



The sustainable use approach could save South Africa's rhinos

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Introduction

South Africa is facing a surge in rhino poaching driven by the high and rising price of rhino horn, which benefits criminals but not landholders or conservation agencies. It is estimated that illegal traders earned \$5000/kg of rhino horn in 2009, rising to \$10 000/kg in 2010 and \$20 000/kg by the end of 2011, or \$60 000 – \$80 000 for each animal poached.¹ Rhino conservation in South Africa has historically been hugely successful. From fewer than 100 rhinos in 1910, there are now 19 000 white rhinos and 2000 black rhinos, of which 4500 occur on private land. The income from live rhino sales has provided significant income to South African National Parks and provided 74.9% of KwaZulu-Natal's parks budget between 2008 and 2011. But rhinos now face the strange paradox that they are so valuable that the private sector is questioning whether it still wants them. At issue are the economic consequences of traditional conservation policy, and the extraordinary ways that these policies twist economic signals.

Landholders benefit from rhinos through tourism, (very limited) hunting and live sales. When the opportunity costs of protecting rhinos were low, these benefits were sufficient to cover the costs of keeping them, but this cost-benefit calculation has been reversed by the escalation of poaching and the costs and risks of tackling armed poachers. Rhinos are becoming a liability and some owners are attempting to sell off animals, which might ultimately have the effect of reducing the 22 274 km² of private land currently used for conservation in South Africa.² The shrinking market for live rhino sales will also have serious effects on the budgets of some state-protected areas.

Would trading rhino horn and expanding sustainable hunting change these cost-benefit calculations? Because rhino horn regrows, dehorning can produce almost 1 kg of horn per rhino annually, earning about \$20 000 per animal – about 100 times the income from domestic stock.¹ A legal trade in rhino horn would provide substantial funding for private and state conservation in South Africa. Indirectly, an increase in the quantity and reliability of the supply of rhino horn would lower its global price. More importantly, legal trade should displace illegal trade, lessening the influence of organised crime, especially if markets were legalised in cooperation with consumer countries in Asia.

No domestic species has gone extinct because it was valuable, so why is high value a threat to wild species, rather than an enormous opportunity? This question is not new. In the 1960s, conservationists in southern Africa asked the same question: if wildlife is so valuable, why is it disappearing so rapidly? Through bold policy experiments that sought to maximise the value of wildlife to landholders, wildlife in southern Africa recovered against great odds. This recovery led to the claim that the commercialisation of wildlife represents 'one of the great agricultural transformations in Africa's recent history'³. Originating on private land, wildlife enterprises were extended to communal land through renowned community-based natural resource management initiatives like Zimbabwe's CAMPFIRE and Namibia's National Community-Based Natural Resource Management Programme. The success was not accidental, but resulted from a deliberate reframing of the political economy of wildlife through the 'sustainable use approach'. Table 1 summarises the changing political economy of wildlife in southern Africa.

In the pre-modern economy, wildlife was plentiful relative to the human population. However the European Industrial Revolution and colonisation of Africa and the America's, radically altered the balance between wildlife and people. New technologies such as guns, rifles and steel traps greatly lowered the cost of harvesting wildlife, and market demand was expanded through improved transportation (e.g. roads and railways). Global markets expanded and, in the absence of institutions which controlled wildlife use in frontier economies, species such as the American bison were devastated.

In 1900 and again in 1933, concerned at this slaughter, the colonial powers met in London and set in place new wildlife policies that radically altered the relationship between wildlife and people.⁴



New norms of conservation were based on three principles:

1. the establishment of state protected areas
2. the restriction or banning of the commercial use of wildlife
3. the centralisation of the control of wildlife in the colonial state.

Similar policies emerged in North America, where leaders and sportsmen like Theodore Roosevelt argued against market hunting by the masses and expanded state-protected areas. In many ways, wildlife was nationalised as a response to the perceived threat that it was being overutilised. This political process was driven by the urban elite at the expense of market hunters and landholders.

