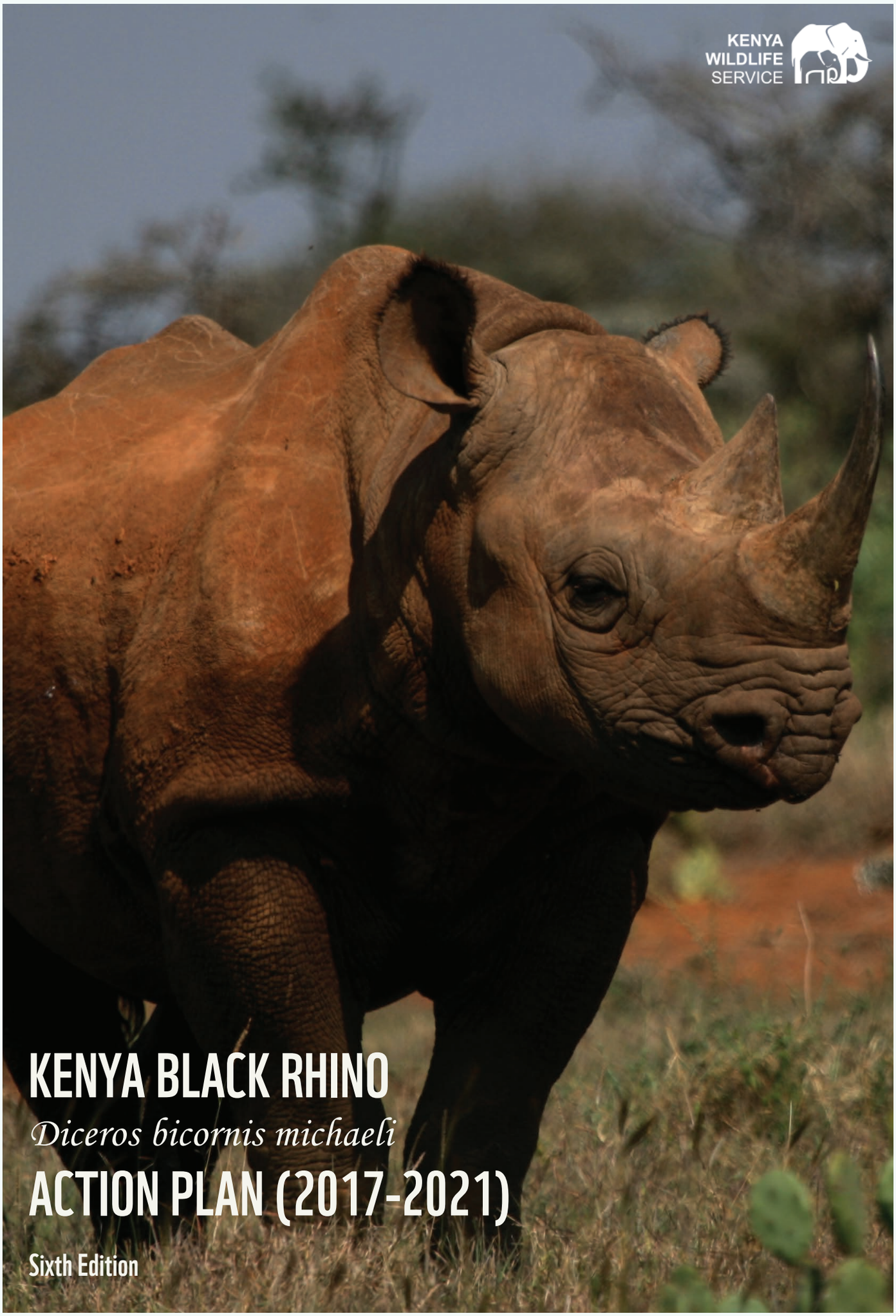

KENYA BLACK RHINO

Diceros bicornis michaeli

ACTION PLAN (2017-2021)

Sixth Edition

KENYA BLACK RHINO ACTION PLAN (2017-2021)

Sixth edition

Sixth edition, 2017: Produced at a workshop held from 8 to 11 May 2017 at the Sawela Lodge in Naivasha, Kenya.

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Acronyms and Abbreviations

AD	Assistant Director
AD ECA	Assistant Director - Eastern Conservation Area
AD MCA	Assistant Director - Mountain Conservation Area
AD TCA	Assistant Director - Tsavo Conservation Area
AfRSG	IUCN SSC African Rhino Specialist Group
APLRS	Association of Private Land Rhino Sanctuaries
ARMC	Area Rhino Management Committee
ASCC	Area Species Conservation Committee
BR&M	Biodiversity Research and Monitoring
CCTV	Close Circuit Television
CEC Wildlife	County Executive Committee Wildlife
CEOs	Chief Executive Officers
CITES	Convention on International Trade in Endangered Species of Wild Fauna & Flora
CO	Commandant
CO KWS LEA	Commandant Kenya Wildlife Service Law Enforcement Academy
COY	Company commander
CW	Chief Warden
CWCCC	County Wildlife Conservation and Compensation Committee
DAS	Domain Awareness System
DD	Deputy Director
DG	Director General
DRECA	Department of Regulatory Enforcement and Compliance Affairs
EAC-RMG	East Africa Community – Rhino Management Group
ECC	Ecological Carrying Capacity
GIS	Geographical Information Systems
GoK	Government of Kenya
GPS	Global Positioning System
GR	Game Reserve
H-EMBIM	Head – Ecological Monitoring and Biodiversity Information Management
H-F&B	Head – Fence and Building
H-HC	Head – Human Capital
H-ICT	Head – Information Communication Technology
H-SCM Management	Head – Species Conservation and
H-VET	Head – Veterinary Services
H-WPD	Head – Wildlife Protection Department
H-WCS	Head – Wildlife and Community Services
H-CC	Head – Cooperate Communication
H-CE	Head – Conservation Education
H-LS	Head – Legal Services
IAPS	Invasive Alien Plant Species
ID	Identifiable
IPZ	Intensive Protection Zone
IUCN	International Union for the Conservation of Nature and Natural Resources (The World Conservation Union)
KWCA	Kenya Wildlife Conservancies Association
KWS	Kenya Wildlife Service
KWS BoT	KWS Board of Trustees
LEA	Law Enforcement Academy
LATF	Lusaka Agreement Task Force
M&E	Monitoring and Evaluation
MPCC	Maximum Productivity Carrying Capacity
NGO	Non-Governmental Organisation
NP	National Park
NRT	Northern Rangelands Trust
OC	Officer in Charge
ODPP	Office of the Director of Public Prosecution
OPC	Ol Pejeta Conservancy
REC	Rhino Executive Committee
RhODIS	Rhino DNA Indexing System
RPC	Rhino Programme Coordinator
RS	Research Scientist
RSC	Rhino Steering Committee
SSC	Species Survival Commission
SW	Senior Warden
TRAFFIC Commerce	Trade Records Analysis Flora and Fauna In

Glossary

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, healthy population growth, to minimise 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 habitat carrying capacity, vegetation conditions etc.
Biological growth	The natural increase in a population's size, being the net result of additions from breeding and losses from natural mortalities, expressed as a percentage of the population size at the start of a year.
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).
Confirmed rhino	An individual rhino seen within one year.
Conservancies	Wildlife conservation areas owned and managed by local communities or private individuals or by partnerships between the two.
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).
Ecological carrying capacity	The maximum number of rhinos that can be supported by the resources of a specific area in the medium term.
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.
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 population segments suffer from inbreeding and associated reduced reproductive fitness (inbreeding depression) and elevated extinction risks; and loss of genetic diversity and reduced ability to adapt evolutionarily to environmental change.
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* - 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.
Invasive plant species	A subset of introduced or alien plant species that are rapidly expanding outside of their native range. Certain invasive plant species can smother and replace indigenous species and can significantly lower carrying capacities of rhinos and other species.

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.
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 population 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%.
Meta-population	A number of sub-populations of a species or sub-species managed collectively as one single population with occasional movement of animals from one sub-population to another.
Range state	A country or state in which rhinos currently occur or historically occurred.
R^{max}	The maximum possible biological growth rate.
Sanctuary	A small part of state-protected land, private land or communal land in which rhino are deliberately confined through perimeter fencing and where law enforcement staff are deployed at high density to protect the rhino population. The confinement of rhino within a sanctuary permits close observation and relatively intense management and protection of the rhino.
Translocation	Mediated 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.

Foreword

The development of the sixth edition of the Kenya Black Rhino Action Plan (2017-2021) follows the worst period in rhino conservation in the recent past, with reported rhino poaching of 5,703 black and white rhinos in Africa between 2012 and 2016. However, over the last three years poaching has declined in Kenya, which is the result of a commendable effort by the Government of Kenya in partnership with its local and international stakeholders.

The enactment of the Wildlife Conservation and Management Act 2013, with its punitive penalties, has been critical in tackling the impact of wildlife crime (poaching, trafficking and demand for rhino horn). So too has the establishment of the wildlife forensic and genetics laboratory, and the sustained awareness campaigns on the plight of the rhino and against the use of rhino horn products.

However, increased risk of detection has led to change in the way the criminals operate. So we continually need to build capacity, equip law enforcement units and enhance intelligence gathering.
Concerted efforts at local, regional and international level will be required to sustain the gains and successes achieved. The KWS management recognises and appreciates the dedication and commitment of the rhino monitoring staff on state, private, community and county government lands with rhinos, and the support of local and international partners in rhino conservation.

Kenya's wildlife is the major tourism attraction that generates an annual income of more than US $1bn to the national economy. The rhino is one of the 'big five' that constitute the core of the tourism industry and go a long way in contributing to KWS's vision of 'Saving the last great species and places on Earth for humanity'. So it is important to invest adequately in the conservation of black rhino and cherish these magnificent animals for posterity.

On behalf of the KWS board of trustees, I thank all those who participated in the production of this Action Plan. I am confident that by implementing the activities in this Action Plan, rhinos will be secure, in good health and continue to increase in numbers. To this end, I am proud to present to you this sixth edition of the Black Rhino Acton Plan and welcome all to support its implementation.

