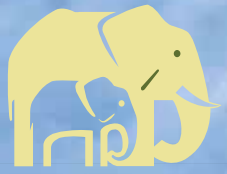**Ministry of Tourism and Wildlife**

KENYA WILDLIFE SERVICE

RECOVERY AND ACTION PLAN FOR THE BLACK RHINO IN KENYA (2022 - 2026)

Seventh Edition

RECOVERY AND ACTION PLAN FOR THE BLACK RHINO IN KENYA (2022-2026)

Seventh edition: Produced at a workshop held from 28 to 29 June 2022 at the Wildlife Research and Training Institute, Naivasha, Kenya.

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[1] Kenya Wildlife Service
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[5] Association of Private and Community Lands Rhino Sanctuaries

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Acronyms and Abbreviations

AD	Assistant Director
AfRSG	African Rhino Specialist Group
AI	Artificial Intelligence
APLRS	Association of Private and Community Lands Rhino Sanctuaries
ASCC	Area Species Conservation Committee
CC	Carbon Credit
CCTV	Closed-Circuit Television
CEC	County Executive Committee
CEO	Chief Executive Officer
CI	Calving Interval
CITES	Convention on International Trade in Endangered Species of Wild Fauna & Flora
CO	Commandant
COVID-19	Coronavirus Disease
CS	Cabinet Secretary
CW	Chief Warden
CWCC	Community Wildlife Compensation Committee
DG	Director General
DNA	Deoxyribonucleic Acid
D-WS	Director - Wildlife Security
EAC-RMG	East Africa Community – Rhino Management Group
ECC	Ecological Carrying Capacity
EU	European Union
GEF	Global Environment Facility
GR	Game Reserve
H-CEE	Head - Conservation, Education and Outreach
H-CSP	Head - Conservation Science Programme
H-DRECA	Head - Department of Regulatory Enforcement and Compliance Affairs
H-I	Head - Intelligence
HR	Human Resource
H-SP	Head - Species Programme
H-VS	Head - Veterinary Services
IAPS	Invasive Alien Plant Species
ID	Identifiable
INTERPOL	International Criminal Police Organization
IPZ	Intensive Protection Zone
IUCN	International Union for Conservation of Nature
KENTTEC	Kenya Tsetse and Trypanosomiasis Eradication Council

KICD	Kenya Institute of Curriculum Development
KPI	Key Performance Indicator
KWCA	Kenya Wildlife Conservancies Association
KWS	Kenya Wildlife Service
KWS BoT	Kenya Wildlife Service Board of Trustees
LATF	Lusaka Agreement Task Force
LEA	Law Enforcement Academy
LoRaWAN	Long Range Wide Area Network
M&E	Monitoring and Evaluation
MCA	Mountain Conservation Area
MDAs	Government Ministries, Departments and Agencies
NGO	Non-Governmental Organization
NP	National Park
PA	Protected Area
PRS-WRTI	Principal Research Scientist - Wildlife Research and Training Institute
REC	Rhino Executive Committee
RhODIS™	Rhino DNA Indexing System
RIB	Rhino Impact Bond
RPC	Rhino Programme Coordinator
RPO	Rhino Program Office
RSC	Rhino Steering Committee
SAD	Senior Assistant Director
SAD-MCA	Senior Assistant Director - Mountain Conservation Area
SAD-TCA	Senior Assistant Director - Tsavo Conservation Area
SAPA	Social Assessment of Protected Areas
SENAPA	Serengeti National Park
SSC	Species Survival Commission
ToR	Terms of Reference
TRAFFIC	Trade Records Analysis Flora and Fauna in Commerce
WCMD	Wildlife Conservation and Management Department
WPAC	Wildlife Policy Advisory Committee
WRTI	Wildlife Research and Training Institute

Glossary

Biological growth

The natural increase in a population's size, being the net result of additions from breeding and losses from non-human induced mortalities, expressed as a percentage of the population size at the start of a year.

Biological management

Management of rhino populations (primarily through adjusting rhino stocking densities, but also managing the densities of other browsers and habitat management) to maintain rapid population growth, to minimize inbreeding and loss of genetic diversity. Rhino removal and introduction decisions are based on a population's breeding performance, social behaviour, genetic relationships, the rhino density relative to an area's ecological carrying capacity, vegetation conditions etc.

Breeding performance

Primarily the female reproductive performance of a population. Measured by female ages at first calving, intervals between calving, and the average proportion of adult females calving per year. These indicators are affected by habitat quality, stocking densities, adult female to male ratios and age of the females. High rates of biological growth result from good breeding performance.

Browsers

Species that feed primarily on stems, twigs, buds, seed pods and leaves of trees and bushes as well as herbaceous plants and succulents (as opposed to grazers that eat grass or mixed feeders that eat both browse and grass).

Calving interval

Also termed "CI" – the period of time between calves for an individual female. CIs are used as an indicator of a population approaching density dependence. In black rhinos, calving intervals should lie between 2.5–3 years.

Confirmed rhino

An individual rhino seen, and evidenced by a date-stamped photo, within one year.

Conservancies

Wildlife conservation areas set aside by an individual landowner, body corporate, group of owners or a community for purposes of wildlife conservation in accordance with the provisions of the Wildlife and Conservation Management Act, 2013.

Ear notching

A method of clipping a small section or sections (usually in a small 'v' shape) from a rhino's ears to allow the animal to be easily identified (and monitored). Each position on the ear corresponds to a different number allowing the notches to be tallied for a unique identification number.

Ecological carrying capacity

Also termed "ECC" – the maximum number of rhinos that can be supported by resources in a fenced area or closed system over time, at which point the number of births equals the number of mortalities. The number or density at which a rhino population will stabilize if left unmanaged by human intervention. The ECC will vary over time for a particular site. Ideally one is looking to use removals to maintain stocking densities below ECC to ensure faster metapopulation growth.

Founders
Rhinos used to establish a new population. Effective founder number refers to the number of founders that are capable of breeding or have bred, i.e. those that contribute or are likely to contribute to the population's original gene pool and also which as far as it is known are unrelated. Scientific guidance suggests a population should have a minimum number of 20 *effective* founders, and that a new *effective* founder should be introduced to an existing population each generation to maintain genetic diversity (in rhinos, a generation is defined as 14 years).

Genetic diversity
Genetic diversity is the total number of genetic characteristics in the genetic makeup of a species or subspecies. Fragmented populations with inadequate gene flow among subpopulations suffer from loss of genetic diversity and inbreeding with associated reduced reproductive fitness (inbreeding depression), and elevated extinction risks with reduced ability to adapt evolutionarily to environmental change.

Genetic profiling
Using molecular genetic techniques to determine the unique genetic characteristics of an individual. Genetic profiles can be used for paternity testing, quantifying genetic diversity and inbreeding, estimating effective population sizes, and in forensic applications linked to wildlife crimes.

Important population
An AfRSG rating to indicate a rhino population whose survival is considered extremely valuable in terms of survival of the rhino species or subspecies. There are four sub-categories of Important Populations, *Important 1* being the most important:

Important 1 - population increasing or stable and N = 20–50;

Important 2 - population trend unknown or decreasing >25% (3–5 years) and N = 51–100;

Important 3 - population decreasing but N = 20–50 in breeding contact in a protected area;

Important 4 - population with 20+ dispersed outside or within a protected area with good potential for consolidation in an area that can take 20 founders.

Intensive protection zone
A defined zone within a larger area of state-protected land, private land or communal land where law enforcement staff are deployed at moderate to high density specifically to protect the rhino population. The concentration of rhinos within an IPZ reflects natural patterns of distribution and movement and is not the deliberate result of fencing and other methods of confinement.

Invasive plant species
A subset of introduced or alien plant species that are rapidly expanding outside their native range. Certain invasive plant species can smother and replace indigenous species and can significantly lower carrying capacities of rhinos and other species.

Key population	An AfRSG rating to indicate a rhino population whose survival is considered critical for the survival of the rhino species and subspecies. There are three defined types of Key Populations with *Key 1* being the most important at a continental level.
	Key 1 - population increasing or stable and N >100, or N >50% of subspecies;
	Key 2 - population increasing or stable and N = 51–100, or N = 26–50% of subspecies;
	Key 3 - population decreasing <25% and N >50, or N >100 even if population decreasing >25%.
Metapopulation	A number of subpopulations of a species or subspecies managed collectively as one single population with deliberate, managed gene flow between subpopulations.
Possible rhino	Also termed "Guestimate" – an individual rhino that has not been seen for more than two years. Possible rhinos are not included in annual population status reports.
Probable rhino	An individual rhino that has not been seen for one year but was seen during the previous 12-month period.
R_{max}	The maximum possible biological growth rate.
Range state	A country or state in which rhinos currently occur or historically occurred.
Reintroduction	An attempt to establish a population in an area within its historical range, from which it has become locally extinct.
Sanctuary	A small part of state-protected land, private land or communal land in which rhinos are deliberately confined through perimeter fencing and where law enforcement staff are deployed at high density to protect the rhino population. The confinement of rhinos within a sanctuary permits close observation and relatively intense management and protection of the rhinos.
Set percentage harvesting	A management approach for maintaining a rhino population at its most productive growth rate, whereby a set percentage of the population is regularly removed.
Sighting interval	The amount of time since an individually recognized rhino was last observed by the monitoring team. Sites often set targets for maximum sighting intervals for all known individual rhinos.
Translocation	Managed physical movement of individual rhinos from one area to another, either to improve chances of survival, to establish new populations, to keep established populations productive, or to increase genetic heterozygosity and improve long-term genetic variability of a population.
Viable population	A self-supporting population with sufficient numbers and genetic variation among healthy individuals and breeding pairs that are well enough distributed to ensure a high probability of survival despite the foreseeable effects of demographic, environmental and genetic events, and of natural catastrophes (Soulé 1987).

Foreword

It gives me great pleasure to oversee the formulation of the 7th edition of the Recovery and Action Plan for the Black Rhino in Kenya (2022-2026) which comes at a time when great strides have been made in rhino conservation since the establishment of Kenya Wildlife Service (KWS) in 1989. This was a time when the rhino population was on the verge of extinction due to rampant poaching with the population declining from approximately 20,000 rhinos in 1970 to less than 400 individuals by 1987.

The successful implementation of the previous six editions of the Action Plans has more than doubled the rhino population. As of 2021, the estimated population stood at 938 black rhinos surpassing the goal set in the 6th edition of the Action Plan (2017-2021) which was to grow the population by 5% per annum to 830 black rhinos by the end of 2021. For the first time, in the last 20 years, we achieved an average of 0.3% per annum mortalities from poaching in the entire Plan period culminating in zero poaching in 2020.

This success happened during a difficult period when the world experienced severe impacts of the COVID-19 pandemic, which led to an international lockdown resulting in the mass layoff of staff and revenue losses in the tourism industry. We thank His Excellency President Uhuru Muigai Kenyatta, and his Government, for the support provided to the wildlife and tourism sector which ensured the country's wildlife resources were conserved and managed during the pandemic period. There has also been significant support from the county governments, private and community landowners, local and international donors, research and academic institutions, non-governmental organizations, and conservation partners for rhino conservation in the country.

Kenya is the stronghold for the eastern black rhino, conserving slightly more than 75% of the population. The Government is committed to building on the success achieved over the last three decades to ensure enhanced recovery of the black rhino population in the country and support for recovery efforts in other range states within the region.

The formulation of the 7th edition of the Plan comes at a time when significant changes have taken place in the wildlife sector, key among them the establishment of the Wildlife Research and Training Institute to provide priority research and capacity to inform wildlife conservation, management, and policy in the country.

Despite the achievements made, there are challenges which we must overcome to achieve the goal of 1,200 black rhinos by 2026 and contribute to the vision of 2,000 black rhinos by 2037. Among the challenges include increasing funding and resource needs, slow adoption of innovative technologies, and inadequate secure space for range expansion due to the high costs of hosting rhinos.

The Government will continue to provide the required policy guidance, enhance resource allocation, engage bilateral and multilateral agencies, and provide an enabling environment for public-private partnership for resource mobilization for rhino conservation.

I call upon the relevant government ministries, departments and agencies, conservation partners, donor agencies, local and international research institutions, institutions of higher learning and other stakeholders to support KWS in the implementation of the activities in this Plan.

Hon. Najib Balala, EGH

Cabinet Secretary, Ministry of Tourism and Wildlife

Preface

Despite the black rhino being listed as Critically Endangered by the International Union for the Conservation of Nature and Natural Resources (IUCN) and listed in the Convention on International Trade in Endangered Species of Wild Fauna & Flora (CITES) Appendix I, the conservation and management of the species continues to face major challenges. However, since the review of the Wildlife Conservation and Management Act (WCMA) in 2013 which enhanced penalties for wildlife crimes and concerted efforts by the international community, there has been significant progress in the fight against the illegal wildlife trade and in minimizing rhino poaching in Kenya.

The 7th edition of the Recovery and Action Plan for the Black Rhino in Kenya (2022-2026) has been aligned with the National Wildlife Strategy 2030, WCMA, 2013 and other relevant national laws and policies. With significant recovery realized in the last three decades to reach 938 black rhinos which is half-way to the long-term vision of 2,000 black rhinos by 2037, the Plan has seven strategic objectives and 144 activities, including two new strategic objectives to focus on an ambitious rhino range expansion and building the research base for conserving the species over the longer-term. The Plan has the overall goal of attaining a confirmed population of 1,200 black rhinos by 2026 with poaching kept to less than 0.5% and mortalities from other unnatural causes reduced to less than 0.5% per annum.

The Plan has identified 16 high-impact projects whose implementation will have a significant long-term impact on rhino conservation in the country. In particular, national-level projects on (1) operationalizing the Tsavo IPZs for conserving large populations, (2) recovery of the forest populations of Aberdare and Chyulu Hills NP, and (3) the creation of a large sanctuary in Laikipia by merging existing and new private and community sanctuaries that are close to each other, will need to be implemented.

This Plan has identified key threats and challenges, including the impacts of climate change, which will require a concerted and coordinated effort among the various stakeholders. Management of competing browsers and invasive species will be prioritized to optimize the available space for the black rhinos. Strategies will be implemented to minimize the negative interaction between endangered species, especially with rhino predation reported to be on the increase in some areas.

The impacts of climate change have become a reality with unpredictable seasons and increasing frequency and prolonged droughts. This has led to habitat resource constraints and increased frequency of disease outbreaks such as anthrax. Appropriate habitat manipulation, feed, water, and mineral supplementation will be undertaken to minimize the risk of rhino mortalities and rhinos straying out of their core range.

The renewed interest from the private and community landowners to partner with the Government in rhino conservation will significantly contribute to expanding the rhino range in the country. Efforts will be made to realize the potential for expanding the existing areas and securing the Tsavo IPZs to ensure the long-term survival of this iconic species.

On behalf of the KWS Board of Trustees, I thank all the rhino conservation areas in national parks, national reserves, private and community lands for the dedication and tireless efforts in rhino conservation which has made us achieve significant milestones. I am delighted to celebrate the successes made in the implementation of the 6th edition of the Plan and look forward to receiving the support from all stakeholders to build on the successes by working together to facilitate the implementation of this 7th edition of the Plan.

Zeinab A. Hussein
Ag. Principal Secretary, State Department of Wildlife

Acknowledgments

Brig. (RTD) J.M. Waweru, EBS, 'ndc' (K), 'psc' (K)
Director General, Kenya Wildlife Service

Executive Summary

The future of the black rhino is of critical importance to the Government of Kenya for several reasons. First, rhinos are a species of considerable conservation concern following a dramatic reduction in their population in the 1970s and 1980s as a result of the illegal trade in their horn. Kenya's black rhino population declined from approximately 20,000 animals in 1970 to fewer than 400 animals in the mid-1980s.

Second, rhinos are a flagship species, a highly charismatic animal that serves as a rallying point for conservation, capturing the attention of people from all over the world and generating significant returns from wildlife-based tourism.

Third, rhinos are an umbrella species as their conservation depends on large areas of ecosystems being conserved and protected. Therefore, they serve the objective of wider biodiversity conservation.

Fourth, rhinos are keystone species with significant roles in ecological dynamics. So their persistence is important to the conservation of other elements of biodiversity.

The development of this 7th edition of the Recovery and Action Plan for the Black Rhino in Kenya (2022-2026) was led by a core group from the RSC and considered the findings of the end-term review of the 2017-2021 Plan. It involved a highly consultative and participatory process which included a stakeholder planning workshop and stakeholder validation workshop to review the draft Plan.

The long-term vision of the Action Plan is: '**To have a metapopulation in Kenya of at least 2,000 eastern black rhinos in suitable habitats by 2037, and 1,450 rhinos by Kenya's Vision 2030, as a global heritage'.**

The overall goal for the next five years is: '**Black rhino numbers increasing by at least 5%, poaching kept below 0.5% and mortality from other unnatural causes reduced to less than 0.5% per annum, and with range expansion including one *Key 1* Intensive Protection Zone (IPZ) population (>100 rhinos), to reach a confirmed national total of 1,200 rhinos by the end of 2026**'.

This will be achieved by focusing efforts and resources on seven key components, each associated with a strategic objective, a set of key performance indicators to gauge overall performance, and a logical framework. A list of priority projects for each key component has been included for funding and implementation. The Plan will be implemented through site action plans and annual implementation plans, and through monitoring and evaluation of progress towards achieving the strategic objectives and goal of the Plan.

Like all its fellow African rhino range states, Kenya continues to face a serious poaching threat and will continue investing in appropriate strategies to keep it below 0.5% per annum and strive for zero levels. The Plan also places increased emphasis on sustained financing and resourcing as this has been a major constraint in the delivery of the previous Action Plans.

During this Plan, a major milestone of 1,000 black rhinos will be reached in the country. Additional space will be required for more than 500 rhinos resulting from population growth and from destocking sanctuaries. The Plan is bold in fully operationalizing the Tsavo IPZs to support large populations. The creation of a contiguous rhino conservation area in Laikipia by merging the private and community sanctuaries that are in close proximity to each other will be initiated. The recovery of the forested rhino populations of the Aberdare and Chyulu Hills National Parks will also be undertaken. Kenya will continue to play a role in the East African Community Rhino Management Group for conserving the eastern black rhino at the regional

level. Targeted research will also be undertaken to guide decision-making for the protection and management of rhinos, other browsers, and their habitats.

