objectives, stated in the various TANAPA policy documents. The mission also notes that there seems to be a lack of clarity in the formulation and application of the Limits of Acceptable Use (LAU) and Limits of Acceptable Change (LAC). It is unclear to the mission what the scientific basis is to determine the LAU and LAC. The lack of clear baselines or limits for measuring LAU and LAC are concerning, especially when considering the scale of the planned tourism growth.

The mission considers that the large planned increase in tourism facilities, including in the low use and wilderness zone is of serious concern, given the increasing evidence that the current tourism footprint is already starting to impact the OUV of the property.

The mission notes the extent of significant scientific research and data available regarding the larger Serengeti-Mara ecosystem, and specifically the migration, and considers that **the revision of the GMP and decisions on future tourism development should be informed by the best available science** in order to revise the management zones and permissible use in these zones. This should include setting measurable and monitorable LAC, particularly in the behaviour, demographics and population of the migrating wildebeest, zebra and other ungulates The mission considers that, given the fact that the wildebeest migration is a key attribute to the OUV of the property, an acceptable limit of change in these aspects of the wildebeest population should be ‘zero change’.

In order to address the above-mentioned challenges and to avoid that the OUV of the property would be jeopardized, the mission proposes the following **recommendations:**

Recommendation 1
The State Party of Kenya should confirm unequivocally that the proposed dam projects on the Mara River are not proceeding and develop and implement a clear action plan to avoid further degradation of the upper Mara catchment.

Recommendation 2
The States Parties of Tanzania and Kenya should urgently develop and adopt the joint water allocation plan for the transboundary Mara River, based on the need to guarantee the Minimum

Ecological Flow as established by the 2008 Environmental Flows Assessment even in the years of drought and taking into account the full range of climate change scenarios for the region (including the most cautionary) and should establish a joint framework for compliance, monitoring and enforcement.

Recommendation 3
Ensure that the proposed addition of the Speke Gulf area to Serengeti National Park is implemented effectively and equitably, and ensure that any planned resettlement of people follows a participatory human rights-based approach in line with international best practice and norms, and that full and just compensation is provided to people to be resettled.

Recommendation 4
Building on the experience of the Greater Serengeti-Mara Ecosystem (GSME) Society and on the MoU between the States Parties of Kenya and Tanzania for the management of the Mara River basin, and including relevant rightsholders and stakeholders, it is recommended that both States Parties, together:

a) establish a formal joint transboundary cooperation mechanism for the management of the GSME to address the increasing pressures on the ecosystem, and addressing the full range of issues across the ecosystems, including the needs and rights of people, and
b) explore the possibilities of nominating the Maasai Mara National Reserve (Kenya) as a transboundary extension to the property.

Recommendation 5
Finalize the development of the management plan for the Serengeti – Ngorongoro Biosphere Reserve as an overarching management plan for the protected areas included in the Tanzanian part of GSME to ensure a clear and common management approach across the landscape and establish a permanent management coordination mechanism between the management authorities of the protected and conserved areas in the GSME (TANAPA, NCAA and TAWA) to facilitate its implementation.

Recommendation 6
Ensure that the Tourism Investment Manual and the General Management Plan (GMP) set quantifiable and measurable Limits of Acceptable Change (LAC) based on the best scientific evidence, the need to protect the values and attributes of the OUV of the property, and accompanied by measurable thresholds and metrics, repeatable monitoring protocols and trends analysis described in the GMP. Similarly, quantifiable and measurable Limits of Acceptable Use (LAU) should be set for all tourism related infrastructure and associated development footprints. These should correlate with the LAC and be informed by current scientific monitoring and research and be based on ecological spatial prioritisation and mapping.

Recommendation 7
Once the southern bypass road is completed, divert further traffic away from the property by downgrading the status of the Karatu – Nyamusa road T17 (which crosses the Serengeti National Park and Ngorongoro Conservation Area World Heritage properties) as a trunk road to a park road, closing it for heavy transit traffic from Arusha to Musoma and by disincentivizing other vehicle transit traffic.

Recommendation 8
Postpone the implementation of the road hardening project Goleni – Seronera - Fort Ikoma within the property, in order to link the timeframe of the project to i) the completion of the

Lodoare – Goleni stretch in Ngorongoro Conservation Area, in order to build on the experiences gained from that upgrade, and ii) to the timeframe for finalizing the southern bypass road, making it possible to downgrade the status of T17 from a trunk road to a park road (see recommendation 7) in order to ensure that traffic through the property does not increase further.

Recommendation 9
Given the potential impact of the Fort Ikoma Golf Course on the wildebeest migration, and hence the OUV of the property, the mission recommends not to proceed with the project and to undertake an additional detailed scientific study and to revise the current EIA, to assess the feasibility of alternative locations, to comprehensively assess the potential impact of the development on the migration in the area, including whether this impact can be adequately mitigated, in line with the *Guidance and Toolkit for Impact Assessments in a World Heritage Context*. Should it not be possible to prevent negative impacts on the OUV of the property, then this project should not be permitted to proceed.

Recommendation 10
Limit the development of the Mugumu airport to a regional airport for light aircraft only, with a 1.2 km gravel runway in order to divert the tourism flight traffic away from the Seronera and Kogatende airstrips inside the property, closing these for tourism traffic.

Recommendation 11
Provide as soon as possible a more detailed report and overview of the progress of current infrastructure development applications within the property, ensure that all EIAs are prepared in line with the *Guidance and Toolkit for Impact Assessments in a World Heritage Context* to assess the potential impacts on the OUV and are submitted to the World Heritage Centre for review by IUCN prior to making any decision to authorize construction in line with paragraph 172 of the *Operational Guidelines*, and to avoid tourism development that may negatively impact the OUV.

Recommendation 12
In preparation of the planned revision of the GMP, develop a scientific rationale for the management zonation, the permissible use in the different zones, and ensure that the LAC are based on the best available science.

Recommendation 13
Ensure that the revision of the GMP (2024-2034) includes the following key aspects:
a) Ensure the management of the property is underpinned by an analysis of its OUV as documented in the Statement of OUV for the property,
b) Includes an improved monitoring system by defining quantifiable baselines, thresholds, and metrics for measuring change and outcomes,
c) Provides mechanisms for community participation and includes best practices for fair and equitable governance including transparency, and appropriate grievance mechanisms,
d) Is informed by a Strategic Environmental Assessment that considers the cumulative impacts of tourism,
e) Ensures sufficient staffing and funding that is guaranteed from the national budget but also allows for revenue retention,
f) Is approved at Ministerial Level and fully implemented and enforceable.

Recommendation 14
a) In relation to other management needs in the property: Undertake a detailed hydrological survey in order to determine the carrying capacity in terms of water use, as recommended

by the 2010 mission, and implement the recommendations of the integrated water resource management plan;

b) TANAPA to continue implementing the national guidelines and strategies to control and manage Invasive Alien Species (IAS) and to include in the next GMP more specific activities and interventions to control and manage IAS, in accordance with the TANAPA Guidelines and the National Invasive Species Strategy and Action Plan (NISSAP);
c) Revise the Fire Management Plan in conjunction with and aligned to the revision of the GMP and make available further resources for its implementation.

Recommendation 15

Ensure that community engagement efforts for the protection and management of the property are inclusive and fair. Key governance considerations should include equity, effectiveness based on legitimacy and voice, transparency and accountability, vitality and ability to respond adaptively. Most notably, all engagement between the governance authority and neighboring communities (rightsholders and stakeholders) should adhere to human rights-based approaches.

1. THE PROPERTY

Serengeti National Park (SENAPA) comprises 1,476,300 ha hectares of vast savannah plains and open woodland, situated in north-western Tanzania. The park is home to important biodiversity including globally threatened and endangered animal species.

The property was inscribed on the World Heritage List in 1981 under criteria (vii) and (x). The annual migration is an outstanding natural phenomenon which takes place in a unique scenic setting of treeless expanses of grasslands dotted with rocky outcrops (kopjes) interspersed with rivers and woodlands (**criterion (vii)**). The site is one of the most productive ecosystems on earth, sustaining the largest number of ungulates and the highest concentration of large predators in the world and supporting 2 million wildebeests, Thomson's gazelles and zebras as the dominant herds. The wildebeest migration is considered to be one of the most impressive nature spectacles in the world. Other herbivores include eland, topi, hartebeests, buffalos, giraffe, elephants, hippopotamus and black rhino. The property also has large populations of predators: lions, leopards, cheetahs, spotted hyenas and a significant population of wild dogs. There are over 500 species of birds that are perennially or seasonally present in the Park, of which five species are endemic to Tanzania (**criterion (x)**). The full Statement of Outstanding Universal Value (SOUV) is available in annex 6.5.

SENAPA was also listed as part of the Serengeti – Ngorongoro Biosphere Reserve in 1981[1].

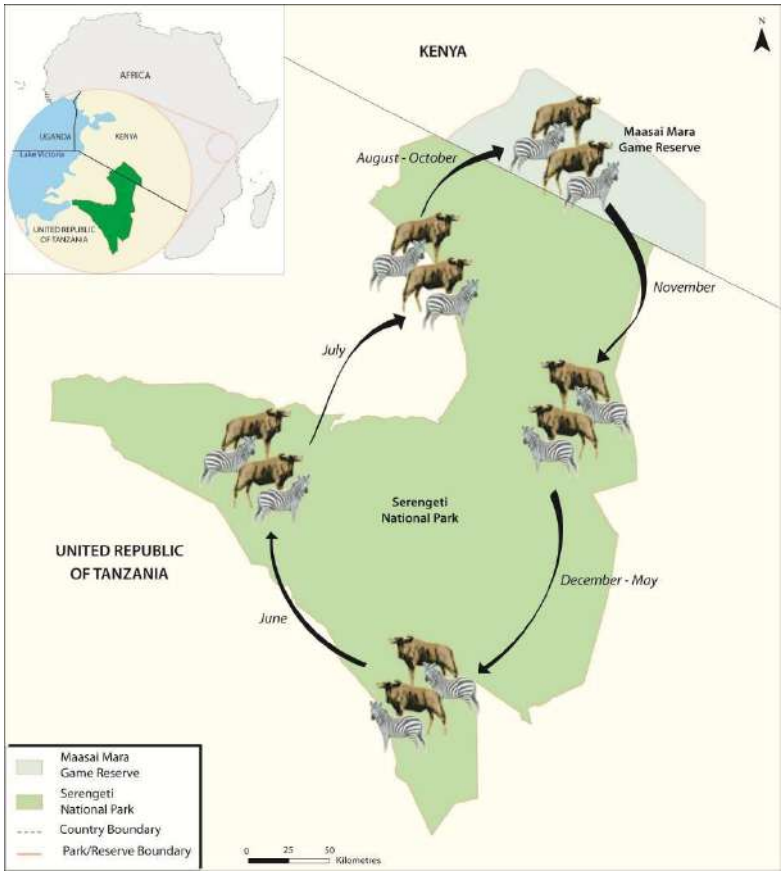


Figure 1: Annual migration in the GSME (Source 2010 World Heritage Centre/IUCN Reactive Monitoring Mission)

The property is at the heart of the transboundary **Greater Serengeti Mara Ecosystem** (GSME), which straddles the border between Tanzania and Kenya. GSME is usually defined by the extent of the (historical) migration of wildebeest and zebra between their dry and wet

[1] https://en.unesco.org/biosphere/africa/serengeti-ngorongoro

season ranges. Others include the upper watersheds of the Mara river, which is an important lifeline for the migration. The migration of wildebeest together with zebra, Thompson gazelle and other herbivores moves around the GSME, in a clockwise movement in search of pasture, water and adequate breeding grounds. The wildebeest calve in February on the short grasslands around Lake Ndutu, which straddle SENAPA and Ngorongoro Conservation Area (NCA), also a World Heritage property. In May or June each year, the wildebeest start moving northwest to the northern woodlands of the Park. From there they migrate to the Maasai Mara National Reserve in Kenya during the dry season (August – November). The wildebeest return to the southern grasslands with the onset of the rain in December (see Fig. 1). The migration drives the ecosystem in terms of nutrient flow and is shaping the health of the vegetation and maintaining the grassland areas.

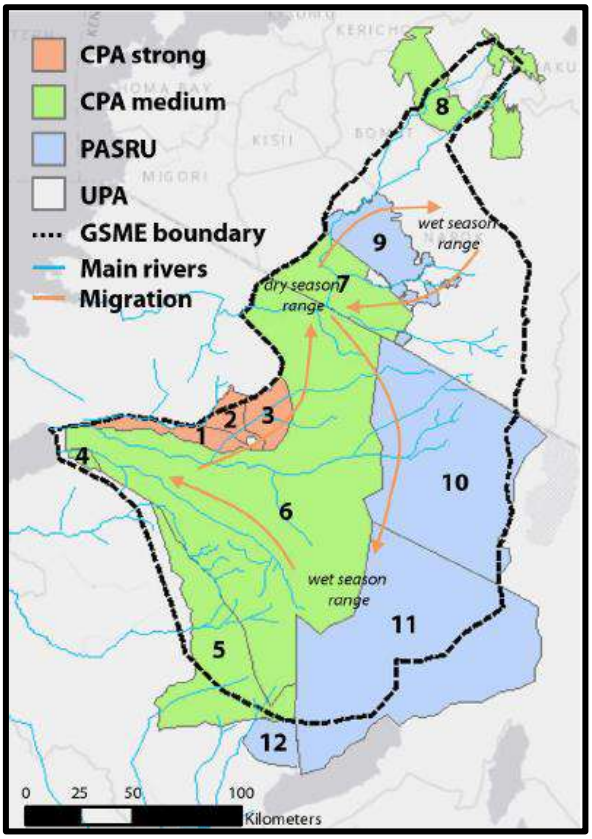


Figure 2: GSME and protected areas therein: Tanzania: SENAPA (6), NCA (11), Maswa GR (5), Ikorongo GR (3) Grumeti Game Reserve (1), Kijereshi GR (4), former Loliondo GCA (10)N, Ikona WMA (2), Makao WMA). Kenya: Maasai Mara National Reserve (7), Masai Mara Conservancies (9), Mau Forest Reserves (8). Source: Veldhuis et al., 2019[2].

GSME is composed of a mosaic of protected areas under different governance and management categories and levels of protection, interspersed with non-protected areas (see Figure 2). In Tanzania, the heart of GSME is formed by the SENAPA property (6) together with the NCA (11, a multiple-use area). They are bordered by several other Game Reserves (GR) and Game Controlled Areas (GCA) including Maswa GR (5), Ikorongo GR (3) Grumeti Game Reserve (1), Kijereshi GR (4) and the Loliondo GCA (10) later degazetted as the smaller Pololeti GCA (see also chapter 4.3). Two areas are community land managed as Wildlife Management Areas (WMA): Ikona WMA (2) and Makao WMA). The area on the western

[2] Veldhuis MP, Ritchie ME, Ogutu JO, Morrison TA, Beale CM, Estes AB, Mwakilema W, Ojwang GO, Parr CL, Probert J, Wargute PW, Hopcraft JGC, Olff H. (2019) Cross-boundary human impacts compromise the Serengeti-Mara Ecosystem. Science 363 (6434): 1424-1428. Includes detailed supplementary material.

boundary of SENAPA, included between the Mwanza – Musoma road (which borders SENAPA) and the lake (Speke Gulf) has the status of a GCA (not indicated on the map).

The area adjacent to the property in Kenya is the Maasai Mara National Reserve (MMNR -7), which is surrounded by several conservancies under multiple use, on the map as the Masai Mara Conservancies (9). Upstream some parts of the Mara river watershed are protected as the Mau Forest Reserves (8). From the map, it is clear that while only the property has the strict protection status of a National Park, which prohibits any consumptive use of the natural resources, a large part of the GSME in Tanzania enjoys some form of protection status, although some areas are multiple-use areas[3]. Only some areas used by the migration at the edges of GSME have no protection status. The situation is radically different in Kenya, with only the Maasai Mara National Reserve benefiting from a relatively strict protection status and the Maasai Mara Conservancies having a multiple use status, but large parts of the GSME not benefitting from any protection status.

Already at the time of the property's inscription by the World Heritage Committee in 1981 (**Decision 5 COM VIII.15**[4]), IUCN highlighted in its evaluation the importance of protecting the Maswa Game Reserve and the Maasai Mara Game Reserve (currently Maasai Mara National reserve) in Kenya, which form part of the GSME and which are key areas for the functioning of the migration.

The State of Conservation of SENAPA was first brought to the attention of the Committee in **1994,** raising several threats to the Outstanding Universal Value (OUV), including the **rapidly growing human population** near the western boundary of the Park and adjacent buffer zone, the resulting threats from **subsistence poaching** reaching commercial levels, and the increased risk of exposure and transmission of diseases from domestic stock and dogs to wildlife. Poorly designed ad-hoc tourism development projects and the need to strengthen coordination with the trans-border Masai Mara Reserve in Kenya were also noted (**Decision 18 COM IX)**.

The issue of **management of the transboundary Mara river basin** was brought to the attention of the World Heritage Committee for the first time in **2001 and 2002**. The World Heritage Committee discussed the proposed Ewaso Ng'iro Hydroelectric Project in Kenya and its potential impact on the hydrology of the Mara river and the property, and in its **Decision 26 COM 21B.23** the Committee urged the States Parties of the United Republic of Tanzania and Kenya to initiate a dialogue on the transboundary effects on the Serengeti World Heritage property from changes in the upstream catchment. In 2009, in its **Decision 33 COM 7B.10**, the Committee noted the steps taken towards transboundary collaboration on integrated water resource management of the Mara River between the State Party of Tanzania and the State Party of Kenya and encouraged the States Parties to enact necessary policies to ensure that the OUV of the property is not degraded due to insufficient water resources. Renewed reports on dam projects on the Mara and Ewaso Ng'iro rivers prompted the World Heritage Committee in its **Decision 42 COM 7B.96**, **Decision 44 COM 7B.86** and **Decision 45 COM 7B.76** to again express its utmost concern about the potential impacts of these projects on the OUV of the property. The proposed dam projects on the Mara and Ewaso Ng'iro rivers were an important reason for the World Heritage Committee to request the current Reactive Monitoring Mission.

In its **Decision 34 COM 7B.5** the World Heritage World Heritage Committee noted with concern reports regarding a proposed **northern road project**, which would dissect the northern wilderness area of the property and requested the State Party to invite a joint World

[3] More information of the different protected area categories is provided in Chapter 2
[4] All Decisions and documents quoted here are available at https://whc.unesco.org/en/list/156/documents/

Heritage Centre / IUCN reactive monitoring mission to the property to assess its state of conservation, including potential threats, such as the northern road proposal, as well as reports on a significant increase in poaching. The Reactive Monitoring Mission took place in 2010 and concluded that if a decision to build the north road was taken, it would constitute a potential threat to the OUV and a clear case for inscribing the property on the List of World Heritage in Danger. The mission also recommended 10 urgent actions to address the threats to the property and ensure its integrity is maintained. At the 35th session of the World Heritage World Heritage Committee, the State Party announced its decision to reconsider the northern road project, committing to maintain the stretch traversing the northern wilderness area of the property as a gravel road, under the management of the Tanzania National Parks (TANAPA) and reserved mainly for tourism and administrative purposes.

In addition to the above mentioned issues, other conservation issues raised in previous State of Conservation reports include **tourism pressure and lodge developments**, **invasive alien species, fire, human-wildlife conflict, zoonotic diseases and various infrastructure developments in and adjacent to the property** including installation of fibre optic cables, upgrading of road infrastructure inside the property, the creation of an international airport, and the development of a golf facility.

2. SUMMARY OF THE NATIONAL MANAGEMENT SYSTEM FOR THE PRESERVATION AND MANAGEMENT OF THE WORLD HERITAGE PROPERTY

Under the Tanganyika National Parks Ordinance CAP [412] of 1959, SENAPA was gazetted as the first National Park of the country. The Ordinance established the mechanism whereby the president can declare, with the consent of Parliament, a National Park. After parks are declared, no other action may alter the declaration, except Acts of the Parliament. However, the President may alter boundaries of a National Park with consent of parliament. All previous rights (except mining rights) within a National Park are extinguished upon its creation. Hunting, killing, capture or wounding of any animal in any national park in contravention of the provisions of the National Parks Act is an offence. With certain exceptions, no entry into parks is allowed without a permit. The Ordonnance was superseded by the 2002 **National Parks Act**.

Wildlife conservation in Tanzania is governed by the **Wildlife Conservation Act**, which was originally adopted in 1974 and revised in 2009, 2013 and 2022. In addition to the national parks established through the National Parks Act, the Wildlife Conservation Act defines different categories of protected areas in addition to National Parks, namely Game Reserves (GR), Game Controlled Areas (GCA) and Wetland Reserves. In both GR and GCA[5], consumptive, regulated use of wildlife[6] can be allowed (such as trophy hunting), however settlements, grazing and agricultural use are not allowed[7]. The Wildlife Conservation Act also foresees the establishment of Wildlife Management Areas (WMA) for purposes of enabling community based wildlife conservation in areas outside of core protected areas which are used by local community members and within the village land. Revenue from consumptive and non-consumptive use of wildlife in WMAs is shared between the Government and the villages to which the land belongs. This is the case for the Ikona and Makao WMA within the GSME. The 2022 Act also provides for the possibility to create wildlife corridors and buffer zones.

NCA was established in the same year as SENAPA under the Ngorongoro Conservation Area Ordinance no. 413 of 1959, but contrary to SENAPA the area was designated as a multiple use area, allowing a resident population and livestock activities.

Relevant national policies for the property include the Tanzania National Parks Policies (1994), the National Wildlife Policy (2007), the National Tourism Policy (1999), the National Environmental Policy (1997), the National Water Policy (2002), the National Forestry Policy (1998) and the National Land Policy (1995).

Tanzania has also ratified a number of international conventions and multilateral environmental agreements relevant for biodiversity conservation including the Convention on Biological Diversity (CBD), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Migratory Species (CMS) and the Convention on Wetlands (Ramsar).

It is further important to note the Environmental Management Act of 2004, which establishes the practice of Environmental Impact Assessment (EIA), as detailed in the 2005 EIA regulations. As in most countries, the types of projects requiring an EIA are stipulated in a

[5] In the original 1974 Act, the only restrictions on GCA were linked to hunting. The 2022 Act strengthened the protection status of GCA significantly by restricting access and forbidding any grazing or agricultural activities, making their protection status de facto similar to the protection status of GR. The 2022 act also foresees specifies a review of the list of GCA within 12 months of the act coming into force to establish their viability and decide if they need to be maintained. It further requests the Minister to ensure that no land falling under the village land is included in the GCA.

[6] While consumptive use of wildlife is in principle possible permitted in all GR, it needs to be pointed out that two GR bordering SENAPA (Grumeti and Ikorongo) are managed for non consumptive photographic tourism only.

series of Schedules in the EIA regulations. The EIA procedures involve the following stages: registration, screening, impact assessment, reviewing, permit decision, monitoring, auditing and decommissioning. The National Environmental Management Council (NEMC) is the mandated authority to ensure enforcement, compliance, review and monitoring of environmental impact assessments. Amendments to the Act of 2016 and 2021 also foresee the possibility of Strategic Environmental Assessments (SEA), which fall under the responsibility of the Vice President's Office for Environment.

SENAPA is managed by TANAPA, within the Ministry of Natural Resources and Tourism (MNRT). TANAPA is a parastatal organization established under the National Parks Act. The other protected areas in the Tanzanian part of GSME are managed by the Tanzania Wildlife Authority (TAWA) for the GRs and GCAs, and by the Ngorongoro Conservation Area Authority (NCAA) in case of NCA.

TANAPA adopted a Strategic Plan for the period between 2020/2021 and 2025/2026, which provides fundamental direction and guidance for the organization. It is also important to note that in the past 5 years, TANAPA, together with TAWA and NCAA, transformed into paramilitary organizations. This was done in an effort to strengthen these institutions anti-poaching ability to reduce the elephant and rhino poaching crisis.

TANAPA's policy requires that management plans be prepared for all national parks and that EIA be performed before activities are undertaken within the parks. The SENAPA General Management Plan (GMP) 2014-2024[8] provides the framework for the management of the Park.

[8] Serengeti National Park, General Management Plan, 2014-2024 (revised 2016)

3. THE MISSION

At its 42nd session in Manama, Bahrain (2018), the World Heritage Committee requested the State Party to invite a joint World Heritage Centre/IUCN Reactive Monitoring Mission to SENAPA World Heritage property "to assess threats posed by the dams proposed upstream of the property in Kenya, and any other developments that may impact the property's OUV" (Decision **42 COM 7B.96**). The mission was originally planned for March 2020 but had to be postponed due to the outbreak of the COVID-19 pandemic. At its extended 44th and extended 45th sessions, the World Heritage Committee reiterated its utmost and continued concern regarding the potential negative impacts of the proposed dam projects on the OUV, and its request for the mission to be organised as soon as possible (Decisions **44 COM 7B.86; 45 COM 7B.76**).

In addition to assess the status of and potential threats posed by the dams and irrigation proposed upstream of the property and reviewing the status of development of a joint management plan between Tanzania and Kenya for the Mara basin to sustainably manage water resources, the mission was also tasked to review the status and plans of further infrastructure developments in and adjacent to the property including consideration of potential impacts on the OUV, in particular potential road developments, tourism developments within and across the wider setting of the property, the potential upgrade of Mugumu airport, potential upgrades to the road network inside the property as well as any other planned infrastructure developments in the vicinity of the property. The mission further had to review progress made to implement the 2010 Reactive Monitoring Mission recommendations and assess the management effectiveness of the property. The Terms of Reference (ToR) and relevant Decisions are available in annex 6.1.

