African rhino conservation 2025–2035

A contemporary strategic framework

Dave Balfour, Sam M. Ferreira, Jamie Gaymer, Claire Lewis, Humbulani Mafumo, Keitumetse Makoma, William Mgoola, Mmadi Reuben, Jo A. Shaw, Simson Uri-Khob

SSC Species Survival Commission

African Rhino Specialist Group

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Foreword from the Director General

The fate of rhinos in Africa has been in the hands of humans for well over a century. In this period, humans have greatly reduced the continental herds of both black and white rhinos to very low numbers. For white rhinos, this happened towards the end of the 19th century. For black rhinos, the low point was a century later, at the end of the 20th century. In both instances, the dramatic decline in numbers was due to humans killing rhinos through unsustainable hunting.

Providing guidelines for re-establishing rhinos

Despite these events, many African states where rhinos have been extirpated are now re-establishing populations in their original range. This is a tremendous turnaround. The guidelines in this African Rhino Conservation Framework were drawn up to assist with this process.

While important knowledge and learning remain from the past century of rhino conservation in Africa, modern-day needs require updated knowledge and approaches. This is particularly the case on a continent with a dense and growing human population, where demands on the natural resources of all countries, including rhino range states, are rapidly increasing. While challenges such as rhino poaching remain, there are now additional considerations, as the context of rhino conservation changes quickly.

Guiding practitioners in approaching the changing landscape of rhino conservation

Rhino conservation approaches traditionally focused on the ecological and biological aspects of conservation management, as well as safety and security issues. This framework introduces four additional strategic pillars. These include 1) ensuring that efforts are made to understand and disrupt organised crime to reduce the profitability of illegal wildlife trade; 2) understanding and influencing rhino-horn markets; 3) prioritising the equity and rights of local stakeholders in relation to rhinos; and 4) fostering diverse views of the value of rhinos in society. Making advances on all six strategic pillars requires flexible funding; legitimate, devolved and collaborative governance that recognises rights and laws; and technical capacity.

These guidelines are a response to a changing world context. They aim to better equip those practising rhino conservation, either on the ground or in the policy environment, to make decisions that have lasting and better outcomes for rhino conservation in Africa. The vision of this framework is to build mutual respect, foster relationships, and establish broader safety and security for people and wildlife through improved governance across landscapes. This approach aims to ensure thriving rhino populations over the long term, with benefits for both rhinos and local communities.

Dr Grethel Aguilar
IUCN Director General

Preface

Leading global development forecasts suggest that over the next 50 years, the Earth's human population will increase from 8 billion to an estimated 10 billion. Of the additional 2 billion people, 800 million will live in Africa, increasing the continental human population to approximately 2.3 billion people. This growth in human population is expected to have a substantial impact on Africa compared to other continents.

Human activities are responsible for the bulk of global biodiversity loss and reductions in ecosystem services, which are so important for human well-being. This is also the case in Africa, where many mammal species, particularly larger animals, are at risk of extinction over the next half century. The illegal wildlife trade and poaching of rhinos continue to threaten rhino populations in Africa and Asia. Against this background, the framework for African rhino conservation 2025–2035 sets out guidelines on how best to approach rhino conservation in Africa over the next 10 to 20 years.

A key challenge for Africa is how to slow or reverse losses in the services that intact ecosystems provide, while simultaneously strengthening conservation efforts in a manner that also benefits people. In the larger social context of rhino range states, activities, interventions and policies intended to enhance rhino conservation should articulate and be explicit about the trade-offs and incentives that can arise or be developed.

What does this mean for policymakers, state officials, financiers, donors or rhino site managers? Effective conservation to secure rhinos in a manner in which they contribute to the provision of ecosystem services will require addressing some of Africa's most disabling historical legacies. These include the highly fragmented locations and small size of many of the sites available for rhino conservation, and a sense of alienation felt by many who are negatively affected by conservation generally, and rhino conservation specifically.

Inequality in the value derived from conservation through patterns of ownership and decision-making is a key issue to be addressed for the successful future conservation of the species. This challenge requires due consideration of the pressure that many rhino populations currently face from illegal killing for their horns, and the efforts and expenditure incurred to protect rhinos from illegal harvesting.

This framework takes the best of the established approaches and merges them with progressive new thinking in the field. It aims to be a source of inspiration to reimagine rhino conservation and the contributions that it can make to an increased range of stakeholders.

Dave Balfour (PhD)
Chair, African Rhino Specialist Group
IUCN Species Survival Commission

Executive summary

Rhinos are part of the charismatic megafauna of Africa and are valued in multiple ways by African and global stakeholders. After decades of population collapse, the numbers of black rhino (*Diceros bicornis*) reached a low of about 2,500 in the mid-1990s. Illegal killing for their horns was largely responsible for this, but habitat loss and population fragmentation also contributed to the population collapse. Today, there are over 6,500 black rhinos in Africa. White rhinos (*Ceratotherium simum*) recovered from an all-time low nearly a century ago to become the most abundant rhino species globally in the early 21st century. The re-emergence of illegal harvesting (poaching) from 2005 onwards resulted in the total number of rhinos on the continent declining, mainly because of declines in white rhino numbers in South Africa. This trend of annual decline ended in 2022 when the annual poaching rate in Africa for both species was contained at 2.5%. African range states reported 23,321 rhinos (6,487 black and 16,834 white rhinos) at the end of that year.

Over the past three decades, continental, regional and national conservation efforts have produced successive rhino conservation action plans and management plans. The African Rhino Specialist Group often supported these plans under the auspices of the International Union for Conservation of Nature (IUCN) Species Survival Commission (SCC). This framework for African rhino conservation builds upon past plans and presents fresh approaches to rhino conservation, integrating new insights with proven practices.

Rhino conservation and the contribution of rhinos to Africa's socio-ecological systems are embedded in the broader context of the history and the people of Africa. Rhinos and other umbrella species require extensive protected conserved areas if their future is to be secured and for them to remain a part of Africa's living legacy. It is increasingly apparent that trade-offs need to be made between the needs of human development and losses in biodiversity and ecosystem services. There is also an increasing recognition of the importance of meaningful and informed participation of people living in and next to protected areas, and of those carrying the cost of living with wildlife, in decisions concerning those areas. This assertion, associated with strong calls from Indigenous Peoples and Local Communities (IPLCs), is framed as rights-based conservation. An analysis of the factors influencing successful rhino conservation across Africa highlights how partnerships, particularly between the state and the private sector, can play a key role in enhancing the performance of rhino populations and recovering their numbers. Combined, the above considerations suggest that a future with less emphasis on traditional fortress-oriented or militarised conservation practices and more emphasis on consultative and participatory conservation can yield significant benefits.

The value of developing a socio-ecological perspective for future success in rhino conservation establishes the basis of a transdisciplinary approach to rhino conservation and the contribution it can make to the well-being of people. The vision of this framework thus encompasses both thriving rhinos and thriving people.


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The framework recognises six strategic pillars that will be beneficial to adopt in rhino conservation:

1. **Ecological** – Ensuring implementation of all aspects of biological management.
2. **Safety and security** – Creating safe and secure areas in which rhinos and people live.
3. **Disruption of organised crime** – Suppressing illegal wildlife trade.
4. **Rhino-horn markets** – Understanding and influencing rhino-horn markets.
5. **Equity and rights** – Ensuring equity and the rights of stakeholders in relation to rhinos.
6. **Value** – Fostering diverse views of the value of rhinos in society.

Making advances on these strategic pillars requires enabling funding with flexibility; legitimate, devolved and collaborative governance, including recognition of rights and laws; and technical capacity. Guidance on approaches to achieve the strategic pillars and enabling themes takes cognisance not only of environmental principles but also of the rights of people as the basis for people-centred conservation.

This framework is an adaptive, living framework seeking to ensure that societal expectations are accommodated, particularly those of local peoples.

As part of their international responsibilities, rhino range states report the national status of rhinos on a triennial basis to the IUCN Species Survival Commission's African Rhino Specialist Group (AfRSG). The AfRSG consolidates the continental numbers and reports them to the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES).

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Acronyms and abbreviations

AfRSG	African Rhino Specialist Group
AICA	Alliance for Indigenous Peoples and Local Communities for Conservation in Africa
ARCF	African Rhino Conservation Framework
CITES	Convention on the International Trade in Endangered Species of Wild Fauna and Flora
EAC	East African Community
IPLCs	Indigenous Peoples and Local Communities
IUCN	International Union for Conservation of Nature
SADC	Southern African Development Community
SSC	Species Survival Commission
ToC	Theories of Change

Glossary

Adaptive capacity: The capacity of systems, institutions, humans and other organisms to adjust to perturbations that are potentially damaging or to take advantage of beneficial opportunities.