The threat to wildlife quickly changed, but policies did not. After World War II, human populations and agriculture in Africa entered an exponential phase of growth. The primary threat to wildlife became habitat modification – through both the plough and the cow. Beginning in the 1960s, conservationists in southern and East Africa began to respond to the sentiment that ‘you can’t farm in a zoo’ with a new mantra – ‘use it or lose it’. The 1961 Arusha Conference entitled ‘Conservation of Wildlife in Modern African States’⁵ marked the beginning of a radical shift in conservation policy in southern Africa.

The ‘sustainable use approach’

Put simply, the sustainable use approach aims to ‘maximize the benefits from wildlife to the people on whose land it lives’⁶. It involves four linked concepts: proprietorship, price, subsidiarity and collaborative adaptive management (Table 2). For the purposes of this paper we will focus on price and proprietorship, noting only that subsidiarity describes how nested institutions need to be built parsimoniously from the bottom up following the principle of ‘delegated aggregation’.⁷ Collaborative adaptive management addresses the need for learning processes linked to stakeholders, complexity and change.

The sustainable use approach reverses the colonial policies of centralising ownership of wildlife and removing it from the market place (Table 2). The price–proprietorship hypothesis suggests that if wildlife is valuable, and if this value accrues to landholders, then there is a high probability that landholders will manage wildlife sustainably, just as they would manage livestock.

Between the 1960s and 1980s, park authorities in southern Africa collaborated on a bold policy experiment. They devolved the rights to use wildlife to landholders (and communities), they encouraged multiple commercial uses of wildlife to drive up its value and, in some countries, they deliberately slashed bureaucratic requirements which act as a tax against wildlife. These policies were highly successful. Wildlife populations on private land in South Africa increased from half a million in the 1960s to several million now,³ creating a multibillion rand sector, tripling employment and doubling the return on investment to 8.6% compared to 4.4% from livestock.⁸ There are now an estimated 9000 to 10 000 wildlife ranches covering 20.5 million hectares or 16.8% of the total land in South Africa.⁹ In Namibia, wildlife populations on private land doubled while livestock halved between 1970 and 2000.^{10,11,12} In Zimbabwe, many cattle ranchers overcame ecological and financial decline by switching partially or entirely to wildlife¹³ on individual properties and on large areas of land called conservancies where ranchers removed all internal fencing and managed wildlife collectively.¹⁴

Gaining confidence in wildlife as an economic option, policymakers began to transfer this approach to communal areas through community-based natural resource management. The economic power of wildlife also allowed experimentation with new management approaches in protected areas. In South Africa, Pilanesberg and Madikwe were the first state-protected areas developed primarily to drive the local economy¹⁵; subsequently ‘contractual parks’ expanded conservation landscapes by linking private,

TABLE 1: The changing political ecology of wildlife.

Phase	Economic and political events	Wildlife conservation and utilisation
Pre-modern economy	Low human populations	<ul style="list-style-type: none"> • Use limited by ability or costs of harvesting • Institutions aimed at sharing spoils of the hunt
Frontier economy	Industrial revolution European colonial expansion	<ul style="list-style-type: none"> • Costs of harvesting greatly reduced by technology • Technology and globalisation increase market access • Few rules or norms to control use
Wildlife is nationalised	Agricultural expansion after World War II Urbanisation of Western society	<ul style="list-style-type: none"> • Control of wildlife centralised in the state • Commercial use greatly restricted
Sustainable use approach		<ul style="list-style-type: none"> • Use of wildlife devolved to landholders (and, later, communities) • Commercial uses encouraged

TABLE 2: How the sustainable use approach radically alters conservation policy and norms.

