Rhino Poaching: How do we respond?

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Acronyms & Abbreviations

AfRSG	(IUCN's) African Rhino Specialist Group
AWF	African Wildlife Foundation
CBNRM	Community Based Natural Resource Management
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CoP	Conference of Parties
EAC	East African Community
EIA	Environmental Investigation Agency
ECWG	Environmental Crime Working Group
EKZN	Ezemvelo- KwaZulu-Natal
IAPF	International Anti-Poaching Foundation
IFAW	International Fund for Animal Welfare
IPZ	Intensive Protection Zones
IUCN	International Union for the Conservation of Nature
KWS	Kenya Wildlife Service
MET	Ministry of Environment and Tourism (Namibia)
NAPHA	Namibia Professional Hunting Association
NWPTB	North West Parks and Tourism Board
PHASA	Professional Hunters Association of South Africa
PROA	Private Rhino Owners Association
RMG	Rhino Management Group
RESG	Rhino and Elephant Security Group
SADC	Southern African Development Community
SMART	Spatial Monitoring and Reporting Tool
SOCA	Serious Organised Crime Agency (UK)
SRT	Save the Rhino Trust
SSC	(IUCN's) Species Survival Commission
SANParks	South African National Parks
TNC	The Nature Conservancy
UNODC	United Nations Office on Drugs and Crime
USFWS	US Fish and Wildlife Service
USFWS-RTCF	US Fish and Wildlife Rhino and Tiger Conservation Fund
WESSA	Wildlife and Environment Society of South Africa
WWF	World Wide Fund for Nature
Zimparks	Zimbabwe Parks and Wildlife Authority
ZSL	Zoological Society of London

Executive Summary*

This report outlines the main actors in rhino conservation, the major main threats to rhinos in the 'Big 4' range states (Zimbabwe, Kenya, South Africa and Namibia) which together conserve almost 99% and 96% of Africa's wild white and black rhino respectively, and offers a review of a range of possible policy responses.

The main conservation actors across the Big 4 can be grouped as:

- Public Sector Conservation Agencies, including Government Departments and Parastatal Boards
- International Organisations
- Regional Organisations
- Locally based NGOs
- Private Sector
- External Agencies, including Conservation NGOs and donors.
- Sub-state entities, including local communities.

The range of actors is slightly different in each country, and the relative importance of different actors varies across countries.

The main threats to black and white rhinos are:

- Poaching, driven by illegal demand for rhino horn from South East Asia;
- Disinvestment by some in the private sector due to the increasing costs and risks of protecting rhinos coupled with declining incentives for conserving rhino;
- Resources are currently insufficient to adequately protect some populations.

Currently poaching rates are lower than birth rates, so rhino numbers continue to rise. However, poaching at a continental level has increased significantly since 2007-8; and if this trend continues unabated the tipping point (where deaths start to exceed births and rhino numbers start declining) could be reached as early as 2014/2015. Therefore interventions to tackle poaching at this stage can be seen as a critically important preventative measure.

There are 9 key findings from the review of possible policy responses:

1. Each range state requires a different menu of approaches that deal with both proximate and ultimate causes of the rises in rhino poaching.
2. Capturing the economic value of rhinos is important.
3. Even though it is illegal, there is currently a lucrative market for rhino horn products in some countries.
4. Efforts need to focus on demand reduction in end user communities, but there is insufficient knowledge of the dynamics of those markets.

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5. Despite increased prison sentences in some rhino range states, poaching continues to escalate in some countries, while some states do not or did not have ‘deterrence sentences’ at all.
6. Dehorning can have a (limited) deterrence effect but is not a practical option for all rhino populations.
7. Community Based Natural Resource Management (CBNRM) can have a (limited) deterrence effect.
8. Each of the 4 range states faces a different combination of threats and their circumstances differ, therefore efforts need to be tailored and targeted
9. Effective Governance ‘Matters’.

SECTION 1

Actors and Issues

Context

In order to allow DFID to prepare for a meeting on rhino and elephant poaching, Evidence on Demand requested that Professor Rosaleen Duffy, Dr Richard Emslie and Dr Michael A. Knight use their combined knowledge and expertise to prepare a rapid review (5 days) of evidence on two areas of rhino conservation in the four rhino range states (Kenya, Zimbabwe, South Africa and Namibia). The two areas they were asked to focus on were:

a) the current main donors and conservation actors
b) the main conservation issues / gaps and recommended policy responses.