Biodiversity (nature) credits: Economic instruments that enable private companies to invest in interventions that deliver net positive biodiversity gains.

Conservation legitimacy: Where conservation activities are accepted (have local support) because of a combination of factors. This includes valuing conservation as a land use, using transparent and accepted procedures in the management and governance of the site, and engaging stakeholders at various levels of participation.

Cost of living with wildlife: The cost of living with wildlife may be direct, such as human-wildlife conflict, when encounters between humans and wildlife lead to negative results. These could include loss of property, livelihoods, and even life. It could also be indirect as opportunity costs of land use or access to land, for example when law enforcement officials disrupt the lives of local people.

Demilitarisation of conservation: An approach to ensure the security of rhino populations that substantially reduces the emphasis on military-type tactics, including the use of force, and increases the use of consultation, participation and partnerships.

Density dependence: Ecological conditions that regulate population growth rates as a function of population density.

Ecosystem services: The direct and indirect contributions of ecosystems on which humans rely for their well-being and quality of life. These are grouped into provisioning services (food, etc.), supporting services (nutrient cycling, etc.), regulating services (flood attenuation, etc.) and cultural services (spiritual, etc.).

***Ex-situ*:** Populations occurring outside the historical/natural range of a species, also used regarding captive-breeding operations or zoos.

Finite game: A term derived from game theory that describes a contest situation where there is a clearly defined end point with winners and losers. It stands in contrast to an infinite game contest situation in which there is no end point and there are no defined winners or losers. Participants in an infinite game work to remain in the game rather than dropping out because of a lack of will or resources.

Functionally extinct: A species or other taxon 1) that has disappeared from the fossil record, or historic reports of its existence ceased; 2) of which the population has been reduced to a level where the species no longer plays a significant role in ecosystem functions; 3) of which the population is no longer viable as the species has no individuals able to reproduce, or 4) of which the small population of breeding individuals will not be able to sustain itself due to inbreeding depression and genetic drift, which leads to a loss of fitness.

Game theory: A branch of applied mathematics that provides tools for analysing situations in which parties, called players, make decisions that are interdependent.

Genetic bottleneck: When a population has become a fraction of the original size and genetic diversity is limited.

Green militarisation: The use of military and paramilitary actors, techniques, technologies and partnerships as a conservation strategy, mainly for securing the populations being conserved.

Harvesting: The removal of individuals from a population. This can be legal or illegal, for ecological or population management purposes or for revenue generation. See also “Over-harvesting”.

Inclusive capacity: An equitable capacity development approach built on the understanding that every individual and community, of all diverse identities and experiences, is instrumental in the transformation of their own societies. Their engagement throughout the entire development process leads to better outcomes.

Infinite game: See “Finite game”.

Large vertebrates: Large animals, generally over 35 kg in mass, with a bony vertebral column, spine or backbone around and along the spinal cord. This includes fish, amphibians, reptiles, birds and mammals.

Livelihoods: The means that people use to support their existence, especially financially or vocationally, i.e. living and securing the necessities of life.

Megafauna: Very large animals (over 1,000 kg).

Meta-population: A group of spatially separated populations of the same species that interact at some level through dispersal events. Populations typically occupy discrete localities, have distinct demographics and are connected through the occasional dispersal of individuals between populations.

Meta-population management: The management of distinct, often completely isolated populations in a manner that simulates historical patterns of dispersal, colonisation and extinction. Meta-population management is designed to promote the persistence of a species across fragmented habitats.

Over-harvesting: An ecological term that refers to the removal of individuals from a population in quantities or at a rate that has nett negative ecological consequences for that population. Harvesting is not necessarily ecologically damaging and thus may be possible without its being considered as over-harvesting. Similarly, poaching at low levels or the removal of individuals that are used to start a new founder population at a new site is not considered as over-harvesting.

Pliocene: The epoch in the geologic time scale that extends from 5.33 million to 2.58 million years ago.

Population growth rate: The rate at which the number of individuals in a population increases over a given time, expressed as a percentage of the initial population.

Rhino crimes: The quality or state of being criminal in relation to rhinos. It includes a socially harmful act or omission that infringes on values linked to rhinos, which are protected by legislation.

Social justice: A society in which all people deserve fair and equal economic, political and social rights, opportunities and privileges.

Socio-ecological resilience: The capacity to adapt to or transform in the face of a change in linked social and ecological systems, particularly unexpected change, in ways that continue to support human well-being.

Species assemblages: The collection of species making up any co-occurring community of organisms in a habitat.

State-driven conservation: Conservation activities and approaches that are directed or dictated by the centralised government of a country.

Theory of Change: A method that explains how an intervention, or set of interventions, is expected to lead to a specific desired outcome. It draws on a causal analysis that is based on evidence.

User rights: The right to utilise an asset, object or land in accordance with the law.

Values of rhino: The regard that rhinos deserve; the importance, worth, or usefulness of rhinos. This includes financial, ecological, spiritual, educational and cultural values.

Wildlife trafficking: Activities that include the illegal capture, collection, killing or harvesting (poaching) of wildlife (animals and plants) and their derivatives, the illegal transport (smuggling) of wildlife (domestically or across international boundaries), and all associated trade-related activities such as illegal selling, buying, receiving or giving of wildlife or their products.

Diceros bicornis	Black rhino
D.b. bicornis	South-western black rhino
D.b. longipes	Western black rhino (Extinct by 2011)
D.b. michaeli	Eastern black rhino
D.b. minor	South-central black rhino

Ceratotherium simum	White rhino
C.s. cottoni	Northern white rhino (Functionally extinct)
C.s. simum	Southern white rhino

1 Rationale for this framework

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Rhinos are part of the charismatic fauna of Africa, and African and global stakeholders value them in diverse ways. Various global environmental change drivers (Sala et al., 2000), such as over-harvesting, habitat loss and habitat fragmentation, threaten rhinos.

Since the 1990s, rhino range states have monitored continental rhino population trends while developing and implementing regional and national rhino management plans. An informal review of the continental Rhino Conservation Action Plan resulted in the Range States African Rhino Conservation Plan in 2016. This plan nominally had a five-year lifespan, ending in 2021.

Historically, range states have prioritised the implementation of national or site-level plans over continental plans. Although this approach has resulted in the successful recovery of black and white rhino numbers to date, there have been limitations. Importantly, these priorities have taken precedence over regional meta-population management considerations. Looking ahead, a primarily national focus may carry risks to global rhino conservation outcomes as regional- and continental-scale processes are ignored.

At a continental scale, the threats to rhinos and the value of conservation outcomes are associated with broader environmental and economic change drivers. Rhino conservation takes place amid changing social, economic and environmental complexity. In the future, conservation success will align more with a rights-based, multi-faceted approach that promotes fair and equitable opportunities for improving the livelihoods of people while also supporting nature, including the survival of rhinos.

1.1 Brief history of rhinos in Africa

In the early 19th century, black rhino (*Diceros bicornis*) was abundant in a range of vegetation types in Africa (Figure 1(a)). Non-sustainable hunting linked to the European occupation of the continent and the development of agriculture reduced continental black rhino numbers to an estimated 100,000 in the early 20th century and 65,000 by 1970. Ongoing and intensified illegal hunting, fuelled by the demand for rhino horn, subsequently led to a precipitous decline in black rhino numbers in Africa, with about 2,500 individuals remaining by 1994. The following 15 years saw a slow recovery of numbers as poaching pressure eased and rhino protection and population management improved. However, by 2011 one subspecies, the western black rhino (*D.b. longipes*), had become extinct. The remaining black rhinos were actively consolidated into smaller areas where they could be protected and monitored. Since the mid-1990s, black rhino numbers in Africa have increased – by the end of 2022 there were nearly 6,500 individuals (Figure 2).

Historically, white rhino (*Ceratotherium simum*) covered a smaller area than black rhino and showed separate northern and southern clusters, mainly occupying a subset of grasslands and savanna woodlands (Figure 1(b)). The northern white rhino (*C.s. cottoni*) was locally common in a strip extending between eastern Cameroon and northern Uganda, west of the Nile River. Two thousand kilometres to the south,

the Zambezi River formed the northern distribution limit for the southern white rhino (*C.s. simum*) and the Gariep (previously the Orange) River in South Africa roughly demarcated the southernmost limits of the subspecies. There are no reliable estimates of the number of individuals in either of the two white rhino subspecies in the early 19th century, but by the early 20th century, northern white rhinos were more numerous, estimated at over 3,000 individuals. By that time, the southern white rhino had already been reduced to fewer than 100 individuals through unregulated hunting. These rhinos were located near the confluence of the Black and White Umfolozi rivers in what is now KwaZulu-Natal in South Africa.