This Plan represents the hard work of many dedicated conservation professionals and the voices of many who participated in its formulation. While it identifies the current threats, it also explores the emerging opportunities and provides a framework for coordinated and concerted action over the next five years and beyond to assure the persistence of black rhinos in Kenya as a national treasure and economic asset for its national constituency, and as a symbol of Kenya's deep commitment to the conservation of biodiversity.
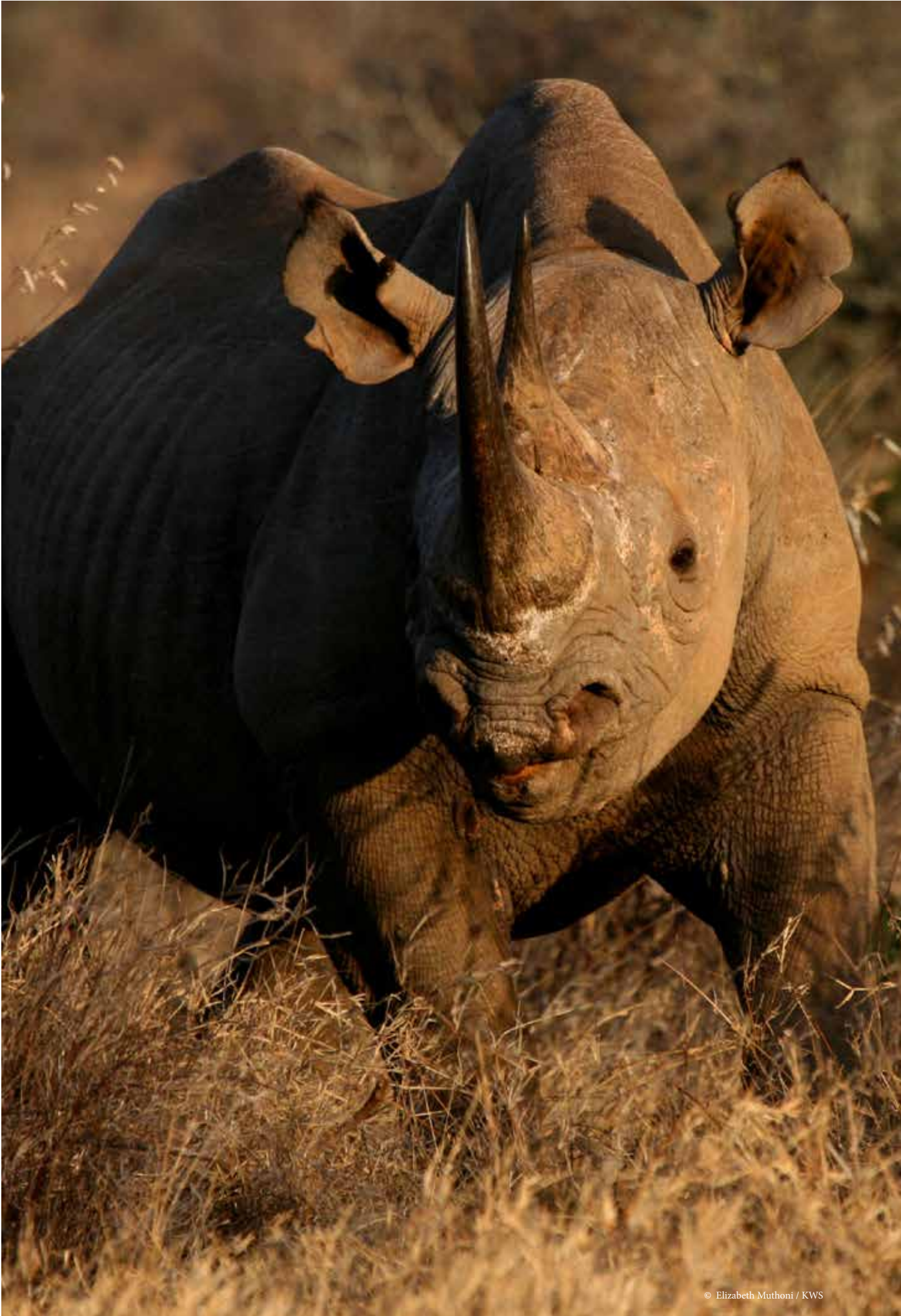
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1. Introduction

Black rhino (*Diceros bicornis)* suffered a catastrophic decline across Africa in the 1970s and 1980s, both in numbers and in the extent of its range. Numbers plummeted from an estimated 65,000 in 1970 to fewer than 2,500 by 1992 due to poaching. The decline in East Africa was particularly severe where the very large national parks and reserves such as Tsavo National Park (NP) and the Selous Game Reserve (GR) each used to hold perhaps twice as many black rhinos as currently exist in the world. The black rhino dropped in numbers in Kenya from an estimated 20,000 in 1970 to under 400 animals by 1987.

Over the last 30 years, considerable money and resources have been expended in Kenya (and other range countries) for securing and recovering rhino populations. As a result, the declining trend has been reversed and numbers are gradually increasing. A national target of five percent (5%) growth per annum has been set in the strategic plans (KWS 2000, 2007, 2012, 2017), with the vision of at least 2,000 eastern black rhinos in their natural habitat. Rhino numbers have continued to increase, surpassing the 5% net growth per annum target during the last Action Plan period. However, the poaching threat remains and between 2012 and 2016, 5,703 black and white rhinos were reported poached in sub-Saharan Africa, with Kenya losing 145 animals during the same period. The sustained high-impact anti-poaching measures put in place by the Kenya Government, including the enactment of the Wildlife Conservation and Management Act (2013), have kept poaching below 1% per annum during the past seven years including zero poaching in 2020.

Legislation and policies concerning rhino conservation

The conservation of black rhinos in Kenya is guided by relevant provisions of national policies and laws that govern the conservation and management of natural resources in the country. Key among them are the Constitution of Kenya, 2010; Kenya's Vision 2030; the National Wildlife Strategy, 2030; the Wildlife Conservation and Management Policy (Draft 2018); Wildlife Conservation and Management Act, 2013; and the National Environmental Management Act, 1999. The Plan provides a platform for bringing together relevant stakeholders in black rhino conservation through a shared vision, goal and a collaborative framework for implementation of priority actions geared toward the recovery of the species. The relevant sections of the laws and policies guiding rhino conservation in the country are summarized below.

The Constitution of Kenya, 2010

Chapter Four - The Bill of Rights: Article 42, Environment. Every person has the right to a clean and healthy environment, which includes the right — (a) to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69. Article 69 (1) The State shall — (a) ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits; (d) encourage public participation in the management, protection and conservation of the environment; (e) protect genetic resources and biological diversity; (f) establish systems for environmental impact assessment, environmental auditing and monitoring of the environment; (g) eliminate processes and activities that are likely to endanger the environment; and (h) utilize the

environment and natural resources for the benefit of the people of Kenya. (2) Every person has a duty to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources.

Kenya's Vision 2030

The economic vision and strategy identify tourism as a key sector in achieving the goals of Vision 2030. The specific strategies in realizing the goals are diversification of the tourism product and better marketing of less visited parks.

National Wildlife Strategy, 2030

The National Wildlife Strategy 2030 is a roadmap for transforming wildlife conservation in Kenya and is aligned to Kenya's Vision 2030 and the Government's Big Four Agenda. It has five-year priority goals and strategies around four key pillars: Resilient Ecosystems, Engagement by all Kenyans, Evidence-Based Decision Making, and Sustainability and Governance. The strategy establishes an implementation framework to enhance communication, coordination, and collaboration to inspire engagement and participation, and catalyse conservation actions with all stakeholders.

The National Wildlife Conservation and Management Policy, Draft 2018

The wildlife policy provides a coordinated framework for wildlife management in Kenya taking into account other sectoral policies and the roles of various agencies. Section 2 of the draft Situational Analysis, part 2.3 recognizes that Kenya's megafauna has declined on average by 68% in the last 40 years alone, with the most decline occurring outside gazetted protected areas. Thirty-three (33) mammalian, 28 avian and 356 plant species in Kenya are under severe threat of extinction. This is of great concern since the country has experienced an estimated 14% loss in biodiversity since 2000 due to land use change of intact natural habitats. The goal of the policy is to ensure sustainable management of Kenya's wildlife resources through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other area-based conservation measures, and integrated into the wider landscapes and seascapes to provide for the social, economic, ecological, cultural and spiritual needs of present and future generations, contribute to the sustainable development of the country, and enhance the quality of human life.

Wildlife Conservation and Management Act, 2013 (Amendments, 2019)

The Wildlife Conservation and Management Act 2013 mandates Kenya Wildlife Service to conserve wildlife and their habitats wherever they occur in collaboration with stakeholders. Section 49 of the Act recommends that KWS develops and implements recovery plans for the conservation and management of all species listed in the Sixth Schedule (rare, endangered and threatened species) of which the black rhino is listed as a Critically Endangered species.

National Environmental Management Act, 1999

Section 50 on the conservation of biological diversity states that: The Authority shall, in consultation with the relevant lead agencies, prescribe measures necessary to ensure the conservation of biological diversity in Kenya and in this respect the Authority shall:

a) Identify, prepare and maintain an inventory of biological diversity of Kenya.

b) Determine which components of biological diversity are endangered, rare or threatened with extinction.

c) Identify potential threats to biological diversity and devise measures to remove or arrest their effects.

d) Undertake measures intended to integrate the conservation and sustainable utilization ethic in relation to biological diversity in existing government activities and activities by private persons.

e) Specify national strategies, plans and government programmes for conservation and sustainable use of biological diversity.

f) Protect indigenous property rights of local communities in respect of biological diversity.

(g) Measure the value of unexploited natural resources in terms of watersheds, influences on climate, cultural and aesthetic value, as well as actual and potential genetic value thereof.

Section 51 on conservation of biological resources in situ states that, The Authority shall, in consultation with the relevant lead agencies, prescribe measures adequate to ensure the conservation of biological resources in situ and in this regard shall issue guidelines for:

a) Land use methods that are compatible with conservation of biological diversity.

b) Selection and management of protected areas so as to promote the conservation of the various terrestrial and aquatic ecosystems under the jurisdiction of Kenya.

c) Selection and management of buffer zones of protected areas.

d) Special arrangements for the protection of species, ecosystems and habitats threatened with extinction.

e) Prohibition and control of alien species in natural habitats.

f) Integration of traditional knowledge with mainstream scientific knowledge for the conservation of biological diversity.

Section 52 on conservation of biological resources ex-situ states that, The Authority shall, in consultation with the relevant lead agencies:

a) Prescribe measures for the conservation of biological resources ex-situ, especially for those species threatened with extinction.

b) Issue guidelines for the management of germplasm banks, botanical gardens, zoos or aquaria, animal orphanages, and any other facilities recommended to the Authority by any of its Committees or considered necessary by the Authority.

c) Ensure that species threatened with extinction which are conserved ex-situ are re-introduced into their native habitats and ecosystems where: the threat to the species has been terminated, or a viable population of the threatened species has been achieved.

Other relevant laws and policies will be adhered to in the implementation of specific activities in this Plan.

The current status of the black rhino in Kenya

Recent genetic analyses of past and current black rhino samples, from across Africa (Moodley *et al*. 2017), and from the RhODIS™ rhino genetic database (Harper *et al*. 2018), provide evidence for the three current subspecies of black rhino which equate to "Evolutionary Significant Units" (ESUs). In East Africa, three surviving ESUs have been identified. However, these now co-occur and an East African Community Rhino Management Group meeting recommended these should be constituted and managed as a single Eastern Black Rhino Management Cluster (hereby termed "eastern black rhino") (Emslie R. 2020).

Kenya remains the stronghold of the eastern black rhino, conserving slightly more than 75% (938 rhinos, Figure 1) at the end of 2021. Kenya's rhino metapopulation comprises 15 populations, of which 12 are of continental significance, as rated by the AfRSG: with four *Key 1*, four *Key 2* and four *Important 1* populations[1]. Kenya's black rhinos are conserved within nine states, four private, one county and one community PAs established across the country. Four new rhino areas have been assessed and are being established (Khayale *et al.* 2020, Figure 2).
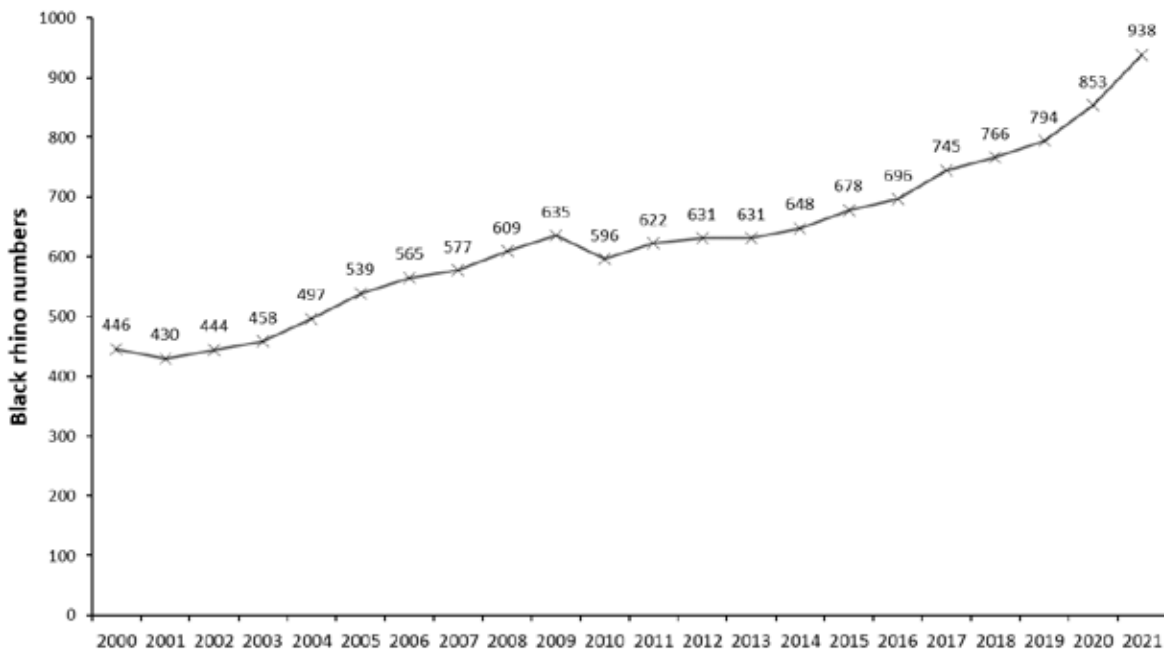
Figure 1. Recovery of black rhino numbers in Kenya following the sharp decline from roughly 20,000 in 1970.

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[1] A *Key 1* population has an increasing or stable population that is >100 rhinos or conserves over 50% of a subspecies. A *Key 2* population has an increasing or stable population that is from 51–100 rhinos or conserves over 25–50% of a subspecies. An *Important 1* population has an increasing or stable population of 20–50 rhinos.

Legend

- ⋯⋯ Territorial sea
- ═══ International Boundary
- Lake
- ☐ KWS Conservation Area
- Black Rhino Conservation Area
- Black Rhino Conservation (emerging) Area

Id	Name	Id	Name
1	Nairobi NP	11	Ol jogi Conservancy
2	Chyulu Hills NP	12	Ol pejeta Conservancy
3	Tsavo East NP	13	Solio Conservancy
4	Tsavo West NP	14	Lewa-Borana Conservancy
5	Masai Mara NR	15	Sera Conservancy
6	Ruma NP		*Emerging areas*
7	Lake Nakuru NP	16	ADC Mutara
8	Aberdare NP	17	Il Ngwesi Conservancy
9	Meru NP	18	Loisaba Conservancy
10	Ngulia Rhino Sanctuary	19	Segera Conservancy

Figure 2. Kenya's black rhino conservation areas, December 2021.

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2. Formulation of the Action Plan

The development of the 7th edition of the Recovery and Action Plan for the Black Rhino in Kenya (2022-2026) involved the following process.

1. End-term review of the 6th edition of the Black Rhino Action Plan (2017-2021).

2. Preparation of documents for the Black Rhino Stakeholders' Planning Workshop.

3. A Black Rhino Stakeholders' Planning Workshop held on 28 and 29 July 2022 to assess the threats, challenges and constraints on conserving black rhinos in Kenya to develop the Plan framework, vision, goal and the strategic objective log-frames.

4. A Stakeholders' Validation Workshop held on 11 July 2022 to review the draft Plan.

5. Review of the final draft of the Plan by the RSC, KWS and Wildlife Research and Training Institute (WRTI) senior management, and the IUCN African Rhino Specialist Group (AfRSG).

6. Endorsement of the Plan by the Ministry of Tourism and Wildlife.

7. Official launch of the Plan.

Results of the end-term review of the Kenya Black Rhino Action Plan (2017-2021)

An end-term review of the implementation of the Kenya Black Rhino Action Plan (2017-2021) was carried out in all black rhino areas in the country at the end of 2021. The review aimed to assess the progress in implementation of the Action Plan in each site and at the national Rhino Programme Office. The findings of the review would contribute to the development of the 7th edition of the Recovery and Action Plan for the Black Rhino in Kenya (2022-2026).

The end-term review showed a significant improvement in the implementation compared to the previous Action Plans, with 71% of the activities assessed as fully implemented, 20% partially implemented and 9% not implemented by the end of 2021. The implementation level of each strategic objective was rated as above average (Table 1).

Table 1. Level of implementation of each strategic objective of the Kenya Black Rhino Action Plan (2017-2021).