The mission took place from 15 to 19 January 2024 and the mission team was composed of Guy Debonnet (UNESCO World Heritage Centre) and Daniel Marnewick (IUCN). The mission team held meetings with the Deputy Permanent Secretary, staff from Government departments including MNRT, TANAPA, TAWIRI, NEMC, Tanroads and the Lake Victoria Basin Water Board, as well as Frankfurt Zoological Society (FZS). The mission also spent two days in the field, visiting the park headquarters at Seronera, the golf course at Fort Ikoma, the north road area, flying over parts of the western corridor and boundary and the Speke Gulf area, and having discussions with staff at the Serengeti and Bunda Districts. Unfortunately, the mission was not able to meet with a Delegation of Kenya as requested by the World Heritage Committee but a virtual meeting was held with Dr. Nancy Koech of the Ministry of Water in Kenya. The mission also organized some meetings with scientific researchers working in the GSME before and after the mission. The time foreseen for the mission was extremely short, with only two days of field visits, making it challenging to collect all the necessary information to respond to the ToR in full. The mission team notes that the field visit was organized in a very efficient way, making the most of the limited time available to mitigate these issues to the extent possible, however it is inevitable that further consultation and information will be needed to fully address all of the matters that are relevant to the Convention.

The detailed programme and the list of people met are available in annex 6.3 and 6.4.

4. ASSESSMENT OF THE STATE OF CONSERVATION OF THE PROPERTY

4.1 Key issues reviewed by the mission

The World Heritage Committee request for the Reactive Monitoring Mission was originally motivated by concerns about proposed dam projects on Mara and Ewaso Ng'iro rivers upstream of the property which could affect the hydrology of the Mara River and impact the migration, a key attribute to the OUV of the property. The mission therefore looked into the management of the Mara river basin, including the importance of the Mara for the OUV of the property, the status of the above-mentioned dam projects, the on-going efforts to establish transboundary water management of the river and efforts to mitigate the risk changes to the hydrological flow of the Mara by securing access for the wildlife to the water of Lake Victoria at Speke Gulf. The mission further looked into the increasing external pressures on the GSME.

The increasing internal pressure from tourism on the property has also been highlighted in several reports to the World Heritage Committee, and the mission noted that the current 2014 – 2024 GMP, which was transmitted to the mission team on 11 January shortly before the mission, foresees a substantial increase of tourism facilities inside the property and changes to the management zones. The mission further looked into a number of specific infrastructure developments related to tourism including the establishment of a golf course at Fort Ikoma, the proposed development of the Mugumu airport, and different lodge developments.

The mission was also tasked to review the progress in the implementation of the recommendations of the 2010 mission. An overview of the progress reported by the State Party to the current mission is provided for information in annex 6.6. In addition to the issue of road developments impacting the property, which was the main concern of the 2010 mission, the mission reviewed poaching and species conservation, management effectiveness, invasive species, fire management, human wildlife conflict, and community relations.

4.2 Management of the Mara river Basin

4.2.1 Proposed dam projects on the Mara River

The Mara River, key for the protection of the OUV of the property

The importance of the Mara River for the integrity of the property and for sustaining the migration as one of the key attributes of its OUV is fundamental – its significance to the property cannot be overstated. The Mara River is the lifeline of the GSME and is also crucial for the livelihoods of the people living in the Mara watershed and beyond. The Mara River is the only perennial river in the GSME and the only source of permanent surface water in the dry season during the regularly accruing drought years. It is therefore a crucial lifeline to sustain the populations of migrating herbivores. The freshwater biodiversity of the Mara is also significant in itself, with at least 473 native freshwater species, including 10 threatened species[9].

The wildebeest migration is driven by a constant need for food and water, including for suitable calving grounds. It is estimated that the wildebeest consume 4800 Tons of grass per day and need to drink water at least once every four days. The Mara River not only provides crucial access to water in the dry periods, it provides this water in a large area with ample grassland available. Scientists estimate that if the Mara River stops flowing, it could lead to an immediate decline of the wildebeest population by 500,000 animals[10] as a result of lack of water and food.

[9] WWF (2020). Freshwater biodiversity of the Mara river basin of Kenya and Tanzania.
[10] Grant Hopcraft (University of Glasgow / Serengeti Biodiversity Program), personal comment. It is estimated that if the river stops flowing for several days in the dry season when the migration is depending on the Mara for water

The wildebeest population would take a long time to recover from such a dramatic reduction and if there are consecutive years of drought, it could lead to a total collapse of the wildebeest population and the migration.

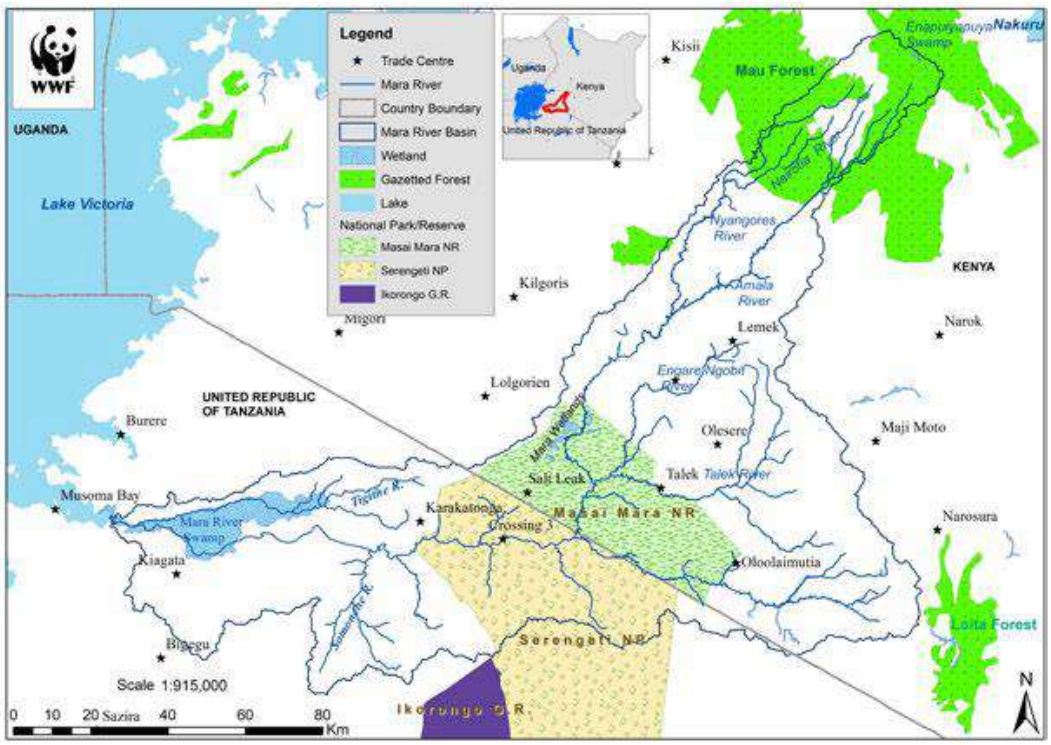


Figure 3: Map of the Mara river Basin (Source WWF)

65% of the Mara catchment is situated in Kenya and 35% in Tanzania. The Mara River starts in Mau Escarpment in Kenya by the convergence of the Amala and Nyangores Rivers. The Mau escarpment was originally forested but is now remnant forest surrounded by silvicultural plantations above and tea plantations below. The Mau Forest is part of the globally recognized Eastern Afromontane Biodiversity Hotspot, and of conservation significance in its own right. Before crossing the Kenya-Tanzania border, the river flows through the Maasai Mara National Reserve. After crossing into Tanzania, the Mara runs through the property, exiting the park in its northwestern boundary with the Tarime and Serengeti districts before reaching Lake Victoria via the papyrus dominated Mara river swamps, in itself a biodiversity hotspot.

The Mara River under threat from catchment degradation and irrigation

The Mara River is under increasing threat from catchment degradation and irrigation. Along the river there is competition for water and widespread conversion of fertile riverine habitats for agriculture. Major forest loss and degradation is taking place in the upper watershed in the Mau Forest. Due to its fertile soils and comparably favorable rainfall patterns, which make it attractive for agriculture, large tracts of the forest have been converted to tea, coffee and timber plantations as well as to subsistence agriculture. According to satellite data from the monitoring platform Global Forest Watch[11], Mau Forest lost 19% of its tree cover, around 533 square kilometers (205 square miles), between 2001 and 2022.With only one exception, all the country's main rivers to the west side of Rift Valley originate in the Mau Forest, making it of critical importance for the water provisions for millions of local and downstream users in Kenya

and the grazing around the Mara river, it could result in the death of 200 000 calves and 150 000 to 300 000 older and weaker animals. Satellite data on the migration are available at www.serengeti-tracker.org.

[11] https://www.globalforestwatch.org/map/

and neighboring countries. The forest also provides other environmental services as regards soil erosion and siltation, natural flow regulation, flood mitigation, microclimate, nutrient cycles etc.

Commercial irrigation in the Kenya part of the Mara is also expanding. According to Kihwele et al.[12] the total irrigation area using Mara River water may have increased by about 20 % since 2005, resulting in a loss of between 75-79 % of the Mara River water before it reaches the property (data from November 2016).

The same article shows that the baseline recession time scale of the Mara River in the property has decreased from 100 days in the early 1970s to 16,4 days at present[13]. This change means that for the Mara River to reach the property, in the early 1970s in the dry season a rainfall event was needed every 3-4 months in the Mau forest, but now this is needed every 2-3 weeks. The authors therefore express concern that a future drought period is likely to dry out the Mara River before entering the property. Climate change could further play a role: although the area is in most climate models predicted to receive more rainfall, this rainfall could come at different times and intensity.

Proposed dam projects on the Mara and Ewaso Ngiro rivers in Kenya

In 2000, various projects to build a series of dams on the Mara and Ewaso Ngiro rivers first surfaced and immediately sparked concern of the conservation and scientific community working in the GSME. As mentioned in chapter 1, the potential impact of the Ewaso Ngiro Hydroelectric Project was also brought to the attention of the World Heritage Committee in 2001.

Like the Mara River, the Ewaso Ngiro rises on the Mau escarpment and forms a separate watershed and drains into Lake Natron in Tanzania. And like the Mara, deforestation linked to land conversion is also affecting the river. The Ewaso Ngiro river cascades down from 1800 m through the rift valley in an easterly direction and crosses the border into Tanzania, where it empties into Lake Natron, which is situated at 600m. The river is the main inflow to Lake Natron, which is a soda lake and is harboring the largest breeding population of the Lesser Flamingo in East Africa[14].

The proposed Ewaso Ngiro hydroelectric project, composed of 3 different dams (Oletukat Olenkulo, Leshota, Oldorko),plans to take advantage of the important grade of the river to generate hydropower while also making water available for irrigation. However, as the river has too little water in itself, the original project foresaw to divert water from the Amala river in the Mara river basin to the Ewaso Ngiro river by building a low weir on the Amala river. The original project was shelved reportedly after a model of the impact of the water abstraction by

[12] E.S. Kihwele, M.P. Veldhuis, A. Loishooki et al., Upstream land-use negatively affects river flow dynamics in the Serengeti National Park, Ecohydrology & Hydrobiology, https://doi.org/10.1016/j.ecohyd.2020.12.004 .
[13] In comparison, the baseflow recession period of the Mbalageti River, which watershed is entirely within SNP, thus it is in a natural state because of total protection of resources in SNP, has not changed since the 1970s.
[14] The dam project is also predicted to result in a change in the salinity of Lake Natron coupled with agricultural pollution of the inflow (as the water is planned to be used for irrigation) and is likely to impact the growth of the blue algae which are the food for the 2.5 Mio Lesser Flamingo population. Lake Natron is not a World Heritage property. However, in “The Kenya Lake System in the Great Rift Valley” World Heritage property in Kenya, which includes Lake Naivasha, Lake Elmenteita and Lake Bogoria, the presence of the flamingoes on these lakes is part of the justification for its World Heritage status. Given that all these flamingoes breed at Lake Natron, the World Heritage Committee has recommended that Kenya and Tanzania should consider also to include this site in the World Heritage property.

Gereta et al.[15] showed that in years of drought, the Mara river would completely dry, resulting in massive death of wildebeest in Serengeti and Mara.

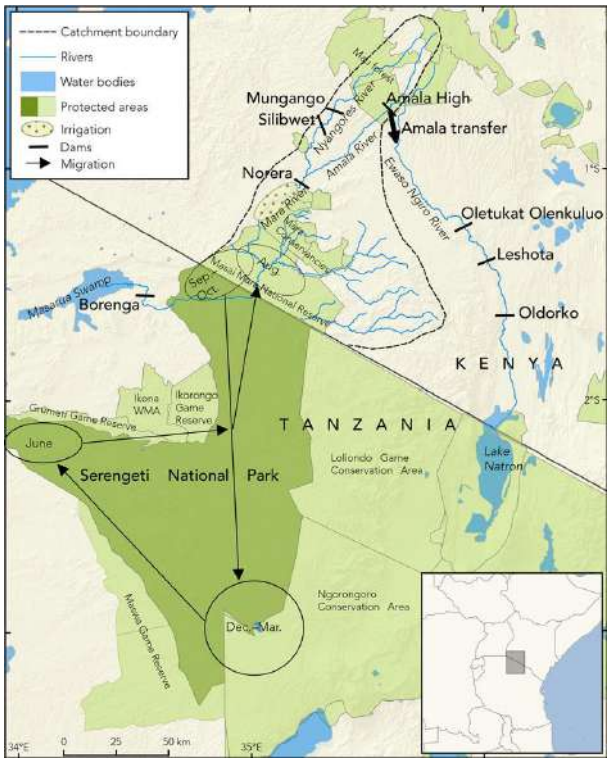


Figure 4: Location of the different proposed dam projects on the Mara and Ewaso Ngiro rivers in relation to the GSME. (Source Mnaya et al.[16])

The project re-surfaced again in recent years in conjunction with a series of other proposed dam projects on the Mara River, which have been promoted by the Nile Equatorial Lakes Subsidiary Action Program (NELSAP) under the umbrella of the Entebbe-based Nile Basin Initiative (NBI).

These include:

- The 10 m high Norera project on the Amala River, proposed as an irrigation dam, situated 30 km upstream of the property. The feasibility study for this project was completed in 2014 and considered the project was feasible with the prerequisite that no water transfer from Amala to Ewaso Ngiro was undertaken unless the Amala Dam would be constructed also. The feasibility study even claims the dam would increase conservation flows in Mara thus benefiting the ecosystems of Masai Mara Reserve and SENAPA.

- The 65 m Amala High dam on the Upper Amala River which would allow to accumulate and store water before diverting it to the Ewaso Ngiro River via a tunnel to ensure sufficient water for the proposed hydroelectric scheme mentioned above. According to NELSAP, the construction of Amala Dam would allow to regulate and store water of

[15] E. Gereta, E. Wolanski, M. Borner and S. Serneels (2002). Use of an ecohydrological model to predict the impact on the Serengeti ecosystem of deforestation, irrigation and the proposed Amala weir water diversion project in Kenya. Ecohydrology & Hydrobiology, vol. 2 (1-4), 127-134.
[16] Mnaya B, Mtahiko MGG, Wolanski E (2017) The Serengeti will die if Kenya dams the Mara River. Oryx 51(4): 581-583. And Mnaya B, Mtahiko MGG, Wolanski E (2018) The Serengeti will die if Kenya dams the Mara River—CORRIGENDUM. Oryx 52(1): 195.

the Amala, making a water transfer Ewaso Ngiro possible without impacting the Mara. To date, no feasibility study was conducted for this project.

- Two dams at Mungango and Silibwet on the Nyangores River, 30 and 70 m high for irrigation purposes. NELSAP also prepared a feasibility study for the Mungango dam project.

- The Borenga in Tanzania, downstream of Serengeti National Park and for which the feasibility study was also concluded in 2014. As this dam would be situated downstream it is likely to have no direct impact on the property, but could impact the Mara papyrus swamps situated outside the property and a wetland that is important for biodiversity.

Conservation scientists and hydrologists have expressed concern on the impacts of the dams on the GSME and the migration, and they consider the feasibility studies developed under NELSAP to not have correctly assessed the potential changes to the hydrology of the Mara River, especially in drought years. On the Norera feasibility study, Mnaya et al.[17] note that (1) the minimum environmental flow (MEF) taken into account in the study is only one third of the Mara River MEF adopted by the Lake Victoria Basin Commission (LVBC) of the East African Community[18], (2) the same water would then flow through 30 kilometers of intensive irrigation farming, and thus it is likely that the Mara River would be dry on entering the property and the Mara National Reserve, (3) The Norera Dam would receive 39 percent of its water from the Nyangores River but the decreased low flow as a result of the two other planned dams on the Nyangores (Mungango and Silibwet) was not considered in the feasibility study, increasing the chance that the MEF will not be released and, (4) the feasibility study is based on a mean annual flow calculated over 22 years of data, but in a dry year, the annual flow is only 51 percent of the mean flow. With only half of the water expected in these dry years, the dam operator would either have to release the minimum MEF to sustain the wildlife in the property and the MMNR, with devastating impacts on the irrigation fields and the local community, or retain the water for irrigation, resulting in a mass die off of the wildebeest and other herbivores.

In May 2017, the World Heritage Centre requested information from the States Parties of Kenya and Tanzania on the proposed dams. On 13 February 2018, the State Party of Kenya confirmed that Norera and Mugango Dams on Amala and Nyangores Rivers have preliminary EIAs and that an EIA for the Ewaso Ng'iro cascade of dams has been conducted. The documents have not been submitted and were not available to the mission team. Given the renewed possibility of the projects going ahead,the World Heritage Committee, in 2018, renewed its concern and requested a a Reactive Monitoring Mission to look into the issue (**Decision 42 COM 7B.96**[19]). While this mission was originally planned in 2020, it had to be postponed as a result of COVID-19.

The State Party of Kenya was officially invited to participate in the current mission to discuss the dam projects and was requested to submit an update on the status of all dam projects proposed in the Mara basin in advance of the mission, as requested in **Decision 45 COM 7B.76.** Unfortunately, no representatives of Kenya participated in the mission and no update on the dam projects was provided ahead of the mission. However, a virtual meeting[20] was

[17] Mnaya B, Mtahiko MGG, Wolanski E (2017) The Serengeti will die if Kenya dams the Mara River. Oryx 51(4): 581-583. And Mnaya B, Mtahiko MGG, Wolanski E (2018) The Serengeti will die if Kenya dams the Mara River—CORRIGENDUM. Oryx 52(1): 195.

[18] See also below on efforts for transboundary management

[19] Letter sent by the Director of the World Heritage Centre to the Permanent Delegation of Kenya on 6 December 2023.

[20] Unfortunately the quality of the call was poor, making the exchange complicated.

organized with Dr. Nancy Koech, in charge of transboundary water at the Ministry of Water in Kenya. In the virtual meeting, she noted that the proposals for the different dams were developed by NELSAP and presented to Kenya but that no decision has been made on these projects and therefore they were not being implemented[21]. It was further noted that before a decision would be made, relevant stakeholders, including relevant Tanzanian authorities would be involved. Dr. Koech further stressed the on-going efforts by Kenya to rehabilitate encroached areas in the Mau forest and to restore catchment areas in an effort to control sediment loads in the river. She also pointed out that the conservation of the Mara and Serengeti is important for the Kenya Government and would be fully considered. The mission insisted that the Ministry of Water would send an official update on the status of the dam project as requested by the World Heritage Centre in its letter. At the time of writing of this report, this letter has regrettably not been received.

The mission also discussed the dam projects with the Director of the Lake Victoria Basin Water Board who is the Tanzanian representative in the technical Steering Committee established under the Memorandum of Understanding (MoU) (see below). He confirmed that at this stage Kenya has agreed not to proceed with the dam projects because of their potential negative impacts.

Transboundary management of the Mara basin

Both the Kenya Water Act (2016) and Tanzania Water Resources Management Act (2009) protect "reserve flows", which are defined as the quantity and quality of water necessary for basic human need and sustainable aquatic ecosystems.

There have been long-standing efforts towards formulating sustainable water resource management policies for the Mara River Basin and to establish a joint transboundary management. A Biodiversity Strategy and Action Plan for the Sustainable Management of the Mara River Basin[22] and an Environmental Flows Assessment[23] were developed and adopted in 2010 by the Lake Victoria Basin Commission (LVBC), a specialized institution of the East African Community that is responsible for coordinating the sustainable development agenda of the Lake Victoria Basin. A SEA of the Mara River Basin[24] was finalized in 2012. The SEA presents three scenarios in order to explore possible responses to change over the next twenty years to 2030: (1) Likely consequences of allowing existing trends to continue (business as usual scenario), (2) Prospects for arresting unfavorable trends and stabilizing the basin's environmental, social and economic conditions by 2030 and (3) Achieving a reversal of unfavorable trends by 2030. It is concluded that conditions outlined under (1) have a greater than 50% probability of triggering a severe degradation of the riverine ecosystem, impinging upon the most basic needs of people living along the river and very likely causing a crash in the wildebeest populations, leading to a breakdown in the entire migration cycle that sustains the Masai Mara – Serengeti ecosystem. The risk is lessened, but not fully removed, in both scenarios (2) and (3).

[21] The mission also notes that in a article available online and dating to August 2022, M. Chrispinus Wafula, Regional Manager for the Mara and Sondu sub-region at the Kenya Water Resources Authority (WRA) is quoted as saying that "There is no plan for the construction of the dams by the Kenya government in the next 20 years, despite proposals by NELSAP The position right now is that the Kenyan government is not planning to construct Norera Dam within the Mara River Basin". See https://www.theniles.org/en/articles/politics/20860/.

[22] http://repository.eac.int/handle/11671/699

[23] https://awsassets.panda.org/downloads/environmental_flows_assessment_mara_1.pdf

[24] http://repository.eac.int/bitstream/handle/11671/708/The%20Trans-Boundary%20Mara%20River%20Basin%20Strategic%20Environmental%20Assessment.pdf?sequence=1&isAllowed=y

Following the SEA, bilateral cooperation has further intensified. Since 2012, both countries agreed to celebrate every 15th day of September as "Mara Day", bringing together relevant stakeholders from Kenya and Tanzania. In 2015 the States Parties of Tanzania and Kenya adopted a bilateral MoUfor the joint water resources management of the transboundary Mara River Basin, with the objective of setting up an institutional arrangement for the joint management of project, programmes and initiatives related to water resources management and development in the Basin and pave the way for the establishment of a joint mechanism / cooperative framework for the sustainable development and management of water resources in the basin. The MoU is intended to deal with the main threats to the catchment, including poor water quality, reduction of water levels/flows (quantity) and biodiversity degradation and foresees cooperation in the area of sustainable development, management and equitable utilization of water resources, including water allocation, water supply and sanitation, capacity building, data and information sharing, research and development.

Since the establishment of the MoU, both Tanzania and Kenya have each developed a Water Allocation Plan (WAP). As a next step, these national WAP would be harmonized into one joint WAP for the entire Mara Basin.

The mission considers that based on the available date, if the proposed dam projects were constructed, they will inevitably result in significant modifications of the Mara river flow and could potentially have devastating impacts on the property and the GSME in general, with the risk of significant mortality of large numbers of wildebeest and other herbivores in years of drought and a possible collapse of the migration if these drought periods occur over several consecutive years. This would result in an irreversible impact on the OUV of the property. The mission recalls in this context art. 6.3 of the Convention, which states that each State Party undertakes not to take any deliberate measures which might damage directly or indirectly World Heritage properties situated on the territory of other States Parties to the Convention. The indication that at least at this stage, the proposed dam projects are not planned to go forward is therefore welcomed.

However, the mission is concerned that even if the proposed dam projects will not materialize, changes to the Mara hydrological flow as a result of catchment degradation and increasing use of irrigation could lead to less reliable water flows and water abstraction beyond the MEF in years of drought. The conclusion of the 2012 SEA, that under a business-as-usual scenario, there is a greater than 50% probability that the Mara could indeed stop flowing for a longer period of time, is alarming. Even when a reversal of the unfavorable trends can be achieved by 2030, the SEA concludes that there would still be a possibility of an important impact on the flow of the Mara River.

The mission welcomes the fact that the need to reverse degradation of the Mara basin by 2030 is recognized by both States Parties and that mechanisms for joint cooperation and decision making have been put in place to achieve this.

Recommendation 1.

The State Party of Kenya should confirm unequivocally that the proposed dam projects on the Mara River are not proceeding and develop and implement a clear action plan to avoid further degradation of the upper Mara catchment;

Recommendation 2.

The States Parties of Tanzania and Kenya should urgently develop and adopt the joint water allocation plan for the transboundary Mara River, based on the need to guarantee the MEF as established by the 2008 EFA even in the years of drought and taking into

account the full range of climate change scenarios for the region (including the most cautionary), and should establish a joint framework for compliance, monitoring and enforcement;

4.2.2 The planned addition of the Speke Gulf area to SENAPA

The westernmost boundary of the property is currently formed by the main tarmac highway Mwanza – Musoma. The 96 km^2 Speke Gulf area is situated between the highway and the shores of Lake Victoria and bordered by the Mbalageta and Ruwana rivers (see fig. 5). This area is used by wildlife, especially wildebeest coming in from the western corridor of the park in the period of March to May as well as elephants, to access an important water source during the dry season. Originally protected as a GCA, since the end of the 1970s the Speke Gulf area has been progressively settled. Currently there are four villages in the area with a population of 3,970 people and there is extensive cultivation and increasing infrastructure. The original population were mainly fishermen but over the years people in search of land for agriculture also moved in. The proximity of the area to the park and the fact that wildlife is using it as a corridor to access the lake has resulted in considerable human-wildlife conflict, especially elephant crop-raiding. Incidents with elephants, hippos or crocodiles attacking people are also common. In addition, the area has been affected in recent years by flooding as a result of the rising level of Lake Victoria. The current mission was able to fly over the area and to confirm that since the 2010 mission, the number of settlements, infrastructure and fields in the area had increased further.