By the 1960s, northern white rhino numbers had declined to an estimated 2,250 individuals (Anon, 1962). This decline continued over the next 30 years and by 1998, only 25 individuals were known to exist in the Democratic Republic of the Congo. The northern white rhino is now functionally extinct, with only two females (a cow and her female calf) remaining at an *ex-situ* site in Kenya.

Under effective protection, southern white rhino numbers increased to 1,800 during the same period. This extensive recovery was largely because of translocation efforts to expand their range in the early 1960s and legalising private ownership in the 1990s. Trophy hunting and live sales were also legal in South Africa at that time. By 2015, there were 20,375 southern white rhinos on the continent, most of them in South Africa.

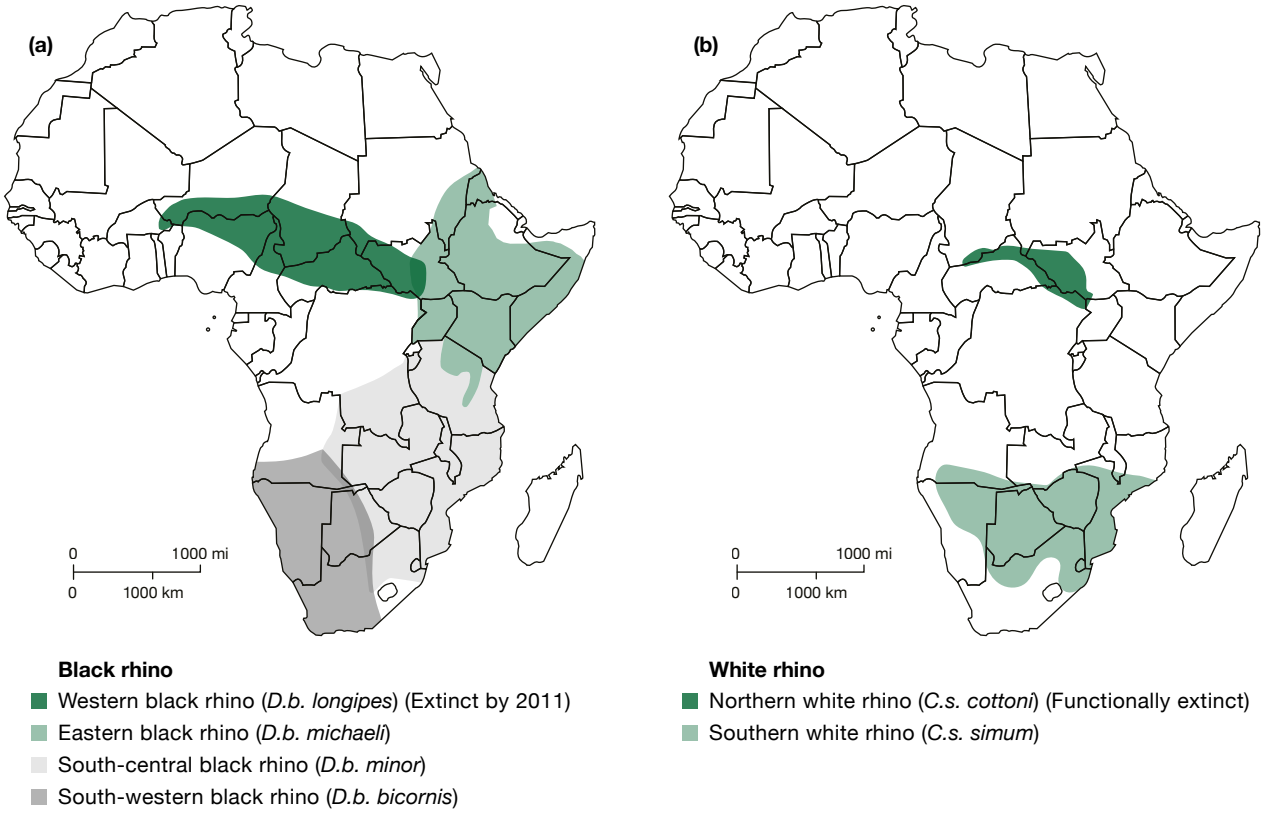

Figure 1 Schematic maps of (a) the natural distribution of black rhino subspecies; (b) the natural distribution of white rhino subspecies.
Sources: 1(a): Moodley et al., 2017; 1(b): Sánchez-Barreiro et al., 2021

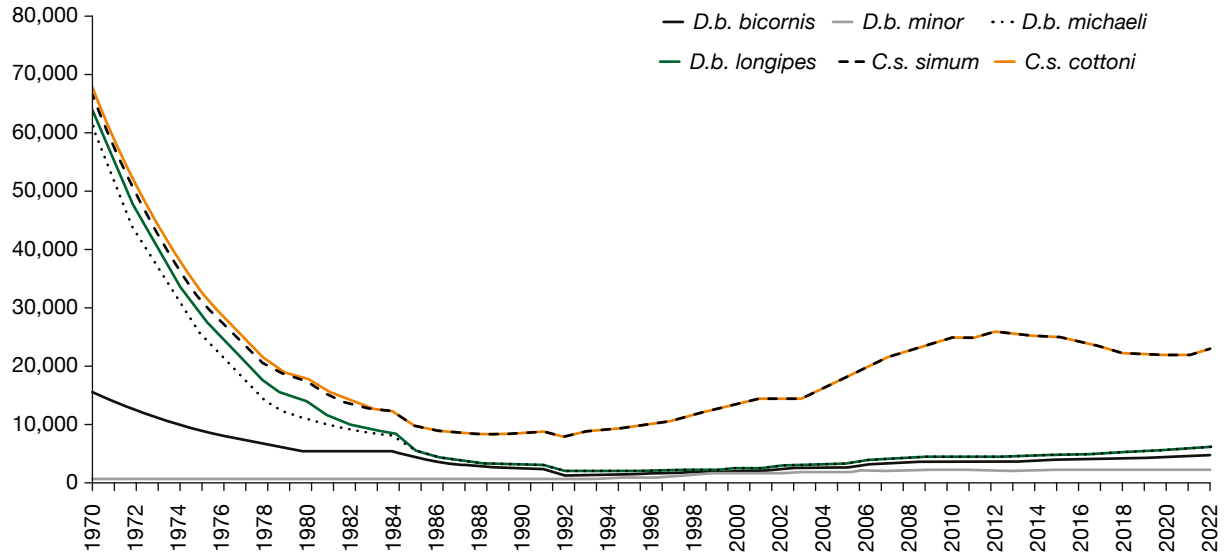

Figure 2 Estimates[1] of African rhinos since 1970 by species and subspecies in Africa.
Source: African Rhino Specialist Group

A marked increase in the illegal killing of African rhinos since 2005 led to substantial losses in rhino numbers, primarily in South Africa. By 2022, an estimated 16,801 southern white rhinos remained in Africa[2] (Figure 2). In the second decade of the 21st century, there was a substantial increase in the cost of securing rhinos against poaching and a concurrent decline in the nett economic value of live rhinos. Legal live sales markedly declined (Ferreira et al., 2022).

1.2 Broader context

The exploitation of Africa and Africans (Kalú & Falola, 2019) provides a broader context for understanding the history of rhino conservation. Although trade in African animals has a long history (Van Uhm, 2016), off-continent industrialisation resulted in overexploitation. African slaves and raw resources contributed critically to the building of the economies of South America, North America and Europe. This negatively affected African economies and African societal structures.

1 Point estimates derived from the sum of the best available estimates for range states. Missing data in a time series for a range state came from interpolation between time t and $t+x$ using the model $N_{t+x} = e^{rx} N_t$, and pooled per species and subspecies. The year 1970 was the base year. To obtain estimates back to 1970, the analysis used the first 10 and 8 available estimates of black and white rhinos in a time series respectively (based on the generation length) to calculate exponential population change per annum (r). For this purpose, generation length (T) used a definition of the time it takes for the population to grow by a factor of its net reproductive rate $T = \log \frac{R_0}{r}$, where R_0 is the number of female calves a cow is expected to produce in a lifetime. The age at first birth was 6.8 years, age at last birth was 35 years, translating to on average 28.3 reproductive years irrespective of species. The calving interval was every 2.5 years. The population growth (r) is when there are no resource limitations, set at 8% and 10% per annum for black and white rhinos respectively. The analysis then used the exponential model above assuming exponential population change to predict populations back in time.