Strategic Objective	Fully implemented	Partially implemented	Not implemented
Rhino protection and law enforcement	70%	16%	14%
Biological monitoring and management	69%	17%	14%
Communication and engagement	84%	1%	15%
Sustained financing	58%	42%	0%
Programme management, coordination and collaboration	73%	27%	0%

The overall goal was surpassed with the population increasing by an average of 5.9% per annum from 2017 to reach 938 animals in 2021. Poaching was reduced to an average of 0.3% per annum (target <1%) throughout the Action Plan period compared to an average of 2.6% per annum in the 2012-2016 Plan period. The highlight was zero poaching in 2020 for the first time in 20 years. However, mortalities from other causes such as disease, territorial fights and predation remained high (2.4% per annum). There was also the tragic loss of 11 rhinos during the Tsavo East NP sanctuary translocation exercise in 2018. Six areas (Nairobi NP, Lake Nakuru NP, Ol Pejeta Conservancy, Ngulia Rhino Sanctuary, Solio Ranch and Lewa Conservancy) have rhino populations above their estimated ecological carrying capacity (ECC), and there is an urgent need to destock these sanctuaries.

The review made the following key recommendations for inclusion in the 2022-2026 Action Plan.

1. Enhance security capacity and infrastructure to maintain poaching at less than 0.5% per annum.

2. Establish new sanctuaries, expand existing sanctuaries, and strengthen IPZs to host rhinos from overstocked areas.

3. Destock areas that have exceeded their ECC.

4. Develop site action plans anchored to the National Plan.

5. Develop site annual implementation plans and budgets based on the site action plans.

6. Encourage engagement at the national, regional and international levels to support the establishment of black rhino populations within the East African Community.

7. Develop innovative mechanisms for raising funds for rhino conservation.

8. Enhance implementation of high-level collaborative fundraising and resource sharing across sites within each region.

9. Reconstitute the RSC to incorporate institutional and personnel changes.

10. Strengthen the Rhino Programme Office.

Threats and challenges in black rhino conservation in Kenya

Poaching was the major cause of rhino population declines in Sub-Saharan Africa from the 1970s up to the 1980s. Poaching also increased between 2012 and 2016, with Kenya losing 145 black and white rhinos in that period. However, pre-2012 and also presently, Kenya and other African rhino range states have made significant progress in increasing their rhino populations. Importantly, the Kenya black rhino population grew by 5.9% per annum from 2017 to 2021. Despite this growth rate, six rhino areas are operating beyond their ECC and their immediate destocking is needed to sustain growth rates and to avoid mortalities due to poor nutrition, especially of female rhinos and their calves. The threats and challenges facing rhino conservation in the country include:

1. Poaching.
2. Law enforcement and rhino monitoring ranger staff, their welfare and in-service training, and equipment below minimum required levels in some rhino areas.
3. Limited resources to secure large areas such as the Tsavo IPZs for population expansion, space is required for more than 500 rhinos in the short term and by 2037 there would be more than 2,000 rhinos if the 5% growth per annum were sustained.
4. Habitat degradation.
5. High density of competing browsers including elephants and buffaloes in certain rhino areas.
6. Predation of rhino calves by hyenas and lions.
7. Diseases.
8. Increased frequency and prolonged droughts, also leading to illegal invasion by herders.
9. Inadequate sustained funding for rhino conservation.

This Plan aims to overcome these threats and challenges to achieve the overall goal.

Threat	Causes	Remarks
Poaching.	- Illegal demand and the high price of rhino horn. - High-profit potential. - Long history of illegal wildlife trade - Inadequate law enforcement. - Proliferation of illegal firearms. - Disincentives created by human-wildlife conflict.	- In the last few years, although the number of rhino horns entering the illegal market each year has continued to decline, demand for illegal rhino horn has continued to date. Coordinated strategies at local, national, regional, and international levels are required to keep the lid on poaching and trafficking. - Integrating local communities into rhino conservation while providing tangible incentives is also important.
Law enforcement and rhino monitoring ranger staff, their welfare and in-service training, and equipment below minimum required levels in some rhino areas.	- Inadequate budgetary allocations.	- A 2018 Ranger Perception Survey highlighted the need to enhance morale and motivation of rangers through regular in-service training, and provision of minimum welfare and equipment needs, among others. This can be achieved by planning for adequate budgetary allocations.
Limited resources to secure large areas for population expansion and to absorb rhinos from overstocked areas.	- High costs of rhino conservation. - Minimal incentives for communities and private landowners to host rhinos in their lands. - Lengthy and delayed decision-making process for major projects e.g., range expansion and translocations.	- Rhino conservation is expensive and long-term incentives to the private and community sector to embrace rhino conservation is needed. - Overstocking of rhinos (and competing browsers) leads to density-induced stresses. Destocking and movement of rhinos into newly created areas would reinvigorate high growth. - National-level projects are needed to secure and operationalize Tsavo IPZs, recover the Aberdare and Chyulu Hills NP populations, and create a large sanctuary in Laikipia. - With increasing negative impact on population growth in overstocked sanctuaries, the losses of rhinos (from reduced production) can exceed potential losses from poaching. Therefore, risk aversion to poaching losses, in large areas such as IPZs, needs to be part of a cost-benefit analysis to guide biological management decisions and ensure the best outcomes.

Table 1. A summary of specific threats and challenges to black rhino conservation in Kenya

Threat	Causes	Remarks
Habitat degradation.	- Invasive plant species. - High densities of competing browsers e.g., buffaloes in Lake Nakuru NP. - Livestock incursion into rhino areas. - Increasing levels of water in lakes in the Rift Valley e.g. Lake Nakuru NP. - Incompatible land use practices resulting in significant soil erosion. - Industrial, effluent, municipal waste. - Recurrent wildfires in some areas e.g., Ruma NP. - Recurrent prolonged droughts, this also leads to incursion by communities' livestock (see also below).	- The national Invasive and Alien Plant Species strategy needs to be adapted in rhino areas. - Competing browsers need to be reduced in affected areas. - Rehabilitation of catchment areas is needed to reduce flooding downstream. - Pollution in some rhino areas particularly Lake Nakuru NP needs to be managed while a fire management plan for Ruma NP needs to be supported. - The National Climate Change Action Plan needs to be adopted in rhino areas.
Predation of rhino calves.	- Predation mostly by large carnivores - lions and spotted hyenas.	- Conflicting single-species action plans which encourage population increase of the three species yet they share the same habitat. There is a need to harmonize their action plans while expanding the use of the species harmonization toolbox in areas of need.

Threat	Causes	Remarks
Diseases.	- Anthrax outbreaks e.g. in Lake Nakuru NP. - Inadequate information on diseases affecting black rhinos. - Tsetse fly infestation in some rhino areas. - Unvaccinated livestock with risk for both domestic stock and wildlife. - Limited resources for routine disease surveillance and monitoring.	- Enhancing the use of disease surveillance and control strategies by all stakeholders will reduce disease transmission and associated mortalities in black rhinos.
Increased frequency and prolonged droughts, also leading to illegal invasion by herders.	- Climate change. - Habitat degradation.	- Drought reduces browse and its nutrients hence affecting the body condition of rhinos and other wildlife. In addition to survivorship, this impacts reproductive performance, and animals become more vulnerable to diseases. There is also a greater risk of invasion into rhino areas by herders for cattle grazing.
Inadequate sustained funding for rhino conservation.	- Inadequate financial and resource commitment from Government, donors and communities. - Global economic conditions and pandemics.	- Continuous lobbying of the national and country governments for funding and resource support, and collaborative high-value impact and innovative fund-raising strategies need to be developed and implemented.
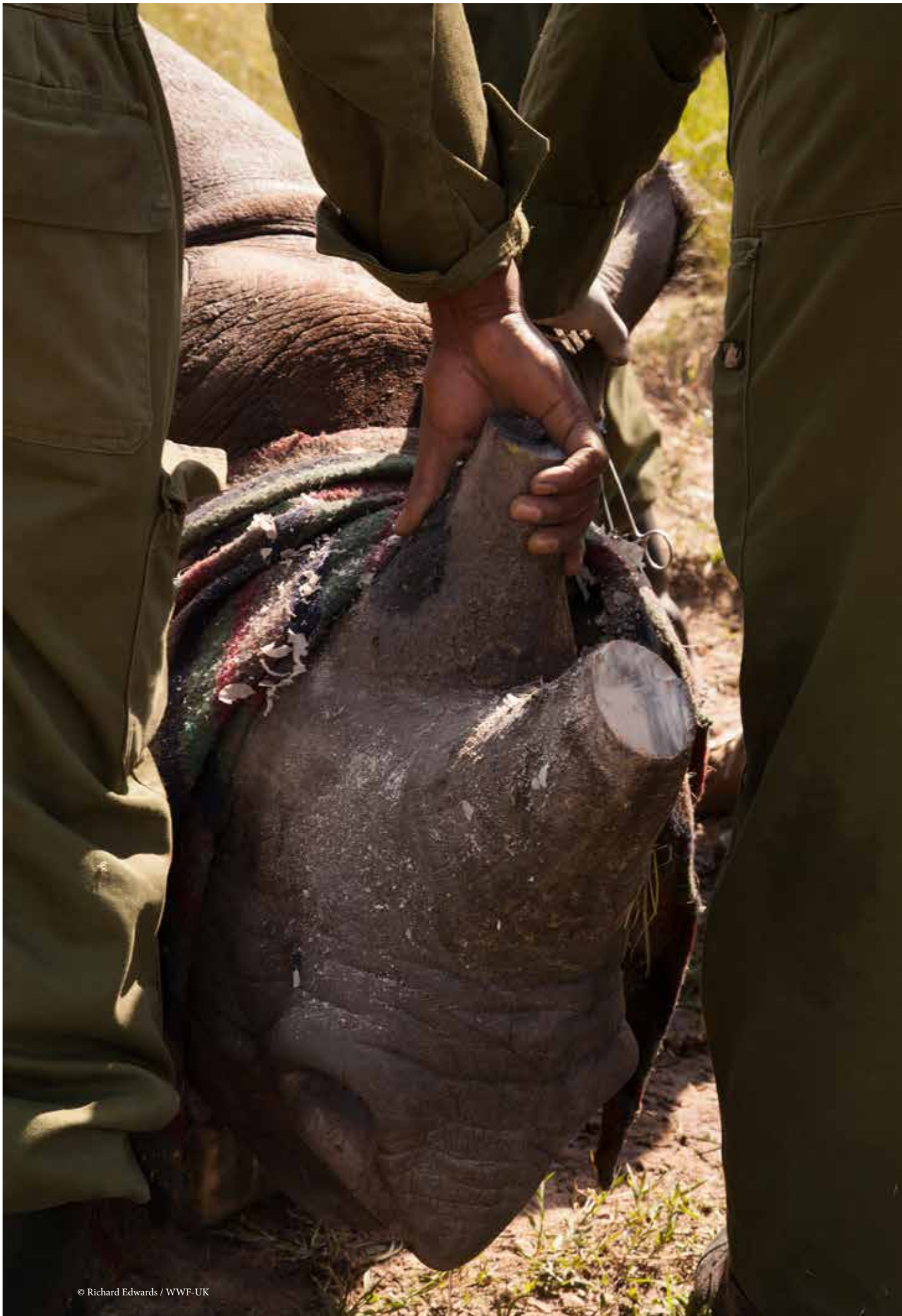
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3. Layout of the Action Plan

Part of Action Plan	Definition
Long-term Vision	An inspirational and relatively short statement of the envisioned status of the species over the long term.
Overall Goal(s)	Overall goal(s) that can realistically be achieved over the lifetime of the Action Plan. In turn, by meeting these overall goal(s), significant progress is made toward achieving the long-term vision of the Plan.
Key Components	Main heading(s) or strands under which the Plan is organized. Each key component relates to a logically related set of threats and constraints.
Key Component	
Strategic Objective	An explicit objective for each key component.
Key Performance Indicators (KPIs)	A quantifiable measure used to evaluate the success of the strategic objective.
Outputs	Statements of the strategic objective results, also activities grouped into logically related clusters, which help to promote implementation.
Activities	The activities that need to be implemented to achieve the output.
Timeframe	Period to complete a particular activity.
Lead Actors	Individuals / offices responsible for a particular activity.
Indicators	Measures or a description of the conditions that would show whether or not a particular activity had been implemented successfully.
Main Assumptions	Key assumptions to achieving outputs.

The overall goal(s) and outputs of this Action Plan are formulated to be **SMART** (**s**pecific, **m**easurable, **a**chievable, **r**ealistic, and **t**ime-bound).

4. The Action Plan Framework – with KPIs and outputs (in the framework, 'rhino' refers to black rhino)

Long-term Vision	To have a metapopulation in Kenya of at least 2,000 eastern black rhinos in suitable habitats by 2037 and 1,450 rhinos by Kenya's Vision 2030, as a global heritage.						
Overall Goal	Black rhino numbers increasing by at least 5%, poaching kept below 0.5% and mortality from other unnatural causes reduced to less than 0.5% per annum, and with range expansion including one *Key* 1 Intensive Protection Zone (IPZ) population (>100 rhinos), to reach a confirmed national total of 1,200 rhinos by the end of 2026.						
Key Components	1. Rhino Protection and Law Enforcement	2. Biological Monitoring and Management	3. Population Expansion	4. Research Informing Management	5. Stakeholder Engagement and Communication	6. Sustained Financing and Resources	7. Programme Management, Coordination and Collaboration
Strategic Objective	To keep rhino poaching to less than 0.5% per annum through effective law enforcement measures and stakeholder collaboration.	To optimize net growth and minimize genetic erosion through standardized biological monitoring and management of each rhino population and their respective habitats.	To expand existing rhino areas and secure new areas for rhino population expansion.	To provide information for adaptive management and protection of rhinos and habitats through priority research.	To enhance the goodwill and support for rhino conservation in Kenya through targeted stakeholder engagement and communication.	To sustain financing and resources for rhino conservation at all levels for delivery of all components of the Plan (2022-2026).	To ensure effective programme management, coordination and collaboration at site level, nationally, regionally, and internationally to achieve the strategic objectives of the Plan (2022-2026).
Key Performance Indicators	**KPI 1a:** Percentage of rhino population poached per area / year. **KPI 1b:** Percentage of overall 'national' rhino population poached / year. **KPI 1c:** Percentage of court cases related to rhino crimes that result in deterrent sentencing of rhino poachers, horn dealers and kingpins.	**KPI 2a:** Net growth per annum of rhino populations (four-year rolling window averages). **KPI 2b:** Number of established fenced rhino areas (over 50% of ECC) managed through set percentage harvesting and updated ECC estimates. **KPI 2c:** Number of rhinos translocated based on annual translocation plans.	**KPI 3a:** Number of rhinos in Tsavo West IPZ and Tsavo East IPZ. **KPI 3b:** Number of new areas with a founder population of at least 20 rhinos. **KPI 3c:** Number of rhinos in Chyulu Hills and Aberdare NPs.	**KPI 4a:** Number of research concept proposals. **KPI 4b:** Number of priority research reports informing management. **KPI 4c:** Number of published articles in peer-reviewed journals and in popular science.	**KPI 5a:** Number of local communities, landowners and county governments supporting rhino conservation. **KPI 5b:** Proportion of required funding and in-kind support secured from national and county governments. **KPI 5c:** Number of institutions actively participating in conservation education activities.	**KPI 6a:** Proportion of required funding secured. **KPI 6b:** Value of funds raised for rhino conservation initiatives that are referenced in this Plan.	**KPI 7a**: Number of staff in the Rhino Programme Office. **KPI 7b:** The Action Plan (2022-2026) is being monitored and evaluated on an annual basis. **KPI 7c:** Number of rhino areas being managed through site action plans and annual implementation plans.

Key Components	1. Rhino Protection and Law Enforcement	2. Biological Monitoring and Management	3. Population Expansion	4. Research Informing Management	5. Stakeholder Engagement and Communication	6. Sustained Financing and Resources	7. Programme Management, Coordination and Collaboration
Key Performance Indicators	**KPI 1d:** Number of recorded rhino poaching attempts per area / year. **KPI 1e:** Number of rhino horns and rhino horn derivatives from Kenyan populations and those on transit seized per annum. **KPI 1f:** Patrol days (based on specified hours of patrolling per day) per patrol block per area / year.	**KPI 2d:** Proportion of confirmed animals in each population. **KPI 2e:** Percentages of rhino disease and health, predation, and social-related causes of mortalities.			**KPI 5d:** Number of arrests that are successfully prosecuted and maximum penalties applied.		**KPI 7d:** End-term review of the Action Plan. **KPI 7e:** Number of committees functioning as per ToRs.
Outputs	**1.1** Strengthened rhino protection and law enforcement systems with rhino poaching kept at less than 0.5% per annum. **1.2** Rhino horn stockpiles secured and managed to CITES standards.	**2.1** At least 99% confirmed national rhino population. **2.2** Fenced rhino areas managed to achieve optimum growth, and to minimize genetic erosion and social pressure.	**3.1** Fully operationalized Tsavo West NP IPZ. **3.2** At least 4 new rhino sanctuaries. **3.3** Three extended sanctuaries as phase 1 for creating a large sanctuary in Laikipia. **3.4** Potential areas identified for population expansion.	**4.1** Innovative survey methodologies for rhino, competing species, and habitats. **4.2** Improved information on disease and vector ecology. **4.3** Improved information and procedural mechanisms for rhino conservation.	**5.1** National and county governments, communities, private landowners, judiciary systems and partners supporting implementation of Plan (2022-2026). **5.2** Public engaged in conservation matters with a focus on rhinos.	**6.1** Secured funding for implementation of the Plan (2022-2026) at national and site levels **6.2** Contingency / emergency funding mechanism.	**7.1** Strengthened National Rhino Programme Office. **7.2** Rhino areas managed through site action plans and annual implementation plans. **7.3** National annual status reports informing metapopulation management decision making.