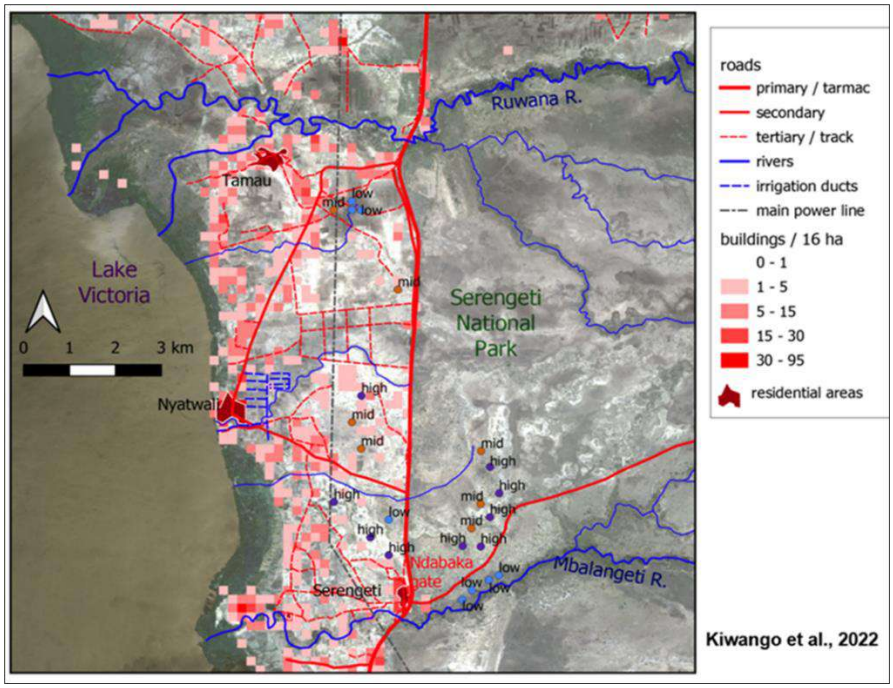


Figure 5: Current infrastructure in the Speke Gulf area (Source Kiwango et al.)

The inclusion of the area into the park has been under consideration for years and was also recommended by the 2010 mission, as it would further enhance the integrity of the property. The 2010 mission stressed the need to engage the local communities currently residing in the area in an open dialogue to find options that would minimize the costs and increase the benefits for residents of the proposed plan to secure the corridor for wildlife use.

The mission was informed that the Government had now decided on the inclusion of the area to SENAPA not only because it was considered important for the long term integrity of the park but also because of the human/wildlife conflict leading to safety concerns, with regular casualties resulting from accidents with elephants, hippo and increasingly crocodiles. According to the Bunda District Commissioner (DC), six people had been killed by Nile Crocodiles in the month preceding the mission.

The mission was informed by the DC that the process of the planned resettlement had been participatory and had involved extensive consultations with local leaders and the communities. It was stated that all people leaving the area will be compensated according to the Tanzanian law. The property evaluation process to determine the compensation value for each household has reportedly been completed, verified and audited by the Treasury, and people were currently awaiting the payout of the compensation in order to move out. The DC expected that compensation will be paid out "in the following one to two months" as the legislation foresees that compensation will be automatically increased by 7% after 6 months after the evaluation. 2000 land plots have been identified in the region where people can move to, although some are expected to move out to other regions. According to the DC, people residing in the area were accepting to resettle given the challenges in the villages with wildlife conflicts, the rising lake levels and the amount of compensation provided. It was pointed out that the resettlement was now also supported by the Members of Parliament of the area, which was not the case before (see 2010 mission report). The mission team notes that it did not have the opportunity within the scope of this mission to discuss with the representatives of the villages who will be resettled to confirm these statements.

TANAPA staff also mentioned that once the addition of Speke Gulf to SENAPA was completed, a boundary modification would be prepared to include the area in the World Heritage property.

Conservationists and researchers confirmed to the mission the importance of securing the Speke Gulf area as a permanent access for the wildlife in the western corridor to the permanent water source of Lake Victoria. However, it was also pointed out that the access to the Lake would not in itself present an alternative for the wildebeest migration if the Mara River would stop flowing, as the area does not have the grazing area to sustain the main migration.

The mission reiterates that the on-going effort to include the Speke Gulf area in SENAPA would support the long term integrity of the property, and notes the statement by the State Party that the process for resettlement has been participatory and that appropriate compensation will be provided. Noting it was not able to meet directly with local communities, the mission reiterates that any relocation process should take a clear and participatory human rights-based approach in line with international best practice standards. While the access to the permanent water of Lake Victoria clearly would not be enough to prevent major impacts of the drying of the Mara on the migration and the other attributes of the OUV of the property, the mission notes that it is an important decision to further strengthen the integrity of the property. The mission notes the commitment to fund resettlement of people from the national budget as important in terms of ensuring that communities provided with appropriate support, including full and just compensation, as well as to assist conservation goals.

Recommendation 3.

Ensure that the proposed addition of the Speke Gulf area to SENAPA is implemented effectively and equitably, and in particular ensure that any planned resettlement of people follows a participatory human rights-based approach in line with international best practice and norms, and that full and just compensation is provided to people to be resettled.

4.3 External pressures on the Greater Serengeti Mara Ecosystem

The migration is the key attribute of the OUV of the property and can only be sustained if the integrity of the property and the larger GSME is being preserved at an ecosystem-wide level. Fortunately, a large part of the GSME is composed of a mosaic of protected areas, and only smaller parts are totally unprotected, especially in the Kenyan part of GSME. At the core of GSME is a series of protected areas under strict protection regime (IUCN categories II or IV), with no agricultural or livestock use allowed. This is the case of the SENAPA, the MMNR, as well as the GR and the Ikona WMA. However, other protected areas operate under multiple use models, allowing pastoral activities and settlements (and sometimes agriculture[25]). This is the case of NCA, the conservancies in the Mara, Makao WMA, and until recently the Loliondo GCA. Following the revision of the Wildlife act in 2022, which banned settlement, livestock and agriculture in GCAs, the Government decided to divide the 4500 km^2 Loliondo GCA into the 1500 km^2 Pololeti GCA[26], composed of 2 components along the eastern boundary of the property and north of NCA, and returning the remaining 3000 km^2 to village land, with no protection status.

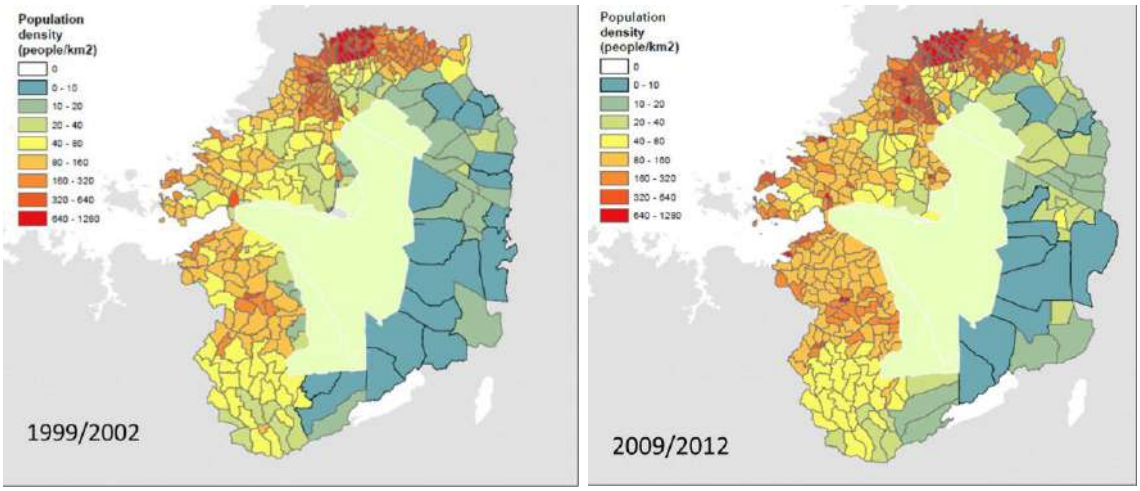


Figure 6: Population densities for wards (Tanzania) and sub-locations (Kenya) within 60 km from the boundaries of the Core Protected Areas (CPA) from 1999/2002 and 2009/2012 (Source Vedhuis et al.)

Recent research summarized in an important article by Veldhuis et al. (2019)[27] has shown that the pressure on the natural resources in and around the GSME has increased substantially over the past decades. This increasing pressure has been driven in the first place by population growth, which on the average increased by 2,4% per year from 1999 to 2012 in and around the GSME. Population densities are the highest in the agro-pastoralist communities on the

[25] Agriculture was never permitted in NCA but at a certain time has been tolerated given food security problems. However, the ban on agriculture is currently reported to be enforced. Before 2022, agriculture was allowed in GCA, hence also in Loliondo GCA. The 2022 revision of the Wildlife Act banned settlement, livestock and agriculture in GCA but also foresaw in the revision of the current GCA to maintain only those considered viable and not in conflict with village land. See below for Loliondo GCA. See also chapter 2.

[26] The Government defended this decision because of the need to better protect the key areas for the migration from increasing overgrazing and settlements. This change of status led to the eviction of Maasai families using the area of the Pololeti GR which was criticized by the UN Rapporteur on Indigenous People and NGO defending the Maasai interests. This issue is not included in the ToR of this mission and outside the scope of this report. This issue is outside of the scope of this mission.

[27] Veldhuis MP, Ritchie ME, Ogutu JO, Morrison TA, Beale CM, Estes AB, Mwakilema W, Ojwang GO, Parr CL, Probert J, Wargute PW, Hopcraft JGC, Olff H. (2019) Cross-boundary human impacts compromise the Serengeti-Mara Ecosystem. Science 363 (6434): 1424-1428.

western boundary of the property and population growth was also significantly higher in these unprotected areas (up to 8.1 % in the Tarime district).

Concomitantly, crop agriculture expanded from 37% of the region in 1984 to 54% in 2018. Over the same period, the population of cattle increased with 0,9% on average per year while sheep and goat populations increased by 3,8% per year. This has led to a decreasing biomass in grazing lands especially in the multiple use protected areas (NCA, Loliondo GCA and the Mara conservancies) and in the parts of the protected areas with significant illegal grazing pressure (including areas in the property bordering Loliondo and NCA, Maswa and Kigesreshi GR)[28]. Pastoral systems are normally considered to be a sustainable form of using rangelands, i.e. compatible with grassland and savanna conservation. However, once livestock units increase beyond a sustainable level, it quickly can lead to rangeland degradation and therefore become unsustainable, resulting in the diminishing ability of the ecosystem to provide for livestock feed and resultingly local people's livelihoods.

Overgrazing in the Narok region in Kenya and in Loliondo is further leading to catchment degradation with impacts on the Mara River and the seasonal rivers in Serengeti originating from the Loliondo area (Kihwele et al.[29]).

A further concern is the increased tendency of private land fencing which is restricting wildlife movements. This is currently a serious problem in the unprotected parts of GSME in Kenya and is increasingly observed around Wasso in the parts of Loliondo GCA which today have been returned to village land. Increased fencing in the Loita plains in Kenya is considered to be the major factor which already has driven the Mara – Loita wildebeest migration to extinction and could in the future also impact the accessibility of wet calving grounds of the former Loliondo GCA.

The wet season short grasslands of NCA are a key area for the migration (fig. 7). While the wildebeest spent a large part of the year in the property and the MMNR, the critical period of calving is happening in the short grasslands around Lake Ndutu and these are largely situated in NCA. Although during the calving season Maasai pastoralists avoid the area because of the risk of disease transmission, the area is impacted by livestock grazing in other periods of the year. The increasing grazing pressure in NCA as a result of increasing livestock numbers (especially goats and sheep) linked to the increasing resident population has been discussed in reports of the Reactive Monitoring missions to NCA in previous years[30]. The mission notes that, following a review of the Multiple Land Use Model for NCA, the State Party has stated that it has initiated a programme of voluntary resettlement of the resident population, and that this matter is now being reviewed by a joint UNESCO/ICOMOS/IUCN Advisory mission to NCA (February 2024) at the request of the World Heritage Committee, following human rights concerns raised regarding the relocation process[31].

[28] Since 2018, significant efforts were made to reduce illegal livestock grazing in the property, see also chapter 4.7.
[29] E.S. Kihwele, M.P. Veldhuis, A. Loishooki et al., Upstream land-use negatively affects river flow dynamics in the Serengeti National Park, Ecohydrology & Hydrobiology, https://doi.org/10.1016/j.ecohyd.2020.12.004
[30] Available at https://whc.unesco.org/en/list/39/documents/.
[31] The voluntary nature of the resettlement has been questioned by various groups. The World Heritage Committee in its Decision 45 COM 7B.30 has expressed its deep concern over the alleged human rights violations in and around the property as set out in the letters from the UN Special Procedures Branch of the Office of the United Nations High Commissioner for Human Rights, and reiterated its unequivocal condemnation of any forced evictions. It requested the State Party to demonstrate that the voluntary relocation process is consistent with international good practices and applicable norms and standards, including the policies of the Convention and the principles of free, prior and informed consent. A UNESCO/ICOMOS/IUCN Advisory mission visited the property in February 2024 to advise the State Party on this matter and its report is in preparation at the time of writing.

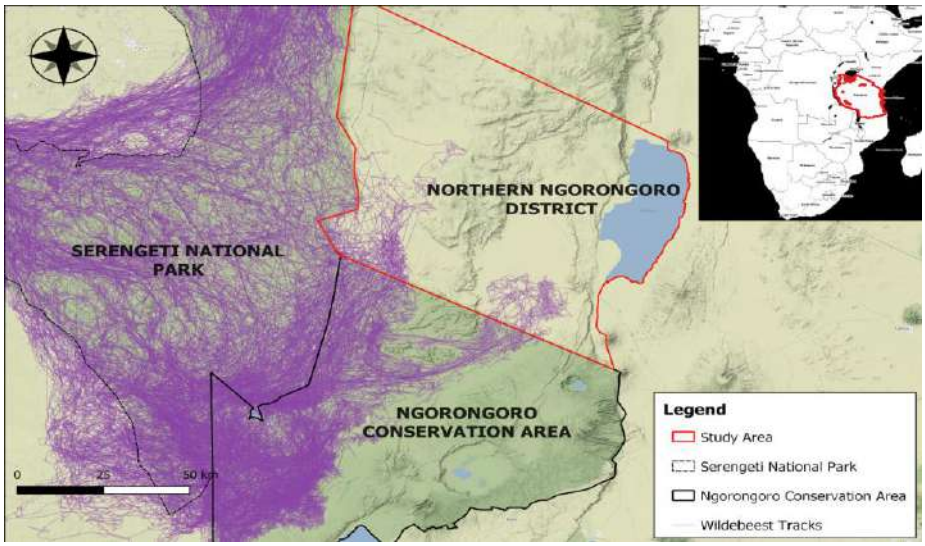


Figure 7: Data from collared wildebeest document the importance of NCA for the wildebeest migration (Source Serengeti Tracker)

Veldhuis et al. conclude that important edge effects are increasingly inducing spatial compression of wildlife across the GSME. Unsustainable activities in the multiple use areas outside the property spatially compress wildlife, leading to more intense use of the property and multiple consequences for the magnitude and stability of ecosystem services. Changes are being observed in the temporal and spatial distribution of wildebeest inside the property and the future effects of changes in space use on animal numbers are uncertain and of potential concern.

Scientific reports highlight that increased human population, livestock densities and/or agricultural intensities on the western boundaries of the property convert soft borders (where wildlife until recently was also using the land outside the property) into hard borders that effectively compress the property. In the agropastoral areas with high human densities, where cattle incursions in the protected areas are common, herbivore wildlife densities are documented to diminish inside the protected areas close to the boundaries where cattle incursions are common during the day, with wildlife species transitioning to greater crespuscular and nocturnal activity (Gutthman et al.[32]).

In the face of this increasing pressure in the GSME, the mission notes that while efforts are undertaken by the State Party to address several of the important stressors as demonstrated in this and other chapters of this report, it is of concern that there is no coordinated strategy or mechanism in place to address the overall situation and underlying causes at the wider ecosystem level. The 2010 mission already noted the importance of ecosystem-wide efforts to manage many of the threats facing the property. It recommended to revive the Serengeti Ecosystem Forum to enhance collaboration and coordination between TANAPA, the NCAA, the Wildlife Division[33], local communities and other relevant stakeholders in the Serengeti-Mara ecosystem to collectively combat the numerous threats to the ecosystem, which has not been implemented to date.

The mission welcomes the establishment of the Greater Serengeti-Mara Ecosystem Society which meets annually and provides an opportunity for scientists working in the GSME to

[32] Guthmann A, Onyango MB, Lannarilli, F and Parker C (2023). Livestock activity shifts larger herbivore temporal distributions to their crepuscular edges. Journal of Animal Ecology 1 – 15.
[33] At the time of the 2010 mission, GR and GCA were managed by the Wildlife Division. This is currently devolved to TAWA.

present their research findings to inform management. However, the mission considers that there is a need to establish a clear management vision for the entire GSME and to establish a formal joint transboundary cooperation mechanism for the management of the GSME in order to address the increasing pressures, and addresses also the social dimensions of conservation, includes rightsholders and stakeholders, and considers solutions to both increase the integrity of the ecosystem and assure social goals are met, in line with international norms. The MoU already established between the States Parties of Kenya and Tanzania on the management of the Mara Basin could serve as a model for such a transboundary cooperation mechanism.

In this respect, it also needs to be recalled that the MMNR has been included on the World Heritage tentative list of Kenya since 2010 and that prior to the pandemic, there was a renewed interest in Kenya to develop a nomination. A transboundary extension of the current SENAPA property to include MMNR would be a logical option and could potentially create an effective framework to formalize a transboundary cooperation and management process.

There is also great potential to improve coordination of management within the GSME in Tanzania. As shown above, the SENAPA, NCA and the relevant GR, GCA and WMA included in the Tanzanian part of GSME are managed by TANAPA, NCA and TAWA, all under the authority of MNRT. Although there seems to be some coordination for example on issues of law enforcement or management of the black rhino, there is no overall management strategy nor a joint strategy to address common management challenges. The protected areas are all also included in the core zone and buffer zone of the Serengeti – Ngorongoro Biosphere Reserve.

The mission notes that the Serengeti – Ngorongoro Biosphere Reserve includes both SENAPA and NCA as its core zone and the different GR and GCA as part of its buffer zone. Currently work is underway to develop a management plan for the Biosphere Reserve, The mission notes that this would be an excellent opportunity to develop a clear management vision and strategy for the Tanzanian part of GSME.

To address the pressure on the hard edges, efforts are also underway to develop land use plans for these villages and clearly demarcate the boundaries adjacent to community land (see also 4.9)

Recommendation 4.

Building on the experience of the Greater Serengeti-Mara Ecosystem Society and on the MoU between the States parties of Kenya and Tanzania for the management of the Mara River basin, and including relevant rightsholders and stakeholders, it is recommended that both State Parties, together:

- ***a) establish a formal transboundary cooperation to allow for the establishment of a joint mechanism for the management of the GSME in order to address the increasing pressures on the ecosystem, and addressing the full range of issues across the ecosystems, including the needs and rights of people and***
- ***b) explore the possibilities of nominating the MMNR as a transboundary extension to the property;***

Recommendation 5.

Finalize the development of the management plan for the Serengeti – Ngorongoro Biosphere Reserve as an overarching management plan for the protected areas included in the Tanzanian part of GSME to ensure a clear and common management

approach across the landscape and establish a permanent management coordination mechanism between TANAPA, NCA and TAWA to facilitate its implementation;

4.4 Pressure from tourism

Tourism pressure in the park was identified as a challenge by the 2010 Reactive Monitoring Mission to the property and in the park's previous GMP (2006-2016). Visitor numbers to SENAPA have significantly increased over the years. Tourism has until recently been concentrated around the Seronera area of the park, where most visitor facilities have traditionally been located. Similar growth in tourism is now also taking place in the Kogatende area in the north, associated with the Mara river crossing. The mission also raises concern regarding TANAPA's stated ambitious plan to grow the tourism footprint (i.e. lodge developments) in other parts of the park, which might lead to a further increase of tourism pressure in the property and likely negative impacts on the OUV.

TANAPA pinciples for growing tourism

TANAPA has in the past subscribed to a tourism principle *of Low Volume, Low Impacts, High Revenue*, which TANAPA confirmed during this mission remains a principle. The TANAPA Strategic Plan[34] states key principles for the conservation of its national parks and tourism growth. For example, the Chama cha Mapinduzi (CCM) Election Manifesto 2020-2025 (section 69) ensures effective management and protection of natural resources for the benefits of the present and future generations. The 2010 mission also noted that the then tourism strategy favoured the development of high-value low-impact luxury tented camps in the underutilized areas of the park instead of the further development of large lodge complexes. The current SENAPA GMP (2014 - 2024) and the TANAPA Tourism Investment Manual both refer to maintaining low impacts on the outstanding natural values. The latter (section 12.1) refers to fundamental values, including; keeping tourism in balance with conservation objectives while encouraging sufficient volumes of tourism to ensure the financial viability, setting Limits for Acceptable Change (LAC) associated with tourism, and setting unacceptable limits of actions, practice, and performance of the investor. The GMP states that "in response to national policies, tourism at SENAPA will be enhanced, diversified and dispersed in order to increase visitor numbers and optimise revenue; whilst at the same time reducing visitor density, so as to maintain the wilderness character of SENAPA and its low-density tourism opportunities."

The Tourism Investment Manual (2019-2024) stipulates that development activities will not cause undue animal harassment by visitors or employees or excessive susceptibility to animal roadkill. The manual is very specific that sensitive areas need to be avoided or any impact mitigated and prescribed for SENAPA a minimum distance of 10 km between two facilities, although it is unclear on what basis this distance was determined.

Projected tourism growth

The CCM Election Manifesto (Section 67) provides for strategic interventions to increase the national tourism arrivals to reach 5,000,000 visitors by the year 2025. This is a significant increase from the current 1,500,000. This growth objective was repeated to the mission team by the Deputy Permanent Secretary of MNRT. During the mission, TANAPA stated that the tourism policy of MNRT includes increasing tourism to the protected areas of the so-called

[34] The United Republic of Tanzania, Ministry of Natural Resources and Tourism. January, 2021. Tanzania National Parks, Strategic Plan, 2021/2022 – 2025/2026

southern circuit[35] to relieve pressure on the "northern circuit" (which includes SENAPA and NCA). Currently SENAPA contributes 47% of TANAPA's tourism income, nearly 8.5% of national GDP, and also contributes to the development, GDP and employment of six surrounding districts[36]. While not all the projected tourism growth would be based on an increase of visitation in SENAPA, TANAPA is under considerable pressure to grow tourism visitation to the property as part of the Government efforts to reach the ambitious tourism growth targets. During the mission the Serengeti DC stated that the town planning of the Serengeti town (previously called Mugumu) is centred around increasing tourism, with reference to the golf course at Fort Ikoma and the Mugumu airport. It can be reasonably anticipated that the growing national tourism industry will converge on SENAPA and the neighbouring NCA. This is apparent from the proposed growth of tourism facilities outlined in the SENAPA GMP[3].

Table 1. Limits of Acceptable Use for Accommodation in the High and Low Use Zones (Source GMP, table 4.5)

	High Use Zone		**Low Use Zone**	
	Existing Beds	Proposed Beds	Existing Beds	Proposed Beds
Lodge Total beds	1088	1310	260	383
Permanent Tented Camps Total Beds	764	880	2071	2570
Total special campsite beds	1300	2600	2060	4120
Total Public campsite beds	180	240	90	120
Total Park tourist accommodation beds	104	180	16	50
Total balloon safari camp beds	200	240	300	440
GRAND TOTAL BEDS*	**3636**	**5450**	**4797**	**7683**
Growth		50%		60%

* The mission notes that the information presented in this table was collated from numbers in the GMP, but that the Grand Total Beds differs from the totals presented in the GMP. The reason for the discrepancy is unclear.

The current SENAPA GMP (2014-2024) projects increasing the current tourism facilities from 165 to 211 (28% growth), including lodges, permanent tented camps, and seasonal camps, across the high use and low use management zones. It also projects a growth in the number of tourist beds of 50% in high use zones and 60% in low use zones (table 1). The mission notes that the low use zone includes significantly more beds than the high use zone, putting into question the concept of low use. The mission notes that regardless of the zonation, there are nearly no parts of the park untouched by tourism.

The 2014-2024 GMP has ambitious projections (table 2 and fig. 8) for growing the tourism facilities in SENAPA, most notably aiming to increase lodges by 250% and permanent tented camps by 300%. In most cases, by the end of 2023, these projects have not yet been realised, partly because of the slowdown in tourism during the Covid-19 pandemic. The largest growth was seen in permanent camps (92%) and balloon base camps (223%). Only one of the projected ten new lodges are currently completed. Nonetheless, if the projected growth targets are maintained or increased in the revised GMP (2024-2034), the mission notes that the tourism footprint will increase by at least 25% in High Use zones and 31% in Low Use zones (26 new facilities).