2 Note that by 2021, the northern white rhino was functionally extinct with only two females surviving. The western black rhino became extinct in 2011.


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It has taken – and continues to take – many African countries considerable time to recover from these effects.

Development forecasts project that by 2100, the global human population will have increased from the current 8 billion to about 10 billion. Most of the forecast growth will be in Africa. This means the continent's population might increase threefold from about 1.5 billion people in 2024 to 3.5–4.5 billion by 2100.

Human activities are responsible for the ongoing global biodiversity loss (MEA, 2005), particularly in Africa (Lindsey et al., 2022). However, non-African players, such as transnational mining and logging companies, also play a role in the loss of ecosystem services that are essential for human well-being (Chaplin-Kramer et al., 2019; Bradbury et al., 2021). These losses will probably be exacerbated by the impacts of climate change (Montzka et al., 2011), which are disproportionately affecting Africa (Archer et al., 2018). Governments across Africa face the dual challenges of addressing disabling legacies, including colonialism, while meeting the living and developmental needs and aspirations of its current and growing populace (Michalopoulos & Papaioannou, 2020).

One of the key challenges for Africa will be to find a balance between achieving the developmental needs of its growing human population and reducing losses in biodiversity and critical ecosystem services. Attaining this balance will require more equitable decision-making, concerted efforts to strengthen conservation activities across the continent, and a suite of planning and land-use decisions about how to conserve ecosystem services (Karieva, 2014; Marvier, 2014; Tallis et al., 2008).

Rhino conservation policies and interventions across multiple spatial scales must thus consider the larger historical legacy and development context to address potential risks, inform trade-offs and maximise incentives for positive biodiversity conservation outcomes. Key policy issues include how to deal with increasingly fragmented national and continental rhino populations; how to strengthen measures to combat wildlife trafficking while working to demilitarise conservation; and how to incentivise increased participation in rhino conservation stewardship by new actors to meet the legitimate expectations of Indigenous Peoples and Local Communities (IPLCs) in Africa. These issues must be considered at local, national, regional and continental scales (APAC, 2022). Addressing these challenges will require policies that are cognisant of the full range of current and potential challenges and costs that people have (Epule, 2022) and the pressures that rhinos face (Clements et al., 2023).

1.3 Purpose of this framework

In the third decade of the 21st century, the fundamental challenge facing biodiversity conservation, and rhino conservation specifically, is how to foster a policy environment that will enable both people and rhinos to thrive. To achieve this, the African Rhino Conservation Framework (ARCF) reviews and incorporates fresh approaches to rhino conservation, many of which experts have openly discussed over the past decade. It also integrates these new insights into earlier approaches and practices that have been proven over time.

The ARCF takes guidance from the IUCN Species Strategic Plan 2021–2025 with its framework of assessing, planning and acting. It further builds and expands on the principles and steps for species conservation planning guided by the IUCN Species Survival Commission's Conservation Planning Specialist Group (CPSG, 2020).

The framework aims to engender a common understanding of the broader context in which rhino conservation occurs and to contribute guiding logic and principles for decision-making in rhino conservation. The framework targets primarily policymakers in African rhino range states, and secondarily government officials, protected area managers and funders or donors concerned with the conservation of African rhinos.

The framework considers various levels – specific sites, subnational and national governments, regions and the entire continent – for the period 2025 to 2035. Based on current species conservation science and contemporary good conservation practice, the framework seeks to contextualise these in projected future socio-ecological and economic trends on the continent while considering key global threats (Lindsey et al., 2022).

> This framework takes the best of the established approaches and merges them with progressive new thinking in the field. It aims to be a source of inspiration to reimagine rhino conservation and the contributions that it can make to an increased range of stakeholders.
>
> – Dave Balfour, African Rhino Specialist Group

2 Background

Climate change, habitat change, population fragmentation and unsustainable hunting and killing by humans have been key drivers in the decline in global abundance and diversity of megafauna such as elephants, rhinos, giraffes and hippos since the early Pliocene 5.33 to 2.58 million years ago (Ripple et al., 2015).

Combinations of these threats have resulted in widespread loss of the ecological roles of these megafaunal species (Enquist et al., 2020). This has altered the functioning of ecosystems. Africa is the notable exception, having retained a strong complement of large vertebrates (Lindsey et al., 2022). These include the two extant rhino species: the black rhino (*D. bicornis*) and the white rhino (*C. simum*). There are five subspecies: the eastern black rhino (*D.b. michaeli*); the south-central black rhino (*D.b. minor*); the south-western black rhino (*D.b. bicornis*); the southern white rhino (*C.s. simum*) and the functionally extinct northern white rhino (*C.s. cottoni*).

Besides their intrinsic value, rhinos perform important ecological roles. The feeding behaviour of white rhinos, for example, contributes to the formation and maintenance of grazing lawns in savannas (see Waldram et al., 2008), resulting in the recognition of this species as “ecosystem engineers”. African rhinos also provide economic incentives. They contribute to conservation that benefits other species via revenue streams based on philanthropic donations and sustainable uses, such as photographic tourism, trophy hunting and trade in live rhinos. Many people value rhinos and their derivatives for cultural or spiritual reasons.

In Africa, both the state and the private sector are involved in rhino ownership and management (Clements et al., 2023). In some countries, such as South Africa and Namibia, over 50% of white rhinos are privately owned or exist on private land. Although 90% of rhino live on private land in Zimbabwe, the ownership of many of them remains *res nullius* (belonging to no one). Generally, however, private ownership of rhino is held among a few, often wealthy, individuals. As societal demands change in Africa, there is increasing recognition of the need for greater participation in rhino ownership and management (Biggs et al., 2017). In all the countries where rhinos occur, the management of these animals, irrespective of ownership, is highly regulated.

3 The socio-ecological context of rhinos

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The most recent information shows that the annual number of rhinos killed illegally in recent times may have peaked. Illegal killings of Africa's rhinos reached their peak at 5.3% annually in 2015, but by 2020, the continent's annual rhino losses had decreased to 2.3%.

3.1 Rhino population dynamics[3]

Ninety per cent of the illegal killing of rhinos occurred in South Africa, which was home to 68% of all rhinos at the end of 2021 (Table 1). Loss rates differed across species, with black rhino numbers increasing by 3% per annum, whereas white rhino numbers declined at 3.1% per annum between 2018 and 2021. Transnational crime networks trafficking rhino horn also targeted certain areas where it is easier to poach white rhinos (which have larger horns). A case in point is the Kruger National Park in South Africa, which experienced the greatest losses (over 8,000 white rhinos between 2008 and 2021), probably because of the higher concentration of rhino in more open habitat in expansive areas that are difficult to patrol in a cost-effective way.

The number (and proportion) of white rhinos in private ownership and/or on private land in South Africa increased from 17.5% in 1994 to about 53% of the total population at the end of 2021 (Clements et al., 2023). Despite an annual poaching rate of 2.5% across the continent in 2022, range states reported 23,321 rhinos (6,487 black and 16,834 white rhinos) at the end of the year (Knight et al., 2023). A further 391 black and 1,241 white rhinos were reported in *ex-situ* collections globally.

African range states have since revised rhino estimates with new information. At the end of 2022, South Africa (15,688 rhinos), Namibia (3,612), Kenya (1,890) and Zimbabwe (1,133) were conserving 95.7% of the rhinos on the continent (Table 1).

3.2 Conservation in a changing societal context

African rhino conservation takes place in a changing societal, political and economic context alongside an increasing appreciation of the links and interconnectedness of ecological and human well-being (MEA, 2005; Archer et al., 2018; Van de Water et al., 2022). Socio-ecological resilience is key to the sustainability of human societies. It requires the management of biodiversity to be fair and equitable, particularly as it pertains to accessing the benefits derived from biodiversity and participation in decision-making. These interdependencies are increasingly being recognised at the national level through state and civil society structures, and in intergovernmental documents (e.g. the Convention on Biological Diversity[4] and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services[5]). Despite the enhanced understanding and policy revisions, implementing these new insights, including societal transformation, is lagging.