Julius Kimani,
Ag Director General, Kenya Wildlife Service

Preface

The conservation and management of the black rhino continues to face various challenges – including poaching due to the increased demand for rhino horn, and limited secure space for expanding the rhino range. With the increasing challenges, investing in rhino conservation has become an expensive venture which requires the collaboration of all the relevant conservation partners and government agencies.
Implementation of the 2012-2016 Black Rhino Conservation and Management Strategy came at a time when poaching was at its highest in the recent past, with Kenya losing 30, 59 and 35 black and white rhinos in 2012, 2013 and 2014 respectively.

However, I am glad to report that through concerted efforts by all stakeholders, the trend was reversed and the losses minimised to 11 in 2015 and 10 in 2016 – thus maintaining a less than 1% loss cumulatively for black and white rhinos for two consecutive years.

I call on all stakeholders to sustain the efforts as we begin implementation of the sixth edition of the Black Rhino Action Plan. This will continue to cement Kenya's position in the continent – where it was ranked third with 679 black rhinos as at end of 2015, after Namibia with 1,957 and South Africa with 1,893. Kenya's black rhino numbers had increased to 696 by the end of 2016.

Implementing this Action Plan will involve consolidating the efforts made in the previous five strategic plans and taking into account the findings from the independent National Rhino Audit undertaken at the end of 2016.

Given that considerable resources will be required to implement this Action Plan, I call on conservation partners to support Kenya towards this global cause. I am confident that together we shall achieve the listed goal and objectives and I look forward to seeing a happier black rhino population on our beautiful landscapes for many years to come.

Samuel M. Kasiki, PhD, OGW
Deputy Director, Biodiversity Research and Monitoring,
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 conservation concern following a dramatic reduction in their population in the 1970s and early 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 1987.

Second, rhinos are a flagship species, a highly charismatic animal that can serve 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 sixth edition of the Black Rhino Action Plan was led by a core group from the National Rhino Steering Committee, and considered the findings of the mid-term review of the 2012-2016 strategy and the independent rhino audit. It involved a highly consultative and participatory process which included a stakeholder planning workshop and stakeholder validation workshop to review the draft Action Plan.

The long-term vision of the Action Plan is: **'To have a meta-population of at least 2,000 black rhinos of the eastern African subspecies *(Diceros bicornis michaeli)* in Kenya, and in suitable habitats as a global heritage'.**

The overall goal for the next five years is: **'To achieve a meta-population of 830 black rhinos by the end of 2021; a net growth of at least 5% per annum maintained in at least six established populations; positive net growth achieved in all recovering populations'.**

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

Like all its fellow African rhino range states, Kenya faces a serious poaching threat. The Action Plan incorporates a zero-poaching framework[2] to overcome this challenge. The Action Plan also introduces a strategic objective on sustained financing as this has been a major constraint in the delivery of the previous Kenya rhino strategies.

This Plan also continues from the previous two strategic plans in using the well-established sanctuary populations as a 'breeding bank' to restock former range areas capable of supporting large populations not only in Kenya but also across east Africa. Kenya has played a key role in the establishment of the East African Rhino Management Group for regional cooperation to conserve the eastern black rhino.

This Kenya Black Rhino Action Plan represents the hard work of many dedicated conservation professionals and the voices of many who were given the opportunity to actively participate 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, both as an economic asset for its national constituency, and as a symbol of Kenya's deep commitment to the conservation of biodiversity.

[2]The zero-poaching framework specified in this Action Plan is a collection of tools that help in the monitoring, tactical planning and implementation, and performance evaluation of anti-poaching activities. The framework is developed with six key pillars of regular assessment, use of best available technology, adequate field staff capacity, local community engagement, improved approaches for prosecution and cooperation in sharing information regionally and nationally.

1. Introduction and Background

Between 2012 and 2016, 5,703 black and white rhinos were reported poached in sub-Saharan Africa, with Kenya losing 145 animals over the same period. The poaching crisis in recent years has been at the highest level since the late 1980s and threatens to undo much of the good conservation work that has been carried out during the last 20 years.

Kenya responded to the previous crisis by formulating and implementing the 1989 wildlife policy framework. This policy led to the establishment of fenced sanctuaries in both state and private lands. A range of other measures were also implemented, notably the creation of the Rhino Programme within KWS.

After 1993, few cases of poaching were reported and the population started to increase. Since 2001, national plans for conserving black rhinos have increasingly focused on enhancing growth through biological management, and rhino numbers increased – achieving the 5% net growth per annum target for several years. This was largely the result of sustained high growths in the well-established sanctuaries.

Subsequently, given the need to find more areas to invest surplus rhinos, the 2007-2011 Rhino Conservation and Management Strategy promoted the establishment of Intensive Protection Zones (IPZs), with Tsavo West IPZ created and put into operation in 2008.

These strategic plans, and the actions that have been implemented as part of them, have been generally successful. Nonetheless, the 2012-2016 strategic plan period was particularly difficult due to the escalation in poaching, especially during 2012-2014. This placed huge constraints on resources.

In 2014, a major review of the implementation of Kenya's black rhino strategy was carried out[3]. The review concluded that "*the Strategy is not on track to achieving the goal of 750 black rhinos by the end of 2016. While this can be attributed largely to the very harsh environment that rhino conservation in Kenya and Africa as a whole is operating in, the fact that the rhino fraternity in Kenya is not working as a unit under the Rhino Steering Committee umbrella cannot be overlooked. Revision of the goal is not recommended at this stage but concerted efforts have to be put in place to sustain the various anti-poaching measures initiated in early 2014 and improve the national growth rate towards the 5% per annum target. This will need significant investment and there is now an opportunity to reinvigorate the remaining period of the Strategy as it continues to receive support from all the stakeholders including major funding institutions interviewed."* The mid-term review included detailed recommendations on each strategic objective to fast-track its progress.

The sustained high impact anti-poaching measures put in place by the Kenya Government, including enactment of the Wildlife Conservation and Management Act (2013), were effective and the poaching was brought below 1% during 2015 and 2016 from between 3% and 5% in the previous three years (Figure 1).

[3]Mid-Term Review (2012-2014) of Conservation and Management Strategy for the Black Rhino in Kenya (2011-2016)

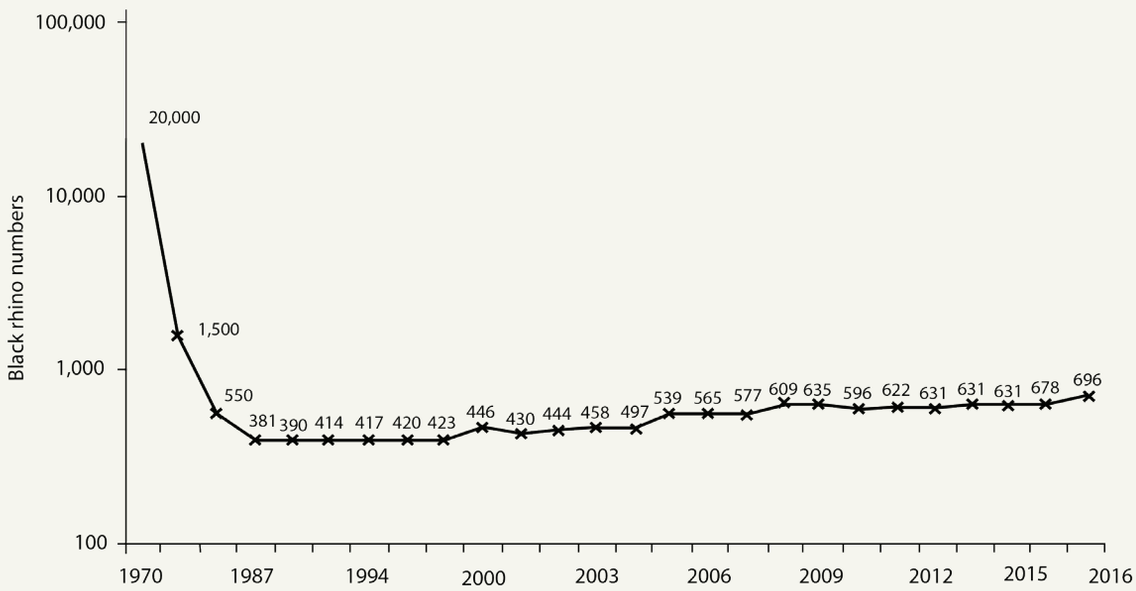


Figure 1. Black rhino numbers in Kenya from 1970 to 2016 in logarithmic scale showing the sharp decline in the 1970s and slow recovery from the mid-1980s. Note the effect of poaching in recent years and the impact of anti-poaching measures in 2015 and 2016.

An independent national rhino audit was also carried out at the end of the 2012-2016 strategic plan to contribute to the preparation of Kenya's next five year Black Rhino Action Plan. It included an assessment of rhino numbers and related monitoring and security standards in all rhino areas, and detailed recommendations for management action.

The development of this, the sixth Kenya Black Rhino Action Plan (2017-2021), considered the findings of both the mid-term review and the independent rhino audit. It involved a five-stage process.

1. Preparation of documents for the Black Rhino Stakeholders' Planning Workshop.
2. A Black Rhino Stakeholders' Planning Workshop to assess problems and constraints on conserving black rhinos in Kenya, and to develop the Kenya Black Rhino Action Plan (2017-2021) framework and the strategic objective log-frames.
3. A Stakeholders' Validation Workshop to review the draft Kenya Black Rhino Action Plan (2017-2021).
4. Presentation of the Kenya Black Rhino Action Plan (2017-2021) to the Rhino Steering Committee for further comments.
5. Endorsement of the Kenya Black Rhino Action Plan (2017-2021) by the Rhino Executive Committee and the KWS Board of Trustees (KWS BoT).

Kenya remains the stronghold of the eastern black rhino subspecies (*Diceros bicornis michaeli*), conserving just over three quarters (77%) of the wild population at the end of 2015. As at the end of 2016, Kenya's meta-population included one IUCN SSC African Rhino Specialist Group (AfRSG) rated *Key 1*, five *Key 2* and four *Important* populations that are of continental significance. Kenya's black rhinos are conserved in nine state, four private, two county and one community lands across the country (Figure 2).