[35] The "Southern Circuit" includes several National Parks (Katavi, Kitulo, Mahale, Udzungwa Mountains, Mikumi and Ruaha), Game Reserves (with Selous being the largest), two rift valley lakes (Nyasa and Tanganyika), areas of cultural interest, and access to the primary gateway town of Iringa. Tanzania is implementing the "REGROW" project funded through a loan from the World Bank to promote investments inside four Protected Areas, considered to be catalytic for the consolidation of the Circuit: Ruaha, Mikumu and Udzungwa Mountains and Nyerere National Parks.

[36] Source TANAPA

Further development of other tourism related infrastructure includes road circuits of about 3,500km and 7 airstrips, enabling most of SENAPA to become accessible throughout the year, and to facilitate tourism activities, park security and revenue collection, and further expanding the human footprint across the park.

The GMP includes a monitoring protocol to ensure these impacts are recognised and mitigated. However, the mission has no indication in how far this monitoring protocol was being implemented.

While the GMP stipulates that only permanent and non-permanent tented camps will be permitted in the Low Use Zone (table 4.1), it is of concern to the mission that the SENAPA presentation during the mission showed that 8 new lodges were projected for the Low Use Zone.

Table 2: The existing and projected growth (GMP 2014-2024) in tourism accommodation in SENAPA (Source: TANAPA presentation to the mission)

ZONES	Permanent Tented Camp				
	Existing 2014	Projected	Existing*	Projected growth	Actual growth*
High use	4	22	6	450%	50%
Low Use	8	26	16	225%	100%
Wilderness	0	0	0	0%	0%
Total	**12**	**48**	**23**	**300%**	**92%**
	Seasonal Camps				
	Existing 2014	Projected	Existing*	Projected growth	Actual growth*
High use	73	73	63	0%	-14%
Low Use	76	76	73	0%	-4%
Wilderness	0	0	22	0%	0%
Total	**149**	**149**	**158**	**0%**	**6%**
	Lodge				
	Existing 2014	Projected	Existing*	Projected growth	Actual growth*
High use	4	6	5	50%	25%
Low Use	0	8	0	800%	0%
Wilderness	0	0	0	0%	0%
Total	**4**	**14**	**5**	**250%**	**25%**
	Balloon Base Camp				
	Existing 2014		Existing*		Actual growth*
High use	1		4		300%
Low Use	2		6		200%
Wilderness	0		0		0%
Total	**3**		**10**		**233%**

* As of Dec 2023

Tourism impacts on the OUV

The critical factor that is not well documented or considered in the GMP is how the tourism footprint follows the wildebeest migration. In other words, the tourist footprint is not evenly or consistently spread across SENAPA or the respective zones. Instead, tourists converge on the migration, following it across the ecosystem. The tourism demand to see the migration incentivises investors to establish tourism accommodation in prime wildlife areas, and also results in a small window of opportunity for high-occupancy of any one of these tourism lodgings while the rest of the season has low occupancy. During the mission a lodge manager mentioned this as a threat to the sustainability of his lodge, and the more lodges that are built, the more his occupancy is impacted.

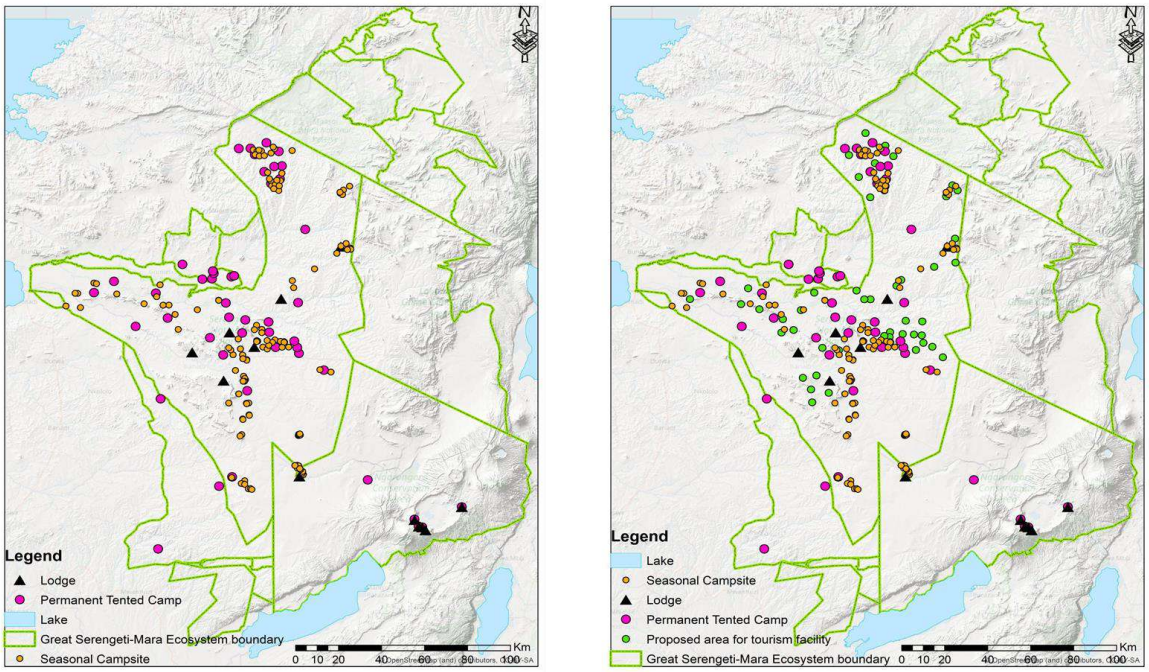


Figure 8: The increase in lodge and camp infrastructure currently and projected in future (source SENAPA tourism department)

The mission notes with concern that scientific research presented at the 2023 Greater Serengeti-Mara Conservation Society indicates that tourism is already having impacts on the migration. Fig. 9uses lights from tourist facilities (map a.) to correlate the tourism footprint with animal movement by comparing where the highest tourism development is in relation to areas with the best quality grazing (map b.), and the change in animal movement (map c.) . These data show a clear correlation between the areas used less by the wildebeest and the areas with high tourism pressure that include some of the richest grazing areas. This is a clear indication that the wildebeest are avoiding the areas impacted by tourism facilities. The data also show that while this is happening in parts of SENAPA, the problem is even more serious in MMNR in Kenya, where the density of tourism facilities is significantly higher. During an early morning drive the mission noted the light pollution from the camps and lodges in SERONERA illustrating the lodge density in the area.

Research data[37] also show that the number of wildebeest crossings have been decreasing over the last seven years, possibly linked to increasing disturbance from tourism.

[37] Presentation at the 2023 Greater Serengeti-Mara Conservation Society and G. Hopcraft, University of Glasgow / Serengeti Biodiversity Program, pers. Comment

Similarly, female cheetahs exposed to high tourist abundance on average raised 0.21 ± 0.72 cubs to independence compared to 2.32 ± 0.11 cubs in low tourism areas (Broekhuis et al 2017, 2018).

Managing impacts from tourism

The GMP outlines managing the impact from tourism through ongoing monitoring of roads, migrations, and ecosystem health, and enforcing closures of roads and access points where and when necessary. TANAPA outlined its plans to use vehicle tracking technology to monitor the movement of tour operators, particularly at specific wildlife viewing events such as big-five sightings, the Mara River migration crossing, etc. A project is currently underway to roll out a system whereby all tourism vehicles would be tracked in real time. TANAPA also monitor the river crossing at Mara, using beacons to indicate to tour operators the minimum distance to the river they may park, in order to reduce the impact on the crossing of the wildebeest. During the river crossing, additional staff are stationed at the river crossing to supervise compliance. However, the effectiveness of these efforts is unclear.

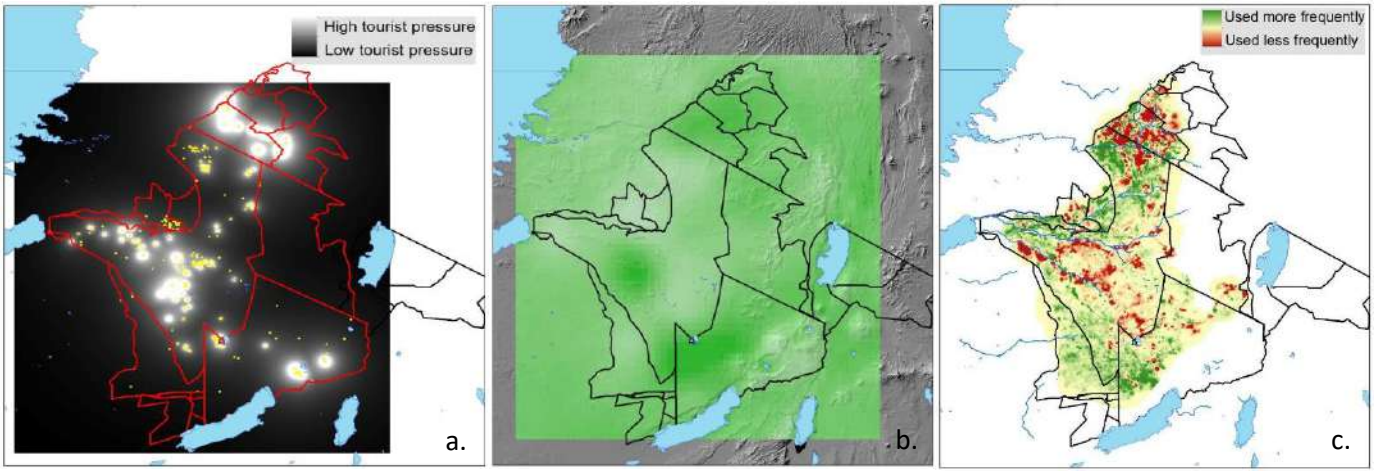


Figure 9. Correlation between tourism footprint, grass quality influencing animal movement, and changes in wildebeest presence. a. Tourism Footprint in 2020 depicted by light pollution. b. Grass protein value in greater Serengeti-Mara Ecosystem. c. Large changes in wildebeest utilization over the last 20 years based on GPS collaring studies (1999-2008 versus 2009-2018). Source Greater Serengeti-Mara Conservation Society (2023)

The mission concludes that while TANAPA subscribes to the principle of low-impact, low-volume tourism in balance with conservation objectives, that the planned growth of tourism facilities seems to be at odds with this objective. The planned increase in tourism facilities, including in the low use and wilderness zone is of serious concern, given the increasing evidence that the current tourism footprint is already starting to impact the OUV of the property.

The mission notes that there seems to be a lack of clarity in the definition of the concepts of respecting Limits of Acceptable Use (LAU) and Limits of Acceptable Change (LAC). The Tourism Investment Manual makes references to respecting Limits of Acceptable Use (LAU) and Limits of Acceptable Change (LAC) associated with developing tourism facilities (12.1, pg 65). It is unclear to the mission what the scientific basis is to determine the LAU and LAC. The lack of clear baselines or limits for measuring LAU and LAC are concerning, especially when considering the scale of the planned tourism growth. However, as described in the section in this report on Management Effectiveness, the GMP does not quantify LAC, but it does quantify LAU. It is unclear how these LAU are determined.

The mission notes that there is significant research which should guide TANAPA in setting LAC in the next iteration of the GMP. This includes research showing strong impacts of the

tourism footprint on the wildebeest migration in the Mara, where wildebeest spent 35 days / year less in the period 2009-2018 compared to 1999-2008.

Recommendation 6

Ensure that the Tourism Investment Manual and the GMP set quantifiable and measurable Limits of Acceptable Change (LAC) based on the best scientific evidence, the need to protect the values and attributes of the OUV of the property, and accompanied by measurable thresholds and metrics, repeatable monitoring protocols and trends analysis described in the GMP. Similarly, quantifiable and measurable Limits of Acceptable Use (LAU) should be set for all tourism related infrastructure and associated development footprints. These should correlate with the LAC and be informed by current scientific monitoring and research and be based on ecological spatial prioritisation and mapping.

4.5 Road Developments

4.5.1 The "north road" and southern bypass project

In November 2009, the UNESCO World Heritage Centre was informed about plans to build a road through the northern part of the property. The proposed so-called "north road" was intended to be a major trunk road which would be part of the 452 km Natta-Mugumu-Tabora 'B'-Kleins-Loliondo-Mto wa Mbu tarmac highway traversing the northern section of SENAPA for 53 km (see fig. 10).

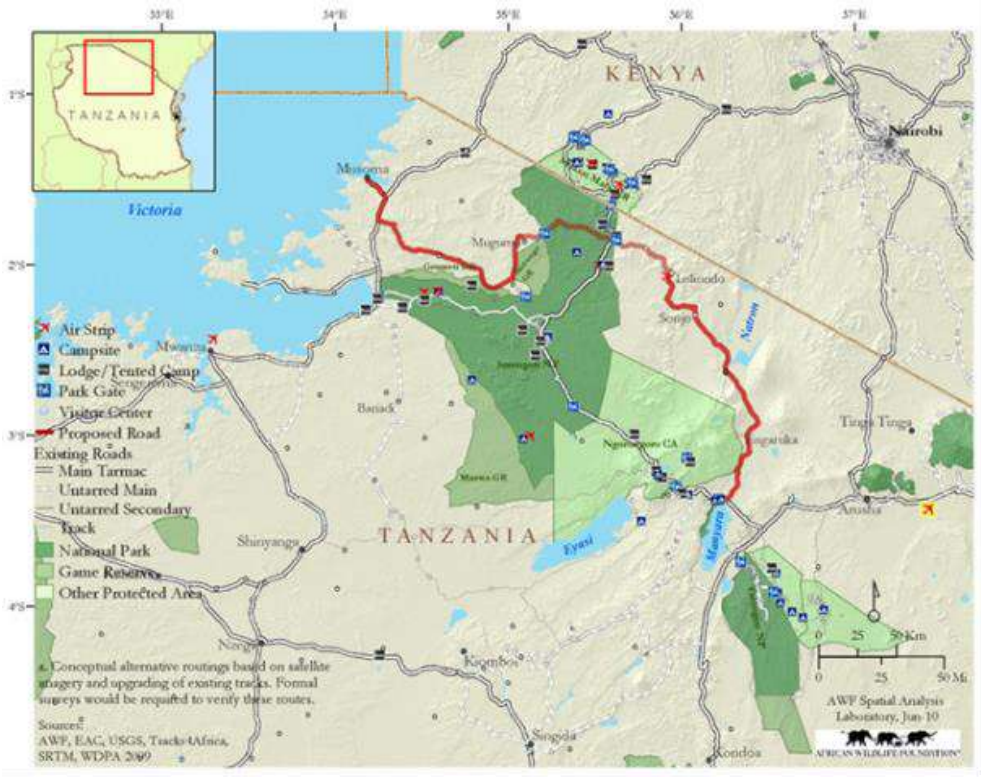


Figure 10: Alignment of the "North Road" as originally proposed in 2009 (Sources: 2010 Reactive Monitoring report)

During its 34th session, the World Heritage Committee, expressed concerns that the proposed alignment could result in irreversible damage to the property's OUV and urged the State Party to submit an EIA to the World Heritage Centre before a decision to implement the project is

taken and requested the State Party to invite a joint World Heritage Centre / IUCN Reactive Monitoring Mission to the property to assess its state of conservation, including potential threats such as the "north road" proposal (Decision 34 COM 7B.5). This mission, which took place in 2010, noted the large scientific consensus that the road would adversely affect the wildebeest migration, endanger the ecosystems and wildlife populations of property, impact its aesthetic values and wilderness character, and increase the management and conservation challenges. The mission therefore concluded that, the proposed alignment of the "north road" was a potential threat to the OUV of the property and recommended that the proposed alignment through the northern part of the property be rejected. The mission also recommended that alternative alignments to the proposed "north road", including the "southern bypass route" and upgrading of existing roads, i.e. from Nata to the district capital of Serengeti Mugumu[38] and Karatu to the district capital Loliondo, be carefully considered[39].

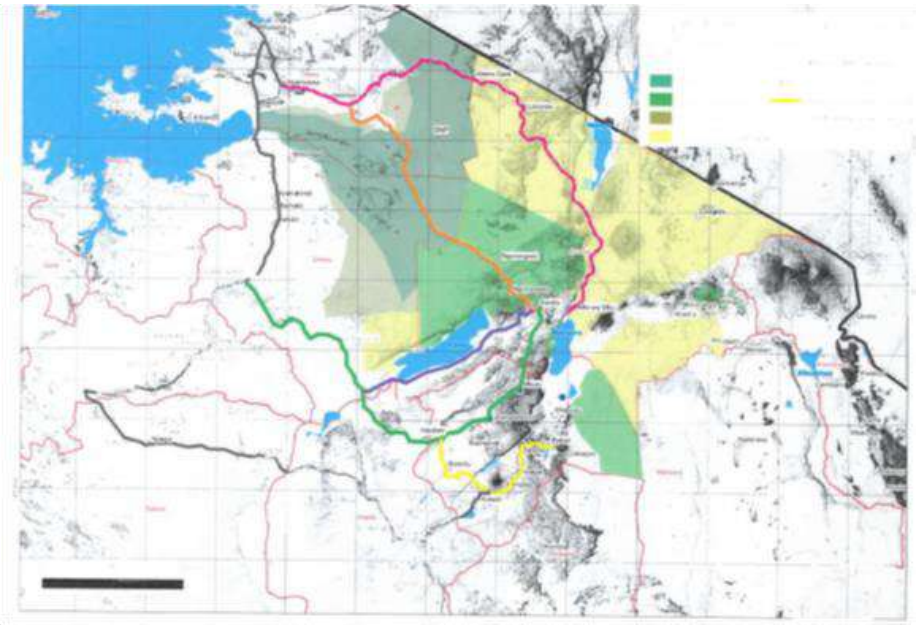


Figure 11: Options considered in the Preliminary Design and Feasibility Report for the Southern Bypass. (Source Tanzania Road Agency).

At the 35th session of the World Heritage Committee, the State Party through the Minister of Natural Resources and Tourism (MNRT) confirmed in writing the decision of the State Party to reconsider the proposed north road and to maintain the stretch of 53 km from Kleins gate to Tabora B traversing the northern wilderness area of the property as a gravel road, under the management of the TANAPA and reserved mainly for tourism and administrative purposes, as it is currently. This commitment was welcomed in Decision 35 COM 7B.7 and the World Heritage Committee called upon the international community and the donor agencies to consider providing support for the construction of a southern alignment, which will avoid the property.

The Deputy Permanent Secretary of MNRT confirmed to the present mission that the commitment made in 2011 remained valid and that the southern bypass project was under implementation.

[38] Mugumu, capital of Serengeti District has now been renamed to Serengeti town.
[39] A detailed review of the potential impact of the proposed northern road on the OUV of the property can be found in the Report of the 2010 Reactive Monitoring Mission, available at https://whc.unesco.org/en/documents/106736/.

The mission was provided with a copy of the Serengeti Southern Bypass Road Preliminary Design and Feasibility Study[40] on the options for the southern bypass road. The study was funded by the German Development Cooperation. In evaluating the different options, the feasibility study considered the economic viability of the project road, costs and funding, the objective to divert traffic from the property to avoid negative impacts on property's OUV and the need to improve connectivity to North West parts of Tanzania. The study considered different options as marked in fig. 11.. The study concluded that the objectives mentioned above are best achieved through the upgrading of the entire project road network: Karatu – Kolandoto of 513.6 km at a total cost of USD 622.6 million, offering a technically, environmentally and economically viable option with an Economic Internal Rate of Return of 22.5%. The feasibility study further proposed that the works could be phased starting with the 358.9 km long route from Katesh to Haydom and on to Maswa at a total capital cost of USD 443.2 million followed by the 154.7 km road from Karatu to Haydom at a total investment cost of USD 179.4 million to connect the district headquarters of Mbulu and the beneficiaries along this route. The feasibility study also advised against the option of the route going along the shores of Lake Eyasi, the territory of the indigenous Hadzabé people and an important wetland bordering the NCA.

The mission also had the opportunity to discuss the current status of the southern bypass with representatives of the Tanzania Road Agency (TanRoads), who explained that the route Karatu – Mbulu – Haydom - Maswa (383 km) was approved and fully committed under the national budget, with contractors for the different subcontracts either already on site or under mobilization. Additional legs Haydom – Katesh and Lalago to Kolalando are not yet committed. The construction could take 5 years to complete.

In addition, the mission was informed that upgrading of the road from Karatu to Loliondo (217 km) to tarmac is also on going, with the construction of Loliondo to Waso (50 km) already completed and a further 70 km under procurement for 2024. The upgrade of the road Nata – Serengeti (Mugumu) is currently not planned.

The mission also had the opportunity to travel on the road from the SENAPA gate at Tabora B in the direction of Kleins. This is the stretch of the original North Road proposal inside the property. The road has been maintained as a gravel road although its quality has been upgraded since the 2010 mission. It was confirmed to the mission that no normal through traffic is permitted and that the road is only used for tourism and park management purposes[41].

The mission welcomes the confirmation by the State Party of the commitment made in 2011 not to develop the north road alignment as a trunk road and to maintain the stretch of 53 km from Kleins gate to Tabora B traversing the northern wilderness area of the property as a gravel road, under the management of the TANAPA and reserved mainly for tourism and administrative purposes. The mission notes that the route option chosen for the southern bypass will allow to improve connectivity between Arusha and Musoma / Mwanza and improve access and bring economic development to the populated areas it is crossing while avoiding impacts on the OUV of the property and avoiding the sensitive Lake Eyasi area. Noting that work is starting and is being funded under the national budget, the mission wants to highlight

[40] Tanzania Road Agency (2023). Serengeti Southern Bypass: Transport Options & Trunk Road Concepts to Reduce Traffic Crossing the Serengeti National Park: Preliminary Design and Feasibility Report Summary report (German Development Cooperation – Gauff Engineers).

[41] At the time of visit of the mission, two buses were seen to pass the gate in the direction of Arusha. It was explained to the mission team that this was exceptional and because of an accident as the road via Fort Ikoma and Seronera had been blocked for larger vehicles with a bridge blocked as a result of flooding of the Mbalageta river crossing linked to the heavy rains and a reversed truck stuck at the level of the passage .

this important investment by the State Party which is directly benefiting the conservation of the property.

4.5.2 Upgrading of the Goleni – Seronera – Fort Ikoma road

The Karatu – Nyamusa gravel road crossing SENAPA and NCA via Lodoare - Goleni - Seronera and Ford Ikoma (orange route on fig. 11) is the main access road to the property. The road is heavily used as the main tourism artery to access the property but also experiences considerable traffic from vehicles transiting to western Tanzania, including increasingly heavy traffic[42]. While the road is an official trunk road (T17), its management is placed under TANAPA (and NCAA) jurisdiction, making them also responsible for its maintenance. The volcanic substrate of the road makes it difficult to maintain, especially in the rainy season and excessive dust generation is a problem in the dry season. Maintenance is not only costly but sourcing the large quantities of gravel needed is also challenging. Gravel sourced from pits in the property is often of poor quality and gravel pits are affecting the visual integrity of the property and are degrading the local environment. Sourcing gravel from outside the property requires high transportation costs and bring the additional risk of introducing invasive species. The deterioration of the road has elicited a large number of complaints from the tourism industry. Corrugation of the gravel road also leads to speeding (to diminish vibrations) and to frequent collisions with wildlife. The mission travelled the road and had a first hand experience of the difficult road conditions.

The 2010 mission recommended to *"Carefully evaluate the options for improving the road, in close cooperation with NCAA, taking into consideration all potentially damaging environmental impacts, before a decision to tarmac the road is taken"*.

Since the 2010 mission, an advisory mission to NCA was organized in 2017 in relation to the concrete plans to harden the Lodoare – Goleni stretch inside NCA, including a review of the detailed design plans, the ESIA and the HIA. The 2017 Advisory mission[43] concluded that the proposed road hardening project had the potential to reduce maintenance costs, improve visitor experience and local livelihoods, and to some extent contribute to the restoration of the property's OUV currently impacted by the condition of the existing road, but also pointed out that the project could lead to significant increase in the volume of through traffic and visitor numbers beyond the agreed carrying capacity, especially if the development of the southern bypass was not undertaken or delayed, leading to adverse impact on the OUV if traffic was not adequately managed.

The 2017 mission recommended that the road hardening project could be implemented, subject to provisions detailed in the ESIA and HIA, including the necessary mitigation measures and by applying a phased approach to enable adjustments to be made, as required, as project implementation progresses, in order to mitigate potential impacts on the natural and cultural heritage values of the property. It further recommended that the mitigation measures should include a specific action plan to ensure traffic through the property does not increase as a result of upgrading the road and that the road should be formally classified as a park road (instead of a trunk road) and be placed fully under the jurisdiction of NCAA in order to guarantee that NCAA can implement the necessary measures to regulate the traffic. The mission also made a number of concrete suggestions on the design standards and

[42] Busses and a limited number of registered trucks. It was explained to the mission that many of the trucks travelling on the road are delivering supplies to the camps and lodges in the park.
[43] The report of the 2017 advisory mission is available at https://whc.unesco.org/en/documents/165407/.

implementation procedures, including considering the possibility of asphalt concrete with coloring and the use of geocell and on the sourcing of gravel.

The mission was informed that an in-principle decision had been made to also harden the sections of T17 inside SENAPA and to develop the road to rigid pavement from Golini to Seronera and Seronera to Ikoma Gate but that so far no feasibility and detailed design had been developed or any concrete plans for the implementation of this decision had been taken. The mission further notes that since the 2017 mission, the works on the hardening of the Lodoare – Goleni stretch inside NCA have not started.