3 Note that this section is a summary extracted from Ferreira et al. (2022).

4 https://www.cbd.int/convention

5 https://www.ipbes.net

Table 1 Estimates of African rhino numbers (December 2023)

	BLACK RHINO				WHITE RHINO		
RANGE STATE	*D.b. bicornis*	*D.b. michaeli*	*D.b. minor*	*Diceros bicornis*	*C.s. cottoni*	*C.s. simum*	*Ceratotherium simum*
Angola	-	-	-	-	-	0	0
Botswana	-	-	21	21	-	282	282
Chad**	-	-	2	2	-	-	-
Côte d'Ivoire	-	-	-	-	-	1	1
Democratic Republic of the Congo**	-	-	-	-	-	20	20
Eswatini	-	-	51	51	-	98	98
Kenya	-	966	-	966	2	922	924
Malawi	-	-	55	55	-	-	-
Mozambique**	-	-	2	2	-	45	45
Namibia	2,195	-	1	2,196	-	1,416	1,416
Rwanda	-	30	-	30	-	33	33
Senegal	-	-	-	-	-	3	3
South Africa	441	100	1,664	2,205	-	13,483	13,483
Tanzania	-	223	5	228	-	-	-
Uganda**	-	-	-	-	-	35	35
Zambia	-	-	60	60	-	32	32
Zimbabwe	-	-	671	671	-	462	462
Africa	**2,636**	**1,319**	**2,532**	**6,487**	**2**	**16,832**	**16,834**
Zoos	-	345	32	391 (14*)	-	1,243	1,243
World	**2,636**	**1,664**	**2,564**	**6,878**	**2**	**18,075**	**18,077**

*Subspecies unknown

**Chad, Democratic Republic of the Congo, Mozambique and Uganda updated for 2021. Other countries updated for 2022.

In contemporary Africa, there is increasing recognition of the importance of meaningful and informed participation in decisions about land used and managed for biodiversity conservation. Following the Kigali Call to Action for People and Nature[6] at the IUCN African Protected Areas Congress, the Alliance for Indigenous Peoples and Local Communities for Conservation in Africa (AICA) called for people-centred, rights-based conservation.[7] However, a lack of supporting policy and legislation, contradictory legislation across sectors favouring priorities in other

6 https://www.iucn.org/sites/default/files/2022-07/apac-kigali-call-to-action-final_0.pdf

7 https://rightsandresources.org/blog/press-release-a-pan-african-alliance-for-community-conservation

sectors, and national decision-making processes commonly confound new insights and approaches.

Important building blocks for many conservation strategies, including those of African rhinos, are:

- Recognising community-led conservation approaches and knowledge systems;
- Securing the land-tenure rights of Indigenous Peoples and Local Communities (IPLCs);
- Mitigating human-wildlife conflict;
- Promoting dialogue to enhance cooperation between communities and protected and conserved areas while engaging jointly in legislative reforms; and
- Acknowledging that the role, participation and engagement of women and youth must be recognised.

The CITES Conference of the Parties (CoP19) recognised that IPLCs were often excluded from participating in decision-making and that the limited, although growing, voices on matters that influence people (Cooney & Abensperg-Traun, 2013) were often ignored. These matters included the management and conservation of rhino. Discussions acknowledged the need to develop and implement more inclusive governance structures and processes to deal with issues relating to people and wildlife at local conservation sites. Linked to the growing understanding that human societies depend on an intact natural environment is the question of how to cover the costs of environmental management and conservation. This area requires active attention and innovation.

3.3 A collaborative future for rhino conservation

Well-established approaches to rhino conservation, as captured and successfully implemented in national plans, focus on the use of biological science to "optimise" the growth in numbers at specific sites (Balfour et al., 2019b). In these plans, the aim is threefold: 1) to increase the number of rhinos by optimising population growth rates; 2) to buffer against and recover from potential poaching-induced genetic bottlenecks (when the population has become so small that genetic diversity is limited); and 3) to restore the species to a state where they are no longer considered threatened.

Evolving conservation and societal scenarios call for a renewed approach to policies and management practices in rhino conservation. This includes using site-specific Theories of Change (ToC) (Balfour et al., 2019a) and greater inclusion of IPLCs (Cooney et al., 2017). An important consideration is recognising that threats to rhinos have impacts at different scales. Demand for rhino horn and illicit supply chains, for example, occur transnationally; contested property and rhino use rights as well as policy prescripts occur at a national scale; and law enforcement for rhino protection and economic opportunities exert an influence at the local level.

Poaching threats to rhinos are associated with organised crime, corruption, governance challenges, high unemployment and a lack of alternative livelihood opportunities. In addition, shortcomings in basic services in many rural landscapes surrounding rhino conservation sites, such as potable water and road infrastructure, often contribute to how people experience conflict with wildlife. Unclear property rights add to the problem. These factors combine as some of the key drivers of poaching (Conrad, 2012).

Future rhino conservation plans need to acknowledge and consider these factors and the scale(s) at which they function or at which their impacts are felt, even if this is beyond the sphere of influence of an individual site manager or national rhino range state co-ordinator. The threats facing rhinos are complex. Mitigating these threats is unlikely to require a single intervention at a local scale; rather, multiple changing interventions across various scales and factors will be needed. A long-term approach is required.

Inspiration for such an approach can be drawn from game and war theory (Simaan & Cruz, 1973; Greene, 2006; Tsu, 2016) as well as crime theory (Wolfson & Frisken, 2000; Brogden & Nijhar, 2013; Miró, 2014). Criminal behaviour can be influenced through the risk:reward ratio, for example, by dehorning rhinos or by focusing on arrests and convictions that are broadly seen as fair and legitimate. As most illegal horn trafficking requires a transit route to distant markets in Asia, interventions that disrupt the individuals involved in illegal transit routes – as opposed to seeking the considerably more numerous foot soldiers – are more likely to be effective over time (Do et al., 2021). In practice, a long-term approach of this nature will have to overcome the limitations of traditional law enforcement approaches to transnational organised crime (Golubovskii et al., 2020). One of these is that legal jurisdiction seldom spans beyond national boundaries.

This framework is an adaptive, living framework seeking to ensure that societal expectations are accommodated, particularly those of local peoples.

4 An African rhino heritage

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An analysis of the recent history and current state of rhino populations identifies three strategic considerations as crucial to the future of rhino conservation.

4.1 Strategic considerations

1) Following a collaborative approach

Collaborative approaches that actively involve multiple stakeholder groups in rhino conservation models are likely to improve the future well-being of both rhinos and people. These approaches require expanding the traditional model of state-driven conservation to include private and community ownership and the use and benefits derived from rhinos. Approaches to rhino management need to embrace co-management models, such as public-private partnerships and bilateral custodianship agreements between the government and other partners, including communities and non-governmental organisations (Ferreira et al., 2022). Tripartite partnerships between the government (contributing regulatory decision-making), non-governmental service providers (contributing operational agility) and Indigenous Peoples and Local Communities (IPLCs) (contributing land-tenure and rhino user rights as and when these have been secured), is an approach that has been successfully tried in a few isolated cases and worth exploring further (see Muntefering et al., 2020).

2) Shifting to an "infinite game" mindset

Some approaches that have been taken in rhino conservation could be re-evaluated. Recent narratives underpinning rhino conservation and security emphasise "winning the poaching war" which is a "finite" game approach. In a finite game, there are rules; it is easy to keep score; the opposition is known; and there is a set time period for the game. This may be an inappropriate approach for most rhino sites. An "infinite" game may provide a more applicable approach: the rules are uncertain and circumstances change frequently; progress is difficult to measure; opponents regularly adapt to changing conditions; and there is no end to the game. An approach like this appears more representative of rhino conservation. In infinite games, the goal is to outlast all the others and leave a legacy (Sinek, 2019).

Two alternate "law enforcement" approaches to rhino conservation are illustrative. The current militarised approach has short-term value, but there are negative long-term consequences (Duffy, 2014) when focusing only on rhino security. The AICA's call for a people-centred, rights-based approach to conservation[8] carries a request that the practice of overly militarised conservation in and surrounding state-protected areas (so-called "green militarisation") be stopped. Striving for a legacy of regional security will better align with the rights that people have.

In contrast to a militarised approach, it is proposed that embracing a policing mindset that builds on mutual respect and seeks to build relationships and establish broader safety and security for people and wildlife through improved governance across a landscape may be more effective in securing rhinos over the longer term.

8 https://rightsandresources.org/blog/press-release-a-pan-african-alliance-for-community-conservation

The African Rhino Conservation Framework (ARCF) encourages a shift to an "infinite game" mindset and operational approach. Taking this direction would require certain foundations to be laid in an enabling environment, including sustained financing, devolved decision-making, engaged local people and cost-effective technology.