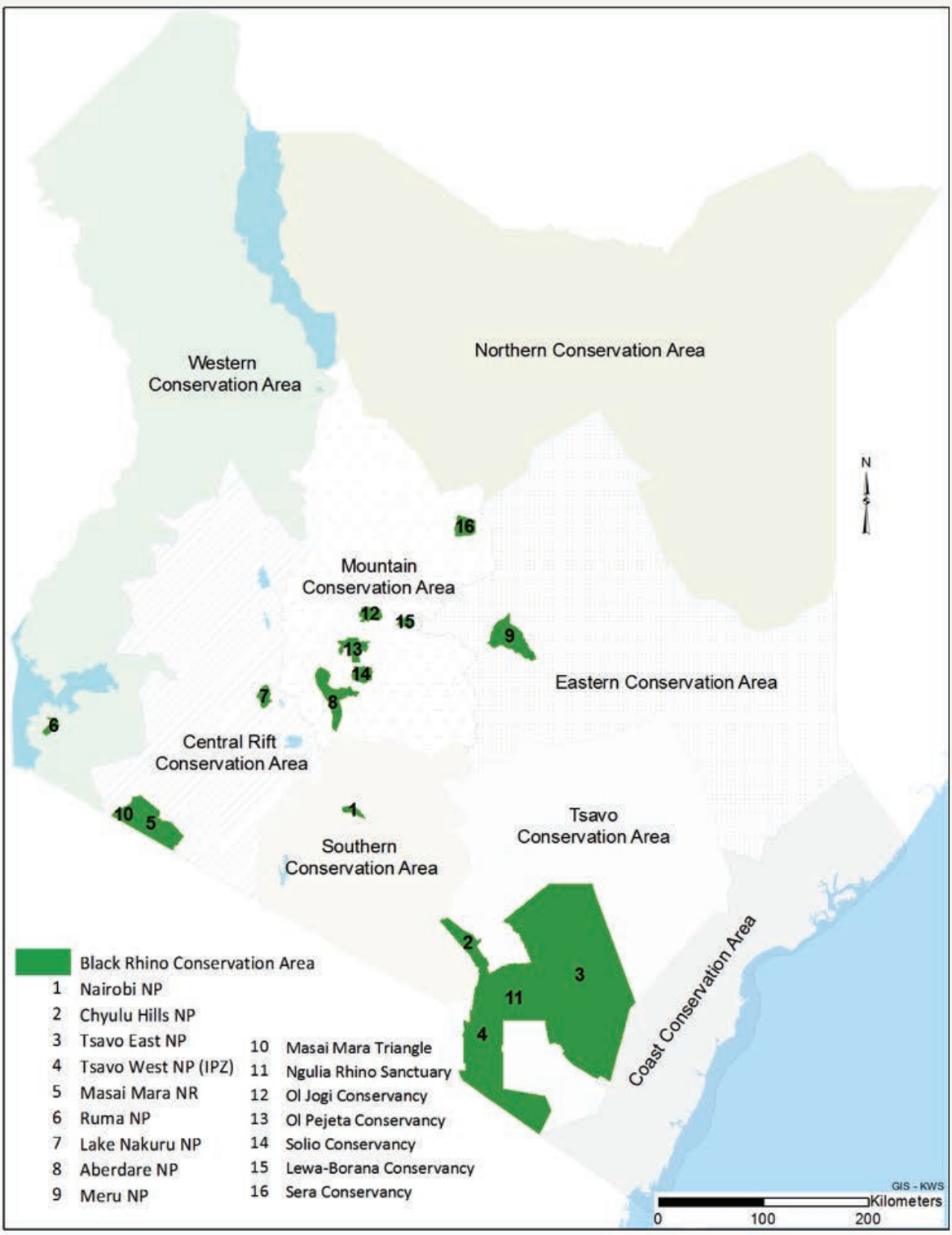


Figure 2. Kenya's black rhino conservation areas, December 2016.

2. Layout of the Action Plan

Part of Action Plan	Definition
Long-term Vision	An inspirational and relatively short statement of the envisioned status of *D. b. michaeli* 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 towards achieving the long-term vision of the Action Plan.
Key Components	Main heading(s) or strands under which the Action Plan is organised. 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 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	Time 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.
Specific Projects	List of key projects for funding and implementation.

The overall goal(s) and outputs of this Action Plan are formulated to be **SMART**

S - Specific

M - Measurable

A - Achiveable

R - Realistic

T - Time-bound

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

Long-term Vision	To have a meta-population of at least 2,000 black rhinos of the eastern African subspecies (*Diceros bicornis michaeli*) in Kenya, and in suitable habitats as a global heritage.				
Overall Goal	To achieve a meta-population of 830 black rhinos by the end of 2021; a net growth of at least 5% per annum maintained in at least six established populations; positive net growth achieved in all recovering populations.				
Key Components	**1. Rhino Protection and Law Enforcement**	**2. Biological Monitoring and Management**	**3. Communication and Engagement**	**4. Sustained Financing**	**5. Programme Management, Coordination and Collaboration**
Strategic Objective	To strengthen rhino protection and law enforcement in all rhino areas, with rhino poaching kept low at less than 1% per annum.	To enhance biological monitoring and management of each rhino population and their respective habitats to optimise the net growth of the national population, expand their range and maintain genetic diversity.	To use targeted communication and engagement of relevant stakeholders to increase the understanding and support for rhino conservation in Kenya.	To sustain financing for rhino conservation at all levels for delivery of all key components of the Kenya Black Rhino Action Plan (2017-2021).	To ensure effective programme management, coordination and collaboration nationally, regionally and internationally to achieve the strategic objectives of the Kenya Black Rhino Action Plan (2017-2021).
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 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 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 of a minimum of 5% per annum averaged over four years. **KPI 2c**: Proportion of confirmed animals in each population. **KPI 2d:** Number of IPZs fully operational and number of fenced areas extended. **KPI 2e:** Number of populations with less than 20 rhinos.	**KPI 3a:** Number of local communities and landowners supporting rhino conservation. **KPI 3b:** Proportion of required funding secured from national and county governments. **KPI 3c:** Number of media briefings, press releases, features and articles per annum. **KPI 3d:** Number of local education institutions participating in rhino conservation activities.	**KPI 4a:** Variances between actual costs and budgeted costs. **KPI 4b:** Proportion of required funding secured.	**KPI 5a:** Proportion of required staffing, finance and equipment provided to the Rhino Programme, at the KWS headquarters, annually. **KPI 5b:** Kenya Black Rhino Action Plan (2017-2021) monitored and evaluated annually. **KPI 5c:** Number of rhino areas being managed through annual action planning. **KPI 5d:** Number of committees functioning as per ToR on an annual basis.
Outputs	**1.1** Strengthened rhino protection and law enforcement systems with rhino poaching kept low at less than 1% per annum. **1.2** Rhino horn stockpiles secured and managed to standards.	**2.1** At least 99% confirmed national rhino population. **2.2** Fenced rhino areas managed to achieve optimum growth and to maintain meta-population genetic diversity. **2.3** Increases in net growth in existing under-performing populations. **2.4** Rhino disease and health related mortalities kept to less than 0.5% per annum. **2.5** A standardised rhino monitoring and reporting system at site and national level. **2.6** At least two fully operational and strengthened Intensive Protection Zones (IPZs) and additional areas identified for national population expansion. **2.7** At least two fenced rhino areas extended.	**3.1** National and county governments, communities, private land owners and partners supporting implementation of the Kenya Black Rhino Action Plan (2017-2021). **3.2** Accurate, responsible and timely briefings, articles, websites, radio, TV and social media coverage on rhino conservation issues. **3.3** Rhino conservation promoted in education programmes.	**4.1** Secured funding for implementation of the Kenya Black Rhino Action Plan (2017-2021).	**5.1** Strengthened Rhino Programme at KWS headquarters. **5.2** Kenya Black Rhino Action Plan (2017-2021) monitored and evaluated annually. **5.3** Rhino areas managed through annual action plans. **5.4** Relevant partners and stakeholders with collaboration agreements in place. **5.5** Functional coordination and management committees at all levels.

4. Vision and Overall Goal

Long-term vision

To have a meta-population of at least 2,000 black rhinos of the eastern African subspecies (Diceros bicornis michaeli) in Kenya, and in suitable habitats as a global heritage[4].

The minimum number of black rhinos needed for a meta-population that will ensure the long-term survival of this subspecies is recognised as being 2,000[5] (see key notes in Annex II). The sooner this target can be achieved, the greater the reduction in loss of overall genetic diversity.

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 Community committed themselves to working together to achieve effective rhino conservation in the region. They agreed a shared regional strategy to achieve stated goals, one of which was '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 Kenya Black Rhino Action Plan (2017-2021), Kenya will continue to collaborate with the black rhino range states within east Africa to achieve this regional goal.

Overall Goal

To achieve a meta-population of 830 black rhinos by the end of 2021; a net growth of at least 5% per annum maintained in at least six established populations; positive net growth achieved in all recovering populations.

The previous strategy (2012-2016) was based on a minimum 5% net growth per annum for the national population. The 5% net growth per annum has been the recommended minimum meta-population management target in many national rhino plans – just over half of R^{max} (9%). This growth target is net of mortalities, including poaching losses, which have been significant in recent years.

In addition to the established black rhino populations, Kenya's meta-population also consists of several recovering populations and some non-viable populations. Therefore, a more realistic goal has been set for the next five years whereby the existing established populations are managed for optimum growth through maintaining densities at productive levels (Figure 3).

The overall objective of the Kenya Black Rhino Action Plan (2017-2021) is to use the established populations as a 'breeding bank' for the provision of a continuous supply of rhinos to build up other populations and to expand into new secure areas with suitable habitats. This has also been the rationale for the previous two strategies.