This report is based on a rapid review of grey literature produced by national and international organisations including IUCN, CITES, WWF and TRAFFIC amongst others, a review of relevant secondary literature and insights from key informants in the rhino conservation sector. The national rhino conservation strategies for each of the 4 states were thoroughly reviewed. Professor Rosaleen Duffy consulted with the rhino coordinators for Kenya (Ben Okita-Ouma) and Namibia (Pierre du Preez) as well as representatives from the Lowveld Rhino Trust in Zimbabwe (Raoul du Toit), Save the Rhino International (Cathy Dean), and the Zoological Society of London (Noelle Kumpel and Catherine Secoy), in order to gain an up to date picture of the main rhino conservation issues and how to respond to them. The authors also consulted with other experts in their field, including Michael t'sas Rolfes to gain additional insights from their work on rhino conservation. A rapid review has inevitable limitations, produced by the shortness of time; such a rapid assessment can only provide an overview of the issues and possible responses. With more time the authors would have wanted to consult more fully with those engaged in rhino conservation on the ground in each of the four range states, as well as with organisations and individuals working in end user markets (notably in China and Viet Nam).

This report should be read in conjunction with a 'sister report' commissioned at the same time by Evidence on Demand, which provides figures on trends in rhino numbers and poaching rates Standley, S. and Emslie, R.H. (2013) *Population and Poaching of African Rhinos across African Range States 2007-2012,* Consultancy Report for DFID, August 2013. Evidence on Demand Report (no. HD078).

It may also be useful to consult with a further report which provides a rapid review of the links between poverty and poaching: Duffy, R. and F.A.V. St. John (2013) *Poverty, Poaching and Trafficking: What are the links?* Consultancy Report for DFID, June 2013. Evidence on Demand Report (no. HD059).

Main Conservation Actors

The main conservation actors across the 4 range states can be grouped as:

- *Public Sector Agencies*: these include Government departments and parastatal national and provincial state conservation boards (South Africa, Zimbabwe and Kenya). Government budgets for conservation can be significant (especially in South

Africa) but additional support is required to make up for budgetary shortfalls and assist with the purchase of capital equipment, training and operational support (helicopter time, fuel, tyres etc). In Namibia a national Game Products Trust Fund helps finance a number of conservation initiatives and projects.

- *International organisations:* these help to provide direction and coordination; the main actors in Sub-Saharan Africa are the International Union for Conservation of Nature (IUCN), Species Survival Commission's (SSC) African Rhino Specialist Group (AfRSG) where all range states with more than 10 rhinos are formally represented). IUCN SSC's African and Asian Rhino Specialist Groups and TRAFFIC are also mandated to report to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Conference of Parties (CoP's) on behalf of range and consumer states. CITES (which also currently has an inter-sessional Rhino Working Group chaired by the UK) has an important role. The last IUCN World Conservation Congress also passed a Rhino Motion.
- *Regional Organisations:* South Africa, Namibia and Zimbabwe and other more minor range states from Southern Africa actively participate in the Southern African Development Community (SADC) Rhino Management Group (SADC RMG) and the Rhino and Elephant Security Group/Interpol Environmental Crime Working Group (RESG/Interpol ECWG).
- *Private Sector*: this includes large private reserves and smaller wildlife ranches that continue to manage an increasing proportion of Africa's rhinos. Rhinos may be privately owned or may be managed in some form of custodianship arrangement with the state. In terms of black rhino, the state has control of all black rhinos in Kenya, Namibia and Zimbabwe and it is only in South Africa where private ownership of black rhino is allowed. More recent developments include organisations such as African Parks, that run state-owned protected areas on a contractual co-management basis, and in some cases these reserves include rhino populations.
- *External Agencies*: these include conservation NGOs and donors. Major donors include WWF, Save the Rhino International, StopRhinoPoaching.com, International Rhino Foundation, US Fish and Wildlife Rhino and Tiger Conservation Fund (USFWS-RTCF), Save Rhino Australia, and RAGe.
- *Sub-state entities*, including local communities and locally based NGOs. Communities play an important role in helping to conserve black rhino in the arid Kunene region in North West Namibia. Efforts to expand community conservation are starting to increase in South Africa. There have also been a number of innovative schemes in Zimbabwe where benefits to communities depend on performance of rhinos in neighbouring reserves.