3) Enabling principal stakeholders

Considering ways in which to enable meaningful participation in decision-making by principally affected stakeholders (landowners, rhino owners, people who access various values or experience costs linked to rhinos, managers and IPLCs) will be essential. A critical aspect in achieving this will be to ensure that the above stakeholders, especially IPLCs, have fair opportunities and access to the enabling factors to become successful participants in the rhino conservation value chain. If those responsible for drafting and approving policy and those capable of influencing policy bear little or no cost associated with living adjacent to rhinos and wildlife, there is a risk of weak policy development and poor implementation. For long-term sustainability, the people who carry the costs of conserving rhinos should support policies and decisions that affect them, ideally by actively participating in policy development and implementation, and through receiving an equitable share of accrued benefits. The devolution of decision-making may not be favoured in cases of strong central government control and thus carries the risk of disempowering rural constituents. Importantly, policy needs to incentivise activities that promote rhino conservation within extensive landscapes, as opposed to rhino production systems that may contribute little to biodiversity conservation other than merely increasing the number of rhinos.

4.2 The impact of socio-ecological concerns on conservation

Conservation as a land use is not just an ecological or social concern, it is also a contentious political issue influenced by policy shifts at multiple scales and through multiple lenses. These range from a focus based on animal rights to inclusive human rights, land rights and all forms of rights over the use of natural resources.

Global socio-ecological trends will create both risks and opportunities for achieving conservation goals. Increasingly, different sectors of different societies will evaluate the relevance of conservation as a land use in their context. This is especially true for Africa with its rapidly growing human population (Lindsey et al., 2022) and increasing land conversion for food production to meet demand. The politics of conservation will commonly be contested rather than simply accepted as a fact of life. These developments align with initiatives such as AICA, an alliance of African countries working together to establish a roadmap for rights-based conservation in Africa.

Climate change that leads to extreme weather events will increase food insecurity, social disruption and migration, which are likely to lead to decreased societal resilience. Changing patterns of drought and flooding, the availability of potable water, habitat alteration and changing land use will challenge the ability of governments to deal with these problems.

Remnant African rhino populations are distributed in isolated conservation areas across the Southern African Development Community (SADC) and the East African Community (EAC) regions. In these areas, there is continued competition among land uses, which is likely to increase: the interests of human needs will keep competing


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with the needs of biodiversity conservation. This is also true for areas such as western Africa, where rhinos historically occurred and where future conservation efforts may consider the reintroduction of rhinos.

Emergent or ongoing threats, such as the illegal killing of rhinos and trafficking of rhino horn to meet international demand, contribute to the focus on law enforcement actions by site-level managers and field rangers against those involved in rhino crimes. Rapid technological advances should continue to create cost-efficient opportunities to monitor and protect rhinos, improve the well-being of people and provide information for decision-making.

Overseas development assistance and, to a lesser extent, philanthropic funding will probably experience ongoing pressure to meet human development needs.

However, a changing socio-ecological context may provide opportunities to integrate human development needs with the restoration of ecosystems and elements within these systems, such as rhinos and the socio-ecological role they play.

5 A rhino conservation framework for Africa

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The African Rhino Conservation Framework (ARCF) seeks to enhance the legitimacy of rhino conservation in Africa. To achieve this, it is crucial to promote approaches that more clearly represent the views and aspirations of principally affected people and to implement good practices that are operationally pragmatic.

The framework promotes a cohesive set of tools and guidelines with a twofold aim: 1) to help define targets and pathways for the conservation of rhinos, and 2) to outline the benefits and values that can be leveraged for people.

5.1 Achieving thriving rhinos valued by people

The ARCF identifies six strategic themes:

1. **Ecological** – Ensuring implementation of all aspects of biological management
2. **Safety and security** – Creating safe and secure areas in which rhinos and people live
3. **Disruption of organised crime** – Suppressing illegal wildlife trade
4. **Rhino-horn markets** – Understanding and influencing rhino-horn markets
5. **Equity and rights** – Ensuring equity and the rights of stakeholders in relation to rhinos
6. **Value** – Fostering the diverse views of the value of rhinos in society

Three enabling themes underpin these strategic themes: flexible funding models; legitimate governance, including rights and laws; and technical capacity (Figure 3).

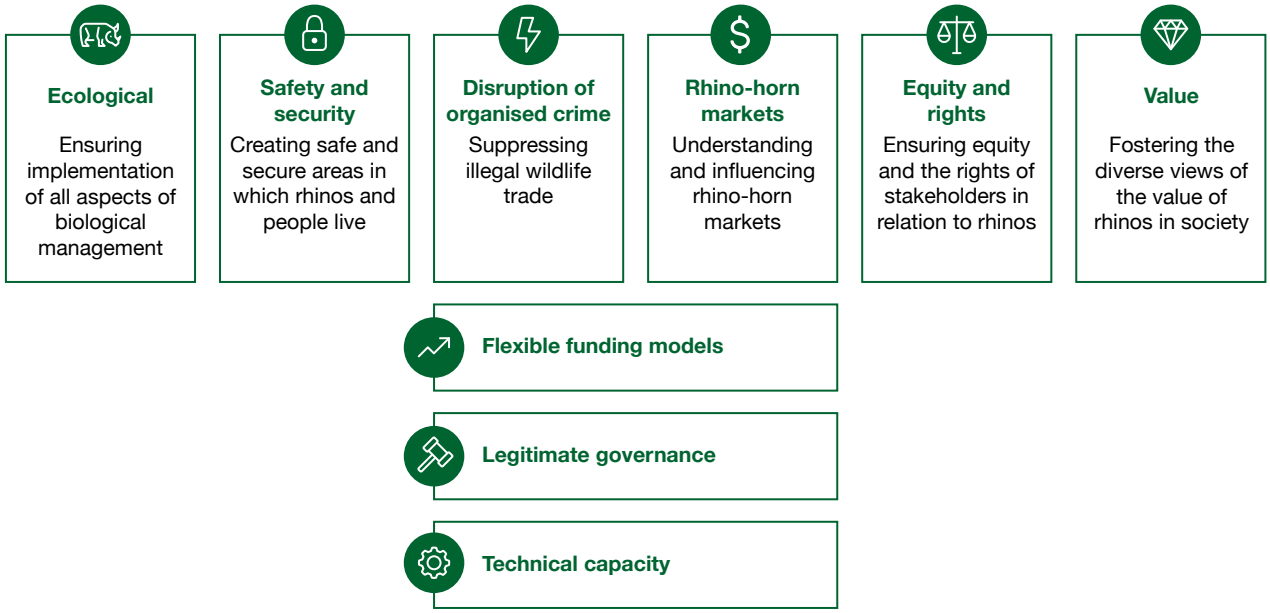

Figure 3 A strategic thematic framework for the conservation of African rhinos, supporting a mission of creating an African rhino heritage that links landscapes and livelihoods. The six strategic themes are underpinned by three enabling requirements.

Table 2 Principles of environmental management and social justice with assumptions that are embedded in this framework

Environmental management principles	Diversity and redundancy provide different options for responding to change and dealing with uncertainty and surprise.
	Connectedness facilitates recovery after a disturbance, but highly connected systems can also spread disturbances faster (e.g. the spread of disease).
	Slow variables and feedback provides many ways in which all the variables in a system can be connected and interact with one another to provide different ecosystem services.
	Adaptive systems thinking helps to understand the complex dynamics that exist between actors and ecosystems in a socio-ecological system.
	Learning and knowledge of a system is always partial and incomplete in socio-ecological systems.
	Participation through active engagement of the relevant stakeholders at all levels is fundamental to building socio-ecological resilience. It also helps to establish the trust and relationships needed to improve the legitimacy of knowledge and authority in decision-making processes.
	Governance through multiple governing bodies that interact to make and enforce rules in a specific policy arena or location achieves robust collective action in the face of disturbance.
Social justice principles	People have different levels of access to resources based on factors such as socio-economic status, education, employment, the environment in which they live, and disruptive factors such as corruption.
	Equitable access to resources focuses on the specific needs of communities and the individuals in those communities.
	Diversity addresses everyone's needs, acknowledging the differences that exist between individuals and groups.
	Individual people have the opportunity and platform to participate in making the policies and taking the decisions that most affect their well-being.
	All individuals, regardless of their socio-economic status, have inherent rights.
Assumptions about people and nature	People, how they behave and their characteristics influence the behaviour, thought processes and emotions of others.
	Human behaviour occurs in a social context influenced by the environment that people live in.
	Nature is orderly, and the laws of nature describe that order.
	People can know and understand nature.
	All phenomena have natural causes.
	Nothing is self-evident.
	Knowledge is derived from the acquisition of and access to information informed by experience.
	Knowledge is superior to ignorance.