The mission notes the importance of fully considering the recommendations of the 2017 advisory mission in the design of the hardening of the T17 Goleni – Seronera– Fort Ikoma road. The mission also notes that the current straight alignment of the road is based on the criteria of a trunk road (privileging the shortest distance between point A and B). This current alignment incites speeding and does not allow for a good visitor experience. Instead, the alignment could be changed to allow for a more scenic road which is part of the visitor experience. It will further be crucial to ensure that traffic through the property does not increase as a result of upgrading the road. Linking the timeframe for completing the hardening project with the timeframe of completing the southern bypass is therefore crucial.

Recommendation 7.

Once the southern bypass road is completed, divert further traffic away from the property by downgrading the status of the Karatu – Nyamusa road T17 (which crosses the NCA and SENAPA properties) as a trunk road to a park road, closing it for heavy transit traffic from Arusha to Musoma and by disincentivizing[44] other vehicle transit traffic.

Recommendation 8.

Postpone the implementation of the road hardening project Goleni – Seronera - Fort Ikoma within the property, in order to link the timeframe of the project to i) the completion of the Lodoare – Goleni stretch in NCA, in order to build on the experiences gained from that upgrade, and ii) to the timeframe for finalizing the southern bypass road, making it possible to downgrade the status of T17 from a trunk road to a park road (see recommendation 7) in order to ensure that traffic through the property does not increase further.

4.6 Other infrastructure developments in and around the property

4.6.1 Fort Ikoma Golf Course

On 14 March 2023 the World Heritage Centre transmitted to the State Party third party information received regarding the construction of a golf course near Fort Ikoma in the vicinity of the property. No reply has been received from the State Party and the mission was requested to review the status and plans of this project and the potential impact on the property's OUV. The mission was able to visit the project area and received a copy of the EIA (dated August 24, 2023).

The project area is situated outside the property next to the Fort Ikoma airstrip. Fort Ikoma is a former military area where a large part of the park administration and service departments

[44] For example through an adapted fee structure.

are situated, including offices and park staff housing. It is situated between Grumeti and Ikorongo GR and the Ikoma WMA (see fig 12) and 15,9 km away from the boundary of the property. It is situated in an important migration corridor which passes in between the Makundusi and Robanda villages, as shown on the map. The area is owned by TANAPA, which is the project promotor.

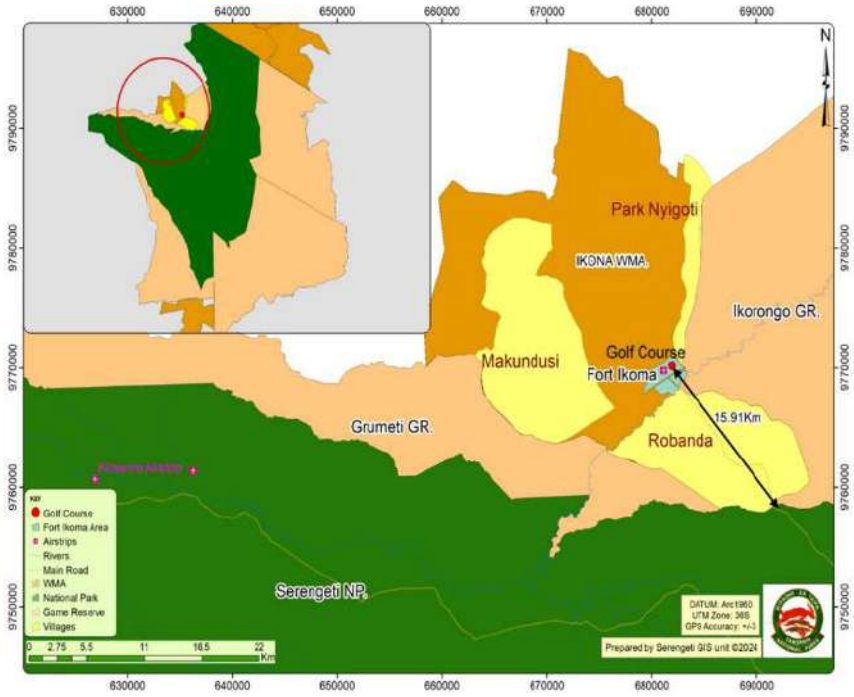


Figure 12: Map of proposed Fort Ikoma Golf Course project area (Source TANAPA)

The project consists of an 18-hole golf course with associated facilities (a clubhouse with public toilets, restaurant and snack bar; swimming pool and associated changing rooms, showers and toilets; the golf halfway houses and golf maintenance centre, a golf practice area, putting greens, cart paths, executive apartments, cycling paths, parking areas, maintenance facilities and other facilities and services consistent with the operation (fig. 13). The golf course and facilities will cover an area of approximately 75 ha.

To supply the necessary water, boreholes will be drilled, expected to yield a maximum of 50,000 litres per day. An average of 22,000 litres per day is calculated to be needed for lawn irrigation, and approximately 10,000 litres for other needs (cooking, residential apartments, washing and cleaning). Six water storage tanks with capacity to keep a total of 300,000 litres will be installed to sustain about two weeks in case of water supply system malfunctioning. In addition, several water bodies are planned to store captured rainwater. Electricity will be sourced from the national grid, which is already available at Fort Ikoma and a solar energy farm. A natural gas-run standby generator will also be provided in both the national grid and solar power will fall-short. A solid waste sorting area and liquid disposal facilities and walkway lights shall be provided. Estimated total investment cost of the project is TZS 7,000,0000,000 (USD 2,750,000). The project is implemented by TANAPA but managed under a Public-Private Partnership (PPP) between TANAPA and the private investor. It is unclear if a private investor has been identified to date. The mission was informed that the costs for infrastructure which so far has been put in place has been covered by the TANAPA budget.

The mission was informed that the objective of the project is to diversify the tourism offering and to extend the stay of visitors to the Park by offering them the possibility to add several days of golf during their stay. According to the EIA report, a market survey conducted by

TANAPA prior to initiating the proposed project is said to show there is a segment of visitors to SENAPA that is interested in integrating game viewing with golf.

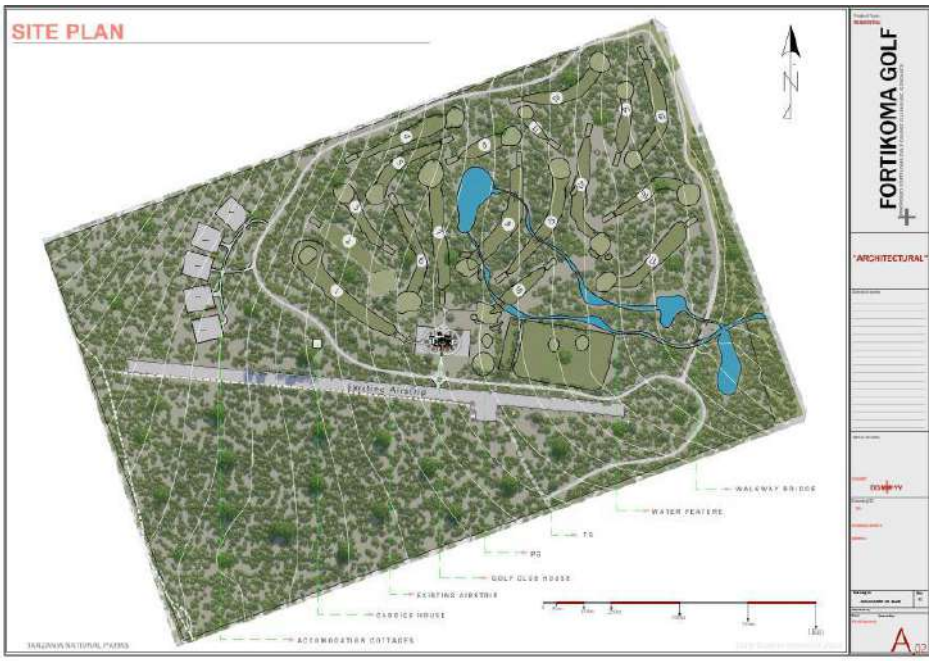


Figure 13: Site Plan of the proposed Fort Ikoma Golf Course project (Source EIA report)

It needs to be noted that on 16 March 2023, Environmental Inspectors from NEMC discovered that construction activities had already commenced without conducting an EIA, prompting NEMC to immediately stop all construction activities until an EIA was conducted and a Certificate granted. This supposedly explains that some holes were already in place during the visit by the mission, in spite of the EIA not yet being approved. At the time of the visit, the putting greens already constructed were protected by barbed wire to avoid wildlife entering and trampling the greens.

The mission notes that although the EIA mentions the status of SENAPA as a World Heritage site, there is no specific consideration of the impact of the proposed golf development on the OUV of the property. In fact, the World Heritage Convention is not even mentioned in the EIA chapter on policy, legal and administrative frameworks (but the document mentions other international Conventions including CITES, CMS and CBD).

While the project area is outside the property, the mission points out that it is a key area for the migration, together with Grumeti and Okorongo GR, and the Ikona WMA. Several researchers contacted by the mission expressed concern that the proposed project, which includes various infrastructure, would affect the migration given that there is increasing evidence that the wildebeest divert their migration patterns to avoid anthropogenic infrastructure.

The mission notes that the EIA provides no serious analysis on the importance of the project area for the migration. The EIA chapter on the description of the existing condition limits itself to a short paragraph describing the wildebeest migration in the Serengeti ecosystem, without specifically mentioning that the project area itself is a major corridor for the migration. There is no effort to quantify the importance of the project area for the migration (e.g. timing of the migration and its expected interaction with the area), in spite of the availability of a wealth of data, notably for collared wildebeest, zebra and Thompson gazelle.

The EIA does include in its assessment of potential impacts and their levels of significance "*Harassment and interference with wildlife movement routes, dispersal areas and calving grounds*" as a "*very high negative impact*" during both the construction and operation of the project. In fact, it is quantified as the biggest negative impact of the project (together with risk of "Overutilization of water and interruption of flow patterns and aquifers" during operation). The mission further notes that the EIA specifies that the project had to be located outside the property itself "*in order to maintain the outstanding resource values, which SENAPA boasts of*", thereby implicitly recognizing the potential impact of the project on the OUV of the property.

In spite of the recognition that interference with wildlife movement routes is to be considered a very negative impact of the proposed project, this is not considered in the discussion on possible alternative location. The EIA proposes the following mitigating measures to address the very negative impact:

Proposed mitigating measures during construction:	**Proposed mitigating measures during operation:**
• The construction camp shall not be fenced to allow free movement of animals. • Construction people shall be prohibited from feeding and harassing animals. • Construction people shall be required to keep noise as low as possible. • SENAPA shall station a ranger at the construction site to enforce regulations on wildlife welfare. • No feeding of wild animals	• No feeding of wild animals • The golf course shall not be fenced to allow free movement of animals. • Outdoor lights shall be fade and down-casted to reduce direct illumination. • Buildings shall be raised at least half a meter from the ground to allow free movement of small animals • Visitors and staff at the golf course shall be prohibited to feed, habituate and harass animals. • Park rangers shall be stationed at the golf course site to enforce environmental conservation rules and regulations.

During the site visit, the mission discussed with TANAPA staff the projected plans to manage and operate the golf course area during the migration when tens of thousands of animals move through the area, feeding on the grass and attracting predators. As it is planned that the area will not be fenced to allow free movement of animals, it is clear that the greens will be trampled and destroyed, requiring major recurrent repairs at high costs. TANAPA staff suggested that the golf course would have to be closed during the time that the migration is passing through the area, but the mission notes that this is not foreseen in the environmental management plan included in the EIA. Further, the greens already constructed are fenced with barbed wire and therefore seem to be in contradiction to the environmental management plan.

The mission considers that the proposed golf development is likely to create a new obstacle for the migration in an area where the migration corridor is already under pressure by increasing development in the Serengeti district (Serengeti town, Robada and Makundusi villages). The proposed development includes infrastructure related to the 18 holes, such as several buildings and artificial water bodies, which may divert the migrating animals away from the area. The mission concludes that the EIA has not adequately assessed the potential impact of the proposed project on the migration, which is the main attribute of the property's OUV, and has therefore not clearly demonstrated that the project will not impact the OUV of the property. The EIA is therefore also not in line with the *Guidance and Toolkit for Impact Assessments in a World Heritage Context.*

While outside the scope of the Terms of Reference, the mission also has doubts regarding the economic viability of the development and considers that a more detailed market analysis might have to be conducted While noting the need for TANAPA to maximize revenue from

tourism, the mission also questions the rationale of a protected area agency, whose first role is to ensure adequate management and protection of the areas under its jurisdiction, to develop tourism projects which are not linked to its core mandate of nature conservation.

Recommendation 9

Given the potential impact of the Fort Ikoma Golf Course on the wildebeest migration, and hence the OUV of the property, the mission recommends not to proceed with the project and to undertake an additional detailed scientific study and to revise the current EIA, to assess the feasibility of alternative locations, to comprehensively assess potential impact of the development on the migration in the area, including whether this impact can be adequately mitigated, in line with the Guidance and Toolkit for Impact Assessments in a World Heritage Context. Should it not be possible to prevent negative impacts on the OUV of the property, then this project should not be permitted to proceed.

4.6.2 Proposed Mugumu Airport

In 2014, the World Heritage Centre and IUCN received information about a project to construct an international airport at Mugumu, about 40 km away from the property, to increase the capacity of the area for tourism development. Initially, it was planned that a large airport with a tarmac runway of about 3.8 km would be built with the view to accommodate large aircrafts carrying more than 100 passengers. The size of the runway would be comparable to the international airports of Dar-es-Salaam or Kilimanjaro.In its 2014 Decision 38 COM 7B.94, the World Heritage Committee requested the State Party to provide detailed information about this project, including a copy of the EIA before a decision is made.

In March 2018, the State Party submitted a copy of the EIA (dated 2014). The proposed size of the project was significantly downsized compared to the initial project, basically upgrading the existing airstrip (which is currently only used for medical emergencies) into a regional international Airport to serve for local flights, as well as to provide entry and exit services (immigration and custom services) to international travellers arriving from outside Tanzania to the property and the luxury camps in the adjacent GRs. According to the EIA, the proposed airport would include a 1.2km gravel type runway to cater for light aircrafts. It was projected that up to 30 aircrafts (of 13 passenger capacity) per day would use the facility thus, bringing about 390 passengers and taking away the same number of passengers at high peak.

In its Decision 42 COM 7B.96, the World Heritage Committee noted that the significantly downsized airport would no longer pose a significant threat to the property's OUV and requested the State Party to monitor and mitigate any potential indirect impacts should the project move forward.

So far, the project has not moved forward since 2018 because of a lack of funds and the impacts of the COVID-19 pandemic. However, the mission was informed that the project was under renewed consideration, bringing it back to the original planned size with a runway of 3.8 km. It was explained to the mission that one of the objectives of the airport was to divert traffic away from the Seronera and Kogatende airstrips in the property. The Seronera airstrip is the main airstrip in the park and has a gravel runway of 1,5 km and is today experiencing significant traffic in terms of number of tourist flights. However, the mission was informed that it does not have the required safety facilities for this volume of traffic. The Kogatende airstrip services the camps around the Mara river and has also been experiencing a significant increase in traffic. In addition, the high number of flights is reported to lead to important noise and disturbance to

the wildlife. The creation of an airport at Mugumu would allow SENAPA to close the Seronera and Kogatende airstrips for tourism related traffic.

The mission supports the proposal to divert the tourism flight traffic away from the airstrips inside the property for both for conservation and tourist safety reasons, and therefore the upgrading of the existing Mugumu airstrip to accommodate the traffic from Seronera and Kogatende following their closure to tourism traffic. Entry and exit services (immigration and custom services) would allow for limited regional arrivals from Nairobi or other nearby airports in the region, which is acceptable as long as the size of the aircraft would remain limited to light aircraft, this would not substantially increase arrivals. However, the mission considers that the development of the airport with a 3,8 km runway and the ability to bring in larger capacity aircraft would seem contradictory to the TANAPA tourism principle of Low Volume, Low Impacts, High Revenue. The mission further notes that any changes to the original proposal for which the EIA was submitted to the World Heritage Centre would require a new full EIA to be submitted in line with paragraph 172 of the *Operational Guidelines*.

Recommendation 10

Limit the development of the Mugumu airport to a regional airport for light aircraft only, with a 1,2 km gravel runway in order to divert the tourism flight traffic away from the Seronera and Kogatende airstrips inside the property, closing these for tourism traffic.

4.6.3 Lodge developments

The mission notes the large number of lodges that are planned to be built in the high use and low use zones of SENAPA. As stipulated in the TANAPA Tourism Investment Manual, developers are required to complete a full proposal and EIA, after which they enter into a licence agreement with TANAPA through a Standard License Agreement.

TANAPA provided the EIA certificates accompanied with EIA conditions of certificate for 4 proposed lodge and permanent tented camp developments: Delaware Investments (Upper Waringi, 13/10/2023), Mwiba Holdings (Nyasirori 3, 16/02/2023), and Imperial Investments (Makoma Imperial Lodge, 28 June 2023). The same generic conditions were applied to all EIA certificates. The full EIA documents were not provided. The mission notes that although these EIAs have been approved, none of the EIA documents have been submitted to WHC for review by IUCN, as foreseen in paragraphs 118b and 172 of the *Operational Guidelines*. The mission further notes that the conditions of certificate were generic and provided no specific conditions for mitigating impacts. The draft EIA for Bela Bela identified potential negative impacts on the section of the migration route, but offered no substantive mitigation measures.

The only EIA TANAPA provided was the draft EIA of Bela Bela Lodge, which was also originally provided to the World Heritage Centre for comment. The mission was informed that the EIA was not approved and would need to be done again since it has lapsed. The mission highlights that the draft EIA notes key stakeholder concerns, including interference with wildlife dispersal areas and calving grounds. In particular, IUCN noted in its review of the original submission, that the proposed location of the project appears to be overlapping with, or very close to, the wildebeest migration route, raising concern over impacts on the migration resulting from an increased and permanent human presence. IUCN therefore recommended that the project proponent identify an alternative location for the project that is further removed from the migration route. In this context, IUCN recommended that the World Heritage Centre request the State Party to ensure that any future proposals for permanent and non-permanent infrastructure development do not interfere with the "unaltered animal migration" as stated under criterion (vii) of the property's Statement of OUV.

The mission notes that the draft EIA report does not adequately address the above concerns, and proposes only the following limited mitigation measures:

- *The lodge compound shall not be fenced so as to allow free movement of animals;*
- *Some structures will be raised at least half a meter above the ground on wooden plinths to allow free movement of small creatures; and,*
- *Lamps along walkways shall be fade and down-casted to reduce illuminating light.*

The mission is concerned that new lodge and permanent tented camp developments are proceeding without the EIA being submitted to the WHC for review by IUCN, as foreseen in the Operational Guidelines.

Recommendation 11:

Provide as soon as possible a more detailed report and overview of the progress of current infrastructure development applications within the property, ensure that all EIAs are prepared in line with the Guidance and Toolkit for Impact Assessments in a World Heritage Context to assess the potential impacts on the OUV and are submitted to the World Heritage Centre for review by IUCN prior to making any decision to authorize construction in line with paragraph 172 of the Operational Guidelines , and to avoid tourism development that may negatively impact the OUV.

4.7 Law enforcement

Poaching

At the 34th session of the World Heritage Committee (Brasilia, 2010), concerns were raised about reports of a significant increase in the poaching of rhinoceros and elephants in the Serengeti National Park (see Decision 34 COM 75 B in Annex A). The 2010 mission noted the need for SENAPA to respond to the then mounting pressure and recommended that SENAPA allocate more resources to anti-poaching efforts.

During this mission TANAPA reported that it had addressed these 2010 recommendations as follows:

- The number of rangers was increased from 200 to 400.
- Modern equipment was purchased to enhance anti-poaching activities (control room, night vision goggles, infrared camera, area patrol capability)
- Specialized patrol units were formed (e.g., Canine Unit, Livestock Unit, and De-snaring Units)
- Enhancement of intelligence based patrols
- Overall strengthening of security of the park due to improved work morale of anti-poaching staff, the transformation of TANAPA to a paramilitary organization, and the use of technology (GIS, Remote sensing).

The mission was informed that no rhino poaching has been recorded for the past 9 years, and no elephant poaching recorded for the past 5 years. Wildebeest and zebra continue to be poached, mainly for bushmeat, but at much lower numbers over the past four years than before (Fig. 14.) Nonetheless, there are still concerns regarding the impact of bushmeat poaching on the local wildebeest and ungulate populations. Important community projects, e.g. ‘Snares for Shares’ through which they pay community members (ex-poachers) to find and remove snares from within the park are aimed at further reducing the impacts from poaching through local employment and beneficiation (see also chapter 4.9.7).

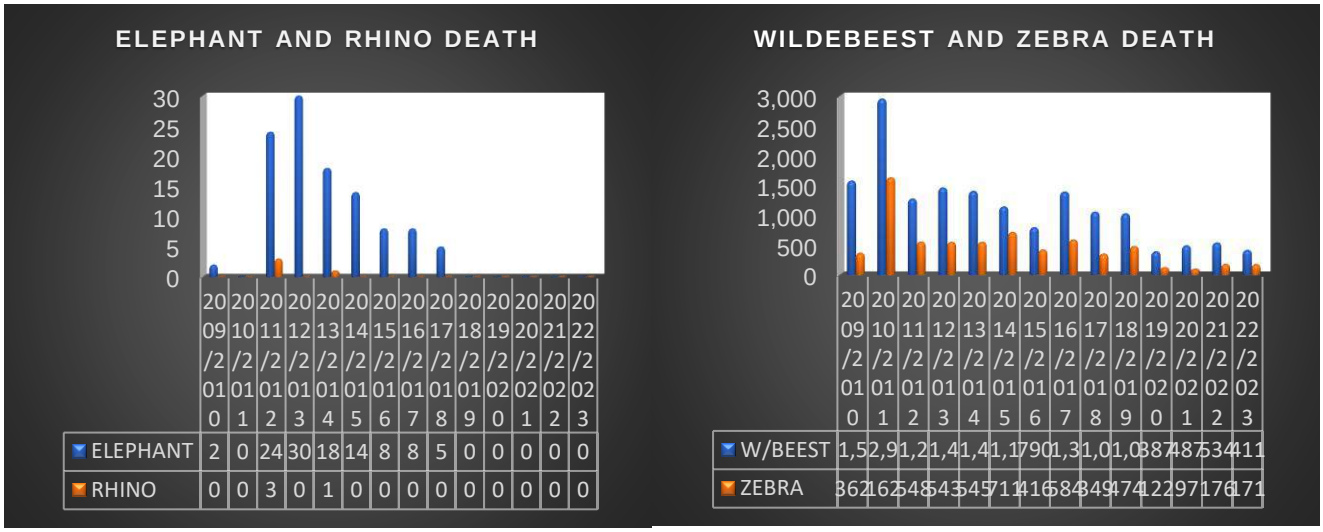


Figure 14. Data shows a dramatic reduction in the number of poached elephant, rhino, wildebeest and zebra, indicating a reduction in poaching incidents (Source TANAPA).

The mission visited the newly built control room, near the site offices in Seronera, which boasts advanced technology able to track the foot and vehicle patrols, collared animal movements, and event and animal sightings, using software like ARC Field Maps and Serengeti-Tracker. SENAPA advised of discussions with NCCA about sharing data. The control room and associated technology has seemingly improved the capacity of the SENAPA field officers to respond to incidents and strengthened proactive monitoring.

Livestock

The Tanganyika National Parks Ordinance CAP [412] of 1959 does not allow livestock to be kept in national parks, i.e. it is illegal to graze or kraal livestock in any national park. However, there has been increased pressures on, and near the boundary of, SENAPA from community owned livestock, especially near the hard boundaries and adjacent to the Loliondo GCA.

Since 2018, TANAPA stepped up the efforts to address this issue, with daily aerial patrolling on the boundaries and the introduction of “cattle teams”, which are composed of members of the local communities, who act as lookouts for livestock entering the park. Cattle teams report these incidents to park rangers who then confiscate the livestock and transfer the case to the judiciary. The mission saw firsthand how cattle that had been seized inside the park were being removed to be confiscated. A more strict application of the law by the courts, resulting in the auctioning of cattle rather than simple fining, is also reported to have reduced incursions by livestock.

TANAPA has also placed white beacons along the hard boundary in Serengeti and Tarime districts to ensure that communities are aware of the park’s boundary, and to facilitate enforcement of the law. The Serengeti DC stated that if cattle are found in the park, they get confiscated. Other stakeholders confirmed to the mission that the pressure of livestock inside the property has greatly diminished since the introduction of these different measures.

The mission commends TANAPA for the significant strengthening of their law enforcement and anti-poaching capabilities. The reduction in elephant and rhino poaching are evidence of the success of these efforts.

The mission notes the continued pressure on the boundaries of the park, but also notes the concerted efforts of the state to mitigate these through active law enforcement.