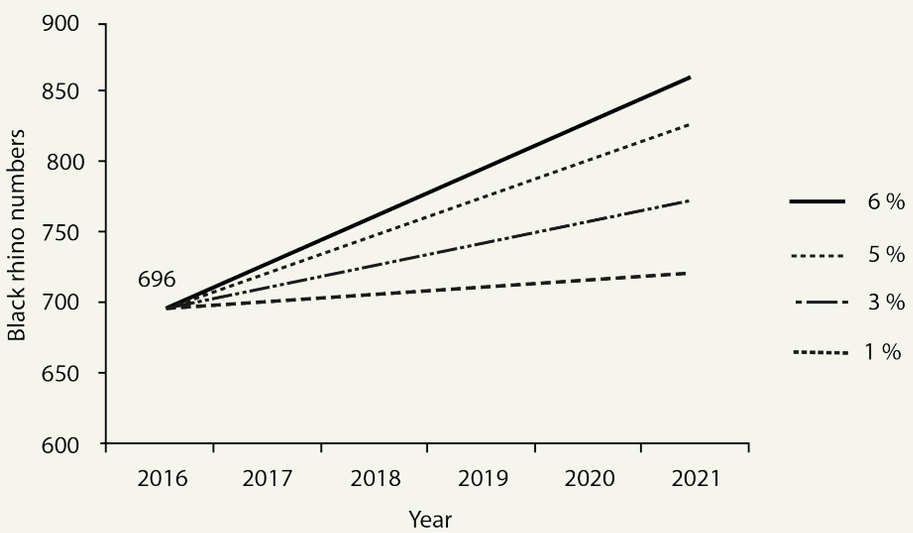


Figure 3. National black rhino population growth projections at different growth rates (2017–2021).

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

[5] du Toit, R. F., Foose, T. J. & Cumming, D. H. M. (1987): Proceedings of African Rhino Workshop, Cincinnati, October 1986. Pachyderm 9: 1–33

5. Key Components

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

Key Component 1: Rhino Protection and Law Enforcement

Strategic objective:
To strengthen rhino protection and law enforcement in all rhino areas, with rhino poaching kept low at less than 1% per annum[6].

Rationale and considerations:

There has been a significant increase in rhino poaching for the illegal trade in its horn in recent years due to new emerging uses of rhino horn and the extremely high price tag on the black market. This has had a significant impact on Kenya's ability to achieve its rhino growth target during the last strategy. It is also undermining the gains and efforts of rhino conservation over the last two decades in the country.

The recent reduction in rhino poaching needs to be continued and maintained as part of a wider wildlife crime preventive approach. Each rhino conservation area needs to realign and strengthen its security and rhino monitoring operations. It is essential that sufficient security and rhino monitoring staff, vehicles and field kits are provided. Fences in rhino sanctuaries must be strictly maintained and operated. Modern law enforcement equipment needs to be deployed – including appropriate firearms and surveillance technologies, digital radio systems with central command centres based on the Domain Awareness System (DAS) and the rhino database (Kifaru) for law enforcement and rhino monitoring, reporting and tactical planning. Appropriate training also needs to be undertaken. Regular in-field assessments need to be conducted. Improved and well-coordinated intelligence networks and information sharing will be critical in ensuring that threats to rhinos are mitigated. All these should be addressed simultaneously within a zero-poaching framework.

It is also necessary to have standard operating procedures in place when poaching occurs and to try to arrest and convict as many rhino poachers and traffickers as soon as possible. The use of dogs to recover horns and track poachers needs to be put into operation at effective levels in all rhino areas.

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 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. Guidelines that have been developed for vetting and retaining rhino security and monitoring staff should be institutionalised. Ranger welfare standards need to be adopted from existing best practices and implemented.

Effective safeguarding of rhino horn stockpiles must continue through regular auditing, and use of micro-chipping, CCTV security systems and databases.

In addition, the nature and scale of rhino horn poaching across Africa requires increased cooperation with other security wings, not just at a national level but also regionally, continentally and internationally. Participation in various meetings is encouraged. Cross-border security operations need to be maintained and where necessary enhanced, and intelligence sharing and analysis improved.

[6] 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; site 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 low at less than 1% per annum.	1.1.1 Establish / maintain separate rhino monitoring and security units in all rhino areas.	Q1 Y1, and then ongoing	SWs, APLRS area managers, CW (Narok County), RPC	Number of rhino areas with separate security and rhino monitoring units (annual status reports).
	1.1.2 Establish and maintain rhino security personnel at required levels in all rhino areas.	By Q4 Y1, and then subsequent annual reviews	DG, CEOs (APLRS areas), CEC Wildlife, CW (Narok County)	Rhino area security personnel strength as a percentage of desirable level (rhino area assessment and requirements document; annual status reports).
	1.1.3 Establish and maintain law enforcement equipment and field kit to minimum required levels in all rhino areas.	By Q4 Y1, and then subsequent annual reviews	Head-Security (KWS, APLRS areas), CW (Narok County)	Number of rhino areas with equipment and field kit at minimum required levels (rhino area assessment and requirements document; annual status reports).
	1.1.4 Provide and maintain sufficient number of reliable security and fence maintenance vehicles with the required fuel and maintenance budget allocations in all rhino areas.	By Q4 Y1, and then ongoing	DG, CEOs (APLRS areas), CEC Wildlife, CW (Narok County)	Rhino area operational security and fence maintenance vehicles as a percentage of desirable level (rhino area assessment and requirements document; annual status reports).
	1.1.5 Adopt and implement existing ranger welfare standards.	By Q4 Y1, and then subsequent annual reviews	DG, CEOs (APLRS areas), CEC Wildlife, CW (Narok County)	Number of rhino areas with ranger living conditions meeting defined standards (annual status reports).
	1.1.6 Provide regular on-site training (with evaluation) to security rangers in specific rhino protection and anti-poaching tactics in all rhino areas.	Y1-Y5 (annually)	Head-Security (KWS, APLRS areas), CW (Narok County)	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).
	1.1.7 Establish adequate patrolling and response capabilities through law enforcement monitoring, reporting and tactical planning in rhino areas.	Q1 Y1, and then ongoing	Head-Security (KWS, APLRS areas), SWs, CW (Narok County), research scientists (data analyses)	Patrol effort and threat encounter indicators (monthly reports; *Kifaru*). Number and percentage of carcasses of rhinos outside critical sighting interval in each rhino area per annum (annual status reports; *Kifaru*).
	1.1.8 Establish and maintain rapid response unit(s) in all rhino areas.	Q4 Y1, and then ongoing	Head-Security (KWS, APLRS areas), CW (Narok County)	Number of rhino areas with rapid response unit(s) (annual status reports).
	1.1.9 Enhance and maintain effective and coordinated intelligence gathering networks.	Q1 Y1, and then ongoing	Head-Intelligence (KWS), Head- Security (APLRS areas), CW (Narok County)	Number of intelligence led arrests (security reports). Number of recovered weapons and horns (security reports).
	1.1.10 Maintain and effectively use intelligence database for protection of rhinos.	Q1 Y1, and then ongoing	Head-Intelligence (KWS), Head-Security (APLRS areas), CW (Narok County)	Number of intelligence-led arrests summarised at criminal level[7] and using information from the intelligence database (security briefing reports).
	1.1.11 Establish and maintain fully operational GPS enabled digital radio system with central command room in all rhino areas.	By Q4 Y2, and then ongoing	Head-Security (KWS, APLRS areas), CW (Narok County)	Number of rhino areas with fully operational GPS enabled digital radio system (monthly reports; annual status reports; DAS; Kifaru).

[7] Arresting a person higher up a criminal network is likely to have a far bigger impact than arresting a low level poacher.

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
	1.1.12 Test and deploy approved technologies for enhancing security in rhino areas with staff trained in their use.	Ongoing, reviewed annually	RSC, REC, RPC, SWs, APLRS area managers, CW (Narok County)	Number of rhino areas using approved technologies for security (security reports).
	1.1.13 Establish capacity within KWS forensic and genetics laboratory to undertake RhODIS compatible analyses.	Q4 Y1	H-Vet, relevant research institutions	Number of Kenyan rhinos populated in RhODIS database (RhODIS). Number of prosecutions based on forensic evidence from RhODIS (court records; KWS security reports).
	1.1.14 Continue to contribute to the continental RhODIS database.	Ongoing	H-Vet, Head-Security (KWS), Head-DRECA	Number of Kenyan rhino samples and percentage of current confirmed population sampled and included in continental RhODIS database annually (RhODIS database).
	1.1.15 Sensitise and gazette[8] prosecution officers and experts with wildlife DNA forensic knowledge.	Q4 Y1, and then ongoing	Head-Security (KWS), H-Vet	Number of successful prosecutions based on forensic evidence (court records; KWS security reports). Number of gazetted prosecution officers and experts in wildlife DNA forensic (gazette notices).
	1.1.16 Produce crime scene management procedures.	Q4 Y1, and then ongoing	Head-Security (KWS, APLRS areas), CW (Narok County)	Number of rhino areas effectively using crime scene management procedures (annual status reports).
	1.1.17 Train and gazette specialised staff in scene of crime investigation.	Q4 Y1, and then biennially	Head-Security (KWS, APLRS areas), CW (Narok County)	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 scene' (annual status reports).
	1.1.18 Review, update and implement an effective fence maintenance plan in rhino sanctuaries.	Q4 Y1, and then ongoing	H-F&B, SWs, APLRS area managers	Number of fenced rhino areas meeting required fence standards (annual status reports).
	1.1.19 Consolidate and maintain tracker dog units to effective levels in rhino areas.	Q1 Y2, and then ongoing	Head-Security (KWS), SWs, APLRS area managers, CW (Narok County)	Number of trained dog units assessed to be operating at effective levels in each rhino area (annual status reports). Number and percentage of poaching incidences successfully dealt with dog units in each rhino area (annual status reports).
	1.1.20 Acquire, train and deploy sniffer dogs at site and ports / borders for collecting evidence admissible in courts.	By Q4 Y1, and then ongoing	Head-Security (KWS, APLRS areas), CW (Narok County), Head-Intelligence (KWS), partners	Number of effective sniffer dog units (annual status reports).
	1.1.21 Review, update and implement standard procedures for periodic vetting of all rhino security and monitoring staff.	Q1 Y1 (guidelines), annual (vetting)	Head-Security (KWS), RPC, SWs, APLRS area managers, CW (Narok County)	Proportion (number) of rhino security and monitoring staff vetted annually in each rhino area (annual status reports).

[8] A gazetted officer is an officer whose appointment is published in the national government gazette (Kenya gazette) for legal purposes.