The range of actors is slightly different in each country, and the relative importance of different actors varies across countries. In the case of NGOs it is important to distinguish between campaign focused organisations (predominantly based in the North), e.g. Environmental Investigation Agency (EIA), Born Free Foundation, Humane Society etc. and those that directly support or contribute to in-country field conservation programmes (most notably WWF, Save the Rhino International (SRI), International Rhino Foundation (IRF), Save African Rhino Foundation (Australia), US Fish and Wildlife Service (USFWS) Rhino and Tiger Conservation Fund, Save the Rhino Trust (SRT), and StopRhinoPoaching.com). Lack of space and a focus on the "Big 4" rhino range states precludes naming all who contribute in some way to rhino conservation efforts. A focus on key actors in the 'Big 4' range states does mean that important actors are missed. For example, the list below does not cover the range of agencies and actors that could be identified in end-user markets; it also does not adequately capture the importance and contribution of global level organisations e.g. TRAFFIC and Interpol; nor does it provide adequate coverage of sponsorship and support from individual philanthropists and private sector to NGOs, state agencies and individual reserves (e.g. donations from the USA to Lewa in Kenya, support

provided to North Luangwa National Park in Zambia by Frankfurt Zoological Society or financial and in-kind support from businesses and civil society to agencies involved in anti poaching in South Africa).

The listing under each country is limited – many more organisations could be added.

South Africa

Government: Conservation in South Africa under the constitution is deemed a concurrent competency shared between national and provincial government structures (i.e. a federal system). Nationally the umbrella body is the Department of Environmental Affairs. State National Parks are managed by South African National Parks (SANParks) which operates in all provinces, except KwaZulu-Natal, conserving 40.8% of the country's black rhino and 54.7% of the white rhino. Provincial conservation agencies operate in the nine provinces – the most important of which, in terms of the number of rhino they own and manage are: Ezemvelo- KZN Wildlife (EKZN Wildlife); North West Parks and Tourism Board (NWPTB) and Eastern Cape Parks and Tourism Agency. A number of these (but not all) provincial conservation authorities have statutory boards (e.g. EKZN Wildlife, Cape Nature, NWPTB). These statutory bodies (including SANParks) are able to raise and keep any revenue they raise– which is very important in supplementing budget requirements and in the past have also provided funds to grow the Parks' estate. Significant numbers of rhino also occur on private land in Mpumalanga and Limpopo provinces (both provinces are managed by state departments). Fewer rhino are found in the Western and Northern Cape, Gauteng and Free State provinces. Together the provincial agencies conserve 34.3% of the black rhino and 21.0% of the white rhino – with private sector owners and custodians conserving just under a quarter (23.5% and 24.3%) of the country's black and white rhino.

Regional Organisations: SADC Rhino Management Group (SADC-RMG). This body coordinates annual black rhino status reporting and is responsible for developing and revising South African black and more recently white rhino management plans. It particularly focuses on issues to do with monitoring and biological management of populations for growth at the regional SADC level. Together with IUCN's AfRSG it also helps promote recommended/best rhino management practices. It was recently appointed (by the Minister of Environment) as the body to implement the national black rhino Biodiversity Management Plan. The Rhino and Elephant Security Group/Interpol ECWG was originally an offshoot from the RMG and focuses primarily on rhino security, protection, techniques for effective investigations, and prosecutions. The two bodies seek to complement each other and also dovetail with the IUCN AfRSG at the continental level.

Private Sector: There are over 400 private rhino populations in South Africa. These range from significant AfRSG rated ***Key*** and ***Important*** populations of continental significance, to many very small populations with less than 10 rhinos. The Private Rhino Owners Association (PROA) represents the greatest number of private owners in South Africa.

NGOs: WWF-South Africa; Professional Hunters Association of South Africa (PHASA); Save the Rhino International; StopRhinoPoaching.com, Endangered Wildlife Trust, Wildlands Conservation Trust; Wildlife and Environment Society of South Africa (WESSA), Save African Rhino Foundation (Australia) has also recently expanded outside of Zimbabwe and is now funding/co-funding a number of South African projects; Project Rhino KZN, International Anti Poaching Foundation (IAPF). In recent years concern has repeatedly been expressed about the proliferation of new NGO's using rhino conservation for fund raising purposes. Some of these may not be *bona fide* and may be spending their money ineffectively. South Africa's Dept Environmental Affairs is in the process of registering rhino fund raising bodies in the country.

Zimbabwe

Government: Zimbabwe Parks and Wildlife Authority (Zimparks). This is a parastatal body that must generate its own funding. Lack of funding is a significant constraint.

Private Sector: Since poaching is more concentrated in National Parks, the majority of Zimbabwe's rhinos are now found in privately managed conservancies that are concentrated in the SE lowveld of the country.