Key Components	1. Rhino Protection and Law Enforcement	2. Biological Monitoring and Management	3. Population Expansion	4. Research Informing Management	5. Stakeholder Engagement and Communication	6. Sustained Financing and Resources	7. Programme Management, Coordination and Collaboration
Outputs		**2.3** Increases in net growth in under-performing populations. **2.4** Rhino disease, predation and intraspecific mortalities kept to less than 0.5% per annum. **2.5** A standardized rhino monitoring and reporting system at site and national level.	**3.5** Two non - viable populations gradually increased to at least 20 rhinos. **3.6** An agreed plan for establishing a rhino sanctuary in at least one national reserve. **3.7** Rhino populations in the East African countries supported by the Kenya Rhino Programme. **3.8** Zoos engaged for possible introduction of rhinos which contribute to enhancing the genetic diversity of the Kenyan population.	**4.4** Innovative methods for rhino security. **4.5** Science-based integrated rhino metapopulation management. **4.6** Understanding of climate change impacts on rhino populations.	**5.3** Rhino conservation promoted in education programmes.		**7.4** Action Plan monitored and evaluated on an annual basis. **7.5** End-term review of 2022-2026 Plan informing the development of the 2027-2031 Action Plan. **7.6** Functional coordination and management committees at all levels.

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5. Vision and Overall Goal

Long-term Vision

To have a metapopulation in Kenya of at least 2,000 eastern black rhinos in suitable habitats by 2037 and 1,450 rhinos by Kenya's Vision 2030, as a global heritage[2].

Kenya is the stronghold of the eastern black rhino, conserving slightly over 75% at the end of 2021. The minimum number of black rhinos needed for a metapopulation that will ensure its long-term survival is recognized as being 2,000 (du Toit *et al*. 1987) (see key notes in Annex II). The sooner this target can be achieved, the greater the reduction in loss of overall genetic diversity. The aim is to achieve 2,000 black rhinos by 2037 with a sustained average annual net growth of 5% (Figure 3). Kenya's Vision 2030 is also an important economic milestone for the country.
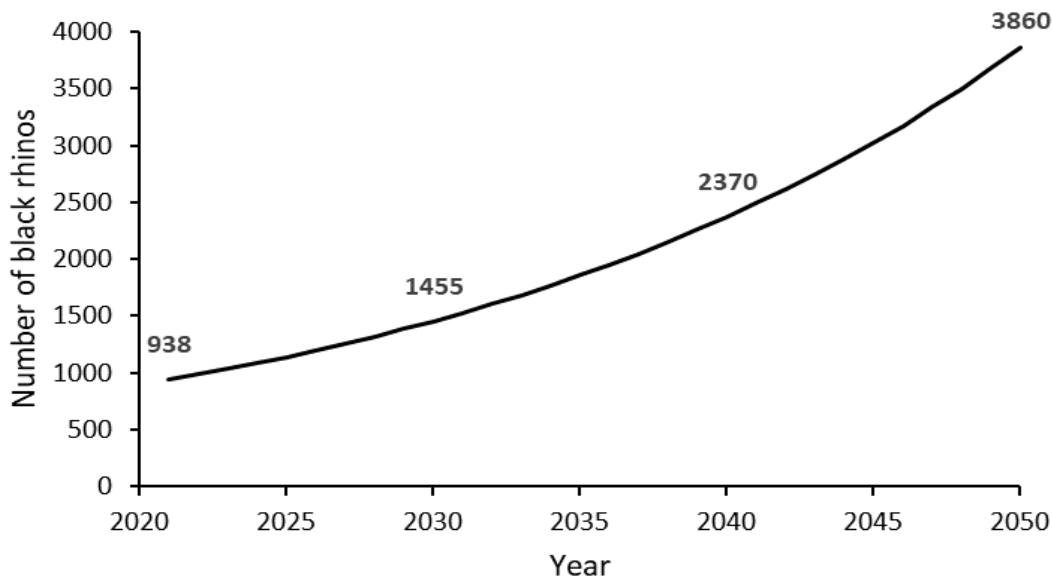
Figure 3. Projected 5% annual increase in black rhino numbers in Kenya. There would be 1,455 rhinos by Kenya Vision 2030, 2,370 rhinos by 2040, and 3,860 rhinos in 2050.

On 11 May 2009, representatives of the rhino range states, wildlife agencies and stakeholders in the East African region working under the umbrella of the East African Rhino Management Group committed themselves to work together to achieve effective rhino conservation in the region (Okita-Ouma *et al*. 2009). They agreed on a shared regional strategy to achieve a well-distributed, growing eastern black rhino population, aiming at establishing 3,000 animals collaboratively within 30 years (i.e. by May 2039). Under this Plan, Kenya will continue to collaborate with the black rhino range states within east Africa to achieve this regional goal.

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[2] The long-term vision will contribute towards ensuring secured, viable, growing and valued populations of black rhino across the east African landscape.

Overall Goal

Black rhino numbers increasing by at least 5%, poaching kept below 0.5% and mortality from other unnatural causes[3] reduced to less than 0.5% per annum, and with range expansion including one *Key 1* Intensive Protection Zone (IPZ) population (>100 rhinos), to reach a confirmed national total of 1,200 rhinos by the end of 2026.

The previous Action Plans have been based on a minimum 5% net growth per annum for the national population. During the 2017-2021 Action Plan, an average net growth of 5.9% per annum was achieved. A 5% net growth per annum has also been the recommended minimum metapopulation management target in many national rhino plans – just over half of R_{max} (9%).

This Plan has, therefore, set a 5% per annum net growth for the next five years, whereby the existing established populations are managed for optimum growth through maintaining densities at productive levels (Figure 4). The overall objective of this Plan continues from previous plans to use the established populations as a 'breeding bank' for the provision of a continuous supply of rhinos to expand into new secure areas with suitable habitats including an IPZ with a carrying capacity of several hundred rhinos.

In addition, the significant reduction in rhino poaching to an average of 0.3% per annum needs to be maintained. Mortality due to other unnatural causes currently averaging 2.4% per annum needs to be significantly reduced.
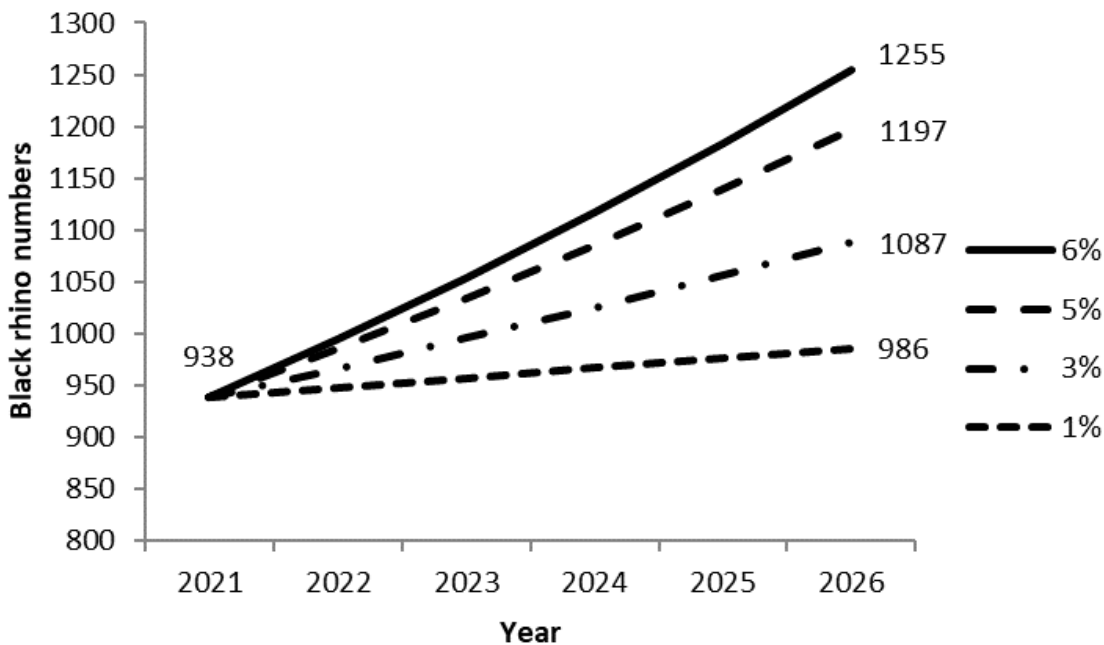
Figure 4. National black rhino population growth projections at different growth rates (2022–2026).

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[3] Unnatural deaths are due to external factors such as predation, intra-species aggression and vector-borne diseases.

6. Key Components

(In the Key Components, 'rhinos' refers to black rhinos)

Key Component 1: Rhino Protection and Law Enforcement

Strategic objective: To keep rhino poaching to less than 0.5% per annum through effective law enforcement measures and stakeholder collaboration[4].

Rationale and considerations

In the previous Plan, poaching of rhinos was reduced significantly as a result of several sustained interventions that culminated in zero poaching in 2020. However, the threat still exists with six rhinos (one black rhino and five white rhinos) poached in Kenya in 2021. Across rhino range states, poaching has continued to date.

The reduction in rhino poaching needs to be maintained as part of the wider wildlife crime prevention framework. Each area needs to maintain, and where necessary, strengthen its capacity with sufficient security staff, reliable vehicles with adequate fuel budget, security and field equipment. Fences must be well maintained as well as an all-weather road network for security operations in all rhino areas. The welfare of rangers needs to be prioritized. Surveillance technologies and digital radio systems with command control rooms based on EarthRanger™ and *Kifaru* database for law-enforcement monitoring, reporting and tactical planning will need to be deployed and maintained in all rhino areas. Regular in-service training with evaluation also needs to be undertaken in all areas. Increasing use of technology is highly advocated as rhino range expansion is prioritized during this Plan period.

It is also critical to have periodically reviewed standard operating procedures and associated training in place so that when poaching occurs, as many rhino poachers and traffickers are arrested and convicted as soon as possible. The use of dogs to recover horns and track poachers needs to be scaled up and maintained at effective levels in most rhino areas.

Improved and well-coordinated intelligence networks and information sharing through a multi-agency approach are critical in ensuring that threats to rhinos continue to be effectively tackled. Improved prosecution through the use of forensics needs to continue through contributing to the continental Rhino DNA Indexing System (RhODIS™), establishing capacity within the KWS-WRTI forensic and genetics laboratory to undertake RhODIS™ compatible analyses, and gazetting prosecution officers and experts with knowledge in wildlife DNA forensics and crime scene investigations.

In addition, the nature and scale of rhino horn poaching across Africa require increased cooperation with security agencies regionally, continentally and internationally via the East Africa Community-Rhino Management Group (EAC-RMG), International Criminal Police Organization (INTERPOL), Lusaka Agreement Task Force (LATF), and Trade Records Analysis of Flora and Fauna in Commerce (TRAFFIC). Cross-border security operations need to be maintained and where necessary enhanced, and intelligence sharing and analysis improved.

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[4] Security, intelligence and prosecution elements well outside of protected areas are covered in a broader KWS security strategy.

Key Performance Indicators (KPIs) – and their means of verification

KPI 1a: Percentage of rhino population poached per area / year (annual status reports).

KPI 1b: Percentage of overall 'national' rhino population poached / year (national annual status reports).

KPI 1c: Percentage of court cases related to rhino crimes that result in deterrent sentencing of rhino poachers, horn dealers and kingpins (records of arrests, prosecutions and sentences as reported to KWS).

KPI 1d: Number of recorded rhino poaching attempts per area / year (annual status reports).

KPI 1e: Number of rhino horns and rhino horn derivatives from Kenyan populations and those on transit seized per annum (KWS seizure reports).

KPI 1f: Patrol days (based on specified hours of patrolling per day) per patrol block per area / year (*Kifaru*, monthly reports, annual status reports).

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
1.1 Strengthened rhino protection and law enforcement systems with rhino poaching kept at less than 0.5% per annum.	1.1.1 Establish/ maintain separate rhino monitoring and security units in all rhino areas.	Ongoing	Site managers, RPC	Number of rhino areas with security and rhino monitoring units (annual status reports).
	1.1.2 Periodically review and maintain rhino security personnel at required levels in all rhino areas.	Ongoing	Site managers	Rhino area security personnel strength as a percentage of required level (rhino area assessment / requirements document; annual status reports).
	1.1.3 Assess and maintain security and field equipment to required levels in all rhino areas.	Ongoing	D-WS, site managers	Number of rhino areas with security and field equipment at required levels (rhino area assessment / requirements document; annual status reports).
	1.1.4 Assess and maintain sufficient number of reliable security and fence maintenance vehicles with adequate fuel and maintenance budget allocations in all rhino areas.	Ongoing	Site managers, H-SP	Rhino area security and fence maintenance vehicles as a percentage of required level (rhino area assessment / requirements document; annual status reports).
	1.1.5 Develop and implement ranger welfare standards.	By Q4 Y1, and then subsequent annual reviews	Site managers, D-WS	Number of rhino areas with ranger living conditions meeting defined standards (ranger welfare standards document; annual status reports).
	1.1.6 Conduct law enforcement training in rhino sites to required standards.	Ongoing	Site managers, D-WS	Number of law enforcement training sessions (security reports).
	1.1.7 Provide regular on-site training (with evaluation) to security rangers in specific rhino protection and anti-poaching tactics in all rhino areas.	Ongoing	D-WS, site managers	Number of rhino protection and anti-poaching tactics training sessions in each rhino area per annum (annual status reports). Number (and proportion) of security rangers provided with specific rhino-protection and anti-poaching tactics training in each rhino area per annum (annual status reports).
	1.1.8 Review and implement security strategies.	Ongoing	D-WS, site managers	Updated strategies (review report).
	1.1.9 Establish/ maintain adequate patrolling and response capabilities through law enforcement monitoring, reporting and tactical planning in all rhino areas.	Ongoing	Site managers	Patrol effort and threat encounter indicators (monthly reports; *Kifaru*). State of carcasses of rhino and other large animals detected in each rhino area per annum (annual status reports; *Kifaru*).

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
	1.1.10 Establish/ maintain effective rapid response unit(s) in all rhino areas.	Ongoing	Site managers	Number of rhino areas with effective rapid response unit(s) (annual status reports).
	1.1.11 Enhance/ maintain well-coordinated intelligence gathering networks.	Ongoing	H-I, site managers	Number of intelligence-led arrests (security reports).\n\nNumber of recovered weapons and horns (security reports).
	1.1.12 Enhance / maintain collaborations and operations to enhance security for rhinos.	Ongoing	Site managers	Number of meetings (security reports).\n\nNumber of joint operations conducted (security reports).
	1.1.13 Maintain and effectively use intelligence database for protection of rhinos.	Ongoing	H-I, site managers	Number of arrests based on information from the intelligence database (security briefing reports).
	1.1.14 Establish and maintain fully operational GPS enabled digital radio system with command control room in all rhino areas.	Ongoing	D-WS, site managers	Number of rhino areas with fully operational GPS enabled digital radio system with command control room (monthly reports; annual status reports; data in EarthRanger™ and Kifaru).
	1.1.15 Test and deploy approved technologies for enhancing security in rhino areas, with staff trained in their use.	Ongoing	Site managers	Number of rhino areas using approved technologies for security (security reports).
	1.1.16 Enhance capacity within WRTI-KWS forensic and genetics laboratory to undertake RhODIS™ compatible analyses.	Q4 Y1	Lab manager, site managers	Number of Kenyan rhinos populated in RhODIS™ database (RhODIS™).
	1.1.17 Continue to contribute to the continental RhODIS™ database.	Ongoing	H-VS, D-WS, H-DRECA, site managers	Number of Kenyan rhino samples and percentage of confirmed population sampled and included in continental RhODIS™ database annually (RhODIS™ database).
	1.1.18 Sensitize and gazette prosecution officers and experts with wildlife DNA forensic knowledge.	Ongoing	D-WS, H-VS	Number and percentage of successful prosecutions based on forensic evidence (court records; KWS security reports).\n\nNumber of gazetted prosecution officers and experts in wildlife DNA forensic (gazette notices).

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
	1.1.19 Review, update and implement crime scene management procedures.	Q4 Y1, and then ongoing	D-WS, site managers	Number of rhino areas effectively using crime scene management procedures (annual status reports).
	1.1.20 Train and gazette specialized staff in scene of crime investigation.	Ongoing	D-WS	Number of trained and gazetted personnel undertaking scene of crime investigation (annual status reports; gazette notices). Number of crime scenes managed by gazetted scene of crime officers (annual status reports). Number of rangers trained in procedures on 'first respondents to a crime
	1.1.21 Implement an effective site-level fence maintenance plan in rhino sanctuaries.	Ongoing	Site managers	Number of rhino sanctuaries meeting fence standards (annual status reports).
	1.1.22 Maintain tracker dog capability to effective levels in rhino areas.	Ongoing	Site managers	Number of trained dog units assessed to be operating at effective levels in rhino areas / shared across rhino areas (annual status reports). Number and percentage of poaching incidences successfully dealt with dog units in rhino areas (annual status reports).
	1.1.23 Maintain sniffer dog units at required levels at ports / borders for collecting evidence admissible in courts.	Ongoing	D-WS	Number of effective sniffer dog units (annual status reports).
	1.1.24 Implement standard procedures for periodic vetting of all rhino security and monitoring staff.	Ongoing	D-WS, site managers	Proportion and number of rhino security and monitoring staff vetted annually in each rhino area (annual status reports).
	1.1.25 Improve and synchronize cross-border security operations.	Ongoing	D-WS, H-I, site managers	Number of synchronized operations (cross-border security meeting minutes and reports).
	1.1.26 Establish/ maintain cooperation and collaboration with security agents at points of entry and exit.	Ongoing	D-WS, H-I, site managers	Number of jointly-led seizures / arrests at ports of entry and exit (KWS security reports).

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
	1.1.27 Establish region-specific contingency plans for securing rhino sanctuaries from unforeseen threats including illegal invasion by herders and natural disasters.	Q4 Y1	SADs, site managers	Number of contingency plans (area reports).
1.2 Rhino horn stockpiles secured and managed to CITES standards.	1.2.1 Maintain security and management of the rhino horn stockpile and site-level strong rooms to CITES standards.	Ongoing	D-WS, H-DRECA, H-SP, site managers	Annually audited stockpile with up-to-date database (stockpile audit reports).