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
	1.1.22 Improve and synchronise cross-border security operations across Mara-Serengeti ecosystem.	Q1 Y1, and then ongoing	Head-Security (KWS), Head-Intelligence (KWS), CW (Narok County)	Number of synchronised operations (cross-border security meeting minutes and reports).
	1.1.23 Establish / maintain cooperation and collaboration with security agents at ports of entry and exit.	Q1 Y1, and then ongoing	Head-Security (KWS), Head-Intelligence (KWS)	Number of jointly-led seizures / arrests at ports of entry and exit (KWS security reports).
	1.1.24 Establish contingency plans for securing rhino sanctuaries from unforeseen threats including illegal invasion by herders.	Q1 Y1	KWS BoT, REC, DG, CEOs (APLRS areas)	Approved contingency plan (REC meeting minutes; plan).
1.2 Rhino horn stockpiles secured and managed to standards.	1.2.1 Enhance and maintain security and management of rhino horn stockpiles to established standards.	Q1 Y1, and then ongoing	Head-Security (KWS), Head-DRECA, RPC, SWs, APLRS area managers, CW (Narok County), H-ICT	Number of annually audited stockpiles (stockpile audit reports). Proportion of stockpiled horns with profiles on RhODIS database (stockpile audit reports; RhODIS database). Number of stockpile sites with up-to-date database (stockpile audit reports). 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 and equipment).
2. Political goodwill and support (local, national and regional).
3. Fully functioning Rhino Coordination Programme.
4. All actors are committed to implementing their activities

Specific projects:

1. Establishing rapid response units in rhino areas.
2. Establishing GPS-enabled digital radio security system with central command room in rhino areas.
3. Establishing capacity within KWS forensic and genetics laboratory to undertake analyses compatible with RhODIS.
4. Developing crime-scene management procedures; training and gazettement of experts in wildlife DNA forensics.
5. Equipping rhino security units (vehicles, surveillance equipment and field kits).
6. Upgrading of rhino area fences.
7. Developing contingency plans for unforeseen threats to rhino sanctuaries.
8. Establishing functional tracker dog units in rhino areas.
9. Testing and deploying approved technologies for enhancing security.
10. Providing on-site training (with evaluation) to security rangers in specific rhino protection and anti-poaching tactics.

Key Component 2: Biological Monitoring and Management

Strategic objective:

To enhance biological monitoring and management of each rhino population and their respective habitats to optimise the net growth of the national population, expand their range[9] and maintain genetic diversity.

Rationale and considerations:

Rhino translocations and stocking density management are key biological management components aimed at achieving high meta-population growth rates. This is because breeding performance can start to decline once densities exceed threshold levels. This requires reliable data on population density and estimates of rhino (and browser) ecological carrying capacity (ECC) of fenced areas. ECC estimates have been documented for fenced areas, and some may need updating.

The proportion of rhinos in the Probable and Guesstimate categories (missing animals; i.e., animals that have not been seen within 12 months) has increased significantly in some rhino areas, and this needs to be addressed.

A rhino translocation plan needs to be produced at the start of each year based on set percentage harvesting to maintain high growth (for established sanctuaries), and for maintaining genetic diversity and rhino health. Genetic profiling of Kenya's rhinos is recommended on the back of the successful RhODIS system and recent important research findings[10].

This plan continues from the previous one in using the well-established sanctuary populations as a 'breeding bank' for the provision of a continuous supply of rhinos to restock former range areas capable of supporting large populations. The target annual growth rate of 5% in established sanctuaries should be kept, based on their high net growth over the last few years. Growth in recovering populations is expected to show a positive trend during the period of this new plan.

A growing national population will require more secure space[11]. The ECC of existing areas can be improved through habitat management such as controlling invasive alien plant species (IAPS) and reducing competing browser densities. Ensuring reliable and consistent supply of water, providing food and mineral supplements where needed and monitoring and controlling disease will also help ensure healthy populations for optimum growth.

However, some established sanctuaries remain overstocked. The emphasis on strengthening existing IPZs which can support large populations must continue, as well as the expansion of secure sanctuaries. This will require significant commitment, sufficient resources and well trained man power.

Biological management requires reliable field monitoring in order to make informed meta-population management decisions based on confirmed rhinos to maintain population growth rates. Apart from assessing changes in numbers over time, a number of metrics (such as average inter-calving interval, age at first

[9] Range expansion also including to former range states as part of EAC-RMG.
[10] Extinctions, genetic erosion and conservation options for the black rhinoceros (Diceros bicornis) (2017). Scientific Reports 7, Article number 41417, DOI: 10.1038/srep41417.
[11] This also needs to be considered as part of the EAC-RMG.

calving, mortality rate) are used to assess population performance through annual status reporting.

The individual ID-based rhino monitoring implemented in Kenya rhino areas also functions as an important audit, and provides early warning of possible missing or poached animals. Rhino monitoring capacity and data quality have declined significantly in some rhino areas over the last few years and there is an urgent need to get monitoring up to the required standard in all rhino conservation areas.

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[12] of a minimum of 5% per annum averaged over four years (annual status reports) (see key notes in Annex II).

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

KPI 2d: Number of IPZs fully operational and number of fenced areas extended (annual status reports; M&E reports)[13].

KP1 2e: Number of populations with less than 20 rhinos (annual status reports).

[12] Set percentage harvesting would take into account animals removed through poaching.
[13] Measurable criteria for a fully operational IPZ will be defined as part of output 1.1.

Output	Activity	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 Implement appropriate rhino survey methods in areas that are difficult to monitor.	Q1 Y1, and then ongoing	RSC, RPC, RSs, SWs, APLRS area managers, CW (Narok County	Percentage of confirmed rhinos in each rhino population (with up to date master ID files including date-stamped photographs; monthly and annual status reports).
	2.1.2 Re-establish standardised rhino monitoring in Solio GR.	Q4 Y1, and then ongoing	RPC, AD-MCA, Solio GR manager	Number/proportion of confirmed rhinos (master ID file).
	2.1.3 Enforce implementation of safe, warning and critical rhino sighting intervals in all rhino areas.	Q1 Y1, and then ongoing	RPC, SWs, APLRS area managers, CW (Narok County)	Number of rhinos within safe, warning and critical sighting intervals (monthly reports).
	2.1.4 Regularly ear-notch rhinos as a means of ensuring all animals can be reliably identified in all areas.	Ongoing	DG, CEOs (APLRS areas), RPC, SWs, APLRS area managers, CW (Narok County), partners	Percentage of accurately identifiable rhinos in each area (annual status reports).
2.2 Fenced rhino areas managed to achieve optimum growth and to maintain meta-population genetic diversity.	2.2.1 Update ECC for rhino and competing browsers in fenced areas as per documented requirements.	Q2-Q3 Y2	RSs, RPC	Number of fenced rhino areas with updated ECC for rhino and competing browsers (annual status reports).
	2.2.2 Develop and implement meta-population translocation plan based on stocking levels, set percentage harvesting, reproductive performance and level of inbreeding (see activity 2.3.4; see key notes in Annex II).	Q4 Y1-Y5	RSC, H-Vet, RPC, SWs, APLRS area managers, CW (Narok County)	Number of fenced populations achieving a minimum of 5% net growth (over a four-year rolling window) per annum (annual status reports).
	2.2.3 Estimate competing browser densities for each fenced rhino area.	Annually	RSs, SWs, APLRS area managers	Number of fenced areas with updated competing browser density estimates (annual status reports).
	2.2.4 Manage densities of competing browsers to recommended levels in fenced areas.	Y2, and then ongoing	RSC, RSs, SWs, APLRS area managers	Number of fenced areas at recommended browser densities (annual status reports).
	2.2.5 Promote implementation of national invasive alien plant species (IAPS) management plan in rhino areas.	Q1 Y1, and then ongoing	H-EMBIM, RSs, RPC	Number of areas implementing IAPS management plan (annual status reports). Level of infestation (distribution and cover) of IAPS in rhino habitats (annual status reports).
	2.2.6 Implement management interventions based on the species harmonisation toolkit in areas where rhinos are significantly predated[14].	Q1 Y1, and then ongoing	H-SCM, H-Vet, RPC	Number of timely interventions based on the species harmonisation toolkit (veterinary reports; annual status reports).

[14] Due diligence will be given when deciding prioritisation of one endangered species over another.

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
2.3 Increases in net growth in existing under-performing populations.	2.3.1 Undertake genetic profiling of Kenya rhino meta-population with a particular focus on known inbred populations (see 2.3.2).	Q4 Y2, and then ongoing	H-Vet, relevant research institutions, RSs, RPC	Percentage (and number) of genetically profiled meta-population using single nucleotide polymorphism (SNP) and microsatellite genotyping (annual status reports).
	2.3.2 Undertake genetic profiling of the Mara-Serengeti ecosystem rhino population with at least 90% of the population genetically profiled.	Q1 Y2	H-Vet, relevant research institutions, RSs, RPC, CW (Narok County), CW (SENAPA)	Percentage (and number) of genetically profiled population using SNP and microsatellite genotyping (annual status reports).
	2.3.3 Incorporate rhino DNA profiles into *Kifaru* database.	Q4 Y2, and then ongoing	RPC, relevant research institutions	Proportion of animals with DNA profiles in *Kifaru* database (*Kifaru*; annual status reports).
	2.3.4 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 needs basis	H-Vet, RSC, RPC, RSs	Number of strategic translocations (annual status reports).
	2.3.5 Maintain rhino populations to at least 20 individuals where there is sufficient suitable habitat and adequate security.	Q4 Y1, and then ongoing	RPC, RSs, RSC, H-Vet	Number of rhinos in each rhino area (annual status reports).
	2.3.6 Evaluate the viability of small population (less than 20 animals) and recommend appropriate actions.	Q4 Y1	RSC	Recommendations to REC (RSC meeting minutes and report).
	2.3.7 Carry out research on drivers of reproductive performance.	Q4 Y2, and then ongoing	RSs, RPC, RSC, relevant research institutions	Information on drivers of reproductive performance (published report).
2.4 Rhino disease and health-related 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	Area-Vet, H-Vet, RPC, SWs, APLRS area managers, CW (Narok County)	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 and update disease surveillance and diagnostic protocols, and implement the protocols in all rhino areas.	Q2 Y2, and then ongoing	H-Vet, RSC	Number of rhino areas using the revised protocols (veterinary reports).
	2.4.3 Investigate disease outbreaks, and implement control mechanisms in a timely manner.	Ongoing	H-Vet	Number of disease outbreaks investigated and control mechanisms implemented in a timely manner (veterinary reports; annual status reports).
	2.4.4 Conduct tsetse fly monitoring and control to reduce disease incidences in high-risk areas.	Ongoing	H-Vet, H-EMBIM, relevant research institutions	Number of high-risk areas with tsetse fly vector monitoring and control mechanism in place (veterinary reports).
	2.4.5 Develop and implement guidelines for food and mineral supplementation in areas of need.	Q4 Y1, and then ongoing	H-Vet, RPC, relevant research institutions, SWs, APLRS area managers	Number of affected rhino areas implementing guidelines (annual status reports).