NGOs/external agencies: Lowveld Rhino Trust is the key player assisting with monitoring and biological management in conservancies. It also assists National Parks with its management operations, such as dehorning and translocations. Its funds primarily come from International Rhino Foundation, SRI and WWF. Australia's Save African Rhino Foundation has also long been a donor to Zimbabwe, primarily providing equipment and vehicles to state-run rhino National Parks. Locally, Dambari Wildlife Trust assists (especially with the Matopos National Park) and the Zambezi Society has provided some support for Matusadona (although few rhinos remain there). Frankfurt Zoological Society is involved with a potential project to reintroduce rhino to Gonarhezhou National Park. Sebakwe Black Rhino Trust in the UK has for many years supported the Midlands Conservancy but poaching has significantly reduced the number of rhino there.

Sub-state: Indigenous communities as partners to conservancies e.g. in Chiredzi, Beitbridge, Bikita, Mwenezi and Chipinge Districts.

Namibia

Government: Ministry of Environment and Tourism (MET); USFWS.

Private Sector: There is a very successful custodianship scheme in Namibia where both private sector reserves and community conservancies are managing rhino on behalf of the State. White rhino can be privately owned in Namibia and numbers have been increasing through breeding together with increasing imports of white rhino from South Africa to Namibia (perceived as safer given its current low levels of poaching). Due to aridity, black rhino carrying capacities on most private reserves are low and many of the private custodianship populations can only hold a limited number of rhinos. As a result these rhinos have to be managed as part of a metapopulation requiring regular movement of rhinos to and from different populations. While the Namibian custodianship programme has been very successful, it puts a logistic and financial burden onto MET.

NGOs and donors: Save the Rhino International; Save the Rhino Trust Namibia; The Nature Conservancy (TNC); WWF; Endangered Wildlife Trust; David Shepherd Wildlife Trust; Namibia Professional Hunting Association (NAPHA).

Sub-state: Communal Wildlife Conservancies – the most important community rhino population in Africa occurs in NW Namibian conservancies, other rhinos from this population also occur on state owned land. A significant proportion, 6.2% of Namibia's black rhino, are conserved on community land. Due to the extreme aridity of the area, human densities are very low; and what works here cannot therefore necessarily be exported directly to other countries where community densities surrounding rhino reserves may be much higher.

Kenya

Government: Kenya Wildlife Service (KWS).

Regional Organisations: East African Community – Rhino Management Group (EAC-RMG). Following the successes of the SADC-RMG in southern Africa a similar regional coordination group was set up for East Africa, but it has not been as active thus far and has not been a catalyst for international translocations to encourage the expansion of rhino in the region.

Private sector: Association of Private Land Rhino Sanctuaries and individual reserves.

NGOs/Donors: WWF African Rhino Programme. Save the Rhino International; US Fish and Wildlife Service's Rhino and Tiger Conservation Fund (USFWS-RTCF), USAID, The Kenya Wildlife Trust (KWT); African Wildlife Foundation (AWF); The Nature Conservancy (TNC); Chester Zoo; Zoological Society of London (ZSL); Mohamed bin Zayed Species Conservation Fund, and the International Fund for Animal Welfare (IFAW).

Sub-state: Northern Rangelands Trust is working with community conservancies in the hope that black rhino can be reintroduced into this region. The Laikipia Wildlife Forum is active.

Main Threats to Rhinos

The main threat to rhino conservation is caused by the increasing demand and very high prices being paid for rhino horn, which fuels escalating poaching. A secondary, but still significant, threat to rhinos in the longer term, is the risk of disinvestment by private rhino owners; this is due to the fact that the costs and risks of securing rhino have increased significantly because of rises in poaching, and this is coupled with declining economic incentives (the dynamics of this are discussed in more detail under 'Policy Responses'). A shortfall in funding also hampers efforts to substantially increase anti poaching and intelligence gathering efforts. In South Africa there are concerns about possible donor fatigue in the future. The significance of this is that a reduced interest in rhinos from the private sector will ultimately lead to less land available for rhinos, with obvious knock effects on rhino numbers, population performance, revenue generation and incentives; new land for rhino expansion in South Africa has to come from either the private sector or communities. In Zimbabwe, land invasions and land transformation have been part of the land reform programme and poaching has negatively affected some areas. One conservancy, Bubiana that once had a continentally ***Key*** population of over 100 rhinos, now has none (the few remaining rhino were successfully relocated to a safer conservancy area).