Proportion of stockpiled horns with profiles in RhODIS™ database (stockpile audit reports; RhODIS™ database).

Number of rhino horn strongrooms with fully functioning CCTV security system (quarterly audit reports). |

Important assumptions

1. Availability of sufficient resources (finance, trained/competent personnel, equipment).
2. Political goodwill and support at local, national and regional level.
3. Fully functioning Rhino Programme Office.
4. All actors are committed to implementing their activities.

Key Component 2: Biological Monitoring and Management

Strategic objective: To optimize net growth and minimize genetic erosion through standardized biological monitoring and management of each rhino population and their respective habitats.

Rationale and considerations

This Plan continues from the previous Action Plans by setting a national growth target of 5% per annum. An average growth rate of 5.9% per annum was realized over the previous Action Plan period (2017-2021). To achieve this growth, management of rhino and competing browser stocking densities and their habitat is essential. This is because limitation of critical resources including forage, water and minerals, and associated social pressures, negatively affect the breeding performance of rhinos. Therefore, reliable ECC estimates of rhino and competing browsers, and improvement of habitat quality through management of invasive plant species and supplementing minerals in affected sites is needed.

Standardized population performance analyses and annual status reporting for each rhino area and its synthesis at a metapopulation level should continue. This will inform annual planning of translocations, with surplus rhinos from overstocked fenced areas moved into new secure areas including IPZs. Genetic profiling of Kenya's population should be undertaken to support translocations while also contributing to the RhODIS™ continental database. Populations should also be maintained to at least 20 rhinos to minimize inbreeding and appropriate management intervention needs to be undertaken to stimulate growth in under performing populations.

Disease and other health-related mortalities have increased in recent years and will require enhanced rhino health monitoring, investigation, and timely veterinary intervention. Areas with high risk of rhino predation will need effective management interventions based on a multi-species harmonization strategy.

Biological management requires reliable and standardized field monitoring data. Apart from assessing changes in numbers over time, a number of metrics (such as average calving interval, age at first calving, mortality rate, and sex ratios) are used to assess population performance through annual status reporting. The individual ID-based rhino monitoring implemented in all rhino areas also functions as an important audit and provides an early warning of possible missing or poached animals. Rhino monitoring capacity and data quality have declined in some areas in recent years and there is an urgent need to get monitoring and reporting up to the required standard in all rhino areas. This will also significantly reduce the proportion of rhinos in the probable and guesstimate categories which have increased.

Key Performance Indicators (KPIs) – and their means of verification

KPI 2a: Net growth per annum of rhino populations (four-year rolling window averages) (annual status reports).

KPI 2b: Number of established fenced rhino areas (over 50% of ECC) managed through set percentage harvesting and updated ECC estimates (annual status reports) (see key notes in Annex II).

KPI 2c: Number of rhino translocations based on annual translocation plans.

KPI 2d: Proportion of confirmed animals in each population (master ID files with date-stamped photos for individuals).

KPI 2e: Percentages of rhino disease and health, predation, and social related causes of mortalities (annual status reports).

Output (Target)	Activity (Action)	Timeframe	Lead actors	Indicators (means of verification)
2.1 At least 99% confirmed national rhino population (see key notes in Annex II).	2.1.1 Re-establish standardized rhino monitoring in Solio GR.	Q4 Y1, and then ongoing	H-SP, Solio GR manager, AD-Aberdare NP, PRS-WRTI	Number and proportion of confirmed rhinos (master ID file; *Kifaru*).
	2.1.2 Enforce implementation of safe, warning and critical rhino sighting intervals in all rhino areas.	Ongoing	H-SP, site managers	Number of rhinos within safe, warning and critical sighting intervals in each area (site monthly reports).
	2.1.3 Regularly ear-notch rhinos to ensure all animals can be reliably identified in all areas.	Ongoing	H-SP, site managers	Percentage of identifiable rhinos in each area (annual status reports).
	2.1.4 Undertake annual rhino audits to confirm numbers in selected sites.	Y1–Y5	H-SP, site managers, PRS-WRTI	Number of confirmed rhinos in selected sites (audit reports; annual status report).
2.2 Fenced rhino areas managed to achieve optimum growth, and to minimize genetic erosion and social pressure.	2.2.1 Update ECC for rhino and competing browsers in fenced areas as per agreed method.	Y1	H-SP, PRS-WRTI, site managers	Number of fenced rhino areas with updated ECC for rhino and competing browsers (annual status reports).
	2.2.2 Undertake genetic profiling of Kenya rhino metapopulation with a particular focus on known inbred populations (see 4.5.1).	Q2 Y1, and then ongoing	H-VS, PRS-WRTI, H-SP	Percentage (and number) of genetically profiled metapopulation using single nucleotide polymorphism (SNP) and microsatellite genotyping (annual status reports).
	2.2.3 Incorporate rhino DNA profiles into *Kifaru* database (see 4.5.1).	Q1 Y2, and then ongoing	H-SP, PRS-WRTI	Proportion of animals with DNA profiles in *Kifaru* database (*Kifaru*; annual status reports).
	2.2.4 Develop and implement a translocation plan based on stocking levels and ECC, set percentage harvesting, reproductive performance, social pressure, and level of inbreeding (see key notes in Annex II).	Q4 Y1, then ongoing	RSC, H-VS, H-SP, site managers	Number of areas with rhino population > ECC (annual status reports). Number of established fenced populations achieving a minimum of 5% net growth (during a four-year rolling window) per annum (annual status reports).
	2.2.5 Manage densities of competing browsers to recommended levels in overstocked fenced areas, through destocking.	Y2, and then ongoing	RSC, PRS-WRTI, site managers	Number of fenced areas at or below recommended browser densities (annual status reports).
	2.2.6 Coordinate implementation of national invasive alien plant species (IAPS) management plan in rhino areas.	Y1, and then ongoing	PRS-WRTI, H-SP	Number of areas implementing IAPS management plan (annual status reports). Level of infestation (distribution and cover) of IAPS in rhino habitats (annual status reports).
	2.2.7 Implement management interventions based on identified strategies in areas where rhinos are significantly predated.	Q1 Y1, and then ongoing	PRS-WRTI, H-VS, H-SP	Number of timely interventions based on identified strategies (veterinary reports; annual status reports).

Output (Target)	Activity (Action)	Timeframe	Lead actors	Indicators (means of verification)
2.3 Increases in net growth in under-performing populations.	2.3.1 Undertake genetic profiling of the Mara-Serengeti ecosystem rhino population with at least 90% of the population genetically profiled (see 4.5.1)[6].	Q1 Y2	H-VS, PRS-WRTI, H-SP, CW (Narok County), CW (SENAPA)	Number and percentage of rhinos genetically profiled using SNP and microsatellite genotyping (annual status reports).
	2.3.2 Carry out strategic translocation of known individuals to improve breeding performance / genetic diversity (He > 0.65; FIS < 0.05) in inbred populations.	Q4 Y1 onwards – on a need basis	H-VS, RSC, H-SP, PRS-WRTI	Number of strategic translocations (annual status reports).
	2.3.3 Maintain rhino populations to at least 20 individuals in all under-performing areas (see 3.5).	Y1-Y5	H-SP, PRS-WRTI, RSC, H-VS	Number of rhinos in each rhino area (annual status reports).
2.4 Rhino disease, predation and intraspecific mortalities kept to less than 0.5% per annum (see key notes in Annex II).	2.4.1 Diagnose and treat sick and injured rhinos in a timely manner.	Ongoing	H-VS, H-SP, PRS-WRTI, site managers	Number of disease and injury-related veterinary interventions per area / year (veterinary reports; annual status reports).

Percentage (and number) of mortalities per annum due to disease and injuries (veterinary reports; annual status reports). |
| | 2.4.2 Review disease surveillance and diagnostic protocols and implement in all rhino areas. | Q1 Y2, and then ongoing | H-VS, RSC, H-SP | Number of rhino areas using the revised protocols (veterinary reports). |
| | 2.4.3 Enhance diagnostic and laboratory capacity to facilitate investigation of disease outbreaks and the implementation of control mechanisms in a timely manner. | Ongoing | H-VS | Number of disease outbreaks investigated and control mechanisms implemented in a timely manner (veterinary reports; annual status reports).

Proportion of required diagnostic equipment acquired (annual vet reports). |
| | 2.4.4 Collaborate with KENTTEC to conduct tsetse fly monitoring and control to reduce disease incidences in Ruma, Tsavo East and West, Chyulu Hills and Meru NPs. | Ongoing | H-VS, PRS-WRTI, KENTTEC | Number of areas with tsetse fly monitoring and control mechanism in place (veterinary reports). |
| | 2.4.5 Develop and implement guidelines for feed and mineral supplementation in areas of need. | Q4 Y1, and then ongoing | H-VS, H-SP, PRS-WRTI, site managers | Number of affected rhino areas implementing guidelines (annual status reports). |

Output (Target)	Activity (Action)	Timeframe	Lead actors	Indicators (means of verification)
2.5 A standardized rhino monitoring and reporting system at site and national level.	2.5.1 Enhance and maintain a trained and dedicated rhino monitoring team in all rhino areas.	Y1, and then ongoing	Site managers, H-SP	Number of rhino areas with a trained and dedicated rhino monitoring team (annual status reports).
	2.5.2 Update and implement rhino monitoring protocol in all rhino areas.	Y1, and then ongoing	H-SP, PRS-WRTI, site managers	Number of rhino areas using updated rhino monitoring protocol (annual status reports).
	2.5.3 Maintain standardized rhino monitoring and reporting protocol in Mara-Serengeti ecosystem and carry out joint surveys / audits of the population.	Q1 Y2, and then ongoing	H-SP, PRS-WRTI, CW (Narok County), CW (SENAPA)	Number of population surveys and audits (survey and audit reports) Number of training sessions in the use of standardized rhino monitoring and reporting protocol (training reports). Status of master ID files and rhino database (master ID files; *Kifaru;* monthly reports).
	2.5.4 Upgrade and maintain *Kifaru* database in all areas for rhino data management, reporting and decision-making.	Y1, and then ongoing	H-SP, PRS-WRTI, site managers	Number of rhino areas using upgraded *Kifaru* database (monthly reports).
	2.5.5 Maintain at least two trained rhino monitoring personnel/ research scientists for managing *Kifaru* database in each rhino area.	Ongoing	H-SP, PRS-WRTI, site managers	Number of trained *Kifaru* database managers in each rhino area (monthly reports).
	2.5.6 Maintain at least two rhino monitoring instructors in each rhino area.	Ongoing	H-SP, site managers	Number of rhino areas with at least two rhino monitoring instructors (monthly reports). Number of rhino monitoring instructors training sessions (annual status reports). Number of training sessions and number of rhino rangers provided refresher training per area / year (monthly reports; annual status reports).
	2.5.7 Minimize staff turnover and retain at least 50% of experienced rhino monitoring personnel in all rhino areas.	Ongoing	Site managers, H-SP	Percentage of experienced rhino monitoring personnel in each rhino area (annual status reports).

Output (Target)	Activity (Action)	Timeframe	Lead actors	Indicators (means of verification)
	2.5.8 Enhance/ maintain data quality control procedures (including an up-to-date rhino master ID file with date-stamped photos for all known individuals) in all rhino areas.	Y1, and then ongoing	Site managers, H-SP, PRS-WRTI	Number of rhino areas with up-to-date master ID files (master ID files with date-stamped photos for all known individuals; monthly reports).
	2.5.9 Implement the rhino monitoring module at KWS Law Enforcement Academy (LEA).	Q3 Y1, and then ongoing	H-SP, CO LEA	Number of personnel trained on rhino monitoring (training reports).
	2.5.10 Update and implement monthly and annual rhino status reporting templates.	Y1, and then ongoing	H-SP, PRS-WRTI, site managers	Number of areas submitting monthly and annual status reports using updated templates (monthly reports; annual status reports).
	2.5.11 Provide timely feedback on monthly and annual status reports to rhino areas.	Ongoing	H-SP, PRS-WRTI	Frequency of feedback reports (monthly reports; annual status reports).

Important assumptions

1. Availability of sufficient resources (finance, trained / competent personnel, equipment, and other resources).
2. Fully functioning Rhino Programme Office.
3. Continued partner support.
4. Management options for browsers and grazers in the WCMA, 2013 being adapted in a timely fashion.

Key Component 3: Population Expansion

Strategic objective: To expand existing rhino areas and secure new areas for rhino population expansion.

Rationale and considerations

In the next five years, space will be required for approximately 500 rhinos resulting from population growth and from destocking sanctuaries. Black rhinos, like other megaherbivores, require large areas to support viable populations for the long term. There is now an urgent need to establish suitable contiguous areas for conserving large populations. This will also enhance their genetic viability as well as optimize the resources required for their protection. As with the previous Plans, the strategy is to use the well-established sanctuaries as 'breeding banks' for the provision of a continuous supply of rhinos to restock former range areas.

Kenya still has large suitable black rhino range areas that have been secured but are under-utilized for the conservation of the species. These include Tsavo West IPZ, Tsavo East IPZ, Meru Conservation Area and large national reserves. The Tsavo West IPZ has one of the highest ECCs of 1-1.5 rhinos/km2 and will need to be fully operationalized with a Key 1 population by the end of this Plan. The Tsavo East Rhino Sanctuary also needs to be operationalized to support population expansion in the Tsavo East IPZ.

There are significant opportunities for establishing new private and community sanctuaries in the Laikipia region, some of which are at the final stages of commissioning. The longer-term strategy of merging the private and community sanctuaries that are in close proximity to each other should also be initiated during this Plan period. The forested areas of Chyulu Hills and Aberdare NPs have non-viable populations, yet they contain suitable habitats. Recovery plans for these populations need to be developed and implemented.

Opportunities to supplement selected populations in the country with eastern black rhinos from zoos which contain genes no longer represented in wild populations should also be explored.

Key Performance Indicators (KPIs) – and their means of verification:

KPI 3a: Number of rhinos in Tsavo West IPZ and Tsavo East IPZ (annual status reports).

KPI 3b: Number of new areas with a founder population of at least 20 rhinos (annual status reports).

KPI 3c: Number of rhinos in Chyulu Hills and Aberdare NPs (annual status reports).

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
3.1 Fully operationalized Tsavo West IPZ.	3.1.1 Prepare a plan with a budget to fully operationalize the IPZ to protect and monitor a population of >100 rhinos in the next 5 years.	Q1 Y1	RSC, H-SP, SAD-TCA, D-WS, site manager, PRS-WRTI	Reviewed and endorsed plan (approved plan with a budget).
	3.1.2 Secure funds and implementation plan.	Y1	RSC, H-SP, SAD-TCA, H-WS, site manager, PRS-WRTI	Secured funds and strengthened IPZ (monthly reports; annual status reports).
	3.1.3 Translocate rhinos from overstocked lowland sanctuaries based on the annual translocation plans.	Y1-Y5	RSC, H-SP, SAD-TCA, H-VS, site manager, PRS-WRTI	Number of rhinos translocated into the IPZ (monthly and annual status reports). Number of rhinos in IPZ (monthly and annual status reports).
3.2 At least 4 new rhino sanctuaries.	3.2.1 Establish Segera Rhino Sanctuary with a founder population of at least 20 rhinos.	Y1-Y2	H-SP, SAD-MCA, RSC, APLRS, PRS-WRTI	Number of rhinos in the sanctuary (annual status report).
	3.2.2 Establish Loisaba Rhino Sanctuary with a founder population of at least 20 rhinos.	Y1	H-SP, SAD-MCA, RSC, APLRS, PRS-WRTI	Number of rhinos in the sanctuary (annual status report).
	3.2.3 Establish at least one additional sanctuary in Laikipia (e.g., El Karama, Jessel, Loldaiga, Ole Naishu Ranches).	Y1-Y5	H-SP, SAD-MCA, RSC, APLRS, PRS-WRTI	Number of rhinos in the sanctuary (annual status report).
	3.2.4 Operationalize the Tsavo East Rhino Sanctuary as a temporary holding facility before releasing translocated rhinos to Tsavo East IPZ.	Y1-Y2	H-SP, SAD-TCA, RSC, PRS-WRTI	Number of rhinos in the sanctuary and IPZ (annual status report).
3.3 Three extended sanctuaries as phase 1 for creating a large sanctuary in Laikipia.	3.3.1 Implement expansion plan for Ol Pejeta rhino population into Mutara.	Y1-Y5	H-SP, SAD-MCA, RSC, APLRS, PRS-WRTI	Number of rhinos in the extended rhino sanctuaries (annual status report).
	3.3.2 Implement expansion plan for Segera rhino population into El Karama.	Y1-Y5	H-SP, SAD-MCA, RSC, APLRS, PRS-WRTI	
	3.3.3 Implement an expansion plan for Lewa-Borana rhino population into Il Ngwesi.	Y1-Y5	H-SP, SAD-MCA, RSC, APLRS, PRS-WRTI	
3.4 Potential areas identified for population expansion	3.4.1 Explore areas for population expansion in community lands.	Y1-Y5	RPC, RSC, APLRS, PRS-WRTI, local communities, county governments	Number of areas with potential for population expansion (annual status reports).