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
2.5 A standardised rhino monitoring and reporting system at site and national level.	2.5.1 Establish and maintain a trained and dedicated rhino monitoring team in all rhino areas.	Q1 Y1, and then ongoing	SWs, APLRS area managers, CW (Narok County), RPC	Number of rhino areas with a dedicated rhino monitoring team (annual status reports).
	2.5.2 Update and implement rhino monitoring protocol in all rhino areas.	Q1 Y1, and then ongoing	RPC, RSs, SWs, APLRS area managers, CW (Narok County)	Number of rhino areas using updated rhino monitoring protocol (annual status reports).
	2.5.3 Recommend implementation of standardised rhino monitoring and reporting protocol in Mara-Serengeti ecosystem.	Q1 Y2	RPC, CW (Narok County), CW (SENAPA)	Number of training sessions in the use of standardised rhino monitoring and reporting protocol (training reports). Status of master ID files, rhino database (master ID files; *Kifaru;* monthly reports).
	2.5.4 Upgrade and maintain *Kifaru* database in all rhino areas for rhino monitoring, reporting and decision-making.	Q2 Y1, and then ongoing	RPC, RSs, SWs, APLRS area managers, CW (Narok County)	Number of rhino areas using upgraded *Kifaru* database (monthly reports).
	2.5.5 Train and maintain at least two suitable rhino monitoring personnel / research scientists for managing *Kifaru* database in each rhino area.	Q2 Y1, and then ongoing	RPC, RSs, SWs, APLRS area managers, CW (Narok County)	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.	Q1 Y1, and then ongoing	RPC, SWs, APLRS area managers, CW (Narok County)	Number of rhino areas with at least two rhino monitoring instructors (monthly reports). Number of training sessions and number of rhino rangers provided refresher training per area / year (monthly reports; annual status reports). Number of refresher courses for rhino monitoring instructors (annual status reports).
	2.5.7 Minimise staff turnover and retain at least 50% of experienced rhino monitoring personnel[15] in all rhino areas.	Q1 Y1, and then ongoing	SWs, APLRS area managers, CW (Narok County), RPC	Percentage of experienced rhino monitoring personnel in each rhino area (annual status reports).
	2.5.8 Implement / maintain data quality control procedures (including an up-to-date rhino master ID file with date-stamped photos for all individuals) in all rhino areas.	Q1 Y1, and then ongoing	SWs, APLRS area managers, CW (Narok County), RPC	Number of rhino areas with up-to-date master ID files (master ID files with date-stamped photos for all individuals; monthly reports).
	2.5.9 Review / update rhino monitoring module at KWS Law Enforcement Academy (LEA).	Q3 Y1	RPC, CO KWS LEA	Updated training module (KWS LEA curriculum).
	2.5.10 Update and implement monthly and annual rhino status reporting templates.	Q1 Y1, and then ongoing	RPC, RSs, SWs, APLRS area managers, CW (Narok County)	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 the field.	Q1 Y1, and then ongoing	RPC	Frequency of feedback reports (monthly reports; annual status reports).

[15] Minimum 3 years in rhino monitoring.

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
2.6 At least two fully operational and strengthened Intensive Protection Zones (IPZs) (also linked to Output 1.1) and additional areas identified for national population expansion.	2.6.1 Identify areas for population expansion to achieve the strategic vision (see key notes in Annex II).	Q1 Y3	REC, RSC	Size and rhino carrying capacity of areas identified (M&E reports; rhino habitat suitability assessment reports).
	2.6.2 Build-up Tsavo West IPZ security and monitoring capacity to required levels; supplement rhino population.	Ongoing	RSC, REC, SW-Tsavo-West, AD-TCA, partners	Tsavo West IPZ rhino population size per year (annual status reports).
	2.6.3 Review, update and implement rhino recovery plan for Chyulu IPZ.	Q1 Y1, and then ongoing	RSC, REC, SW-Chyulu, AD-TCA, partners	Chyulu rhino recovery plan and progress with its implementation (RSC and REC meeting minutes; annual status reports; M&E reports). Chyulu rhino population size per annum (annual status reports).
	2.6.4 Build-up Tsavo East rhino population with a plan to supplement the IPZ.	Ongoing	RSC, REC, SW-Tsavo-East, AD-TCA, partners	Tsavo East rhino population size per annum (annual status reports).
	2.6.5 Review rhino numbers and existing recovery plan for Aberdare Salient IPZ; implement plan / recommendations.	Q4 Y1, and then ongoing	RSC, REC, SW-Aberdare, AD-MCA, partners	Revised plan and progress in its implementation, or recommendations (RSC and REC meeting minutes, annual status reports; M&E reports). Aberdare Salient rhino population size per annum (annual status reports).
2.7 At least two fenced rhino areas extended.	2.7.1 Develop and implement expansion plan for Ol Pejeta rhino population into Mutara.	Q1 Y1, and then ongoing	CEO Ol-Pejeta Conservancy, RSC, REC, SW-Laikipia, AD-MCA, partners	Expansion plan and progress with its implementation (RSC meeting minutes; annual status reports; M&E reports). Number of rhinos in Ol Pejeta and Mutara (annual status reports).
	2.7.2 Review, update and implement an expansion plan for Meru rhino sanctuary.	Q2 Y1	RPC, RSC, RS, REC, SW-Meru, AD-ECA, partners	Revised expansion plan and progress with its implementation (RSC meeting minutes; annual status reports; M&E reports). Number of rhinos in the existing and extended areas (annual status reports).
	2.7.3 Develop an expansion plan for Lewa-Borana rhino population into Il Ngwesi Group Ranch.	Q1 Y1, and then ongoing	CEO Lewa-Borana Conservancy, Il Ngwesi Group Ranch management, RSC, REC, SW-Laikipia, AD-MCA, partners	Expansion plan (RSC meeting minutes; annual status reports; M&E reports).

[15] Minimum 3 years in rhino monitoring

Important assumptions:

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

Specific projects:

1. Producing guidelines for food and mineral supplementation.
2. Identifying areas for population expansion to achieve the strategic vision of at least 2,000 black rhinos in Kenya.
3. Updating monthly and annual rhino status reporting templates; compiling annual site and national rhino status reports.
4. Genetic profiling of the national rhino population.
5. Genetic profiling of the Mara-Serengeti rhino population.
6. Conducting ECC assessments in fenced areas, and habitat assessments in the Mara.
7. Upgrading and implementing *Kifaru* along with data quality procedures (master ID files, monitoring protocol) and training in its use.
8. Conducting rhino surveys in areas that are difficult to monitor.
9. Carrying out a study on drivers of reproductive performance.
10. Reviewing and updating the rhino recovery plan for the Aberdare National Park.
11. Reviewing and updating protocols for rhino disease surveillance and diagnoses.
12. Establishing a standardised rhino monitoring system in Solio GR.

Key Component 3: Communication and Engagement

Strategic objective:

To use targeted communication and engagement of relevant stakeholders to increase the understanding and support for rhino conservation in Kenya.

Rationale and considerations:

If we are to achieve the intended outcomes of this action plan, it's important that we gain people's support for the different rhino conservation initiatives. This will require targeting prioritised sections of the Kenyan population with appropriate messaging.

Educational psychology (Bloom's Taxonomy) says that audiences typically move from 'knowing' (head) to 'feeling' (heart) to 'doing' (hands). In other words, first the target audience needs to understand the problem or issues, then needs to feel inspired to want to tackle those problems, and finally the audience needs to be able to take positive action. Therefore, identification of the right audiences for the message is critical in order to achieve the desired impact for rhino conservation.

Given the significant role of the communities and landowners in wildlife conservation issues in Kenya, targeted messaging to gain their on-going support will be vital. Communication of rhino issues needs to be enhanced through a dedicated communication officer for both positive messaging and also to respond to negative press. The media will be a key conduit of rhino related communication to enhance their role of positive messaging.

Continued engagement with the judiciary and prosecutors is required to ensure maximum penalties on cases related to rhino poaching or trading in their horn and its derivatives. National and county governments need to be lobbied to increase their support for rhino conservation. Learning institutions need to be engaged to pass knowledge related to conservation of rhinos and other endangered species through lessons and activities.

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

KPI 3a: Number of local communities and landowners supporting rhino conservation (community surveys results; annual status reports).

KPI 3b: Proportion of required funding secured from national and county governments (annual financial reports – through KWS / partner financial review process).

KPI 3c: Number of media briefings, press releases, features and articles per annum (annual status reports).

KPI 3d: Number of local education institutions participating in rhino conservation activities (rhino area education reports).