4.8 Management Effectiveness

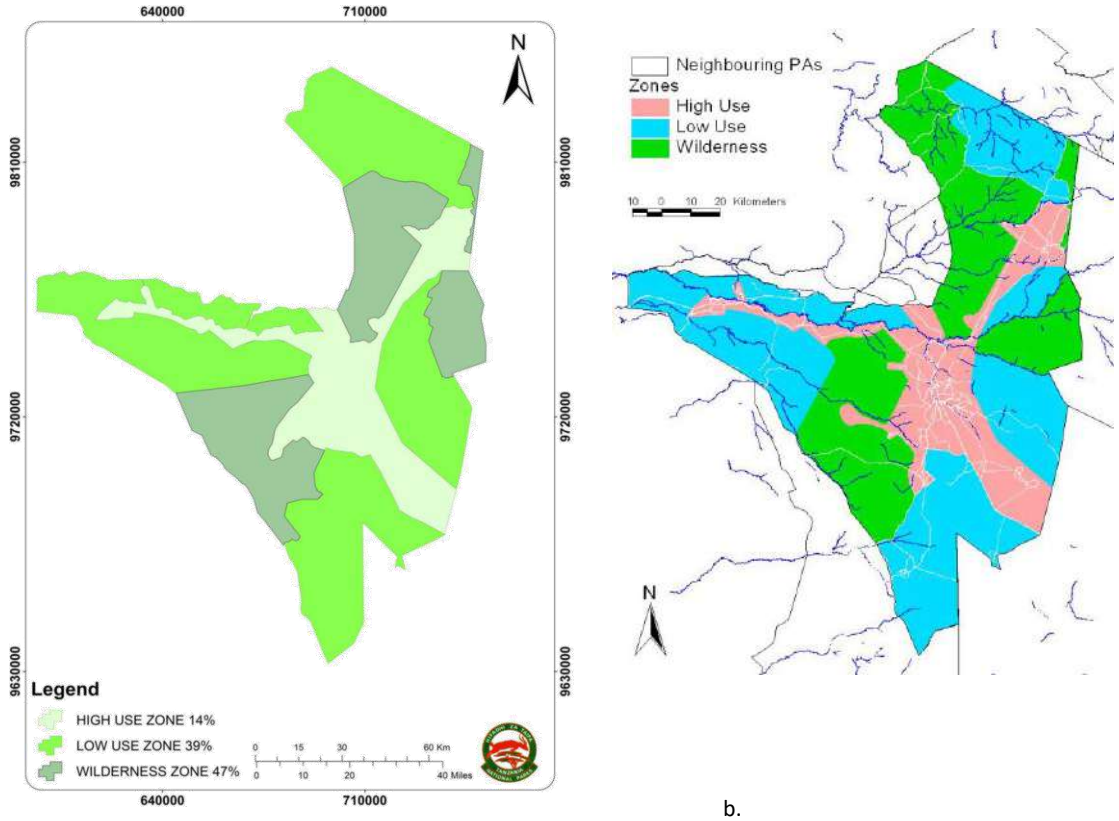
4.8.1 General Management Plan

Tanzania Wildlife Conservation Act (June 2022) states that GMPs should be approved by the Minister and published in the Gazette. All actions within the protected area should be consistent with directions prescribed in the relevant GMP.

The SENAPA GMP 2014-2024 was approved in 2016 and provides the framework for the management of the national park (preceded by the 2006-2016 GMP). The GMP is directed at the day-to-day needs of the SENAPA managers. The GMP is organised into four distinct Management Programmes (ecosystem management, tourism management, community outreach, and park operations), that are directly linked to specific SENAPA departments. Each Programme has a "logical framework approach" to clearly present the Programme objectives and management actions in relation to the management issues they address; and is actioned through a 3-year rolling action planning component per programme, aimed to help practically ground the ten years GMP strategic framework. This is the first GMP that includes a business plan to support its implementation. The Business Plan highlights the need for substantial investment in SENAPA administration, conservation and tourism operations. It also offers ideas for new income streams and compares revenues from different accommodation types.

The GMP identifies 11 different Exceptional Resource Values (ERV), which it is intending to protect through its implementation. There is no specific reference to the OUV of the property, however the GMP's ERV cover the different aspects identified in the Statement of OUV (large mammal migration cycle, self-regulating ecosystem, habitat mosaic, threatened and endangered species, migratory birds and their habitats).

The GMP foresees three distinct management zones which include 'high use', 'low use' and 'wilderness zones' (see fig. 15). Since the 2006 GMP, the zonation has been simplified to three



b.

Figure 15: The management zones of the GMPs for a. 2014-2024 and b. 2006-2016. (source: SENAPA GMP 2014-2024, SENAPA GMP 2006-2026)

zones, as opposed to the original eight zones outlined in the 1996 GMP. The mission did not receive a clear answer on the rationale for defining the zoning, although it was mentioned to the mission that the wilderness zone was based on the presence of black rhino. The purpose of this zonation is to provide a framework for achieving and reconciling the twin management needs of protecting the natural qualities and environment of the Park and regulating and promoting visitor use. The GMP prescribes the objectives and allowed activities within each zone, which according to the GMP are in line with the ecological objectives of that zone. The GMP states that the zones have been demarcated based on SENAPA's ecological and tourism imperatives, describing the types of acceptable use in each zone, and states that activities and impacts will be continuously monitored, and activities will be stopped or specific zones closed should there be negative impacts on the natural resources.

The Tourism Investment Manual (2019-2024) stipulates that development activity will not cause undue animal harassment by visitors or employees or excessive susceptibility to animal roadkill. The manual is very specific about sensitive areas to be avoided or impact mitigated. The Manual also references setting Limits of Acceptable Change (LAC) associated with tourism. The GMP lists tables of the LAC in terms of number of beds for the different tourism facilities in the different zones and describes development of the Ecological Monitoring Plan that will require a baseline to be established not only for future comparisons but also to enable the establishment of clearly defined indicators and, where appropriate, the limits of acceptable change.

The GMP has identified eight Conservation Targets that capture the unique biodiversity of the park and provide measures of the long-term health of the ecosystem. These include 'Ecosystem (The migration, Mara river)', 'Community (Riverine forest, Acacia woodland, Terminalia woodland and Kopje habitat)', and 'Species (black rhino and wild dogs)'. It is noted that the table of Conservation Targets in the GMP includes 14 targets. Threats to these targets are provided, along with current severity and scope and each target is accompanied by the necessary actions to reduce the threats and restore the targets.

The mission was also informed that TANAPA is planning to revise the SENAPA GMP in 2024, with support from FZS.

The mission considers that the GMP provides a substantive monitoring framework for management implementation and threat mitigation of the property. The mission further notes the important body of scientific data which is available to assist with the planning, monitoring and implementation of the GMP. However, the mission is concerned that the current GMP does not provide the scientific basis or reasoning for the specific delineation of the management zones or parameters of the limits of acceptable use or change included in the GMP. While it was explained to the mission that finer scale mapping exists of areas of significance in SENAPA to inform zonation, these maps were never shared with the mission and are not provided for in the GMPs.

The mission further notes that while the Ecological Monitoring Plan describes attributes, indicators, monitoring, etc., neither the Tourism Manual nor the GMP describe the actual baseline nor provide the scientific rationale for defining the LAC for the different zones. In fact these LAC were revised upward between the current and previous GMP but no explanation is provided which justifies this increase. TANAPA confirmed that these baselines and LAC will be set in the revised GMP (2024-2034), and committed to using the available science to support this process.

The mission notes that the conservation targets listed in the GMP are useful for monitoring impact on the natural ecosystem, but is concerned that no benchmarks or thresholds are provided for these targets, which could prove difficult for monitoring the LAC.

The mission notes the important change in the zoning between the various GMPs of 1996, 2006 and 2014, concerned that the wilderness zone appears to be progressively being diminished in area[45], while the LAU were significantly increased, particularly in the north around Lamai, Sopa valley and the Western corridor. Additionally, the 2014 GMP allows more activities in the wilderness zone and low use zone compared to the 2006 GMP. For example, guided bird walks and filming are additionally allowed in the wilderness zones, and guided bird walks, ballooning, filming, night game drives, bush meals, and migration river crossing viewing are additionally allowed activities in the low use zones. It is noted that no game viewing by vehicles is permitted in the wilderness zone, with visitor use being restricted to walking safaris. The mission is concerned about the lack of scientific justification for these changes, particularly for the delineation of the zonations.

Stakeholders mentioned to the mission that some changes in the zoning have been implemented because of lodge developments which were not compatible with the original zoning, and noted the lack of enforceability of the GMP in the face of tourism projects with high level political support[46].

The mission notes the extent of significant scientific research and data available regarding the larger Serengeti-Mara ecosystem, and specifically the migration, and considers that the revision of the GMP should be informed by the best available science in order to revise the management zones and permissible use in these zones. This should include setting measurable and monitorable limits of acceptable change, particularly in the behaviour, demographics and population of the migrating wildebeest, zebra and other gazelle. The mission considers that, given the fact that the wildebeest migration is a key attribute of the OUV of the property, an acceptable limit of change in these aspects of the wildebeest population should be 'zero change'. The mission is concerned that current research indicates that the tourism presence has already impacted the movement of the wildebeest, and therefore could affect the OUV of the property (see also chapter on tourism) (see also 4.4).

During the mission, the NEMC suggested that SENAPA should be subjected to an SEA. During the mission, NEMC submitted an official request to the Tanzanian Vice-Presidents office. The mission fully supports this proposal, as an SEA is a key tool for integrating environmental considerations into policies, programs and plans and the assessment will allow to also assess the cumulative impacts of tourism. This should be pursued by NEMC with support from TANAPA.

Recommendation 12:

In preparation of the planned revision of the GMP, develop a scientific rationale for the management zonation, the permissible use in the different zones, and ensure that the LAC are based on the best available science;

4.8.2 Species monitoring and conservation

Ecological health and species are monitored through aerial surveys (top counts, Systematic Reconnaissance Flight transects, Aerial Point Surveys with camera, etc). The survey frequency used to be every three years, twice a year in wet and dry seasons, but is currently

[45] It is noted that the 2006 and 2014 GMPs present the coverage of the Wilderness zone as 35% and 47% respectively. However, when the zones are overlaid and compared visually, it seems that the wilderness zone has been reduced and the low use zone has been expanded in the 2016 GMP, compared to the 2006 GMP. This was not verified using GIS maps, but it should be verified and if needed corrected in the revised GMP.

[46] For example, the current Four Seasons Safari lodge (previously Kempinsky Bilala lodge) was mentioned, which was constructed in 2009 inside the wilderness zone as defined in the 2006 GMP.

only in dry seasons due to budget constraints (TAWIRI presentation). Wildlife have been actively monitored between the periods 1964-68, 1974-92, and from 2005 onwards. Satellite collaring has been used since 2007 (TAWIRI *pers comm.*).

The park has three black rhino areas: Moru, Nyamalumbwa and Ndasiata. The last remaining Black Rhino population at Moru decreased to a low of three in the 1990's but thanks to translocations from South Africa, two new Rhino populations were established at Nyamalumbwa and Ndasiata. These populations have been breeding successfully and the population has grown to more than 50 at present. These Rhinos are being allowed to disperse, with some animals moving into Maswa and Pololeti GR. The adjacent NCA also has a thriving black rhino population in the Ngorongoro crater. Whilst originally migration corridors existed between the Ngorongoro and Serengeti population, currently the populations are isolated. However, with numbers increasing in both NCA and SENAPA, experts from the IUCN Rhino Specialist Group consider that both populations might connect again in the future.

Tanzania recently announced plans to introduce White Rhino in NCA. The IUCN SSC African Rhino Specialist Group (AfrRSG) has raised several concerns on this proposed introduction. Since Tanzania is not part of the species' contemporary range and there are no white rhinos in Tanzania (with no ecological equivalent for at least 3,000 years), the consequences of a non-native species for this ecosystem are not clear. Further consideration of long-term approaches to managing the species and the risks that may associate with a non-native species, such as disease and veterinary considerations, ecological, social and tourism impacts as well as provision of rhino security, is required. The plan has been contested as it is uncertain if white rhino ever occurred in the area. The World Heritage Centre and IUCN therefore have recommended not to proceed with the introduction in NCA without addressing the aforementioned concern. It was clarified to the mission that TANAPA at this stage does not plan to introduce white rhino to SENAPA. However, any introduction in NCAcould also impact SENAPA as both areas are contiguous.

While at the time of inscription the wild dog population was estimated at 300 animals, by 2010 they were thought to have completely disappeared from the property, but they remained present in GSME[47]. Between 2010-17 there were eight wild dogs packs, but two packs were impacted by distemper and 17 dogs died. In 2016 there were 250 dogs, but due to the impacts of Distemper there are 130 dogs in 2023. Currently five packs have settled in Serengeti and adjacent sites. SENAPA uses a programme called 'Wildlife Guardians' to pay Maasai community members in Loliondo to report their Wild dog sightings. These sighting are verified with photos and by rangers who are called in to verify.

4.8.3 Staffing and budget

The total staffing of SENAPA in 2023 amounted to 419 full time employees against the 569 required (73.63%). During the 2010 Reactive Monitoring Mission, the park had 386 staff (implying an 8.5% growth in staff over 12 years). The mission notes that in spite of the significant growth, staffing remains sub-optimal, with a 24% shortfall in the required staffing needs.

The mission was informed that the annual operating budget of the park increased from approximately 1,876,000 to 7,810,000 USD from 2003/2004 to 2008/2009. The mission did not receive requested recent data on the budget but the park management indicated that the necessary resources to fully implement the GMP remain lacking. From the presentation by SENAPA to the mission, tourist visitor numbers to the park between 2015-2023 (excluding three years over Covid-19) remained relatively stable, ranging between 450,000-570,000. However, the revenue to the park increased year on year, from TSH 70m in 2015/2016 to TSH

[47] Based on 2010 Reactive Monitoring Mission report.

165m 2022/2023. It is unclear if this revenue is linked to income from tourists or if this is the budget allocation from MNRT. If it is the former, it would be useful to understand how tourism revenue was increased without significantly increasing tourism numbers.

It is important to point out a significant change since the 2010 mission in the way TANAPA is funded. TANAPA used to operate under a system of revenue retention. It received no allocation from the State budget but was able to use the entire revenue from tourism to fund its operations. SENAPA together with Kilimanjaro National Park generate most of the revenue from tourism, and this revenue was redistributed to fund the other parks managed by TANAPA which were not generating sufficient revenue. With the outbreak of the COVID-19 pandemic, tourism collapsed and the TANAPA revenue crumbled so a decision was made by the State Party to end the revenue retention scheme and provide budget allocations from the State Budget. This system is currently still in place and all collected revenue passed on to the Tanzania Revenue Authority. While no concrete figures on the current budget were provided to the mission, park management indicated that the allocated budget is comparable to the budget before the end of the revenue retention scheme. The Deputy PS indicated to the mission that the Government was considering moving back towards a model of budget retention for TANAPA. It is further noted that since the 2010 mission, the property benefited from a large increase in donor funding, especially from the German Development Bank. Germany also provided substantial additional funding after the outbreak of the pandemic to attenuate the loss in tourism revenue. Donor funding has allowed for substantial investments in infrastructure and equipment but also in community conservation activities in the neighbouring districts.

The mission notes that the outbreak of the pandemic clearly showed the limitations of depending on tourism revenue for the funding of the protected area system. The mission welcomes the decision of the State Party to address the potential serious budget shortfall resulting from the drop in tourism revenue by providing funding from the state budget, as well as the support from Germany in response to the budget crisis. While the mission welcomes the assessment by TANAPA that at this stage budget allocations from the State budget are comparable to the budget available through the retention scheme before the start of the pandemic, it notes concerns raised by some stakeholders that dependence on the state budget allocations could in the future result in budget issues. The mission further notes that the increasing dependence on donor funding also presents risks regarding the ability to ensure long term funding for the property.

Recommendation 13:

Ensure that the revision of the GMP (2024-2034) includes the following key aspects:

- ***a) Ensure the management of the property is underpinned by an analysis of its OUV as documented in the SOUV;***
- ***b) Includes an improved monitoring system by defining quantifiable baselines, thresholds, and metrics for measuring change and outcomes;***
- ***c) Provides mechanisms for community participation in GMP development and includes best practices for fair and equitable governance including transparency, and appropriate grievance mechanisms;***
- ***d) Is informed by a Strategic Environmental Assessment (SEA) that considers the cumulative impacts of tourism on the property***
- ***e) Ensures sufficient staffing and funding that is guaranteed from the national budget but also allows for revenue retention;***
- ***f) Is approved at Ministerial Level and fully implemented and enforceable.***

4.9 Other issues

4.9.1 Internal water resource management

The 2010 reactive monitoring noted challenges with the water supply for internal use in the park. While lodges and tented camps are required to have their own borehole, water for the park facilities, including ranger posts and for the seasonal tented camps and public camp sites is sourced almost exclusively from one borehole at Turner's spring and is transported around with water bowser truck a costly solution leading to additional heavy traffic in the property. Previous considerations of possible solutions included repairing a pipeline constructed in the 1960s piping water from the only permanent spring in the property at Bologonja in the north to Seronera, as well as the construction of a new pipeline bringing in water from Lake Victoria. The 2010 mission recommended a detailed hydrological survey to determine the quality and quantity of water available from underground aquifers in order to determine the carrying capacity in terms of water use and to develop a comprehensive plan to address the water shortage issue.

In 2019 TANAPA, with financial support of the German Government, commissioned a study to develop an integrated water resource management plan. The study quantifies current and projected water needs and evaluates the feasibility of different options to satisfy current and future demand. Calculations are based on 6,000 beds available in 2019 with a total number of staff of about 5,900, with projections for 2028 based on 10,000 beds with about 8,800 staff.

The plan recommends that the water demand of the Administrative Facilities in Seronera Valley should be met by a combination of water supply from boreholes and rainwater harvesting, given that the proposed Bologonja pipeline not only would lead to increased environmental concerns within the park but also be much more costly. The plan states that water demands for the operation of the ranger posts, which are spread throughout the park could be met through rainwater harvesting. To meet the demand from the seasonal tented camps and to diminish the current heavy traffic by water bowser trucks, the report suggests boreholes to be drilled at strategic sites close to the camps following thorough hydrogeological investigations. The plan also notes that no reliable hydrogeological data are currently available for the existing production boreholes and the establishment of a groundwater monitoring network is recommended by incorporating groundwater measurement infrastructure into every production borehole. Interestingly, the study also concludes that from an environmental perspective, the only really 'safe' solution for avoiding unplanned developments and an overuse of critical water resources may be to ultimately set an upper limit for the number of visitors in the Park – based on the goal of sustainability rather than growth, noting that only then can it be guaranteed, that the SNP will fulfil its initial purpose, i.e. to ensure the long-term conservation and protection of its ecosystem, habitats, and biodiversity.

While the mission welcomes the progress made in developing an integrated water resource management plan, it notes that a detailed hydrological survey to determine the quality and quantity of water available from underground aquifers in order to determine the carrying capacity in terms of water use is not yet available. It further notes the conclusion of the report that setting an upper limit for the number of visitors in the Park based on the goal of sustainability rather than growth.

The mission recommends to undertake a detailed hydrological survey in order to determine the carrying capacity in terms of water use, as recommended by the 2010 mission and implement the recommendations of the integrated water resource management plan.

4.9.2 Invasive species

The 2010 mission noted the presence and active attempts to control and manage invasive alien species (IAS) *Argemone Mexicana*, *Datura stramomium*, *Opuntia sp*, *Parthenium hysterophorus*, and *Chromolaena odorata*. Various mechanical and herbicidal controls were being used by SENAPA to control these invasive species. The 2010 mission expressed extreme concern about the emergence of new and aggressive IAS, and noted the lack of collaboration between SENAPA and the Ministry of Agriculture in Tanzania (which has an invasive species unit). The mission recommended that SENAPA improve collaboration with other organisations working on the management of IAS, and that a national strategy for managing threats to biodiversity livelihoods by IAS be developed.

In response to this, TANAPA published Guidelines for Invasive Alien Species Management (2017). The guidelines outline a broad national strategy to prevent introduction, create early detection, and undertake mechanical, herbicidal, biological, cultural, and indirect control of IAS. The guidelines listed the main IAS in SENAPA as *Agave sisalana, Amaranthus hybridus, Argemone Mexicana, Argemone ochroleuca, Cassia occidentalis, Cedrella odorata, Datura stramonium, Datura erecta, Lantana camara, Opuntia monacantha, Opuntia inermis, Opuntia vurgaris, Pistia stratiotes, Ricinus communis, Xanthium strumarium*. This is a substantive list, although the guidelines do not indicate the prevalence of these IAS within the site, and so it must be assumed these present varying degrees of threat. Interestingly, *Parthenium hysterophorus* does not appear on this list.

In 2019, the Tanzania Vice Presidents Office published the National Invasive Species Strategy and Action Plan (NISSAP) (2019-2029). A key opportunity is that the NISSAP aims to coordinate the management and control of IAS across multiple sectors and ministries.

The NISSAP states that TANAPA and NCAA collectively spent more than 1 billion Tanzanian shillings on the management of invasive species in the financial year of 2018/2019. For the period 2008-2019, TANAPA has spent about 2 billion TZS on addressing invasive species in the Tanzanian parks indicating the magnitude of the problem. Both TANAPA and NCAA were noted for their commitment and success in controlling IAS.

The SENAPA GMP recognises IAS as a threat to the site, and sets out key objectives such as developing an inventory, controlling, preventing introduction, and raising awareness of IAS. However, the GMP lacks specific operational activities to implement these objectives.

The mission notes that TANAPA has appropriate plans in place to implement actions to control IAS present in the property through the guidelines and NISSAP. Based on the mission's limited observations, these appear to not pose a fundamental threat, however no further scientific assessment has been undertaken. The guidelines and the NISSAP are new and instrumental documents to improve IAS control in Tanzania and SENAPA, and efforts should be made to align the TANAPA Guidelines, the NISSAP, and the SENAPA GMP documents in future revisions with the aim of cross-ministerial implementation.

The mission recommends that TANAPA continue implementing the national guidelines and strategies to control and manage IAS and to include in the next GMP more specific activities and interventions to control and manage IAS, in accordance with the TANAPA Guidelines and the NISSAP.

4.9.3 Fire management

The 2010 mission noted that repeated hot fires at the end of the dry season could have detrimental effects on ecosystems, especially on riverine, Acacia and Terminalia woodlands. Such fires were being used by poachers to divert attention away from their activities. The

mission noted TANAPA was developing a fire management plan and recommended that resources are made available for its implementation as soon as possible.

The SENAPA GMP (2014-2024) notes that fire plays a critical role in shaping the Serengeti and commits to developing and implementing a Fire Management Plan during this GMP. This mission commends SENAPA for developing and publishing the Serengeti National Fire Management Plan (2014-2019) (FMP) which aims to control and minimise the damage caused by wildfire and to direct the use of prescribed fires for management purposes. This FMP has three objectives that focus on (1) application of prescribed fires to enhance the ecosystem health (2) controlling the destructive impact of (hot) wildfires on ecosystem resources, human property and Park infrastructure and (3) to build the capacity of the park in sustainable fire management.

A Fire Management Zoning Scheme divides SENAPA into three zones: High Intensity Fire Management Zone, Medium Intensity Fire Management Zone and Low Intensity Fire Management Zone. An action plan for implementation of specific activities under the different targets is also given. In addition, the environmental impact considerations of implementing the FMP are covered together with a mitigation plan for the several potential negative impacts.

SENAPA produce Serengeti Ecosystem Monthly Management Reports (including GIS and Remote Sensing data). The mission was sent the report for December 2023. The report includes data on burned areas, precipitation, vegetation cover, and migration.

The mission notes the research results showing that encroachment of livestock on the eastern boundary of the property is having negative impacts on the available fuel load for natural fires. This has resulted in fewer fires, impacting the nutrient cycle and possibly the migration[48] .

The mission was also informed by TANAPA that it intends to use fire management to access carbon credits, and has entered into a partnership with Soils for the Future Tanzania (SftFTZ), a partnership with CarbonSolve and Soils for the Future[49]. SftFTZ's goal is to establish public-private partnerships (PPP) on soil carbon-based financing to support improved rangeland health to the benefit of people and nature.

The mission commends TANAPA for developing the FMP and recommends that resources continue to be made available for its implementation. Additionally, the mission notes that the FMP has expired in 2019 and recommends that it be revised in conjunction with and aligned to the revision of the GMP.

Recommendation 14:

- ***a) In relation to other management needs in the property: Undertake a detailed hydrological survey in order to determine the carrying capacity in terms of water use, as recommended by the 2010 mission, and implement the recommendations of the integrated water resource management plan;***
- ***b) TANAPA to continue implementing the national guidelines and strategies to control and manage IAS and to include in the next GMP more specific activities and interventions to control and manage IAS, in accordance with the TANAPA Guidelines and the NISSAP;***
- ***c) Revise the FMP in conjunction with and aligned to the revision of the GMP and make available further resources for its implementation.***

[48] Grant Hopcraft (University of Glasgow / Serengeti Biodiversity Program), personal comment.

[49] https://www.carbonsolve.world/about-1#:~:text=Soils%20for%20the%20Future%20Tanzania%20Ltd%20(SftFTZ)is%20a%20private,that%20benefits%20people%20and%20nature.

4.9.4 Community Engagement

The SENAPA GMP is committed to the Community Outreach Programme, which aims to promote sustainable conservation of the Serengeti ecosystem through supporting livelihoods whilst maintaining good relationships with adjacent human communities.

Evidence of environmental degradation caused by rapid human population increase in the wider setting of the property, park boundary conflict, livestock increase with limited forage, , and the increase of informal settlements, amongst others, have been described as key human induced challenges across the Serengeti ecosystem (see also 4.3).
Human-wildlife coexistence is a delicate balance between meeting the needs of biological conservation and socio-economic imperatives. Sustainable use limits and thresholds and minimum needs exist for all these aspects, and finding the balance is found in identifying these and agreeing on acceptable use and compromises. In protected areas designated exclusively for biodiversity conservation and related economic activities (i.e. no human settlements), surrounding socio-economic activities and anthropogenic pressures are nonetheless factors that need to be identified, mitigated, strengthened or generally managed.