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
3.5 Two non-viable populations gradually increased to at least 20 rhinos.	3.5.1. Produce and implement Aberdare NP rhino recovery plan to establish a viable population of at least 20 rhinos.	Y1-Y5	H-SP, SAD-MCA, site manager, RSC, PRS-WRTI	Number of rhinos in Aberdare NP at the end of Plan period (annual status report; end-term review report).
	3.5.2 Review and implement the Chyulu Hills NP rhino recovery plan to establish a viable population of at least 20 rhinos.	Y1-Y5	H-SP, SAD-TCA, site manager, RSC, PRS-WRTI	Number of rhinos in Chyulu Hills NP at the end of Plan period (annual status report; end-term review report).
3.6 An agreed plan for establishing a rhino sanctuary in at least one national reserve.	3.6.1 Engage with county governments on establishing rhino sanctuaries within national reserves.	Y1-Y2	DG, SADs, county wardens, county governments	Number of engagements / meetings (meeting minutes).
	3.6.2 Prepare a plan and agreements for establishing rhino sanctuaries in identified national reserves.	Y3-Y5	DG, SADs, county wardens, county governments, H-SP, RSC, PRS-WRTI	Agreed plan (plan document, agreements).
3.7 Rhino populations in the East African countries supported by the Kenya Rhino Programme.	3.7.1 Provide technical support through EAC-RMG.	Y1-Y5	H-SP, RSC, PRS-WRTI	Level of technical support and engagement (annual reports).
	3.7.2 Consider donation of rhinos when requested.	Y1-Y5	CS, DG, RSC	Number of rhinos donated based on requests (annual status report).
3.8 Zoos engaged for possible introduction of rhinos which contribute to enhancing the genetic diversity of the Kenyan population.	3.8.1 Explore opportunities (with cost-benefit analyses) to supplement selected populations with rhino from zoos which contain genes no longer represented in wild populations.	Y1-Y5	PRS-WRTI, H-SP	Number of engagements with zoos (annual status reports).

Important assumptions

1. Requisite security arrangements will be in place in areas to host rhinos.

2. Adequate funding will be available to construct and operationalize the sanctuaries.

3. The ongoing court case on the disputed land ownership within Chyulu Hills NP will be resolved before 2024.

4. County governments are supportive.

Key Component 4: Research informing Management

Strategic objective: To provide information for adaptive management and protection of rhinos and habitats through priority research.

Rationale and considerations

The black rhino in Kenya is facing threats from poaching, overstocking in sanctuaries, habitat degradation and conversion, climate change, disease, predation, and potential inbreeding depression. Research, along with biological monitoring, is needed to make informed decisions on the basis of adaptive management for the protection and management of rhinos and their habitats.

The newly created Wildlife Research and Training Institute (WRTI) is mandated under the Wildlife Conservation and Management Act 2013 to undertake and coordinate research and capacity development for wildlife conservation and management in the country. It will work with KWS and research partners to provide the required information to achieve the goals of this Plan. Targeted research should be conducted on advanced survey methodologies, disease and vector ecology, rhino habitat and community ecology, innovative methods for security, conservation genetics, science-based translocations, and climate change. It will generate the evidence base for guiding black rhino management in Kenya over the next five years and beyond.

Key Performance Indicators (KPIs) – and their means of verification

KPI 4a: Number of research concept proposals (WRTI annual reports, national annual status reports).

KPI 4b: Number of priority research reports informing management (WRTI annual reports, national annual status reports).

KPI 4c: Number of published articles and papers in peer-reviewed journals and in popular science (WRTI annual reports, annual rhino status reports)

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
4.1 Innovative survey methodologies for rhino, competing species, and habitats.	4.1.1 Apply machine learning algorithms to identify rhinos from camera-trap images.	Y1-Y5	PRS-WRTI	A machine algorithm with accuracy >90%.
	4.1.2 Explore the utility of dung-based DNA techniques to survey small rhino populations in difficult habitats.	Y1-Y5, depending on funding	PRS-WRTI, site managers, Lab manager	Number of studies undertaken and recommendations for management (technical reports).
	4.1.3 Review and adopt standardized habitat assessment methods.	Y1-Y5	PRS-WRTI, site managers	Number of sites assessed (technical reports).
	4.1.4 Explore the use of innovative methods and technologies to routinely survey / monitor rhino and competing species.	Y1-Y5	PRS-WRTI, site managers	Number of studies undertaken and recommendations for management (technical reports).
4.2 Improved information on disease and vector ecology.	4.2.1 Conduct research on vector borne diseases.	Q1 Y1, and then ongoing	H-VS, site vets, PRS-WRTI	Number of studies undertaken and recommendations for management (technical reports).
	4.2.2 Conduct research on infectious and non-infectious diseases.	Q1 Y1, and then ongoing	H-VS, site vets	Number of studies undertaken and recommendations for management (technical reports).
	4.2.3 Acquire and use new molecular diagnostic tools for rhino genetic studies.	Q1 Y1, and then ongoing	H-VS, Lab manager, PRS-WRTI	Number of diagnostic tools acquired (lab reports). Number of studies undertaken (technical reports).
4.3 Improved information and procedural mechanisms for rhino conservation.	4.3.1 Quantify spatio-temporal changes in habitats in fenced areas using remote sensing.	Y1, and then ongoing	PRS-WRTI, RPC, site managers	Number of sites with information on habitat trends (technical reports and maps).
	4.3.2 Investigate impact of other browsers and predators on rhinos in identified areas.	Y1, and then ongoing	PRS-WRTI, H-SP, RPC, site managers	Recommendations for management (technical report).
	4.3.3 Develop water quality standards for rhino health.	Y1, and then ongoing	H-VS, PRS-WRTI, RPC	Number of identified sites using water quality standards (technical report).
	4.3.4 Assess the impact of toxins on rhino health.	Y2-Y3	H-VS, PRS-WRTI, RPC	Recommendations for management (technical report).
	4.3.5 Assess the impact of anthropogenic factors on rhino populations.	Y1, and then ongoing	PRS-WRTI, site managers, RPC	Recommendations for management (technical report).

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
	4.3.6 Apply improved methods for assessing browse quality in sanctuaries.	Y1, and then ongoing	PRS-WRTI, site managers, RPC	Number of sites assessed (technical reports).
	4.3.7 Conduct soil chemistry analysis in sanctuaries.	Y1-Y3	PRS-WRTI, site managers	Number of identified sites assessed and recommendations for management (technical reports).
	4.3.8 Carry out research on drivers of rhino reproductive performance.	Y1-Y2	PRS-WRTI, RPC, site managers	Recommendations for management (technical report).
	4.3.9 Review current methods in determining rhino and competing browser stocking densities in fenced areas.	Y1	PRS-WRTI, RPC, site managers	Recommendations for management (technical report).
	4.3.10 Conduct study on rhino movement ecology and home ranges.	Y2-Y3	PRS-WRTI, site managers	Recommendations for management (technical report).
	4.3.11 Conduct ecosystem valuation of selected rhino areas.	Y3-Y5	PRS-WRTI, site managers	Recommendations for management (technical reports).
4.4 Innovative methods for rhino security.	4.4.1 Develop and test techniques for detection of intrusions and illegal activities.	Y1, and then ongoing	D-WS, PRS-WRTI, site managers, RPC	Recommendations for management (technical report).
	4.4.2 Test and deploy technologies for enhancing surveillance.	Y1, and then ongoing	D-WS, PRS-WRTI, site managers, RPC	Number of sites using surveillance-based technologies (security reports).
	4.4.3 Explore the use of data mining in security database.	Y2, and then ongoing	D-WS, PRS-WRTI, site managers, RPC	Recommendations for management (technical report).
4.5 Science-based integrated rhino metapopulation management.	4.5.1 Quantify the impact of inbreeding on reproductive performance.	Y1-Y3	PRS-WRTI, RPC, site managers	Recommendations for management (technical report).
	4.5.2 Conduct genomic analysis to quantify the effect of reproductive skew, temporal changes in genetic load, and effective population size.	Y1-Y2	PRS-WRTI, RPC, site managers	Recommendations for management (technical report).
	4.5.3 Conduct meta-analysis of factors mediating translocation and breeding success.	Y1	PRS-WRTI	Recommendations for management (technical report).
	4.5.4 Investigate the long-term physiological impacts following translocation.	Y1-Y3	PRS-WRTI	Recommendations for management (technical report).

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
	4.5.5 Study movement ecology of translocated animals, and the influence of conspecifics and habitat quality on home range establishment.	Y1-Y3	PRS-WRTI	Recommendations for management (technical report).
	4.5.6 Establish relationship between physiological measurements of stress, associated density and ecological carrying capacity.	Y1-Y3	PRS-WRTI	Recommendations for management (technical report).
4.6 Understanding of climate change impacts on rhino populations.	4.6.1 Develop predictive models of climate-induced habitat changes and the potential impact on black rhino recovery.	Y1-Y3	PRS-WRTI, site managers	Recommendations for management (technical report).
	4.6.2 Investigate potential climate change mitigation and adaptation strategies.	Y1, and then ongoing	PRS-WRTI, site managers	Recommendations for management (technical report).

Important assumptions

1. Secured funding.
2. Trained scientists on specific research topics and data analysis.

Key Component 5: Stakeholder Engagement and Communication

Strategic objective: To enhance the goodwill and support for rhino conservation in Kenya through targeted stakeholder engagement and communication.

Rationale and considerations

To realize the outcomes of this Plan, it is important that we gain people's support for the different conservation initiatives across the country. This will require targeting prioritized sections of the Kenyan population with appropriate messaging. Rhino messaging can contribute significantly to wider conservation communication. This is because rhinos are a flagship species, a highly charismatic animal, that serve as a rallying point for conservation. They also act as umbrella species for the ecosystems they inhabit because their conservation requirements, by default, encompass those of other smaller species, and being a keystone species, play a significant role in ecological dynamics. As a start, dissemination of the Plan to the stakeholders and holding a biennial rhino conference, to present progress on rhino conservation in the country, needs to be undertaken.

The communities and landowners have a significant role in wildlife conservation in Kenya. Therefore, targeted messaging to gain their ongoing involvement and support will be vital. Communication on conservation matters including rhino should be enhanced through dedicated communication officers in the rhino areas. The media is a key conduit in this regard and hence the need for their engagement to enhance their role in positive messaging.

Continued engagement with the judiciary and prosecutors is required to ensure timely sentencing, with maximum penalties, for wildlife crimes with a particular focus on rhino poaching and trading in their horn and its derivatives, and arrests of kingpins.

National and county governments need to continue to be engaged to increase their support for conservation. Learning institutions also need to be engaged directly and through the Kenya Institute of Curriculum Development (KICD) to pass knowledge related to conservation and environment through lessons and activities. Conservation and environmental education at the site-level also needs further promotion to enhance outreach.

Key Performance Indicators (KPIs) – and their means of verification

KPI 5a: Number of local communities, landowners and county governments supporting rhino conservation (social assessment results, annual status reports).

KPI 5b: Proportion of required funding and in-kind support secured from national and county governments (annual financial reports – through KWS / partner financial review process).

KPI 5c: Number of institutions actively participating in conservation education activities (rhino area education reports, curriculums, publications).

KPI 5d: Number of arrests that are successfully prosecuted and maximum penalties applied (annual reports, court records).

Output	Activity	Timeframe	Key actors	Indicators (means of verification)
5.1 National and county governments, communities, private landowners, judiciary systems and partners supporting implementation of the Recovery and Action Plan for the Black Rhino in Kenya (2022-2026).	5.1.1 Undertake social assessments (e.g., SAPA) in rhino areas, and implement recommendations to enhance participation in conservation.	Y1-Y5	H-CSP, PRS-WRTI, site managers	Number of sites implementing recommendations of social assessments (annual reports).
	5.1.2 Proactively engage communities and landowners to support rhino conservation, and where suitable to establish rhino sanctuaries on their lands.	Y1, and then ongoing	H-CSP, APLRS site managers, CEC-Wildlife in counties hosting rhinos	Number of communities and landowners supporting rhino conservation (rhino area reports). Number of new rhino areas established (annual status reports
	5.1.3 Proactively engage judiciary and prosecutors to ensure maximum penalties on wildlife crimes with a particular focus on rhino poaching and trading in their horn and its derivatives.	Y1, and then ongoing	D-WS, site managers	Number of engagements (annual reports). Number of arrests that are successfully prosecuted and maximum penalties applied (annual reports; court records).
	5.1.4 Engage communities to develop local solutions to mitigate intrusion by herders seeking pasture and water in rhino areas.	Y1, and then ongoing	SADs, site managers, CEC-Wildlife	Number of local solutions implemented (rhino area reports).
	5.1.5 Lobby national and county governments to support conservation, e.g. from County Climate Fund (see also 6.1.9).	Y1, and then ongoing	DG, county wardens, site managers, KWCA	Number of lobbying meetings (reports; minutes). Amount of funds and other resources from national and county governments for rhino conservation (audited accounts).
	5.1.6 Develop and implement site action plans and annual implementation plans through involvement of stakeholders in all rhino areas (see also 7.2.2).	Start of Y1, and then annually	SADs, site managers	Number of rhino areas with site action plans and annual implementation plans (annual status reports).
	5.1.7 Develop and disseminate a summary of the Plan to stakeholders.	Start of Y1	RSC, RPC	Number of copies of a summary plan produced and disseminated (M&E reports).
5.2 Public engaged in conservation matters with a focus on rhinos.	5.2.1 Hold a national rhino conference biennially.	Y1, Y3, Y5	RSC, RPC	Number of conferences held (proceedings).
	5.2.2 Enhance media coverage of conservation efforts with a particular focus on rhinos.	Q2 Y1, and then ongoing	H-CSP, CEC-Wildlife,	Number of print and digital articles, radio, TV and social media coverage on rhino conservation issues per year (annual site reports).

Output	Activity	Timeframe	Key actors	Indicators (means of verification)
	5.2.3 Develop innovative public engagement initiatives to raise awareness on wildlife conservation with a particular focus on rhinos.	Ongoing	H-CSP, CEC-Wildlife, site managers	Number of public engagement initiatives in each area per year (annual status reports). Number of local groups and organizations supporting rhino conservation (rhino area reports).
	5.2.4 Enhance conservation outreach programmes in rhino areas.	Ongoing	Site managers	Number of outreach programmes per site / year (annual reports).
5.3 Rhino conservation promoted in education programmes.	5.3.1 Support incorporation of conservation content and projects with focus on rhino in local institutions' curriculum.	Y1, and then ongoing	H-CE&E, partners, WRTI, KICD	Number of curriculums with wildlife and rhino conservation content (M&E reports).
	5.3.2 Enhance delivery of conservation activities / topics within each rhino area's environmental education programme.	Ongoing	H-CE&E, site managers	Number of rhino areas delivering conservation education (annual status reports).

Important assumptions

1. Appropriate messages on rhino conservation issues are packaged and provided to the communication offices for dissemination using the relevant communication platforms.

Key Component 6: Sustained Financing and Resources

Strategic objective: To sustain financing and resources for rhino conservation at all levels for delivery of all components of the Recovery and Action Plan for the Black Rhino in Kenya (2022-2026).

Rationale and considerations

Sustained financing is a critical component for the successful delivery of this Plan. The resources needed to implement the Plan are substantial and therefore there is the need to innovatively explore all avenues for resource mobilization. Efforts must be prioritized to secure longer-term funding.

The COVID-19 pandemic during the previous Action Plan resulted in a drastic reduction in revenue from tourism and highlighted the importance of diversifying revenue generation streams. There should be renewed efforts to engage both the national and county governments through the relevant ministries to secure the necessary budgetary allocations for rhino conservation. There also needs to be targeted engagement of key partners including bilateral and multilateral donors to support high-value impact projects in the Plan. There is also a need to coordinate development of funding proposals. Detailed annual implementation plans and budgets need to be developed both at the national and site levels in line with national and site action plans. This will be a crucial step for resource mobilization at all levels of Plan implementation.

Key Performance Indicators (KPIs) – and their means of verification

KPI 6a: Proportion of required funding secured (annual financial reports – through KWS / partner financial review process).

KPI 6b: Value of funds raised for rhino conservation initiatives that are referenced in this Plan (annual reports).

Output	Activity	Time frame	Lead actors	Indicators (means of verification)
6.1 Secured funding for implementation of the Recovery and Action Plan for the Black Rhino in Kenya (2022-2026) at national and site levels.	6.1.1 Develop a five-year budget for all national level activities of the Plan; review annually and update the budget based on implementation plans.	Q1 Y1, and then annually	H-SP, RSC	Approved 5-year budget (budget document).
	6.1.2 Develop budgets for annual implementation plans for each site aligned to the Plan.	Start of each year	Site managers	Approved site budgets (site implementation plans).
	6.1.3 Set up a funding working group to spearhead funding and resource mobilization.	Q1 Y1	RSC, H-SP, NGOs, site managers	ToR for the working group (ToR).
	6.1.4 Identify funding sources and prepare joint proposals across multiple rhino areas.	Y1-Y5	RSC, H-SP, site managers	Proportion of required funding and resources raised (annual financial reports).
	6.1.5 Enhance corporate partnerships for funding and resources.	Ongoing	RSC, APLRS, site managers	
	6.1.6 Identify alternative sources of revenue – Rhino Bond, carbon credits, payment for ecosystem services.	Y1-Y5	RSC, APLRS, site managers, NGOs	
	6.1.7 Develop longer-term funding proposals for bilateral and multilateral donors such as GEF and EU.	Y1-Y5	RSC, APLRS	
	6.1.8 Lobby national treasury to finance rhino conservation in line with the WCMA, 2013.	Y1-Y5	Parent Ministry, RSC	
	6.1.9 Engage relevant county governments to enact appropriate wildlife bills to support financing of rhino conservation.	Y1-Y5	RSC	
6.2 Contingency / emergency funding mechanism.	6.2.1 Develop a funding mechanism for dealing with emergencies such as pandemics, droughts and diseases.	Y1-Y5	RSC, APLRS, site managers	Funding mechanism for emergencies (document).

Important assumptions

1. The prepared budgets are accurate.

2. There will be increased buy-in for rhino areas to jointly raise funds.

3. Donors and partners support the Plan and remain engaged.

Key Component 7: Programme Management, Coordination and Collaboration

Strategic objective: To ensure effective programme management, coordination and collaboration at site level, nationally, regionally, and internationally to achieve the strategic objectives of the Recovery and Action Plan for the Black Rhino in Kenya (2022-2026).

Rationale and considerations

The Kenya rhino programme coordination structure is currently made up of the Area Species Conservation Committees (ASCC), the Association of Private Land and Community Rhino Sanctuaries (APLRS), the Rhino Steering Committee (RSC), and the Rhino Executive Committee (REC). There is a need to include the KWS Board of Trustees (BoT) and the Parent Ministry for high-level decision-making and policy guidance (Figure 5).