Conservation policy	London Convention 1900, 1933	Sustainable use approach
1. Protected areas	Establish state-protected areas to conserve fauna and flora and, later, public access	Privilege conservation, but: <ul style="list-style-type: none"> • provide public goods suited to society (jobs, economic growth) • recognise legitimacy of private and community conserved areas
Off-reserve conservation		
1. Wildlife ownership	Centralised in the state	Proprietorship: Devolve rights to use, sell and manage to landholders and communities
2. Commercial use of wildlife	Restrict and/or ban	Price: Make wildlife as (commercially) valuable as possible (provided use is humane)
3. Management of scale and hierarchy	Top down (implicit)	Subsidiarity: If institutions of scale are necessary to manage factors such as resource mobility, first construct these by scaling down to landholders, then build nested institutions through a process of upward delegation. Upward scaling should be parsimonious, and match the scale of the resource to the scale of the management jurisdiction.
4. Management of change and complexity	Static	Collaborative adaptive management: To adapt to change and complexity; and incorporate the mental models, objectives and data affecting key stakeholders through collaborative processes.



community and state conservation areas legally.¹⁶ Moreover, by casting protected area management as a conservation process that had significant socio-economic benefits, South African National Parks was mandated to expand the protected area estate from 6% to 8% of South Africa.¹⁶

However, price and proprietorship interact (Table 3), and misunderstanding this interaction is why conservation policy is often confused economically. The sustainable use approach is most effective where proprietorship is strong and prices are high – as indicated in Quadrant 3 in Table 3. However, where wildlife is valuable, but proprietorship is weak or absent (Quadrant 1), a frontier or open-access economy exists with a high likelihood that wildlife will be rapidly exploited. As we see with rhinos, the usual approach has been to ban trade in the hope of reducing the incentives for poaching. Unfortunately, this ban moves the resource from Quadrant 1 to Quadrant 2, which is the ‘no hope’ strategy where landholders switch to more viable enterprises, park agencies have less income to fight poachers, and government places a lower priority on wildlife because its social and economic benefits are reduced. A more constructive strategy is to move from Quadrant 1 to Quadrant 3 by devolving rights to use rhinos to landholders (and reducing regulatory restrictions), and encouraging trade to drive up its price through innovation. Banning or restricting commercial use shifts the political economy of wildlife into the right-hand column. This approach is unlikely to work without long-term international or state funding coupled with strong rights of exclusion (Quadrant 4). A good example of Quadrant 4 is state-protected areas. Parks can be effective if well funded, but in some cases are reasonably effective even with limited funding, provided that their boundaries are well delineated and the resources they contain are not too valuable. Quadrant 4 also represents the increasing number of landholders who conserve nature, not for financial reasons, but because they understand and own it. Thus, strategies whereby state agencies educate landholders to conserve ‘their’ biodiversity are effective. But the high-handed imposition of regulations often backfires because this strategy removes ownership and effectively moves resources from Quadrant 4 to Quadrant 2.

Conclusion

The sustainable use approach suggests we can choose to perceive the high price of rhinos as an economic blessing rather than a threat. The approach provides us with a powerful lever for rhino conservation and indeed the conservation of ecosystems, but only if we are prepared to use it and run the political gauntlet – the current governance regime

for rhinos is in direct contradiction of the sustainable use approach. Today’s approach emphasises national and international public interest in preventing rhino poaching, but the associated restrictions on use (both through CITES and nationally in South Africa) shifts the R3 billion opportunity costs of these preservationist policies to rhino producers.¹ The irony is that the special interests who promote these policies lack direct accountability and invariably shirk paying for rhino conservation. (Such actions also effectively amount to removing property rights from landholders and communities without paying for them. The outcome of a challenge to this unpaid transfer of property rights in a court of law would be interesting. It was just such a case that precipitated the reversal of Zimbabwean wildlife laws in the 1970s, when a rancher won his argument that if the state claimed ownership to wildlife they, as owners, must also be liable for the costs associated with it.)

The rhino crisis confronts us with a stark choice. Do we continue with a conservation strategy based on centralised conservation and trade bans that has been in place for 35 years and is failing? Or is the better risk strategy to boldly reverse a system that is not working? The argument that we need to wait for evidence that trade will work before we open markets is rather like telling your 16-year-old that they can drive a car only once they prove they can drive. Just as the only way to learn to drive is in a car, the only way to test if trade will save rhinos is to open trade. We would not be doing this blindly, but learning from 50 years of experience in the wildlife sector. The sustainable use approach suggests that rhinos (and South Africa’s economy and employment figures) would benefit by replacing a failed no-trade regulatory approach with a carefully designed policy experiment to trade rhino horn through carefully configured and simple (not simplistic) institutions. Specifically, this experiment would require devolving full use rights for rhinos to landholders, and allowing them to trade freely in rhino products (including hunting), while carefully monitoring outcomes.