Some of the key management activities in the 3-year action plan under the GMP are reducing human impacts by developing and implementing village land use plans; understanding, quantifying and reducing the magnitude and impacts of human-wildlife conflict (HWC); role-out conservation education programmes; resolving boundary disputes; and improving benefit-sharing.

Land Use Planning

Participatory land use planning in the districts adjacent to the park has been supported through the Serengeti Ecosystem Development and Conservation Project (SEDCP), funded by KfW with technical support from FZS. Village land use plans are being developed in the five districts of Serengeti, Ngorongoro, Bunda, Bariadi and Tarime based on the guidelines for the preparation of district land use framework plans in Tanzania. So far SEDCP has successfully prepared 22 village land use plans in the Serengeti District.

The mission was informed that participatory land use planning would target the zones 10km from the boundary of the park. One of the stated benefits of the land use planning included mitigating human-wildlife conflict, and encouraging buffers used for livestock grazing, as opposed to settlements. Unfortunately, the mission timeframes did not allow the mission to look into this issue in more detail. Nevertheless, the mission underlines the importance of ensuring that land use planning, in collaboration between the park management and relevant districts, effectively considers and manages any conflicts with communities through a human rights-based approach to conservation management. There is also a need to foresee sufficient areas for grazing in the village land use plans to address the issue of pressure from livestock.

Human-Wildlife Conflict:

During the mission, conflict between neighboring communities and wildlife was mentioned by both TANAPA and the two District Commissioners met by the mission as a continuing issue. The conflict is particularly heightened where there is no buffer between the park and local communities, i.e. north-western boundary and southern boundary of western corridor. The mission noted the increasingly hard boundary being formed when flying over the southern boundary of the western corridor. Crop lands planted on the border of the park entice elephants to leave the park and results in dangerous encounters between elephants and farmers, resulting in injury and sometimes fatal accidents. These situations are being addressed through projects such as the land use planning, but have not yet been implemented along the entire park boundary.

The mission notes the MNRT National Human-Wildlife Conflict Management Strategy (2020-2024), which is used by TANAPA to develop strategies for the human-wildlife conflict related to the property.

In an open system such as Serengeti, fencing was cited by a number of stakeholders as a potentially controversial management tool for managing human-wildlife conflict (and preventing livestock incursions into the park) given the impact on the animal movements (migration). Ikorongo GR built a 30km elephant proof fence, and have been monitoring the incidents of cattle incursions and human-wildlife conflict. Data indicate that the frequency of elephant moving into neighboring villages has decreased. However, there are also reports of wildlife being entangled in the fences and dying (source SENAPA presentation). The mission recommends conducting a proper assessment of the impacts from the fencing on the property, including on the movement of wildlife to ensure fences do not interrupt the wildlife migration.

Other community engagement activities

Community Conservation Banks (COCOBA) is a microfinance programme which was established in Serengeti Ecosystem in 2009 by FZS in collaboration with TANAPA through SENAPA. The overall goal of the COCOBA programme is to reduce poverty and enhance community participation in conservation through refraining from poaching for bushmeat and bushmeat business and engaging with environmental-friendly/neutral livelihoods activities. FZS provided the mission with a document outlining the programme and listing eight successes thus far. It was also mentioned that the trust created with the communities through the COCOBA programme facilitated engaging local communities in law enforcement related activities such as 'Shares for Snares' and 'cattle teams'.

The mission welcomes the efforts of TANAPA and its partners to improve relations with neighboring communities through land use planning, placing beacons along the boundary of the park, human-wildlife conflict mitigation, and benefit-sharing initiatives.

The mission encourages TANAPA to continue engaging with neighboring communities in a positive, transparent, and cooperative manner.

Recommendation 15:

Ensure that community engagement efforts for the protection and management of the property are inclusive and fair. Key governance considerations should include equity, effectiveness based on legitimacy and voice, transparency and accountability, vitality and ability to respond adaptively. Most notably, all engagement between the governance authority and neighboring communities (rightsholders and stakeholders) should adhere to human rights-based approaches.

5. CONCLUSIONS AND RECOMMENDATIONS

The mission concludes that the different attributes which underpin the OUV of the property are being maintained. The annual migration of two million wildebeest, Thomson's gazelle and zebra continues to present an outstanding natural phenomenon justifying the inscription under criterion (vii). Population numbers of wildebeest and other ungulates are stable. Since the 2010 mission, populations of rare and endangered flagship species have been effectively conserved and related threats to these species are largely mitigated. Rhino poaching has been brought under control, with no rhino poaching reported for the last 9 years. Translocations from South Africa have strengthened both the numbers and the genetic vigor of the population and the rhino are now spreading beyond the boundary of the property into the adjacent GR and GCA. Wild dog, which had disappeared from the property in 2010, have returned, even if the population remains under pressure from canine distemper. Elephant numbers have seen an important increase, with no poaching incident reported for the last 5 years.

The mission commends the State Party for the important efforts it has undertaken in implementing the 2010 mission recommendations. The "northern road" project which constituted a major threat to the OUV of the property has been abandoned and the southern bypass is under construction. The addition of the Speke Gulf area, providing wildlife access to the permanent water source of Lake Victoria is underway. Both the southern bypass and the Speke Gulf addition require substantial investments which are entirely born by the national budget and are a clear sign of the commitment of the State Party to the conservation of the property.

The mission also wants to specifically highlight the quick response of the State Party and the German Development Cooperation to cover the acute budget shortfall for the management of the property after the outbreak of the COVID-19 pandemic, which temporarily resulted in a complete loss of tourism. Without this intervention, the conservation of the site could have been jeopardized.

The mission further welcomes the important work undertaken since the 2010 mission to strengthen law enforcement to address poaching and livestock grazing in the property, including efforts to engage local communities through innovative approaches. Efforts to address the human wildlife conflict and the increasing pressure on the hard boundaries of the property by supporting the development of village land use plans and better demarcating the site boundaries are encouraging and need to be continued. Whilst noting the State Party's reported efforts to further improve the relations with local communities, address invasive species and develop a clear strategy for the management of fires, the mission was not able to meet with local communities during this mission. The mission therefore takes the opportunity to recall the importance of ensuring a participatory human rights-based approach to the protection and management of the property that is in line with international best practice standards.

In spite of these positive developments, the mission remains concerned about the long term integrity of the property. As already noted at the time of inscription on the World Heritage List, the integrity of the property is dependent on the ecological health of the wider transboundary landscape of the GSME.

The mission notes that recent research clearly documents that the pressure on the natural resources in and around the GSME has increased substantially over the past decades, driven mainly by population growth. This has led to expansion of crop agriculture and a steep increase in livestock numbers in and around the GSME, leading to degradation of rangelands in the multiple use protected areas and increasing pressure from illegal grazing in the other protected

areas within GSME. Growing fencing of private land especially in the unprotected parts of GSME in Kenya is increasingly restricting wildlife movements which already has driven the Mara – Loita wildebeest migration to extinction in the Kenya part of GSME and could in the future also spread to the Tanzanian part of the ecosystem.

These important edge effects are increasingly inducing spatial compression of wildlife across the GSME and could directly impact the integrity of the property. Unsustainable activities in the multiple use areas outside the property spatially compress wildlife, leading to more intense use of the property and multiple consequences for the magnitude and stability of ecosystem services. Changes are already being observed in the temporal and spatial distribution of wildebeest inside the property and the future effects of these changes on animal numbers are uncertain and of potential concern. To address these increasing external pressures on the GSME, transboundary management strategies need to be developed and transboundary cooperation improved. In the Tanzanian part of the GSME, the coordination between the different agencies responsible of the protected areas needs to be increased.

The mission is especially concerned by changes in the hydrology of the transboundary Mara River as a result of catchment degradation and irrigation. As the only perennial river in the GSME, the Mara River is the lifeline of the ecosystem, providing crucial access for the migrating herbivores to water in the dry periods within a large area with ample grassland available. If the Mara River would stop flowing, it could lead to an immediate and steep decline of the wildebeest population as a result of lack of water and food. Along the river there is competition for water and widespread conversion of fertile riverine habitats for agriculture. Major forest loss and degradation is taking place in the upper watershed in the Mau Forest in Kenya. Commercial irrigation in the Kenya part is also expanding. Climate change could further play a role with rainfall arriving at different times and intensity. These factors could lead to less reliable water flows and water abstraction beyond the Minimum Ecological Flow needed to prevent the river from drying up for a period of time in years of drought.

The proposed construction of a series of dams on the Mara and Ewaso Ngiro could further alter the hydrology of the Mara River. The mission considers that, based on the available data, the construction of the proposed dam projects would inevitably result in significant modifications of the Mara River flow and could potentially have devastating impacts on the OUV of the property and the GSME in general, with the risk of significant mortality of large numbers of wildebeest and other herbivores in years of drought and a possible collapse of the migration if these drought periods occur over several consecutive years.

The mission notes that, at this stage, there do not appear to be plans to proceed with the proposed dam projects, however this needs to be officially confirmed by the State Party of Kenya. The mission is further encouraged by the on-going efforts to strengthen transboundary management of the Mara Basin. The need to reverse degradation of the Mara basin by 2030 is recognized by both States Parties and that mechanisms for joint cooperation and decision making have been put in place to achieve this. The mission considers that the proposed joint water allocation plan for the transboundary Mara River needs to ensure the MEF as established by the 2008 EFA even in the years of drought, taking into account the most pessimistic climate change scenarios for the region. A joint framework for compliance and enforcement also needs to be included.

In addition with to the increasing external pressure on the property by the developments in the GSME, the mission is also concerned about the growing impacts of tourism inside the property. Given the ambitious objective of Tanzania to grow national tourism arrivals from the current 1,500,000 to reach 5,000,000 visitors by the year 2025, it can be reasonably anticipated that the growing national tourism industry will converge on SENAPA and the neighbouring NCA.

This is apparent from the proposed growth of tourism facilities outlined in the GMP, increasing the number of lodges by 250% and permanent tented camps by 300%, and expanding the human footprint across the park. Ambitious tourism infrastructure projects in the vicinity of the property such as the planned construction of a golf course at Fort Ikoma and the establishment of an international airport in Serengeti District are further examples of this policy. The mission notes that the planned growth of tourism facilities seems to be at odds with the principle of "low impact low volume" tourism that ensures conservation objectives, stated in the various TANAPA policy documents. The mission also notes that there seems to be a lack of clarity in the formulation and application of the Limits of Acceptable Use (LAU) and Limits of Acceptable Change (LAC). It is unclear to the mission what the scientific basis is to determine the LAU and LAC. The lack of clear baselines or limits for measuring LAU and LAC are concerning, especially when considering the scale of the planned tourism growth.

The mission considers that the large planned increase in tourism facilities, including in the low use and wilderness zone is of serious concern, given the increasing evidence that the current tourism footprint is already starting to impact the OUV of the property. A clear correlation has been established between the areas where there has been a reduction in the use of rich grazing areas by wildebeest and the areas with high tourism pressure; a clear indication that the wildebeest are avoiding the areas with tourism facilities. The number of wildebeest crossings at the Mara have been shown to decrease over the last 7 years, possibly linked to increasing disturbance from tourism. Similarly, a reduction in breeding success has been documented in female cheetahs exposed to tourist pressures.

The mission notes the extent of significant scientific research and data available regarding the larger Serengeti-Mara ecosystem, and specifically the migration, and considers that the revision of the GMP and decisions on future tourism development should be informed by the best available science in order to revise the management zones and permissible use in these zones. This should include setting measurable and monitorable limits of acceptable change, particularly in the behaviour, demographics and population of the migrating wildebeest, zebra and other gazelle. The mission considers that, given the fact that the wildebeest migration is a key attribute to the OUV of the property, an acceptable limit of change in these aspects of the wildebeest population should be 'zero change'.

In order to address the above-mentioned challenges and to avoid that the OUV of the property would be jeopardized, the mission proposes the following main recommendations.

Recommendation 1.

The State Party of Kenya to confirm that the proposed dam projects on the Mara River are not going forward and to develop and implement a clear action plan to avoid further degradation of the upper Mara catchment.

Recommendation 2.

The States Parties of Tanzania and Kenya to develop and adopt urgently the joint water allocation plan for the transboundary Mara River, based on the need to guarantee the MEF as established by the 2008 Environmental Flows Assessment even in the years of drought and taking into account the most cautionary climate change scenario's for the region and to establish a joint framework for compliance and enforcement.

Recommendation 3.

Ensure that the proposed addition of the Speke Gulf area to Serengeti National Park is implemented effectively and equitably, and ensure that any planned resettlement of people

follows a participatory human rights-based approach in line with international best practice and norms, and that full and just compensation is provided to people to be resettled.

Recommendation 4.

Building on the experience of the Greater Serengeti-Mara Ecosystem Society and on the MoU established by the States parties of Kenya and Tanzania for the management of the Mara River basin, establish a formal transboundary cooperation to allow for the establishment of a joint mechanism for the management of the GSME in order to address the increasing pressures on the ecosystem and explore the possibilities of nominating the MMNR as a transboundary extension to the SENAPA World Heritage property.

Recommendation 5.

Finalize the development of the management plan for the Serengeti – Ngorongoro Biosphere Reserve as an overarching management plan for the protected areas included in the Tanzanian part of GSME to ensure a clear and common management approach across the landscape and establish a permanent management coordination mechanism between the management authorities of the protected and conserved areas in the GSME (TANAPA, NCAA and TAWA) to facilitate its implementation.

Recommendation 6

Ensure that the Tourism Investment Manual and the General Management Plan (GMP) set quantifiable and measurable Limits of Acceptable Change (LAC) based on the best scientific evidence, the need to protect the values and attributes of the OUV of the property, and accompanied by measurable thresholds and metrics, repeatable monitoring protocols and trends analysis described in the GMP. Similarly, quantifiable and measurable Limits of Acceptable Use (LAU) should be set for all tourism related infrastructure and associated development footprints. These should correlate with the LAC and be informed by current scientific monitoring and research and be based on ecological spatial prioritisation and mapping.

Recommendation 7.

Once the southern bypass road is completed, divert further traffic away from the property by downgrading the status of the Karatu – Nyamusa road T17 (which is crossing the NCA and SENAPA properties) as a trunk road to a park road, closing it for heavy transit traffic from Arusha to Musoma and by disincentivizing other vehicle transit traffic.

Recommendation 8.

Postpone the implementation of the road hardening project Goleni – Seronera - Fort Ikoma in SENAPA, in order to link the timeframe of the project to i) the completion of the Lodoare – Goleni stretch in NCA, in order to build on the experiences gained from that upgrade, and ii) to the timeframe for finalizing the southern bypass road, so that it will make it possible to downgrade the status of T17 from a trunk road to a park road (see recommendation 7) without increasing traffic through the property.

Recommendation 9

Given the potential impact of the Fort Ikoma Golf Course on the wildebeest migration, and hence the OUV of the property, the mission recommends not to proceed with the project and to undertake an additional detailed scientific study and to revise the current EIA, to assess the feasibility of alternative locations, to comprehensively assess the potential impact of the

development on the migration in the area, including whether this impact can be adequately mitigated, in line with the *Guidance and Toolkit for Impact Assessments in a World Heritage Context*. Should it not be possible to prevent negative impacts on the OUV of the property, then this project should not be permitted to proceed.

Recommendation 10.

Limit the development of the Mugumu airport to a regional airport for light aircraft only with immigration and custom services and with a 1,2 km gravel runway in order to divert the tourism flight traffic away from the airstrips inside the property, closing the Seronera and Kogatende airstrips for tourism traffic.

Recommendation 11.

Provide as soon as possible a more detailed report and overview of the progress of current infrastructure development applications within the property, ensure that all EIAs are prepared in line with the *Guidance and Toolkit for Impact Assessments in a World Heritage Context* to assess the potential impacts on the OUV and are submitted to the World Heritage Centre for review by IUCN prior to making any decision to authorize construction in line with paragraph 172 of the *Operational Guidelines*, and to avoid tourism development that may negatively impact the OUV.

Recommendation 12.

In preparation of the planned revision of the GMP, develop a scientific rationale for the management zonation, the permissible use in the different zones, and the LAC, based on the best available science.

Recommendation 13.

Ensure that the revision of the GMP (2024-2034) includes the following key aspects:

g) Ensure the management of the property is underpinned by an analysis of its OUV as documented in the Statement of OUV for the property,
h) Includes an improved monitoring system by defining quantifiable baselines, thresholds, and metrics for measuring change and outcomes,
i) Provides mechanisms for community participation and includes best practices for fair and equitable governance including transparency, and appropriate grievance mechanisms,
j) Is informed by a Strategic Environmental Assessment that considers the cumulative impacts of tourism,
k) Ensures sufficient staffing and funding that is guaranteed from the national budget but also allows for revenue retention,
l) Is approved at Ministerial Level and fully implemented and enforceable.

Recommendation 14.

d) In relation to other management needs in the property: Undertake a detailed hydrological survey in order to determine the carrying capacity in terms of water use, as recommended by the 2010 mission, and implement the recommendations of the integrated water resource management plan;
e) TANAPA to continue implementing the national guidelines and strategies to control and manage Invasive Alien Species (IAS) and to include in the next GMP more specific activities and interventions to control and manage IAS, in accordance with the TANAPA Guidelines and the National Invasive Species Strategy and Action Plan (NISSAP);

f) Revise the Fire Management Plan in conjunction with and aligned to the revision of the GMP and make available further resources for its implementation.

Recommendation 15.

TANAPA to ensure that community engagement efforts are inclusive and fair, particularly during the revision of the GMP. Key governance considerations should include equity, effectiveness based on legitimacy and voice, transparency and accountability, vitality and ability to respond adaptively. Most notably, all engagement between the governance authority and neighboring communities (rightsholders and stakeholders) should adhere to human rights-based approaches.

6. ANNEXES

6.1 Terms of reference (ToR) of the mission, and Committee decision(s)
6.2 Composition of mission team
6.3 Itinerary and programme of the mission
6.4 List of people met
6.5 SOUV of the property
6.6 An overview of the progress in implementing the recommendations of the 2010 mission as provided by the State Party

6.1 Terms of reference (ToR) of the mission, and Committee decision(s)

TERMS OF REFERENCE

Joint World Heritage Centre/IUCN Reactive Monitoring mission

Serengeti National Park – United Republic of Tanzania

15-19 January 2024

At its 42nd session in Manama, Bahrain (2018), the World Heritage Committee requested the State Party of the United Republic of Tanzania to invite a joint World Heritage Centre/IUCN Reactive Monitoring mission to Serengeti National Park World Heritage property "to assess threats posed by the dams proposed upstream of the property in Kenya, and any other developments that may impact the property's [Outstanding Universal Value] OUV". The Committee requested that the mission should also meet with representatives of the State Party of Kenya (Decision **42 COM 7B.96,** annexed to this TOR). Following postponement of the mission due to the COVID-19 pandemic, the Committee at its 44th and 45th sessions (Decisions **44 COM 7B.86; 45 COM 7B.76,** annexed to this TOR) reiterated its utmost and continued concern regarding the potential negative impacts of the proposed dam projects on the OUV, and its request for the mission to be organised as soon as possible.

In response to the letter of invitation by the State Party on 1 June 2023, a joint World Heritage Centre/IUCN Reactive Monitoring mission to the property is planned to be carried out from 15 -19 January 2024.

The mission will review the state of conservation of the property by carrying out the following tasks:

1. Assess the status of and potential threats posed by the dams and irrigation proposed upstream of the property in the Mara River basin in Kenya, which could have a negative impact on the OUV of the Serengeti National Park in Tanzania and the Kenya Lake System in the Great Rift Valley World Heritage property in Kenya;

2. Review the status of development of a joint management plan between Tanzania and Kenya for the Mara basin to sustainably manage water resources, specifically the transboundary Joint Water Allocation Plan (JWAP) for the Mara basin and review the existing policies and practices for joint water management of the basin;
3. Review the status and plans of further infrastructure developments in and adjacent to the property including consideration of potential impacts on the OUV, including:

    a. Potential road developments, specifically the current status of the proposed "northern road", which could traverse the property, and review the Route Option Selection Report, feasibility study and preliminary design for the two options for the Serengeti Southern Bypass route,

    b. All tourism developments within and in the wider setting of the property, and examine available Environmental Impact Assessments (EIA), including the reported construction of a golf course in Ikoma Wildlife Management Area adjacent to the property which is a key migration corridor for wildebeest, to review their potential impacts on the property's OUV

c. The current status of the potential upgrade of Mugumu airport, potential upgrades to the road network inside the property as well as any other planned infrastructure development in the vicinity of the property.

4. Review progress made to implement the 2010 Reactive Monitoring mission recommendations;

5. Assess the management effectiveness of the property, by reviewing the 2014-2024 Management Plan for the property, including details of any changes to the zonation of the property, as well as the governance system, regulatory arrangements for tourism and infrastructure, and the availability of staffing and budgets of the management authority, and their capacity to effectively conserve the property's OUV;
6. In line with paragraph 173 of the *Operational Guidelines*, assess any other relevant conservation issues that may have an impact on the OUV of the property, including the conditions of integrity and protection and management.

The State Party should facilitate necessary field visits to key locations in relation to the above objectives. The mission should hold consultation meetings with representatives of the States Parties of Kenya and Tanzania (in particular the Ministry for Natural Resources and Tourism) as well as the Lake Victoria Basin Commission of the East African Community. In addition, the mission should hold consultations with a range of relevant stakeholders, including representatives of the management authority (TANAPA) and other relevant government bodies (including TAWIRI, TAWA, NCAA), non-governmental organizations supporting the management of the Serengeti Ecosystem (including Frankfurt Zoological Society) and relevant donors (including Germany), and relevant national and international scientists and experts.

In order to ensure adequate preparation of the mission, the State Party should provide the following items, with confirmation on the status of these documents, to the World Heritage Centre as soon as possible:

a) The approved 2014-2024 Management Plan of the property including details of any changes to the zonation;

b) An update on the status of all dam projects proposed in the Mara River basin including relevant documents related to the joint water management of the Mara basin with Kenya, including the transboundary JWAP and 2015 Memorandum of Understanding between Tanzania and Kenya;
c) The Route Option Selection Report and the feasibility study and preliminary design for the Southern Bypass route, including a map of the proposed alignments;

d) EIAs and any other available details concerning all proposed and planned tourism development within the property and its wider setting including the reported golf course, ;

e) An overview of progress in the implementation of the recommendations of the 2010 mission recommendations;

~~f)~~ An overview of relevant National legislation and the Institutional framework and in particular any changes which incurred since the 2010 monitoring mission;

g) Any other material related to the property's state of conservation, which would facilitate the mission's work, including data on wildlife trends and visitor numbers.

In addition, the State Party of Kenya should provide the following documents:

a) An update on the status of the dam projects in the Mara Basin, including any available EIAs and any other studies of the proposed dams.

Please note that additional information may be requested from the States Parties and key stakeholders during the mission.

Based on the assessment of available information and discussions with the States Parties representatives and stakeholders, the mission will develop recommendations to the World Heritage Committee regarding the status of the property in line with the Committee Decisions (**42 COM 7B.96, 44 COM 7B.86, 45 COM 7B.76**) and provide guidance on further recommended actions for the conservation of the property's OUV, including its conditions of integrity. It should be noted that recommendations will be provided in the mission report, and not during the course of the mission.

The mission will prepare a report on the findings and recommendations of this Reactive Monitoring mission as soon as possible after the completion of the mission, following the standard format, for review by the World Heritage Committee at its 46th session (India, 2024).

ANNEXURE TO TORs, WHC Decisions:

World Heritage Committee
42nd session (Manama, 2018)

Decision: 42 COM 7B.96

Serengeti National Park (United Republic of Tanzania) (N 156)

The World Heritage Committee,

1. Having examined Document WHC/18/42.COM/7B,

2. Recalling Decisions **35 COM 7B.7**, **38 COM 7B.94** and **40 COM 7B.83** adopted at its 35th (UNESCO, 2011), 38th (Doha, 2014) and 40th (Istanbul/UNESCO, 2016), respectively,

3. Commends the State Party on its anti-poaching efforts, contributing to further reduced elephant poaching and maintaining zero poaching of rhinos in the property;

4. Notes with utmost concern that a series of dams have been proposed upstream of the property in Kenya, which could have a negative impact on the Outstanding Universal Value (OUV) of the Serengeti National Park and Kenya Lake System in the Great Rift Valley World Heritage properties, and requests the State Party of Kenya to submit to the World Heritage Centre, without delay, all available preliminary and full Environmental Impact Assessments (EIAs) to the World Heritage Centre for review;

5. Reiterates its request to the States Parties of Tanzania and Kenya to develop and implement a joint management plan for the Mara River basin to sustainably manage water resources, and also requests the State Party of Tanzania to inform the World Heritage Centre on the status of updating the 2006-2016 General Management Plan;

6. Appreciates that the State Party is undertaking a feasibility study and a preliminary design for two options for the Serengeti Southern Bypass route, and further requests the State Party to submit to the World Heritage Centre for review as soon as available:

   a) The Route Option Selection Report and the feasibility study and preliminary design, including a map of the proposed alignments, upon completion by the end of September 2018,

   b) The Strategic Environmental Assessment (SEA) and the Comprehensive Transport and Trade System Development Master Plan;

7. Requests furthermore the State Party to reaffirm its commitments to maintain the northern road traversing the property as a gravel road under Tanzania National Parks (TANAPA) management and reserved mainly for tourism and administrative purposes (Decision **35 COM 7B.7**) and to abandon the construction of the proposed northern highway (Decision **38 COM 7B.94**);

8. Considers that the Belabela Lodge proposed within the 'low-use zone' of the property close to a wildebeest migration route could pose a potential threat to the property's OUV, and requests moreover the State Party to undertake an EIA of the proposed lodge, including a specific assessment of potential impacts on OUV in line with IUCN's World Heritage Advice Note on Environmental Assessment, and submit it to the World Heritage Centre for review;

9. Welcomes the proposal to include the ecologically important Speke Gulf into the property, which would require a request for boundary modification in line with the appropriate provisions in the *Operational Guidelines*, and encourages the State Party to ensure compensation for affected communities that were legally residing in the proposed area, and to keep the World Heritage Centre informed;

10. Notes that based on the submitted EIA the proposed upgrade of the Mugumu airport has been significantly downsized from the initial plans to construct an international airport, also considers that it will no longer pose a significant threat to the property's OUV, but requests in addition the State Party to monitor and mitigate any potential indirect impacts should the project move forward;

11. Also requests the State Party to invite a joint World Heritage Centre/IUCN Reactive Monitoring mission to the property, which should also meet with representatives of the State Party of Kenya, to assess threats posed by the dams proposed upstream of the property in Kenya, and any other developments that may impact the property's OUV;

12. Finally requests the State Party to submit to the World Heritage Centre, by **1 February 2019**, a progress report and, by **1 December 2019**, an updated report on the state of conservation of the property and the implementation of the above, for examination by the World Heritage Committee at its 44th session in 2020.