Source: Prepared by the report authors

5.2 Principles and assumptions

The socio-ecological context of rhino conservation is embedded in social justice (Miller, 2001) as well as environmental principles (Biggs et al., 2012). The ARCF also makes assumptions about people (Geras, 2000) and nature (Hull et al., 2002) (Table 2).

5.3 Consideration of rights

The ARCF takes cognisance of the evolving social context in Africa and embraces a rights-based approach to rhino conservation. This is embedded in the United Nations Declaration of Human Rights (United Nations, 1948) and the more recent Declaration on the Rights of Indigenous Peoples (United Nations, 2007). Apart from rights to life, dignity, freedom, peace and security, the right of self-determination for all African people, including Indigenous Peoples and Local Communities (IPLCs), is a focal point. The political barriers to rights recognition could be challenging for rhino conservation that includes IPLCs and how people realise the value rhinos hold for them. The onus is on conservation organisations to support participation by IPLCs in rhino conservation (through policy and budget allocation) and for local site managers to embrace participation from IPLCs to help achieve rhino conservation outcomes.

This approach aligns with the rights of people to participate in decision-making on matters that affect their lives, and to own, use, develop and control land and the natural resources it contains. This is a key aspect of the Global Biodiversity Framework (Target 22) (CBD, 2023). IPLCs have rights to the use, conservation and protection of the environment and to the productive capacity of their lands or territories and the natural resources it contains. The ARCF recognises that the guarantee of rights may require changes in policies and legislation to accommodate the aspirations of African stakeholders.

6 Strategic guidance to support rhino conservation

The African Rhino Conservation Framework (ARCF) provides guidance on key activities that would support rhino conservation outcomes under the identified themes. For each theme, these strategic activities should help to achieve the expected outcomes. The outcomes are expressed as an impact statement for each theme.

THEME 1: Ecological – Ensuring implementation of all aspects of biological management

1) Expand ecologically significant units of both species of rhino across the continent

Maintaining dynamic free-ranging populations of rhino, particularly in extensive areas, is important for rhino conservation. Future rhino conservation interventions will include restoring populations and, in particular, reintroducing rhinos to localities where they are currently absent. The focus is not only on their historical range but also on prioritising landscapes where rhinos are most likely to persist in 20–50 years' time. To ensure species recovery at subnational, national, regional and continental scales, biological management should continue based on pragmatic genetic approaches. These include using well-established best practices (e.g. individual or population-level monitoring, translocations, or improving habitats through the use of fire) and expanding the range of rhinos.

Where the indigenous subspecies (or appropriate genetic units) have become extinct (such as the western black rhino), the ecological role of rhinos may be mimicked using other subspecies. In the case of the northern white rhino, of which only two females remain, innovative reproductive technologies may help to rescue the subspecies.

Changes in the climate and future shifts in suitable rhino habitat, together with habitat loss, may require novel solutions. Rhinos could be introduced beyond their natural range to contribute to the role that large herbivores play in enhancing ecological function and resilience. This will require stringent risk assessments and management practices to prevent unintended consequences on other species and across ecosystems. Conservationists should only undertake this if they consider that the potential conservation gains outweigh such risks.

2) Connect dynamic fragmented populations across range states

Connecting different areas where rhinos live, or might live, will benefit from ecological corridors. Some of these corridors could be created in transfrontier conservation areas, which could also enhance opportunities for local people to earn a living. If this is not possible, meta-population management, guided by the social and population dynamics of rhinos, will make it possible for rhinos to persist in fragmented landscapes.

Linked to the meta-population management of free-ranging rhinos is the integration of rhinos in zoo collections, captive-breeding organisations and wild populations. Reintroducing rhinos bred in captivity, whether in Africa or beyond, into natural

free-ranging conditions may restore genetic diversity, but will require the mitigation of threats to rhinos and enhancing the adaptive capacity of individual rhinos. The multiple ways in which rhinos can be owned, kept, managed and used in captivity or in the wild must also be carefully considered.

3) Mitigate biological limitations at sites

Managing the influence of ecological and social density-dependent constraints on populations is important to enable ongoing species recovery, and to maintain and enhance robust ecological dynamics. Linked to site-level management, managers can, to a limited extent, improve habitats for rhinos. This includes mitigating bush encroachment which degrades the grazing habitats of white rhinos. It is increasingly seen as helpful to consider the social dynamics of each or both species of rhinos as these dynamics may have a greater influence than is commonly believed. Further research must be done and the results should be included in management decisions.

4) Monitor trends and adapt

Monitoring rhinos under established high standards of detail using methods that are appropriate based on the vegetation type, total area, numbers of rhinos or their density will provide the information basis for decision-making and evaluation. Effective monitoring also requires robust data management to help facilitate timely reporting at national and mandated international levels.

ECOLOGICAL

Rhino populations with robust ecological and behavioural dynamics persist across their range with reduced extinction risks (IUCN, 2001) while the green status (Grace et al., 2021) of both species improves.

THEME 2: Safety and security – Creating safe and secure areas in which rhinos and people live

1) Advocate for and influence inter-agency cooperation

The aim would be to increase sentences, promote prosecution-led investigations and increase judicial awareness of rhino poaching as a form of transnational organised crime. It is important to understand the role of corruption in aiding organised crime activities and to develop approaches to build resilience and integrity within agencies. These initiatives will benefit from being integrated with regional ones such as the SADC Law Enforcement and Anti-Poaching Strategy (LEAP) (SADC, 2024).

2) Enhance landscape safety and security at abutting sites

Strengthening cooperation between law enforcement agencies, social development organisations and other agencies should enhance rural safety and security. A key element is to develop or strengthen community policing practices and policing approaches by engaging with local people living in areas abutting sites where rhinos occur, or communities that share landscapes with rhinos.

3) Protect rhinos at sites

Rhino protection and law enforcement should be implemented by using new approaches that reduce militarised tactics where feasible (e.g. use policing tactics that aim to enhance regional security). Rhino site managers should seek to leave a legacy of thriving rhinos valued by all through co-developing and implementing rhino protection with the cooperation of local people. A key element is to develop, explore, test and implement alternative ways, such as community custodianships and rhino guarding, to create safe rhino habitats.

4) Monitor trends in criminality related to rhinos and adapt safety and security responses

The monitoring of criminality related to rhinos should be promoted, while robustly managing and sharing relevant data and information. Robust data management will help to facilitate timely reporting at national and mandated international levels. Support should be given to assessments and reflections on challenges and best practices linked to the curbing of poaching so that approaches can be adapted to secure rhinos and create safe areas where they live.


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SAFETY AND SECURITY

Criminality is reduced to a level where the illegal killing of rhinos is below the threshold rates at which rhino populations start to decline (Ferreira et al., 2022).

THEME 3: Disruption of organised crime – Suppressing illegal wildlife trade

1) Advocate for and influence international cooperation

Cooperation between law enforcement agencies[9] within range states and across regions in Africa and links with transit states through which criminals traffic rhino products to states where people consume such products remain key aspects to address challenges through shared best practices.[10]

A key element is to conduct innovative and targeted local, regional and transnational investigations and ways of sharing information and intelligence. This requires efficient processes to allow the robust provision and retention of a chain of evidence across several scales. Enhancing the judicial awareness at the local, regional and transnational scales can support efficient sanctions against rhino crimes. Extensive international collaboration is a key requirement to suppress illegal wildlife trade

9 The SADC Law Enforcement and Anti-Poaching (LEAP) strategy and its implications for transfrontier conservation areas: https://tfcaportal.org/sites/default/files/eventdocuments/04MS_CManda_01.pdf; the Lusaka Agreement on Co-operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora: https://lusakaagreement.org

10 https://cites.org/sites/default/files/eng/com/sc/74/E-SC74-37-A1.pdf

linked to rhinos. Multi-agency task forces or secure units are a proven approach. Partnerships with private sector or NGO partners can also be beneficial.

2) Monitor trends in rhino-linked organised crime and adapt responses to disrupt these

Authorities should strive to monitor and appropriately manage international rhino crimes while sharing data and information (Wildlife Justice Commission, 2022). A key element is to establish an efficient means of reporting and to monitor information on the seizure of rhino products. In addition, best practice tools and approaches, such as financial investigations, can be used to disrupt high-value networks. Robust data management would help to facilitate the timely reporting at national and mandated international levels. Supporting assessments and analyses that reflect challenges and best practices linked to the trafficking of rhino products can help to inform the adaptation of approaches to disrupt organised crime.