Output	Activity	Timeframe	Key actors	Indicators (means of verification)
3.1 National and county governments, communities, private landowners and partners supporting implementation of the Kenya Black Rhino Action Plan (2017-2021).	3.1.1 Undertake surveys to understand perception of communities and landowners on rhino conservation.	Biennially (Y1, Y3, Y5)	H-WCS, SWs, APLRS area managers, CW (Narok County)	Documented changes in level of awareness of rhino issues among communities and landowners (survey reports),
	3.1.2 Develop, deliver, monitor and evaluate targeted campaigns to communities and landowners for supporting rhino conservation.	Annually	H-WCS, communication team in APLRS areas, CW (Narok County)	Number of rhino campaigns run in each area / year (annual status reports) Number of rhino communication packages / messages produced and delivered (publications; media reports). Number of local groups and partners supporting rhino conservation (rhino area reports).
	3.1.3 Lobby national and county governments to support rhino conservation.	Q1 Y1, and then ongoing	DG, KWCA, CEC Wildlife in counties hosting rhinos, relevant partners	Number of lobbying meetings (reports; minutes). Amount of funds from national and county governments for rhino conservation (audited accounts).
	3.1.4 Assign responsibility for communicating rhino conservation issues to a communication officer at KWS HQ, APLRS and county communication offices.	Q2 Y1	H-CC, H-HC	Number and quality of communications on rhino conservation issues delivered to communities, landowners, policy makers and judiciary (communication archives).
	3.1.5 Develop and disseminate a summary Action Plan to stakeholders.	Q1 Y1	RPC, partners	Number of copies of a summary plan produced and disseminated (M&E reports).
3.2 Accurate, responsible and timely briefings, articles, websites, radio, TV and social media coverage on rhino conservation issues.	3.2.1 Develop a social media plan to communicate rhino conservation.	Q4 Y1	H-CC, RSC, RPC	Social media plan (RSC meeting minutes; social media plan).
	3.2.2 Organise briefings and field trips for the media.	Quarterly	H-CC, CEC Wildlife, APLRS area managers, CW (Narok County)	Number of media briefings and field trips per year (KWS press office records).
	3.2.3 Identify and liaise with local and international feature writers.	As needed	H-CC, CEC Wildlife, APLRS area managers, CW (Narok County)	Number of features and articles (KWS press records).
	3.2.4 Plan and proactively respond to positive stories and controversial issues on rhino.	Ad hoc	H-CC, CEC Wildlife, APLRS area managers, CW (Narok County)	Number of briefings and press communications released on rhino issues (KWS press records).
	3.2.5 Maintain KWS, APLRS area and partner websites with up-to-date information on rhino conservation in Kenya.	Ongoing	RPC, H-CC, H-ICT, CEC Wildlife, APLRS area managers, CW (Narok County), partners	Number of hits on websites (website records).
	3.2.6 Facilitate / coordinate production of radio and TV special features and documentaries on rhino conservation.	As needed	H-CC, CEC Wildlife, APLRS area managers, CW (Narok County), relevant partners	Number of special features and documentaries (KWS press records).

Output	Activity	Timeframe	Key actors	Indicators (means of verification)
3.3 Rhino conservation promoted in education programmes.	3.3.1 Promote rhino conservation in education and training programmes e.g. schools, KWSTI, in-house training, KWS LEA.	Q4 Y1, and then ongoing	H-CE, partners	Level of rhino conservation in education and training programmes (M&E reports).
	3.3.2 Incorporate / enhance rhino conservation activities / topics within each rhino area's environment education programme.	Q1 Y2, and then ongoing	H-CE, conservation education officers	Number of rhino areas with a conservation education officer engaging with local education institutions on rhino and other species conservation (annual status reports). Quality of rhino education material (education material and reports). Number of local education institutions engaging in conservation of rhinos and other species; e.g. schools with active Wildlife Clubs of Kenya programme (education reports).

Main assumptions:

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

Specific projects:

1. Undertaking surveys to understand perception of communities and landowners to rhino conservation.
2. Developing education materials and activities that focus on rhino conservation.

Key Component 4: Sustained Financin

Strategic objective:

To sustain financing for rhino conservation at all levels for delivery of all key components of the Kenya Black Rhino Action Plan (2017-2021).

Rationale and considerations:

Rhino conservation requires substantial financial and material resources. Therefore, sustainable and innovative financing is a key prerequisite to successful rhino protection, monitoring and management. In addition, the poaching challenge now being faced requires significant support.

A major constraint in the delivery of the previous Kenya rhino strategies has been inadequate efforts for securing the required funding. A key component in mobilising adequate sustained funding to implement the Kenya Black Rhino Action Plan (2017-2021) must therefore be the development of a longer-term funding plan that centers on the Government of Kenya and KWS with support from the county governments, APLRS and partners (local and international).

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

KPI 4a: Variances between actual costs and budgeted costs (approved annual financial budget).

KPI 4b: Proportion of required funding secured (annual financial reports – through KWS / partner financial review process).

Output	Activity	Timeframe	Lead actors	Indicators (means of verification)
4.1 Secured funding for implementation of the Kenya Black Rhino Action Plan (2017-2021).	4.1.1 Compile financial, staffing and equipment requirements for each key component of the Action Plan.	Q1 Y1, and then annually	RSC, APLRS area managers, CW (Narok County)	Documented financial, staffing and equipment requirements (annual status reports).
	4.1.2 Develop a five-year budget for all activities of the Action Plan; review annually and update the budget based on work plans.	Q1 Y1, and then annually	RSC, APLRS area managers, CW (Narok County), partners	Budget for implementing Action Plan; approved annual budgets (respective corporate budgets).
	4.1.3 Identify funding sources and prepare proposals including for high-level funding based on overall and annual budgets and work plans.	Y1, and then annually	RSC, RPC, APLRS area managers, CW (Narok County), partners	Proportion of required funding raised (annual financial reports).
	4.1.4 Identify initiatives to generate revenue and raise funds to provide additional funding towards Action Plan delivery.	Y1, and then annually	RSC, RPC, APLRS area managers, CW (Narok County), partners	
	4.1.5 Lobby national and county governments to increase financial and other support to rhino conservation.	Y1, and then annually	DG, CEC Wildlife, APLRS area managers, CW (Narok County), relevant NGOs	

Important assumptions:

1. Institutions hosting rhinos remain committed.
2. The prepared budgets are accurate.
3. Donors and partners remain engaged.

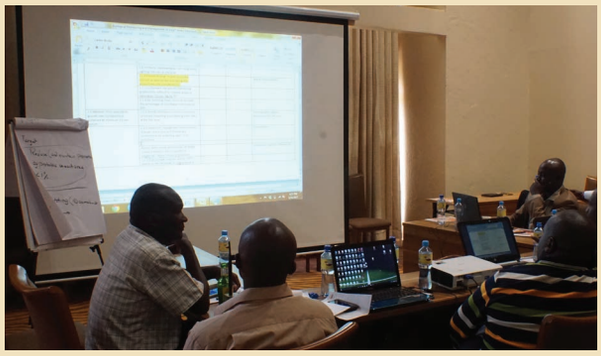
Specific projects:

1. Proposal(s) for high-level funding for the coordination and delivery of the Kenya Black Rhino Action Plan (2017-2021).

Key Component 5: Programme Management, Coordination and Collaboration

Strategic objective:

To ensure effective programme management, coordination and collaboration nationally, regionally and internationally to achieve the strategic objectives of the Kenya Black Rhino Action Plan (2017-2021).



Rationale and considerations:

The existing Rhino Programme coordination structure requires refinements to enhance its effectiveness. This includes replacing the Area Rhino Management Committee (ARMC) with the Area Species Conservation Committee (ASCC).

The Rhino Executive Committee (REC)[16] membership should be reconstituted to include the secretary of the Association of Private Land and Community Rhino Sanctuaries (APLRS), representatives from the County Wildlife Conservation and Compensation Committees (CWCCCs), the CEO of the Kenya Wildlife Conservancy Association (KWCA) and a representative of the rhino county-managed national reserve. The directors responsible for security, research and the wildlife and community services, and the APLRS chair should continue as members of the REC. The DG of KWS should remain as the chair of the REC.

The Rhino Steering Committee's (RSC) terms of reference needs to be revised to include monitoring and evaluation (M&E) of the Kenya Black Rhino Action Plan (2017-2021) on an annual basis. Development of an M&E plan needs to be introduced in the Kenya Black Rhino Action Plan (2017-2021) because it has always been unintentionally left out in the previous strategies yet it is a critical tool for measuring progress. Monitoring and evaluation will ensure systematic follow-up of implementation of activities and its outputs within the Kenya Black Rhino Action Plan (2017-2021).

The Rhino Programme headquarters needs to be enhanced with appropriate and sufficient staff and equipment to provide overall programme management and coordination.

Collaboration is critical for gaining management, political, technical and financial support for rhino conservation. Collaboration is encouraged at the national level (e.g. with corporate sector, traditional / cultural leaders, communities, national and county governments, security agencies, judiciary, immigration, etc.) and at the international level (e.g. with 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), AfRSG, countries that form the East African Community Rhino Management Group (EAC-RMG), and the African Rhino Range States' African Rhino Conservation Plan). Collaboration also creates opportunities for the private sector and communities to conserve rhinos on their lands.

[16] Or an equivalent executive / decision-making committee on conservation matters within KWS.

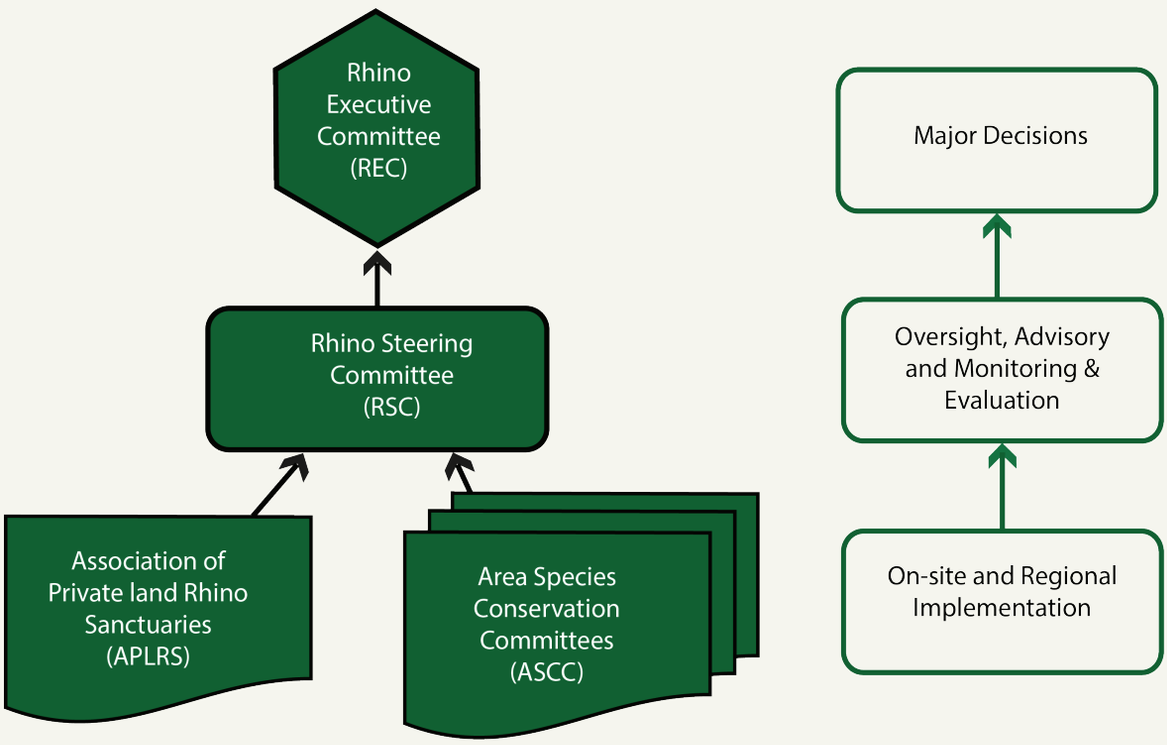


Figure 4. The Kenya Black Rhino Action Plan (2017-2021) coordination framework[17]