World Heritage Committee
Extended 44th session (Fuzhou/online, 2021)

Decision: 44 COM 7B.86

Serengeti National Park (United Republic of Tanzania) (N 156)

The World Heritage Committee,

1. Having examined Document WHC/21/44.COM/7B,

Recalling Decisions **35 COM 7B.7**, **38 COM 7B.94** and **42 COM 7B.96** adopted at its 35th (UNESCO, 2011), 38th (Doha, 2014) and 42nd (Manama, 2018) sessions respectively,

Reiterates its utmost concern about the proposed dam projects upstream of the property in the Mara river basin, which could have a negative impact on the Outstanding Universal Value (OUV) of the Serengeti National Park and Kenya Lake System in the Great Rift Valley World Heritage properties;

Welcomes the efforts of the States Parties of the United Republic of Tanzania and Kenya to start developing a transboundary Joint Water Allocation Plan (JWAP) for the Mara Basin and notes that it is crucial that this plan ensures the permanent character of the Mara River is retained, taking into account potential changes in rainfall patterns in the region including as a result of climate change;

Requests the States Parties of the United Republic of Tanzania and Kenya to submit to the World Heritage Centre as soon as possible, and before the Reactive Monitoring mission takes place, an update on the status of all dam projects in the Mara River basin and urges them not to make any decisions on infrastructure development that could affect the water flow into the Mara River before the JWAP is agreed and the impacts on the OUV of the property are thoroughly assessed;

Also welcomes the progress made to expand the National Park to include the ecologically important Speke Gulf, and that a boundary modification will be submitted upon completion in line with the provisions in the *Operational Guidelines*;

Regrets that the State Party did not submit the various documents requested in Decision **42 COM 7B.96** and also urges the State Party to submit the following documents as soon as possible, and before the Reactive Monitoring mission:

The approved 2014-2024 Management Plan for the property, including details of any changes to the zonation of the property,

The Route Option Selection Report and the feasibility study and preliminary design, including a map of the proposed alignments,

The Strategic Environmental Assessment (SEA) and the Comprehensive Transport and Trade System Development Master Plan;

Takes note that the State Party will maintain the northern road traversing the property as a gravel road under Tanzania National Parks (TANAPA) management but also requests the State Party to confirm its previous commitment to reserve the road mainly for tourism and administrative purposes (Decision **35 COM 7B.7**) and to abandon the construction of the proposed northern highway (Decision **38 COM 7B.94**);

Also takes note of the confirmation by the State Party that no “major infrastructure” is planned in the property until at least 2030, and further requests the State Party to ensure that the

cumulative impact of any development, including tourism infrastructure is assessed before they making decisions on individual projects;

Notes with appreciation the invitation from the State Party for a joint World Heritage Centre/IUCN Reactive Monitoring mission to the property, and the cooperation of the State Party of Kenya in the organization of the mission, however, also regrets that the mission was postponed due to global pandemic concerns and reiterates its request that the mission, be organized as soon as the sanitary situation allows and:

Ensure it also meets with representatives of the State Party of Kenya to assess threats posed by the dams proposed upstream of the property in Kenya,

Review the 2014-2024 Management Plan,

Analyze the documents and decisions related to the Southern Bypass Road,

Assess any other developments that may impact the property's OUV;

Encourages continued dialogue between the States Parties of the United Republic of Tanzania and Kenya, with the support of the World Heritage Centre and IUCN, on the opportunities to extend the property with the contiguous transboundary landscape of "The African Great Rift Valley – The Maasai Mara" (Kenya) on the Tentative List;

Finally requests the State Party to submit to the World Heritage Centre, by **1 December 2022**, an updated report on the state of conservation of the property and the implementation of the above, for examination by the World Heritage Committee at its 46th session.

World Heritage Committee
45th session (Riyadh, 2023)

Decision: 45 COM 7B.76

Serengeti National Park (United Republic of Tanzania) (N 156)

The World Heritage Committee,

Having examined Document WHC/23/45.COM/7B.Add,

Recalling Decisions **35 COM 7B.7, 38 COM 7B.94, 42 COM 7B.96** and **44 COM 7B.[86]** adopted at its 35th (UNESCO, 2011), 38th (Doha, 2014), 42nd (Manama, 2018) and its extended 44th (Fuzhou/online, 2021) sessions respectively,

Expresses its continued concern about the proposed dam projects upstream of the property in the Mara River basin, which could have a negative impact on the Outstanding Universal Value (OUV) of the Serengeti National Park and Kenya Lake System in the Great Rift Valley World Heritage properties;

Welcomes the ongoing efforts by the States Parties of the United Republic of Tanzania and Kenya to develop a Joint Water Allocation Plan (JWAP) for the Mara River basin but notes with concern that no update is available on the status of all dam projects in the Mara River basin, in particular the different projects proposed in Kenya;

Reiterates its request to the States Parties of the United Republic of Tanzania and Kenya to submit to the World Heritage Centre as soon as possible, and before the requested Reactive Monitoring mission takes place, an update on the status of all dam projects proposed in the Mara River basin and urges them again not to make any decisions on infrastructure development that could affect the water flow into the Mara River before the JWAP is agreed and the impacts on the OUV of the property are thoroughly assessed;

Also welcomes the approval by the State Party to expand the Serengeti National Park to include the ecologically important Speke Gulf and encourages the State Party to submit a boundary modification to reflect this extension on the World Heritage property in line with the provisions in the *Operational Guidelines* as soon as the process of the extension under national law is completed;

Regrets that in spite of its previous request, the State Party did not submit the various documents requested in Decision 42 COM 7B.96 and also urges again the State Party to submit the following documents as soon as possible, and before the requested Reactive Monitoring mission:

The approved 2014-2024 Management Plan for the property, including details of any changes to the zonation of the property,

The Route Option Selection Report and the feasibility study and preliminary design, including a map of the proposed alignments,

The Strategic Environmental Assessment (SEA) and the Comprehensive Transport and Trade System Development Master Plan;

While noting the confirmation that the State Party will maintain the northern road traversing the property as a gravel road under Tanzania National Parks (TANAPA) management, reiterates its request to the State Party to confirm its previous commitment to reserve the road mainly for tourism and administrative purposes (Decision 35 COM 7B.7) and to abandon the construction of the proposed northern highway (Decision 38 COM 7B.94);

Expresses concern about the reported construction of a golf course in the Ikoma Wildlife Management Area, adjacent to the property and a key main migration corridor for the wildebeest, and requests the State Party, given its potential impact on the OUV of the property, to pause the further development of this project until a full Environmental and Social Impact Assessment (ESIA), in line with the Guidance and Toolkit for Impact Assessments in a World Heritage Context, is submitted to the World Heritage Centre and reviewed by IUCN, in line with the requirements of the *Operational Guidelines*;

Also notes with concern that the increasing density of lodges, tented camps and other tourism infrastructure in the property and along the migration routes in the wider Serengeti ecosystem is increasingly likely to impact the wildebeest migration, one of the main attributes of the OUV;

Further notes that the State Party finally invited the requested joint Word Heritage Centre/IUCN Reactive Monitoring mission and also requests that the mission be undertaken as soon as possible to review the state of conservation of the property, including all the threats and issues cited above, as well as to assess the implementation of the previous Committee decisions and mission recommendations;

Requests the State Party to submit to the World Heritage Centre, by **1 February 2024**, an updated report on the state of conservation of the property and the implementation of the above, for examination by the World Heritage Committee at its 46th session.

6.2 Composition of mission team

Guy DEBONNET

Guy Debonnet is currently Chief of the Natural Heritage Unit at UNESCO World Heritage Centre. He joined UNESCO World Heritage Centre in 2002 as a specialist for natural heritage. In his position, he coordinates the work on natural heritage under the 1972 World Heritage Convention and works closely with the International Union for Conservation of Nature (IUCN) as its advisory body for natural heritage. Guy has an MSc in Bioscience Engineering.

Daniel MARNEWICK

Daniel Marnewick is the Area-based Conservation Coordinator for the IUCN Eastern and Southern Regional Office. He joined IUCN in 2021 as a specialist in area-based conservation, particularly focused on PCA effectiveness and equity, as well as biodiversity prioritization and management. Daniel has a MPhil in Wildlife Management and a BA (Hons) in Environmental Sociology.

6.3 Itinerary and programme of the mission

DATE	ITEM	TIME	VENUE
Sunday 14/01/2024	Arrival in Tanzania via Kilimanjaro International Airport - Transfers to a hotel in Arusha	1705HRS and 2200HRS	Four Points (Sheraton)-Arusha
Monday 15/01/2024	Hotel pickup and Mission Debrief	0800-0900 HRS	TANAPA Board Room
	Inception Meeting to the Permanent Secretary Ministry of Natural Resources and Tourism	0900-1000 HRS	TANAPA Board Room
	Round Table Discussion on action taken on previous RMM 2010 & Current issues	1000-1300 HRS	TANAPA Board Room
	LUNCH BREAK-TANAPA BOARD ROOM	1300HRS -1400 HRS	
	Presentation on Status of the Dams Development from State Party of Kenya	1400-1600 HRS	TANAPA
Tuesday 16/01/2024	Stakeholders Consultation Meeting: TANAPA	0900 – 1200 HRS	TANAPA Board
	TAWIRI	0900-1000	
	TANROADS	1000-11000	
	NEMC	1100-1130	
	FZS	1130-1230	
	LUNCH BREAK -TANAPA BOARD ROOM	1230 – 1330HRS	
	Stakeholders Consultation cont.	1330 – 1500HRS	Field
	Transfer to Arusha Airport TANAPA-Plane (Travel to Serengeti National Park) Evening discussion with TAWIRI and LVBC	1500 -1700 HRS 2000	
Wednesday 17/01/2024	Briefing and Joint Mission with Serengeti National Park Management (Site Manager) Visit to -Presentation of Park Management Issues (Tourism, -Control Monitoring Rooms	0800– 1130 HRS	Seronera SIVC
	Transfer to Serengeti District and View Golf Course Area	1130 – 1300 HRS	
	LUNCH BREAK -LATONNA MUGUMU	1300 – 1400 HRS	-
	Discussion and Briefing (Serengeti District Commissioner) – Mugumu Airport and Field Visit	1400 – 1500 HRS	-

	Visit to Mugumu airport site		Field
	Transfer to Tabora B-Kleins'Road To Selected Tourism Infrastructures/zone	1530 – 1730 HRS	
Thursday 18/01/2024	Transfer to Fort Ikoma Airstrip	0630-7=0700HRS	Mugumu
	Speke Gulf Overview Flight: TANAPA Flight over the Area and Western Corridor	0700-0800HRS	Fort Ikoma
	Landing and Transfer to Bunda	0800-0900HRS	Musoma
	Discussion and Briefing Bunda District Commissioner (Speke Gulf annexation into Property)	0900HRS-1030HRS	Bunda
	Flight back to Seronera via western corridor	1030-1230HRS	Bunda
	Exit Debrief with Park Management (Site Manager)	1230 – 1300 HRS	Seronera
	LUNCH BREAK -Seronera	1300-1400 HRS	
	Travel back to Arusha travel Through NCAA (See proposed Road Development-Seronera-Naabi)	1400-1800HRS	Seronera-Arusha
Thursday 19/1/2024	Exit Meeting with PS – MNRT	1000 – 1230HRS	TANAPA Board Room
	LUNCH BREAK	1230 – 1330HRS	TANAPA Board Room
	Transfer to Kilimanjaro International Airport (KIA)	1400-1500 HRS	Arusha
	Mission Team departure	1725-Guy Debbonet 1830-Magiel	KIA

6.4 List of people met

NAME OF PARTICIPANTS	POSITION	INSTITUTION
BENEDICT WAKULYAMBA	Deputy Permanent Secretary	MNRT
CHRISTOWAJA NTANDU	Director of Antiquities	MNRT
JUMA N. JUMA	Conservation Commisioner	TANAPA HQ
HERMAN K. BATIHO	Deputy Conservation Commissioner - Conservation and Business Development	TANAPA HQ
DR. FORTUNATA MSOFE	Ag. Director of wildlife	MNRT
EVERLYNE SWAI	Coordinator UNESCO Activites MNRT	MNRT
MORONDA B. MORONDA	Assistant Conservation Commissioner	TANAPA (SENAPA)
ALBERT MZIRAY	Assistant Conservation Commisioner- Conservation and Bussiness Development	TANAPA-Western Zone
GADIEL DAVID MOSHI	Principal Conservation Officer (Ecologist)	TANAPA (SENAPA)
NUHU DANIEL MASSAY	Principal Conservation Officer (Dev Projects)	TANAPA (SENAPA)
GERALD MAFURU	Senior Conservation Officer (GIS)	TANAPA (SENAPA)
DAVIS MATHEW MUSHI	Principal Conservation Officer (Protection)	TANAPA (SENAPA)
ROBERT S. MASOBEJI	Conservation officer II (Outreach)	TANAPA (SENAPA)
ALLI KASSIM SHAKHA	Conservation Officer II (GIS)	TANAPA (SENAPA)
FRANK MICHAEL MAPUNDA	Conservation Officer II (Pilot)	TANAPA (SENAPA)
Eng. DIANA	Engineer - Tanzania Civil Aviation Authority (	TCAA HQ DAR ES SALAAM
Eng. SUNDAY BOAZ	Engineer	TANROAD ARUSHA
Eng WAZIRI HAMISI	Engineer	TANROAD HQ - DODOMA
Dr. HAMZA KIJA	Tanzania Wildlife Research Institute (TAWIRI)	HQ-ARUSHA
Dr. EMMANUEL MASENGA	Director	TAWIRI - SENAPA
Dr. RENATUS SHINHU	Director - LVWBO	LAKE VICTORIA BASIN - MWANZA
NOEL KIKWALE	Senior Environmental Officer	NEMC -NORTHERN ZONE
FRANCIS NYAMHANGA	Senior Environmental Officer	NEMC - NORTHERN ZONE
DR. VICENT NAANO ANNEY	District Commisioner	BUNDA DISTRICT COUNCIL
SALUM MTELELA	District Administrative Secretary	BUNDA DISTRICT COUNCIL
DR. VICENT MASHINJI	District commissioner	SERENGETI DISTRICT COUNCIL

Dr NANCY KOECH	State party of Kenya (Online meeting)	KENYA
Dr. EZEKIEL DEMBE	Country Director	FRANKFURT ZOOLOGICAL SOCIETY (FZS)
MASEGERI RURAI	Programme Manager	FZS - SENAPA
JUSTINE IRVINE	Grant adviser	FZS - SENAPA

6.5 SOUV of the property

Brief synthesis

In the vast plains of Serengeti National Park, comprising 1.5 million hectares of savannah, the annual migration of two million wildebeests plus hundreds of thousands of gazelles and zebras - followed by their predators in their annual migration in search of pasture and water – is one of the most impressive nature spectacles in the world. The biological diversity of the park is very high with at least four globally threatened or endangered animal species: black rhinoceros, *elephant, wild dog, and cheetah*.

Criterion (vii): The Serengeti plains harbour the largest remaining unaltered animal migration in the world where over one million wildebeest plus hundreds of thousands of other ungulates engage in a 1,000 km long annual circular trek spanning the two adjacent countries of Kenya and Tanzania. This spectacular phenomenon takes place in a unique scenic setting of 'endless plains': 25,000km^2 of treeless expanses of spectacularly flat short grasslands dotted with rocky outcrops (kopjes) interspersed with rivers and woodlands. The Park also hosts one of the largest and most diverse large predator-prey interactions worldwide, providing a particularly impressive aesthetic experience.

Criterion (x): The remarkable spatial-temporal gradient in abiotic factors such as rainfall, temperature, topography and geology, soils and drainage systems in Serengeti National Park manifests in a wide variety of aquatic and terrestrial habitats. The combination of volcanic soils combined with the ecological impact of the migration results in one of the most productive ecosystems on earth, sustaining the largest number of ungulates and the highest concentration of large predators in the world. The ecosystem supports 2 million wildebeests, 900,000 Thomson's gazelles and 300,000 zebras as the dominant herds. Other herbivores include 7,000 elands, 27,000 topis, 18,000 hartebeests, 70,000 buffalos, 4,000 giraffes, 15,000 warthogs, 3,000 waterbucks, 2,700 elephants, 500 hippopotamuses, 200 black rhinoceroses, 10 species of antelope and 10 species of primate. Major predators include 4,000 lions, 1000 leopards, 225 cheetahs, 3,500 spotted hyenas and 300 wild dogs. Of these, the black rhino *Diceros bicornis*, leopard *Panthera pardus*, African elephant *Loxodonta africana* and cheetah *Acynonix jubatus* are listed in the IUCN Red List. There are over 500 species of birds that are perennially or seasonally present in the Park, of which five species are endemic to Tanzania. The Park has the highest ostrich population in Tanzania and probably Africa, making the population globally important.

Integrity

Serengeti National Park is at the heart the larger Serengeti ecosystem, which is defined by the area covered by the annual migration. The property is contiguous with Ngorongoro Conservation Unit, an area of 528,000ha declared a World Heritage Site in 1979. The entire ecosystem also includes the Maswa Game Reserve (2,200km^2) in the south, Grumeti and Ikorongo Game Reserves in the east, Maasai Mara National Reserve in Kenya (1,672km^2) to the north, and Loliondo Game Controlled Area in the west. This entire ecosystem is intact and no barriers hamper the migration. Serengeti National Park is sufficiently large and intact to ensure the survival and vigour of all

the species contained therein, if maintained in its present state but does not, by itself, ensure the protection of the entire ecosystem. However, all other parts of the ecosystem do have a greater or lesser degree of protection. A potential threat is the plan to build a transport infrastructure through the Serengeti. This would essentially cut the ecosystem into two halves, with predictably negative consequences on the Serengeti. Adding Maswa Game Reserve and Maasai Mara National Reserve to the World Heritage List, or giving then the status of a buffer zone would further safeguard the Outstanding Universal Values of this property.

Another major potential threat to the integrity of the Park is the scarcity of surface water for the animals during dry years, as only one river (Mara) flows perennially through the Park. An extension of the Park boundary to reach Lake Victoria providing a corridor for animals to access water in times of drought is planned for the future to address this issue.

Protection and management requirements

The site has a well designated and partially demarcated boundary, and since 2009 funds have been allocated to demarcate the entire boundary. Its management is regulated by both international and government policies and legal obligations. The National Parks Ordinance Cap 412 of 1959 provides for Tanzania National Parks with the mandate to manage the site. In addition, The 1974 Tanzanian Wildlife Conservation Act and the 2009 Wildlife Conservation Act provide for both within the site and adjacent area protection of resources, respectively. A General Management Plan (2006-2016) has been formulated to guide the daily management of the site in a sustainable manner and is currently being implemented. The Plan provides guidance on how to execute the various activities within the park under four main Themes: Ecosystem Management, Outreach services, Tourism Management and Park Operations. The site has a reasonable level of human and financial resources for effective management, but as the activities expand, and more challenges emerge, the lack of sufficient resources remains a potential future constraint. The major management concerns include poaching, tourism pressure, wildfires, and lack of adequate capacity in resource monitoring. Another important management challenge is water: despite numerous sources of water during the rain season, there is only one perennial river (Mara) which is transnational. However, this river currently faces multiple human-mediated cross-boundary threats.

6.6 An overview of the progress in implementing the recommendations of the 2010 mission as provided by the State Party

SN	2010 RECOMMENDATIONS	ACTION TAKEN	RESPONSIBLE
1	Allocate more resources to anti-poaching efforts, especially in light of the increasing poaching pressure on rhinoceros and elephants	• The number of Rangers was increased from 200 to 400. • Purchased modern equipment for anti-poaching activities (control room, night vision goggles, infrared camera, area patrol capability) • Specialized patrol units (i.e., Canine Unit, Livestock Unit, and De-snaring Units) • Enhancement of intelligence based patrol • Reduced poaching and livestock incursion	SENAPA / TAWIRI
2	Intensify efforts to develop alternative livelihoods to help stem subsistence and commercial poaching;	• Established Income Generating Activities (Community Conservation Banks (COCOBA) groups (62 – in Bariadi, Bunda, Serengeti & Ngorongoro), Beekeeping Groups (12 in Bariadi & Ngorongoro)	SENAPA
		• Launching Snares 4 Shares pilot project (ERB) • Commissioned Bush Meat Study (2022) to better understand the challenges	TANAPA and FZS
3	Develop national and regional approaches, in cooperation with relevant State Parties in the region, to address the increasing elephant and rhino poaching in eastern and southern Africa	• Conservation and Management Plan for Black Rhino in Tanzania (2019 – 2023)-4th edition (under revision) • Tanzania Elephant Management and Action Plan (2023 – 2033)	MNRT
4	Upscale the current efforts to manage the problem of human wildlife conflicts, particularly conflict with elephants, through community-based methods	• National Wildlife Policy Implementation Strategy (2023 – 2033) • National Human - Wildlife Conflict Management Strategy (NHWCMS) 2020 – 2024 • Tanzania National Wildlife Corridors Implementation and Action Plan (2022 – 2026) • Human Wildlife Conflict Study • Village Game Scout Groups (26) established and watch towers (6) along the problematic areas installed	MNRT/TANAPA & FZS

SN	2010 RECOMMENDATIONS	ACTION TAKEN	RESPONSIBLE
		• Application of traditional animal scaring techniques and • Land Use Plans already developed (81 out 248 villages surrounding the property)	
5	Work with all relevant institutions and organizations, including those in Kenya, to control the spread of invasive alien species in the Serengeti - Mara ecosystem;	In collaboration with relevant institutions and organizations we developed a national wide control strategy for invasive and alien species. • National Invasive Species Strategy And Action Plan 2019-2029 (NISSAP) • TANAPA Invasive Alien Species Management Guidelines (2017)	TANAPA
6	Carry out a detailed hydrological survey to determine the maximum carrying capacity of water use in the property and develop a comprehensive plan to address water shortage issues;	Through KfW funded projects a Hydrological survey already conducted and report in place. • Integrated Water Resources Management Plan for Park completed • ERB Blue Recovery Groundwater Monitoring via Holistic Integrated Ecosystem Monitoring and Protection Phase One Pilot Project: Serengeti Water Management and Conservation Plan • SEDCP II Serengeti National Park Water Development and Management Enhanced	TANAPA
7	Engage the local communities currently residing in the Speke Gulf area, in an open dialogue to find options that would minimize the costs and increase the benefits of the proposed plan to secure the area for wildlife use.	• The State Party approved extension and compensation to the affected communities. The evaluation for compensation has been done following prevailing Tanzania Laws regarding the matter	Ministry of Land and Housing Development/ Regional / district
8	Carefully, evaluate the options for improving the road from Naabi Hill to Seronera, in close cooperation with NCAA, taking into consideration all potentially damaging environmental impacts, before a decision to tarmac the road is taken	Decision has been taken by State Party to develop the road to rigid pavement from Golini to Seronera and Seronera to Ikoma Gate). When feasibility and detailed design is completed will be shared with WHC.	TANAPA NCAA MNRT

SN	2010 RECOMMENDATIONS	ACTION TAKEN	RESPONSIBLE
9	Strengthen the funding base for the implementation of the General Management Plan (including the newly developed fire management plan) and improve its monitoring;	TANAPA continue to release funds for the implementation of the stated plans through annual budget. Review also is done to accommodate emerging issues to increase efficiency in resource management to maintain Serengeti Ecological integrity. Currently the Park is operating with GMP (2014-2024). Currently we are planning to review the GMP into new GMP (2025-2035).The Fire Management plan is also under revision.	TANAPA
10	Revive the Serengeti Ecosystem Forum to enhance collaboration and coordination between TANAPA, the NCAA, the Wildlife Division, local communities, and other relevant stakeholders in the Serengeti-Mara ecosystem to collectively combat the numerous threats to the ecosystem.	Serengeti Ecosystem Forum has not been revived. However, The Greater Serengeti-Mara Ecosystem Society has established and meets annually to discuss conservation and new findings across Serengeti-Mara Ecosystem. Similarly, Mara River Anniversary has been established to commemorate the signing of agreement to protect and preserve the Mara river. Since events have celebrated jointly (Tanzania & Kenya) Since conclusion of MoU.	TANAPA NCAA MNRT