A Wildlife (Rhino) Policy Advisory Committee (WPAC) should also be formed to advise the Parent Ministry on policy level issues. Membership and Terms of Reference (ToR) for the committees will need to be reviewed following the establishment of WRTI, and to also include expertise in publicity, fund-raising, resource mobilization, and wildlife trade. To facilitate timely decision-making, the REC was reconstituted in the previous Action plan to be in line with KWS senior management structure. The RSC Chair should continue to present key recommendations to the REC for further guidance and approval. There is a need to improve feedback mechanisms at all levels from REC, RSC, site committees and APLRS, site managers, and the Rhino Programme Office.

The capacity of the Rhino Programme Office, which also serves as the RSC secretariat, requires enhancement with appropriate staff and equipment. The APLRS has supported the Rhino Programme Office through secondment of the Administrator to the Secretariat and this needs to be continued. In the reconstituted RSC, the secretariat will be drawn from KWS, WRTI, and APLRS.

A monitoring and evaluation (M&E) framework for the Plan needs to be included to ensure systematic progress assessment of activities and outputs. The area committees will be required to develop M&E plans as part of the site-specific action plans.

Collaboration among various stakeholders is encouraged at all levels for the necessary management, political, technical and financial support to sustain the progress achieved in the previous Action Plan. Key stakeholders in rhino conservation in Kenya include government ministries, departments and agencies (MDAs); county governments; communities; corporate and private sector; donor agencies; research institutions; institutions of higher learning; East African Community Rhino Management Group (EAC-RMG); African Rhino Specialist Group (AfRSG); Convention on International Trade in Endangered Species of Wild Fauna & Flora (CITES); Trade Records Analysis Flora and Fauna In Commerce (TRAFFIC); Lusaka Agreement Task Force (LATF) among others (see Annex III).
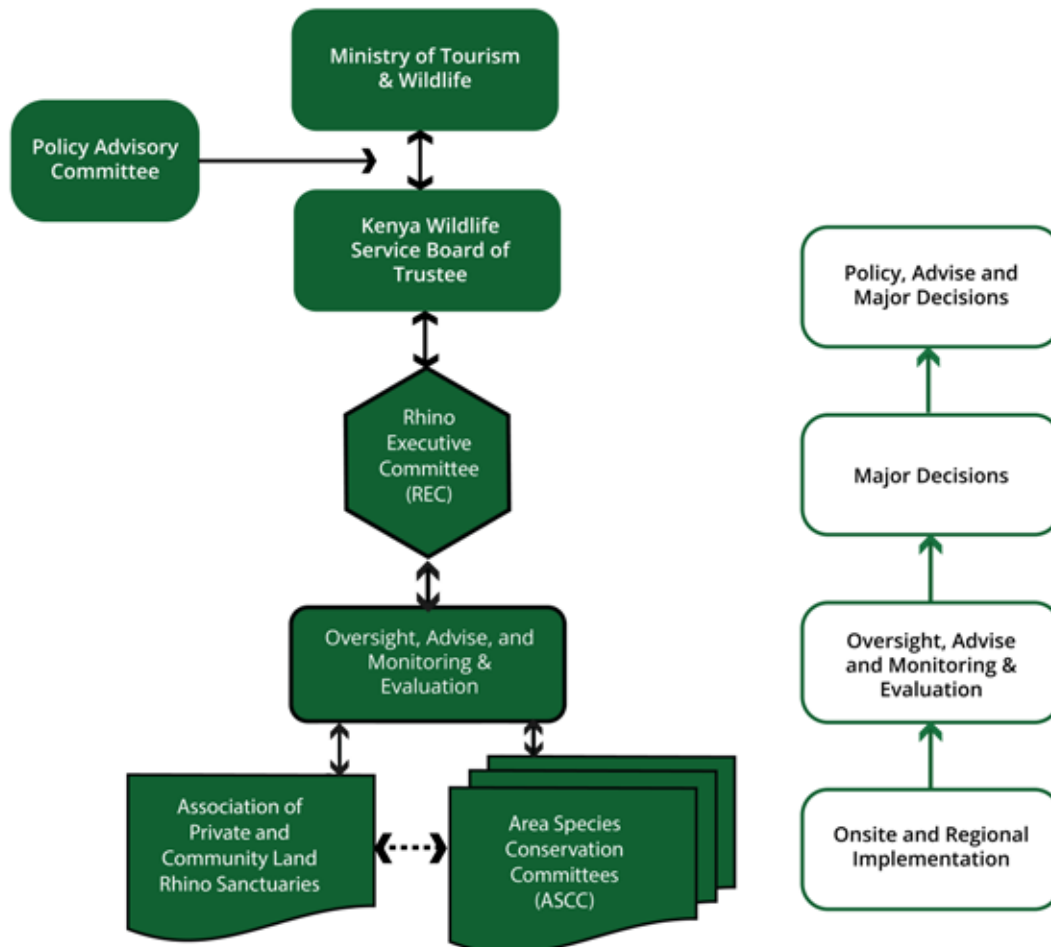
Figure 5. Coordination framework for the Recovery and Action Plan for the Black Rhino in Kenya (2022-2026)[7].

Key Performance Indicators (KPIs) – and their means of verification

KPI 7a: Number of staff in the Rhino Programme Office (HR report).

KPI 7b: The Recovery and Action Plan for the Black Rhino in Kenya (2022-2026) is being monitored and evaluated on an annual basis (annual status reports).

KPI 7c: Number of rhino areas being managed through site action plans and annual implementation plans (M&E reports).

KPI 7d: End-term review of the Action Plan (report).

KPI 7e: Number of committees functioning as per ToRs (committee meeting minutes).

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[7]Links to international groups and programmes including IUCN-AfRSG, EAC-RMG and RhODIS™ will be through the Rhino Programme Office.

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
7.1 Strengthened National Rhino Programme Office.	7.1.1 Review staffing requirements for effective rhino programme coordination and management.	Q2 Y1	H-CSP	Documented staffing requirements (review report).
	7.1.2 Establish and maintain the required staff for the Rhino Programme Office.	Y1, and then ongoing	H-CSP	Number of staff at Rhino Programme Office (HR records).
	7.1.3 Provide required information to and participate in national, regional and global forums.	On a needs basis	RPC	Number of meetings participated (meeting documents).
7.2 Rhino areas managed through site action plans and annual implementation plans.	7.2.1 Support development of site action plans.	Q1 Y1-Y5	Site managers, RPC	Number of rhino areas with action plans (action plans, rhino area and national M&E reports).
	7.2.2 Support implementation of the site action plans.	Y1-Y5	Site managers, RPC	Number of rhino areas with annual implementation plans (rhino area and national M&E reports).
	7.2.3 Support annual M&E of site action plans.	Y1-Y5	Site managers, RPC	Number of rhino areas with action plans monitored and evaluated (rhino area and national M&E reports).
7.3 National status reports informing metapopulation management decision making.	7.3.1 Support rhino monitoring and status reporting in all rhino areas.	Ongoing	Site managers, RPC	Number of rhino areas submitting monthly reports and annual status reports (national status reports).
	7.3.2 Compile and circulate national status reports to RSC and site managers.	Q1 Y1-Y5	RPC	Status report review (RSC meeting minutes).
	7.3.3 Develop annual translocation plan based on national status report (see 2.2.4).	Q1 Y1-Y5	Site managers, RPC	Annual translocation plan (annual status report).
7.4 National Action Plan monitored and evaluated on an annual basis.	7.4.1 Carry out an M&E of the Plan annually.	Q4 Y1-Y5	RSC, RPC, site managers	Findings of the M&E (report).
	7.4.2 Report progress on the implementation of the Plan.	Bi-annual	RSC, RPC, site managers	Number of progress reports to RSC (progress reports, RSC meeting minutes).

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
7.5 End-term review of 2022-2026 Action Plan informing the development of the 2027-2031 Action Plan.	7.5.1 Identify resource persons to undertake review of the Plan implementation.	Q4 Y5	H-CSP	Number of resource persons (assessment report).
	7.5.2 Undertake site assessments.	Q4 Y5	RPC, resource persons, site managers	Number of rhino areas assessed (site reports).
	7.5.3 Prepare report, review, and circulate to site managers.	Q4 Y5	RPC, RSC, resource persons	Review report and feedback from RSC (RSC meeting minutes).
7.6 Functional coordination and management committees at all levels.	7.6.1 Review and update membership and TORs for the committees.	Q1 Y1	RSC, SADs	Updated committees with TORs (TORs, meeting minutes).
	7.6.2 Hold meetings as per the TORs.	Ongoing	Chair-RSC, Chair-ASCC	Number of committee meetings held (committee meeting minutes).

Important assumptions

1. Availability of suitable staff with interest in rhino conservation.

2. Required finances available.

3. Cooperation and collaboration by stakeholders.

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7. Key Projects

Key Component	Project	Budget estimate (Ksh.)
Rhino Protection and Law Enforcement	1. Implementing appropriate technologies for security, and rhino and law-enforcement monitoring - technologies include camera traps, thermal cameras, acoustic sensors, satellite-based transmitters, drones, Long Range Wide Area Network (LoRaWAN), digital radio systems with command control rooms operating in real-time, and AI software.	Ksh. 100,000,000
	2. Enhancing capacity within WRTI-KWS forensic and genetics laboratory and undertaking RhODIS™ compatible analyses to enhance prosecutions.	Ksh. 25,000,000 (Ksh. 5,000,000 p.a.)
	3. Strategic fencing to secure priority rhino areas. For example, an 83km fencing is required to further secure Tsavo West IPZ to support a *Key 1* (>100 rhinos) population in the next 5 years.	Ksh. 83,000,000 (Ksh. 1,000,000/ kilometre)
Biological Monitoring and Management	4. Implementation of annual rhino translocation plans.	Ksh. 50,000,000 (estimated at 35 rhino translocations per year)
	5. Strengthening rhino capture and translocation capacity.	Ksh. 100,000,000 for crates, equipment, machinery, vehicles, holding bomas
	6. Rhino ear notching to ensure all animals can be reliably identified, minimizing the number of rhinos in the critical sighting interval and ensuring 99% of rhinos are confirmed.	Ear notching 500 rhinos - Ksh. 45,000,000
	7. Reviewing methods and updating rhino and competing browser ecological carrying capacity (ECC) estimates of sanctuaries - the ECC estimates for most rhino sanctuaries in Kenya are outdated. There is also a need to review and update the assessment method.	Ksh. 5,000,000 for reviewing and updating methods Ksh. 7,800,000 for undertaking ECC assessments in 12 rhino areas
Population expansion	8. Fully operationalizing Tsavo West IPZ – with strengthened security and monitoring systems, establishing a Key 1 population of more than 100 rhinos in the IPZ by the end of the Plan period.	Ksh. 110,000,000 for security and monitoring (Ksh. 50,000,000 in the 1st year then 15,000,000 for the next 4 years)

Population expansion	9. operationalizing Tsavo East Rhino Sanctuary – to commission the constructed rhino sanctuary and use it primarily as a holding site for rhinos to be released into the wider Tsavo East IPZ. Fresh water provision in the sanctuary will be a key component of the project.	Ksh. 35,000,000 for repairing infrastructure and harnessing of fresh water from Galana River
	10. Developing (and implementing) Aberdare rhino recovery plan – the only montane forest black rhino population has declined to a few individuals. Quantifying factors that have contributed to the decline and mitigating their impact, and translocation of additional rhinos into the area will be required.	Ksh. 4,500,000 for developing a recovery plan detailing threats and interventions
Research	11. Developing (and implementing) guidelines for feed and mineral supplementation – this would require data on site-specific soil chemistry and browse quality.	Ksh. 18,000,000 for feed, minerals and soil chemistry sampling and analysis in 12 rhino sites Ksh. 2,500,000 for developing the guidelines
	12. Habitat utilization and movement patterns of black rhino in relation to habitat quality - the information obtained will guide translocations, zonation of PAs, and infrastructure development in rhino areas.	Ksh. 525,0000 (assessments in 3 key sites @ Ksh. 1,750,000 / site
	13. Disease surveillance of potential infectious pathogens and parasites, and study on risk of toxins in rhino areas – rhino mortality due to disease has increased in recent years.	Ksh. 18,000,000 for undertaking disease surveillance in 6 sites, and procuring necessary laboratory equipment, consumables, protective gear.
Communication and engagement	14. Undertaking social assessments in rhino areas - to enhance community involvement and engagement in rhino conservation.	Ksh. 22,500,000 for 15 sites (Ksh. 1,500,000 per site).
	15. Develop and incorporate conservation content with focus on the rhino in local institutions' curriculum through the KICD and other training institutions.	Ksh. 3,500,000 for developing material, printing and dissemination @ 1,500,000 in the 1st year then Ksh. 500,000/year in the next 4 years.
Sustained financing and resources	16. Formulating of revenue mobilization strategy - the Plan aims to attain a sustainable funding position for rhino conservation in Kenya. Innovative ways, such as the Rhino Impact Bond (RIB) and carbon credit, for raising the required finances and resources will be needed.	Ksh. 4,500,000 for convening technical teams for developing the strategy and implementing it.
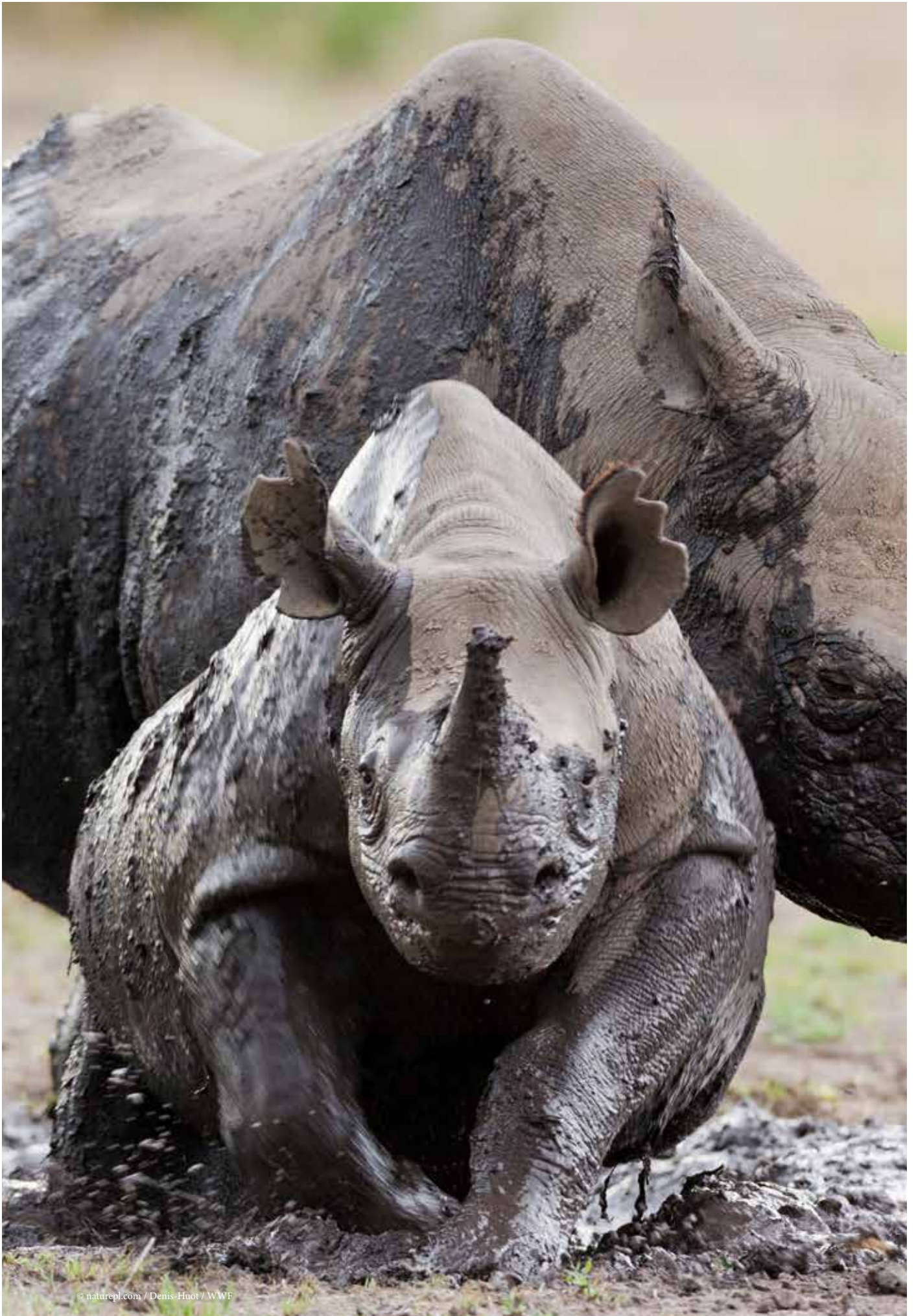
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8. Monitoring and Evaluation of the Action Plan

Effective monitoring and evaluation of the national and site action plans on an annual basis will be critical in tracking progress on implementation of planned activities and in assessing performance against set targets and objectives. This process will also help in capturing emerging constraints and issues in time for management intervention thereby promoting a culture of learning and application of lessons learned.

The monitoring and evaluation component of this Plan will draw from the guidelines set in the KWS and national Governments' Monitoring and Evaluation Policy. Performance monitoring and evaluation shall be the responsibility of those involved in the implementation of the action plans as well as key projects.

The Rhino Programme Office, supported by RSC, will undertake performance evaluation and reporting at the national level and provide support at the site level. Progress reporting will be based on annual implementation plans.

The M&E framework will have three components.

Setting performance targets - at the beginning of each year, all rhino areas will set performance targets as part of their annual implementation plans, derived from the action plan log frames.

Monitoring performance - to monitor progress towards targets based on the performance indicators and resources, to identify potential difficulties and assist in addressing them during implementation, and to provide feedback for the next phase of implementation.

Performance evaluation – annual evaluation of the action plans and implementation plans is important to determine if the intended results have been achieved, and the required resources are in place. Agreed performance targets and indicators at all levels will be used as benchmarks for the evaluation. The outcome of the annual evaluation will form the basis for implementing activities and outputs for the following year.