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

KPI 5a: Proportion of required staffing, finance and equipment provided to the Rhino Programme, at the KWS headquarters, annually (annual status reports).
KPI 5b: Kenya Black Rhino Action Plan (2017-2021) monitored and evaluated annually (annual status reports).
KPI 5c: Number of rhino areas being managed through annual action planning (M&E report).
KPI 5d: Number of committees functioning as per ToR on an annual basis (committee meeting minutes).

[17] 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)
5.1 Strengthened Rhino Programme at KWS headquarters.	5.1.1 Review staffing requirements for effective Rhino Programme coordination and management.	Q1 Y1	RSC, H-HC	Documented staffing requirements (assessment report).
	5.1.2 Establish and maintain the required staff for the Rhino Programme at KWS HQ.	Q2 Y1, and then ongoing	H-HC	Staff levels at Rhino Programme HQ (H-HC records).
	5.1.3 Undertake needs assessment for equipment and finances for the Rhino Programme at KWS HQ.	Q1 Y1, and then annually	RSC	Documented equipment and financial requirements (assessment reports).
	5.1.4 Provide necessary equipment and finances to the Rhino Programme at KWS HQ.	Q2 Y1, and then ongoing	REC, Head-Finance (KWS)	Proportion of required finances and equipment provided (annual status reports).
	5.1.5 Coordinate rhino monitoring and reporting in all rhino areas.	Q1 Y1, and then ongoing	RPC, rhino scientist	Rhino monitoring teams and systems established and operational in all rhino areas (monthly reports; annual status reports).
	5.1.6 Compile and circulate annual status reports to RSC.	Q4 Y1, and then annually	RPC, rhino scientist	Annual status report reviews (RSC meeting minutes).
	5.1.7 Provide required information to and participate in EAC-RMG, AfRSG, CITES and RhODIS meetings.	Ongoing	RSC, RPC	Number of meetings participated in (meeting documents).
5.2 Kenya Black Rhino Action Plan (2017-2021) monitored and evaluated annually.	5.2.1 Develop an M&E plan.	Q1 Y1	RSC	M&E plan (RSC minutes).
	5.2.2 Carry out M&E of the Action Plan annually.	Q4 Y1-Y5	RSC, RPC (with all rhino areas)	M&E reports (annual status reports).
	5.2.3 Review and update the Action Plan implementation plan.	Q1 Y2, and then annually	RSC	Updated implementation plan (plan; RSC meeting minutes).
	5.2.4 Report progress on implementation of the Action Plan.	Annually	RPC	Number of stakeholders and partners receiving the Action Plan summary M&E report in a timely manner each year (stakeholder and partner feedback).
5.3 Rhino areas managed through annual action plans.	5.3.1 Coordinate development, implementation and review of rhino area annual plans.	Q1 Y1-Y5	RPC, Field-ADs, SWs, APLRS area managers, CW (Narok County)	Number of rhino areas being managed through annual action planning (M&E report).
5.4 Relevant partners and stakeholders with collaboration agreements in place.	5.4.1 Review and update partner and stakeholder collaboration agreements including minimum standards required for hosting rhinos.	Q4 Y1-Y5	RSC, RPC, relevant partners	Partner and stakeholder collaboration agreements (MoAs; MoUs; RSC meeting minutes).
5.5 Functional coordination and management committees at all levels.	5.5.1 Appoint members of REC, RSC and ASCC committees.	Q1 Y1	DG, REC, RSC, Field-ADs	Committees in place (REC, RSC and ASCC meeting minutes; letters of appointment).
	5.5.2 Hold committee meetings as per ToR.	Q1 Y1, and then ongoing	Field-ADs (KWS), Chair-APLRS, RPC	Number of committee meetings held annually (committee meeting minutes).

Important assumptions:

1. Availability of suitable staff with interest in rhino conservation.
2. Required finances available.
3. Cooperation and collaboration by various stakeholders.

Specific projects:

1. Needs assessment and audit of current status of staffing, equipment and competencies at all levels.
2. Capacity building for selected rhino areas.
3. Overall budget for implementation of the Kenya Black Rhino Action Plan (2017-2021).

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

A.Rhino Executive Committee (REC)[18]

- To make top-level decisions with cognizance of recommendations from the Rhino Steering Committee (RSC).
- To report to the KWS Board of Trustees.
- To appoint members of the RSC.
- To review progress reports from the RSC.
- To meet at least twice per year.

The REC will comprise the following members:

1. Chairperson: DG – KWS.
2. Secretary: Rhino Programme Coordinator (RPC).
3. Director responsible for security.
4. Director responsible for research.
5. Director responsible for wildlife / community service.
6. Chairperson of Association of Private Land Rhino Sanctuaries (APLRS).
7. Secretary of APLRS.
8. Chair of the County Wildlife Conservation and Compensation Committee (CWCCC).
9. CEO of Kenya Wildlife Conservancies Association (KWCA).
10. Representative of the county-managed national reserve.
11. Co-opted technical experts as needed.

B.Rhino Steering Committee (RSC)

- To oversee, monitor and evaluate the implementation of the Action Plan.
- To review and update the Action Plan annually.
- To review site and national annual status reports.
- To report to the REC including providing recommendations for top-level decisions.
- To report to relevant rhino stakeholders (via RPC) on progress on the Action Plan implementation.
- To meet three times per year[19].
- 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: Head of the KWS Division that includes the Rhino Programme.
2. Secretary: RPC.
3. Head - Wildlife Protection Department.
4. Head - Parks & Reserves.

[18] Or an equivalent executive / decision making committee on conservation matters within KWS.
[19] A quorum for the meeting is constituted when eight members are present with at least three members not being from KWS.

5. Head - Veterinary Services.
6. Chairman of the APLRS.
7. Secretary of the APLRS.
8. A member of the APLRS.
9. Senior Warden (SW) of county-managed national reserve.
10. NGOs / partners with nationally implemented rhino conservation programme in Kenya.
11. Field Assistant Directors (KWS) from rhino areas.
12. Co-opted technical experts as needed.

A Secretariat for the RSC will also be setup.

C.Area Species Conservation Committee (ASCC)

- To oversee the development and implementation of site specific action plans based on the Action Plan.
- To report to the RSC on the progress of implementation of activities at the area level.
- To ensure harmony with other species action plans at the local level (through liaison with KWS Head of Species).
- To meet and report quarterly.

The ASCC will be constituted as follows:

1. Chairperson: KWS Assistant Director for relevant conservation area.
2. Secretary: KWS Area Scientist.
3. KWS SWs from the rhino areas within the conservation area.
4. County government national reserve SW(s) 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. Officer-in-charge of intelligence or security in the rhino areas within the conservation area.
7. Partners involved in the local area rhino conservation.
8. Co-opted technical representatives as needed.

The Association of Private Lands Rhino Sanctuaries (APLRS)

- To conserve and manage all rhino on private lands in consultation and collaboration with KWS.
- To represent Private and Community sector involved in the conservation and management of all rhinos on private and community land.
- To provide secure land and offer security to all rhinos held in private land.
- To fund raise in consultation with KWS for rhino management on private lands.
- To build capacity for rhino monitoring and security.

- To offer advice on issues relating to rhino conservation and management to members of the Association.
- To share logistical support among members.
- To coordinate channeling of specific issues relating to rhino 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. RPC.
6. Co-opted members 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 meta-population for a species or sub-species.

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 1% 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

KPI 2b: Number of established fenced rhino areas (over 50% of ECC) managed through set percentage harvesting of minimum 5% per annum averaged over four years.

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.

Output 2.1 At least 99% confirmed national rhino population.

There is a need for significant improvement (in some areas) and a degree of uniformity in monitoring rhino populations using the standardised 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	Non first-class, 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.**

Animals not **in the population**, or **incomplete**, or **missing** 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 animal 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.

Output 2.2 Fenced rhino areas managed to achieve optimum growth and to maintain meta-population genetic diversity (and Output 2.3 Increases in net growth in existing under-performing populations).

Activity 2.2.2 (and Activity 2.3.4) 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.

Output 2.4 Rhino disease and health related mortalities kept to less than 0.5% per annum.

The less than 0.5% target is based on the average mortality rate of 0.69% (range 0.29% - 1.08%) due to disease for black rhino (2012-2016). The average mortality rate due to disease for both black and white rhino was 0.87% (range 0.18% - 1.76%) (2012-2016).

Key Component: Communication and Engagement

Output 3.1 National and county governments, communities, private landowners and partners supporting implementation of the Kenya Black Rhino Action Plan (2017-2021).

Activity 3.1.3 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: List of Participants

Kenya Black Rhino Action Plan (2017-2021) Stakeholders Workshop (Sawela Lodge, Naivasha) and Validation Workshop (KWS Headquarters, Nairobi)

#	Name	Organisation	Email address
1	Aggrey Maumo	KWS	amaumo@kws.go.ke
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