DISRUPTION OF ORGANISED CRIME

Organised crime indices[11] in range states, as well as incidences of seizures of illegal rhino horn, have reduced.

THEME 4: Rhino-horn markets – Understanding and influencing rhino-horn markets

1) Understand the present and future drivers of demand and markets for rhino horn

Conducting robust research and assessments on the status of rhino-horn markets will help to understand the drivers of the demand for rhino horn, whether legal or illegal. The approach can expand beyond understanding rhino-horn markets to include other rhino products, such as skin or feet. Meta-analyses that extract general trends and influences should form the basis of evaluating market outcomes and changes under varying ecological (e.g. climate change), social and economic (e.g. trade) scenarios.

2) Influence the drivers of illegal demand and markets

The evaluation of the likely outcomes of various scenarios should guide the implementation of innovative interventions. Understanding existing and new markets for different products and the drivers of these in different countries should help to guide robust and transparent law enforcement that focuses on addressing illegal markets. In addition, best practice approaches that help to understand the demand for various products should inform the application of behaviour change principles that enhance the responsible and legal habits of people. An important requirement is to conduct robust impact assessments of interventions and report on these. Sharing the outcomes of interventions should be transparent and aimed at broad global stakeholders.

11 https://africa.ocindex.net


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3) Monitor rhino-horn markets and adapt responses

The appropriate monitoring of markets will help to understand and interpret trends in the trade of rhino horn. Robust data management will help to facilitate timely reporting at national and mandated international levels (e.g. TRAFFIC). Supporting assessments and reflections of market trends in rhino horn and other products are key sources of information. Based on these, authorities can adapt approaches to influence rhino-horn markets.

RHINO-HORN MARKETS

The number of illegal rhino horns and products entering the market has declined.

THEME 5: Equity and rights – Ensuring equity and the rights of stakeholders in relation to rhinos

1) Advocate for and enhance equitable governance

Active participation in decision-making[12] by principally affected stakeholders[13] is a key requirement for rhino conservation. This participation should empower involvement (Arnstein, 1969) in the co-development, co-implementation and co-

12 The competencies that people need to have awareness of themselves in relation to the environment they live in to take sensible decisions and participate actively and positively in the culture of which they form part.

13 People who have an interest in, authority over and are authentic about rhinos. But in a sense rhinos are also "principal stakeholders" – they have a key influence on people through people having ownership or user rights of rhinos. These include livelihoods linked to rhinos as well as management responsibilities or the costs of living adjacent to rhinos.

management of rhino conservation and the benefits and costs that may accrue at the level of local sites. Establishing or implementing processes that allow and facilitate meaningful participation in national and international contexts will require novel approaches and adaptation, such as the procedures of the Conference of the Parties to CITES and the Convention on Biodiversity (CBD).

Approaches of this nature will also help to work towards equity in the distribution of the costs of living adjacent to rhinos and the benefits that could accrue from doing so. Equity in recognition (e.g. giving different groups an equal voice) is a key element in the sphere of equitable governance (Franks et al., 2024).

2) Monitor social resilience links to rhinos and adapt responses

Extracting various indices (e.g. White, 2006; Stanton, 2007) that reflect the social condition and perceptions that people have should provide a better understanding of the quality of their lives and livelihoods in localities abutting protected areas where rhinos live. Sometimes, these will be community-conserved areas. Appropriately monitoring trends in these indices needs to be linked to rhino population performances. Approaches should be adapted based on timely reporting and support for the assessment and analyses of social resilience in areas linked to rhinos.

EQUITY AND RIGHTS

Plans and implementation at various scales include local people in decision-making in order to enhance social resilience while benefiting from rhinos.

THEME 6: Value – Fostering the diverse views of the value of rhinos in society

1) Improve the perception of rhinos

Stakeholders have various interests, and rhinos influence people differently. Communication about rhinos and how they affect people's livelihoods should seek to share information and grow an understanding of the diversity of views and values that people hold about rhinos.

2) Enhance support for rhinos and conservation legitimacy

Improving the awareness and understanding of rhinos and of conservation more broadly are key requirements that can unlock participation in rhino conservation, particularly by Indigenous Peoples and Local Communities (IPLCs) as affected stakeholders. This requires co-developing knowledge and integrating approaches, such as formal scientific research, indigenous and traditional knowledge, and cultural and social learning. Improved awareness and understanding will provide the basis of support for rhinos and conservation legitimacy. Approaches that improve awareness, enhance attitudes and broaden behaviour of a range of stakeholders in various countries across the globe should highlight and focus on the tangible and intangible rewards that accrue within the existing and new approaches to achieve conservation legitimacy.

VALUE

The full spectrum of stakeholders has an enhanced understanding of rhinos and the socio-ecological roles they play.

ENABLING THEME 1: Flexible funding models

1) Advocate for and diversify sustainable funding approaches

Advocating for and facilitating the identification, development and use of a diverse set of funding models should enhance conservation outcomes that link to protecting and using biodiversity (Claes et al., 2020). These models could benefit from traditional approaches that focus on donors and governments allocating budgets to address the threats posed by various global change drivers (e.g. wildlife trafficking, the impacts of climate change or habitat fragmentation). Additional funding options include compensation or offset payments (where appropriate), such as carbon finance, to help fund the costs of protecting landscapes where rhinos live based on the carbon sequestration functions of those landscapes. Rhinos could also be integrated as part of the growing biodiversity economies across the continent.

Funding sources from using a suite of biodiversity values may provide additional mechanisms to supplement traditional revenue streams, such as tourism and recreation, the trading of rhinos, as well as hunting in some range states. Options such as sustainable capital and investment funds, real-estate development and other economic activities, payment for species (e.g. species wildlife impact bonds), species assemblages and ecosystem functioning (e.g. nature or biodiversity credits) and conservation trust funds could strengthen financial resilience and adaptive capacity to perturbations influencing financing (e.g. government restrictions during the Covid-19 pandemic).

A key consideration is to ensure that funding focuses on the point of impact: the managers, landowners and IPLCs in areas relevant to rhino conservation. These areas could include a range of protected and conserved areas of various types and descriptions.

FUNDING

Diverse funding options are available to enhance financial resilience and adaptive capacity at the local, regional, national and international scales.

ENABLING THEME 2: Legitimate governance

1) Advocate for enabling and effective governance

Enabling policies that are transparent, practical, responsive and accountable are key requirements for the diverse set of strategic themes. This should facilitate the desired impacts and outcomes, which are key consequences of effective governance (Ombudsman Association, 2009).

2) Enhance legitimate collaborative management

Good governance includes the recognition of the rights of people, consensus of approaches and meaningful participation in decision-making. To achieve the themes of the ARCF, strategic activities should be embedded in national and international law. Similarly, to co-develop and co-implement conservation plans, the participation of stakeholders should be obtained at a national, regional and international scale.

LEGITIMATE GOVERNANCE

Compliance with recognising the rights of people, being lawful and having responsibly enabling policies in place increases, leading to governance effectiveness.

ENABLING THEME 3: Technical capacity

1) Enhance skills supporting rhino conservation across diverse functions

Facilitating the development of an inclusive range of technical skills is a strategic requirement. Equipped with these skills, stakeholders can conduct robust science, establish effective policies, implement innovative management and engage informatively with the public. Skills development should focus on continuity, transferring knowledge and developing future leaders from young professionals across the themes of the ARCF.

2) Enhance institutional partnerships

Partnerships between government divisions, non-government organisations, non-profit organisations, captive-breeding operations and other community-led organisations require continuity and the broad sharing of information.

TECHNICAL CAPACITY

Technical capacity and institutional partners improve across a spectrum of functionalities associated with rhino conservation.

7 Review and adaptation of this framework

The African Rhino Conservation Framework (ARCF) is a living framework that is flexible and able to accommodate changing societal expectations.

The IUCN Species Survival Commission's African Rhino Specialist Group will reflect on the objectives and the relevance of strategic actions at intervals. This will be aligned with formal reporting on the status of rhinos to IUCN and with the resultant CITES reporting mandate.

Supporting material provides details of the process that informed the development of the ARCF, as well as an expanded history and context. Several evolving toolkits can assist in the development of rhino conservation approaches.

For more information on the process of how the ARCF was developed or for progress in developing support toolkits, please contact the African Rhino Specialist Group via this website: https://rhinos.org/our-work/research-and-publications/afrsg/.

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