Goal: Black rhino numbers increasing by at least 5%, poaching kept below 0.5% and mortality from other unnatural causes reduced to less than 0.5% per annum, and with range expansion including one *Key 1* Intensive Protection Zone (IPZ) population (>100 rhinos), to reach a confirmed national total of 1,200 rhinos by the end of 2026.

The baseline for the M&E on national high-level activities will be the national rhino status report of 31st December 2021. The main areas of focus will be as follows:

1. Rhino area security and monitoring staff deployment.
2. Staff capacity and skills.
3. Ranger welfare standards.
4. Equipment and technologies used for rhino conservation.
5. Black rhino population status.
6. Black rhino poaching levels.
7. Rhino-related arrests and court cases.
8. Number of rhino areas and acreage.
9. Stocking levels of rhino areas relative to ecological carrying capacity.
10. Rhino veterinary interventions.
11. Rhino horn stockpile data and management.
12. Resources to support rhino conservation and management.
13. Rhino communication and public engagement.
14. Rhino programme coordination.

The baseline for research priorities informing rhino conservation and management will be developed at the end of 2022.

Key Component	Target	Indicator	Verification	Risks
1. Rhino Protection and Law Enforcement	Rhino poaching kept at less than 0.5% per annum through effective law enforcement measures and stakeholder collaboration.	Percentage of rhinos poached per annum.	Rhino security reports.	Lack of support from key stakeholders to sustain the achievements. Illegal trade of rhino horn at unmanageable levels.
	Rhino horn stockpile and site strong rooms secured and managed to CITES standards.	Annually audited stockpiles at national and site levels with up-to-date databases.	Stockpile audit reports.	Rhino areas not submitting their stockpiles to the central strong room.

Key Component	Target	Indicator	Verification	Risks
2. Biological Monitoring and Management	National rhino population growth at minimum 5% per annum and mortality from other unnatural causes reduced to less than 0.5%.	Net national population growth per annum. Rhino mortality rate due to other causes.	Annual status reports, end-term review report.	Standardized rhino monitoring and reporting not being undertaken to the required standard by all rhino areas. Reporting not undertaken at national level and/or feedback not provided to site managers. Lack of support from partners and stakeholders. Annual rhino translocation plan not developed or implemented.
3. Population Expansion	To secure additional space in the next 5 years to host approximately 500 rhinos.	Total area secured. Number of rhinos in Tsavo IPZs. Number of new areas with a founder population.	Annual status reports	Lack of support from landowners. Lack of political goodwill.
4. Research informing Management	To provide information for adaptive management and protection of rhinos and habitats through priority research	Number of priority research reports informing management.	WRTI reports, annual status reports, peer-reviewed publications	Scientists not engaged in rhino research. Inadequate funding.
5. Stakeholder Engagement and Communication	National and county governments, communities, private landowners, judiciary systems and partners supporting implementation of the Plan.	Number of local communities, landowners and county governments supporting rhino conservation. Number of institutions actively participating in conservation education activities.	Social assessment results, annual status reports Rhino area education reports, curriculum, and publications	Lack of support from stakeholders, partners, and the general public.

Key Component	Target	Indicator	Verification	Risks
		Proportion of required funding and in-kind support secured from national and county governments.	Annual financial reports – through KWS / partner financial review process.	
6. Sustained Financing and Resources	Secured funding for implementation of the Plan activities.	Amount and proportion of required funding secured. Number of proposals funded.	Annual financial reports – through KWS / partner financial review process.	Support from Government, partners and donors not sustained.
7. Programme Management, Coordination and Collaboration	Action Plan effectively implemented by all stakeholders.	Number of committees functioning as per ToRs. Number of staff involved in the coordination of the National Rhino Programme. Number of rhino areas being managed through site action plans and annual implementation plans.	Minutes of committee meetings. National and site M&E reports. Plan end term review report.	Limited stakeholder involvement. Rhino areas not responding or reporting in a timely manner.

Site Action Plans

The Rhino Programme Office shall support rhino areas in developing site-specific action plans in line with the national Plan. This will help focus the Plan to each area. The planning process should be inclusive and involve all stakeholders for buy-in. The process will help the teams familiarize with the Plan, thus ensuring effective implementation at the site level. This process will also help create ownership of the Plan at grassroots level.

The site action plans will guide the development of annual implementation plans with budgets. The site implementation plans and budgets shall then be forwarded by the respective SAD's office for consolidation by H-SP. The H-SP through the RSC secretariat shall also keep track of implementation through monthly and quarterly reports. At the end of each year, progress shall be reviewed by the key implementers (site manager, scientist etc.) supported by the H-SP and in line with the established monitoring and evaluation framework.

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9. References

Emslie R. (2020). *Diceros bicornis*. The IUCN Red List of Threatened Species 2020: e.T6557A152728945. https://dx.doi.org/10.2305/IUCN.UK.2020-1.RLTS.T6557A152728945.en

Harper C., Ludwig A., Clarke A., et al. (2018). Robust forensic matching of confiscated horns to individual poached African rhinoceros. Current Biology 28: R13-R14.

Khayale C., Kariuki L., Chege G., et al. (2020). Progress on the Kenya black rhino Action Plan (2017–2021). Pachyderm No. 6.

KWS (2001). Conservation and Management Strategy for the Black Rhino in Kenya (2001-2005). Kenya Wildlife Service, Kenya.

KWS (2007). Conservation and Management Strategy for the Black Rhino and Management Guidelines for the White Rhino in Kenya (2007-2011). Kenya Wildlife Service, Kenya.

KWS (2012). Conservation and Management Strategy for the Black Rhino in Kenya, 2012-2016. Kenya Wildlife Service, Kenya.

KWS (2017). Kenya Black Rhino Action Plan (2017-2021). Kenya Wildlife Service, Kenya.

Moodley Y., Russo I.R., Dalton D. et al. (2017). Extinctions, genetic erosion and conservation options for the black rhinoceros (*Diceros bicornis*). Scientific Reports 7, 41417. https://doi.org/10.1038/srep41417.

Okita-Ouma B., Kock R., Amin R. et al. (2009). Proceedings of the East African Community Rhino Management Group inaugural meeting. Kenya Wildlife Service, Nairobi.

Soulé M.E. (ed.) (1987). Viable populations for conservation. Cambridge University Press, Cambridge, UK.

du Toit R.F., Foose T.F. and Cumming D.H.M. (1987). Proceedings of the African Rhino Workshop, Cincinnati, October 1986.e. Pachyderm, (Special Issue No 9).

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Annex I: Terms of References for the Rhino Programme Management Committees

A. Ministry responsible for Wildlife (Rhino) Policy Advisory Committee, and KWS Board of Trustees

The 7th edition of the Recovery and Action Plan for the Black Rhino in Kenya (2022-2026) coordination framework includes the KWS Board of Trustees and the Parent Ministry to provide high-level approvals and policy guidance on critical matters related to rhino conservation and management.

The Plan framework also introduces an advisory arm to the ministry to provide input on policy and high-level decisions.

B. Rhino Executive Committee (REC)

1. To make top-level decisions

2. To report to the KWS Board of Trustees and the Ministry of Tourism and Wildlife.

3. To appoint members of the RSC.

4. To provide guidance and approvals on key recommendations from the RSC.

5. To cover key matters on rhino management in at least two of its meetings per year.

6. To provide overall guidance on rhino conservation and management issues at all levels.

The REC will comprise the following members:

1. To facilitate timely decision-making, the REC was reconstituted in the previous Action Plan to be in line with KWS senior management structure.

2. Relevant experts to be invited to the REC meetings on a need basis, through the RSC Chair, to provide technical input on specific matters.

C. Rhino Steering Committee (RSC)

1. To oversee the implementation of the Plan.

2. To review annual monitoring and evaluation reports.

3. To review site and national annual status reports.

4. To report to the REC including providing recommendations for top-level decisions.

5. To report to relevant rhino stakeholders (through the RSC secretariat) on the progress of the Plan implementation.

6. To prioritize research projects.

7. To guide and support fundraising for implementation of the Plan.

8. To recommend novel technologies for rhino monitoring and surveillance.

9. To meet biannually.

10. To convene at least one meeting with all the rhino stakeholders and relevant partners each year.

The RSC will be constituted as follows:

1. Chairperson: KWS Director for Wildlife and Community Service Directorate (where the rhino programme is hosted).

2. Secretary: Head - Species Programmes (Rhino Programme Coordinator).

3. Head - Wildlife Protection Department.

4. Head - Parks and Reserves.

5. Head - Veterinary Services.

6. Chairman of the APLRS.

7. Secretary of the APLRS.

8. Treasurer of the APLRS.

9. Principal Research Scientist - WRTI

10. Chief Warden(s) (CW) - county-managed national reserve(s)

11. NGOs / partners with nationally implemented rhino conservation programme in Kenya.

12. Senior Assistant Directors of KWS regions with rhinos.

13. Co-opted technical experts as needed.

A Secretariat for the RSC shall be drawn from KWS, WRTI and APLRS.

D. Area Species Conservation Committees (ASCC)

To oversee the development and implementation of site-specific action plans based on the Action Plan.

1. To report to the RSC on the progress of implementation of activities at the area level.

2. To ensure harmony with other species action plans at the local level (through liaison with Head - Species Programmes).

3. To advise on appropriate technologies for their rhino areas.

4. To mobilize resources for implementation of site-specific action plans.

5. To identify site-specific priority research for rhino conservation.

6. To meet and report biannually.

The ASCC will be constituted as follows:

1. Chairperson: KWS Senior Assistant Director for relevant conservation area.

2. Secretary: Site Committee to designate an appropriate KWS Officer as the secretary.

3. KWS senior wardens from the rhino areas within the conservation area.

4. County government national reserve(s) Chief Warden(s) (CW) from the rhino area(s) within the conservation area.

5. Officers-in-charge of rhinos, Chief Executive Officers (CEOs) or managers of APLRS rhino areas within the conservation area.

6. Principal Research Scientist – WRTI.

7. Officer-in-charge of intelligence or security in the rhino areas within the conservation area.

8. Co-opted technical experts as needed.

E. The Association of Private and Community Lands Rhino Sanctuaries (APLRS)

1. To conserve and manage all rhino on private lands in consultation and collaboration with KWS.
2. To represent the private and community sector involved in the conservation and management of rhinos on private and community land.
3. To provide secure land and offer security to all rhinos held in private land.
4. To fundraise in consultation with KWS for rhino management on private lands.
5. To build capacity for rhino monitoring and security.
6. To offer advice on issues relating to rhino conservation and management to members of the Association.
7. To share logistical support among members.
8. To coordinate channelling of specific issues relating to rhinos on private and community land to the RSC.

The APLRS will be constituted as follows:
1. Chairman: as elected by members.
2. Secretary: as elected by members.
3. Treasurer: as elected by members.
4. Representatives of private and community land rhino sanctuaries.
5. Head - Species Programmes (Rhino Programme Coordinator)
6. Principal Research Scientist / Research Scientist - WRTI
7. Other members to be co-opted as decided by the Association.

Annex II: Key notes

Vision

A long-term aim of rhino breeding programmes is to maintain the potential of the species to adapt to natural selection pressures (i.e., to evolve further). Conservation biologists cannot yet be precise about the population size and composition that would be required to limit the rate of genetic loss through inbreeding, genetic drift, etc. to a specified level. However, the 'conventional wisdom' on rhino genetic management is to have 2,000-5,000 animals as a metapopulation for a species or subspecies.

Key Component: Rhino Protection and Law Enforcement

It is worth noting that there are two similar KPIs:

KPI 1a: Percentage of rhino population poached per area / year.

KPI 1d: Number of recorded rhino poaching attempts per area / year.

To clarify:

KPI 1a relates to actual mortalities due to poaching.

KPI 1d refers to attempts which have been foiled. It is important to note that these are only the documented cases and may not be very accurate.

KPI 1e may also indicate weak law enforcement at institutional or site level.

The less than 0.5% national poaching per annum target is based on previous poaching figures and to help towards the minimum 5% net growth per annum.

Key Component: Biological Monitoring and Management

<u>KPI 2b: Number of established fenced rhino areas (over 50% of ECC) managed through set percentage harvesting and updated ECC estimates.</u>

Set percentage harvesting is the removal of rhino at a constant rate from established populations stocked at over 50% of estimated ECC. The harvesting rate is set at a minimum average of 5% of the population / year, which is below the estimated intrinsic rate of increase for black rhino (between 8-9%). Application of the set or constant harvesting strategy must be adaptive in nature, with accurate monitoring of the population, with the strategy applied for at least five years to see its effect followed by a review and adjustment as required. The advantages of the set percentage harvesting include:
  - It does not require an accurate estimate of the ECC for black rhinos, thus removing any controversy around this.
  - It does not require knowledge of the maximum sustained yield for the population.
  - It is a simple and applicable concept for management.
  - More regular small removals from a population would pose less of a threat than fewer larger ones if there were overestimates of the ECC.

In smaller populations, consideration can be given to either removing a bigger percentage once every few years (averaging 5% / year) or by seeking to keep populations at or below 75% of ECC, and monitoring performance in case ECC may have been over- or under-estimated.

<u>Output 2.1 At least 99% confirmed national rhino population.</u>

There is a need for improvement (in some areas) and ensuring a degree of uniformity in monitoring rhino populations using the standardized individual ID based method implemented in all rhino areas. The following status categories of animals will be used:

Category A Easy ID	Individuals known by easily identifiable features and in particular **ear notches** (i.e., identifiable by 'all trained observers always').
Category B Harder ID	Individuals known by more subtle, harder-to-record ID features such as distinctive horn configurations, small ear nicks, major scars etc. Such animals will not always be identifiable by all trained observers and rather may only be identified by key observers and / or in photographs.
Category C Clean	Complete sightings of **clean** animals without clear ID features but with defendable and auditable evidence, e.g., photos showing horn shapes are different, or complete sightings of clearly different animals of different age and sex combinations. This applies to larger populations (e.g., > 100 animals).
Incomplete	Incomplete sightings (e.g., if both ears are not seen clearly).
Not in the population	Animals that have been translocated out of the population or that have died.
Missing	Animals in categories A, B and C not seen in the last 12 months are defined as **missing.**

The current population estimate for a given year is **the total number of animals in Category A, B and C that have been seen in the last 12 months**.

Missing animals are not counted in the current population estimate unless they are subsequently seen again when they can be added back.

In summary, the **only** animals counted in a population assessment will be:

Seen and identified in the last year with date stamped photograph of the sighting. To count as **seen** in the last 12 months, a good, date-stamped ID photograph of the sighting **must** be provided as evidence. Up-to-date sighting register books with quality-controlled ID forms (filed) and up-to-date master files should also be maintained.

Any verifiably distinct, clean animals seen during each year. Animals in Category C are **only** counted if there is defendable and auditable data. This will give a defendable **minimum clean** number. Defendable and auditable evidence would be, for example, photos of clean animals showing horn shapes are different, or complete sightings of clearly different animals of different age and sex combinations. This applies to larger populations (e.g., > 100 animals).

For small populations, it should be possible to obtain photographic evidence of all animals within a 12-month period, by focused and concerted effort.

For large populations particularly, this means some hard-to-trace animals might be left out in any given year. However, if they are subsequently found alive (photographed / verified), they will be added back into one of the categories A, B or C, and will thus be taken into account in the rolling four-year average and will not distort the overall picture.

<u>Output 2.2 Fenced rhino areas managed to achieve optimum growth, and to minimize genetic erosion and social pressure (and Output 2.3 Increases in net growth in under-performing populations).</u>

Activity 2.2.4 (and Activity 2.3.2) should also include the transfer of at least one unrelated rhino into each population every generation (14-year period), provided that this population is showing positive growth. The transferred animal must be an effective breeder. Note that the transfer of unrelated rhino could be of either sex. Transfer may be more safely achieved with cows, but since the availability of cows is limited in some cases, it may be that more risky male introductions will have to be attempted.

<u>Output 2.4 Rhino disease, predation and intraspecific mortalities kept to less than 0.5% per annum.</u>

The less than 0.5% target is based on the low average mortality rate of 0.69% (range 0.29% - 1.08%) in 2012-2016 due to unnatural causes for black rhino.

Key Component: Stakeholder Engagement and Communication

<u>Output 5.1 National and county governments, communities, private landowners, judiciary system, and partners supporting implementation of the Recovery and Action Plan for the Black Rhino in Kenya (2022-2026).</u>

Activity 5.1.5 Lobbying national and county governments to support rhino conservation needs to be done yearly to coincide with the time when the Cabinet Secretary gives a brief on the state of the environment to Parliament.

Annex III: Stakeholders in the Conservation of Black Rhinos in Kenya

Category	Collaborating institutions
National government ministries, departments, and agencies	Ministry of Tourism and Wildlife, Ministry of Foreign Affairs, Ministry of Interior and Coordination of Government, Kenya Wildlife Service, Directorate of Veterinary Services, National Management and Environment Authority, security agencies, other relevant ministries, departments and agencies.
County governments	County governments hosting existing and potential rhino areas.
Communities	Communities living adjacent to existing and in potential rhino areas, wildlife conservancies, community-based organizations.
Private and community conservancies	Members of Association of Private and Community Lands Rhino Sanctuaries.
Research and academic institutions	Wildlife Research Training Institute, national and international learning and research institutions, independent researchers.
Landowners	Current and potential owners of land hosting rhinos.
IUCN SSC African Rhino Specialist Group	Members of the IUCN SSC African Rhino Specialist Group.
East African Community Rhino Management Group	Kenya, Uganda, Tanzania and Rwanda.
Donors	Individuals, corporates, foundations, NGOs, Zoos, private trusts, bilateral and multilateral donors, international government funding agencies.
Media	Print and digital media, TV, radio, feature writers, bloggers, social media influencers.
Zoos	Zoos hosting black rhinos.

Annex IV: List of Participants of the Stakeholders Planning Workshop 28-29 July 2022 (Wildlife Research and Training Institute, Naivasha)

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