Effectiveness might be increased, and risks reduced, by linking the power of private ownership to collective self-regulation following the principle of subsidiarity. Thus, the devolution of use rights might be contingent on landholder conservancies of, for example, more than 15 landholders and 10 000 – 20 000 hectares, constituting themselves to manage and regulate rhinos collectively. Following well-accepted theory,¹⁷ constitutions would require locally designed mechanisms for allocating use rights, monitoring, sanctioning and conflict resolution (i.e. Ostrom’s principles 1 to 6).

TABLE 3: An economic framework for analysing conservation strategies.

Proprietorship	High price	Low price
Weak	<i>Frontier economy:</i> Wild resources are decimated through poaching and unsustainable harvesting Quadrant 1	<i>No hope economy:</i> Wild resources are usually replaced by more valuable and/or privately owned (domestic) resources Quadrant 2
Strong	<i>Sustainable use approach:</i> Wild resources are conserved through the sustainable use approach and community-based natural resource management Quadrant 3	<i>Survive if subsidised economy:</i> Wild resources are usually replaced by more valuable domestic resources but are sometimes conserved because people like them and can exclude other users Quadrant 4



Rhino conservancies would be automatically granted the rights to use and manage rhinos collectively, with the single national responsibility of submitting a minimal set of data that enables society to oversee progress through adaptive management. Such collective action places checks and balances on maverick landholders, encourages ecologies and economies of scale and, if rhinos are truly worth many times what domestic stock is, is highly likely to shift large areas of land into the bio-experience economy. The government, after carefully designing a system with checks and balances, would step back into a more strategic and focused role: to track the efficacy of its new policy and improve this policy adaptively on the basis of data, and to intervene strategically and locally only where there is clear evidence that a particular community is not working.

Scholars of cross-scale governance¹⁸ would also see the benefits of establishing a national level Rhino Conservation Association that is constructed from the bottom up following the principles of subsidiarity¹⁹ which is so elegantly explained by Marshall Murphree⁷. This association would be formed primarily by accountable stakeholders including landholder conservancies and park agencies, but with participation from civil society and academia. The association would be empowered as the primary mechanism for framing matters of rhino trade and protection. Its objective would be to conserve rhinos in a way that also maximises public benefits to South Africa, including job creation, economic growth and a reputation as a leader in conservation policy.

There are widely used arguments that whatever the local success in southern Africa, the trade in rhino horn, or ivory for that matter, will be used as a cover for illegal trade from other countries with less successful wildlife conservation policy. There are three counter arguments to this:

- Rhino horn trade has been banned for 35 years (since 1977), yet rhinos are still highly threatened, and surely it is time to devise new approaches.
- Legalising rhino horn trade for South Africa is likely to shift the market out of the hands of organised crime into legal channels, which must be good for rhinos and other wildlife currently moving through these illicit channels. A large and steady supply of horns is also likely to lower and stabilise prices, which also plays against the black market.
- Rhinos are most seriously threatened where proprietorship of them is weak (Quadrant 2, Table 3) or where there are insufficient funds for law enforcement in protected areas (Quadrant 3).

This failure is predictable, and good policy should not be held hostage by bad. Where a non-trade approach is chosen it should be explicitly paid for, both by funding rhino protection *in situ*, and by paying the opportunity costs imposed on rhino producers like protected areas, communities and private landholders in southern Africa. It is not in the interests of conservation that international mandates are unfunded, or that rhino producers in southern Africa bear an annual

opportunity cost approaching \$400 million at current prices resulting from decisions at international forums like CITES.

The sustainable use approach predicts that:

- Devolving the ownership of rhinos to private, community and state landholders.
- Promoting legal markets for rhino hunting and trade within an institutional framework that is built up from the bottom and managed adaptively.

This will provide powerful economic incentives for rhino conservation in South Africa.

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