Figures have been provided on poaching in Report HD078, *Population and Poaching of African Rhinos across African Range States* by Sarah Standley and Richard Emslie (based on information supplied by IUCN's AfRSG and TRAFFIC). While numbers of rhinos have increased, so have the rates of poaching, and growth in numbers of African rhinos has slowed as a result. If these trends continue then a tipping point (where rhino deaths start to exceed births) will be reached in some countries as soon as 2014/2015. Therefore interventions to tackle poaching at this stage can be seen as a critically important preventative measure.

The main threats are detailed below for each of the 4 states.
Kenya: the main threat is poaching exacerbated by concerns about corruption, followed by disinvestment in rhinos by private owners. Inadequate budgets are also a threat. Kenya has recently changed the status of white rhino which is likely to act as a disincentive to some previous owners. It is a challenge to find areas that can be effectively secured and protected to expand rhino range.

Zimbabwe: the main threat is poaching and inadequate budgets, capacity and institutional/government support for state reserves; an additional problem with habitat loss/disruption is due to land invasions on privately owned ranches, especially in the lowveld region (du Toit, 2013; also see Wolmer, 2007). Other threats include the reduction in and undermining of important sources of finance (e.g. trophy hunting) for privately owned areas in the absence of a viable tourism industry.

Namibia: organised rhino poaching has so far not affected Namibia, but poaching has the potential to increase as enforcement efforts are stepped up or supplies are exhausted elsewhere (domino effect). Namibia is seeking to be proactive and is developing specific security plans for its rhinos and elephants.

South Africa: The main threat is poaching, coupled with declining incentives to conserve rhinos, which leads to disinvestment by private owners. The declining turnover obtained for live white rhino sales is also reducing funding for conservation agencies. The lack of sufficient funds to increase anti-poaching and intelligence efforts is also seen as a threat, which is why the Rhino Issues Management process has called for the establishment of an international fund to help support protection and conservation efforts. Many, but certainly not all, in South Africa view the lack of a legal trade in rhino horn as a threat to rhinos; in the absence of a legal trade the majority of current demand in countries such as Viet Nam is being supplied from rhinos from illegal sources.

Pseudo-hunting was a problem in South Africa until recently; it involves the use of legal permits as a cover for non bona-fide sport hunting of rhino with a view to using CITES permits to transport rhino horn to user countries where it is sold in illegal markets. Legislative changes in April 2012 have largely controlled this. However importing countries still need to work with South African authorities to minimise the chance of proxy hunting by citizens from other countries, by confirming all hunting applicants are bona fide hunters.

The very high black market prices for horn, and current demand in countries, such as Viet Nam, has created conditions for greater involvement by organised crime networks. Organised crime remains a major risk given their resources, ability to corrupt, and resourcefulness. With organised crime's involvement in rhino poaching there is an increased risk of attempts to corrupt and pay for information on rhinos and park security operations.

Mozambique remains a major problem given its inadequate legislation and law enforcement efforts, coupled with active involvement of organised crime. The long border between Mozambique and Kruger National Park is difficult to patrol effectively. This is problematic given that Kruger National Park contains the world's largest white rhino and second largest black rhino population. However recent reports of increased collaboration between Kruger National Park and neighbouring Mozambique are encouraging.

SECTION 2

Policy Responses

IUCN SSC African and Asian Rhino Specialist Groups have started the process of examining pros and cons of alternative policy options. South Africa's National Biodiversity Institute also organised a workshop to examine and score pros and cons of different policy options to help advise Government. A variety of economic modeling projects are also currently underway to try to understand the possible outcomes of various policy options or combinations of options.

Below is a list, by country, of relevant responses/challenges, further explanation is provided in the key findings pp.8-18. Each rhino range state will need a different menu of responses, and obviously some responses cross cut or are at odds with others (e.g. trade legalisation and engagement in demand reduction strategies, greater levels of enforcement might undermine community based efforts etc.). It is clear that for each state there needs to be a carefully thought through response that is in line with locally based needs and challenges.

Kenya

1. Work closely with local communities to ensure they are fully engaged in rhino conservation, and tackle rural poverty to reduce incentives to poach. Kenya's policy framework does not support sustainable use of wildlife, which limits CBNRM opportunities for communities and private sector (as compared with countries that allow consumptive sustainable use). Economic benefits from wildlife in Kenya are primarily derived from tourism revenue and employment in conservation and tourism. In one innovative scheme, a private reserve (with rhino) assisted a neighbouring community in securing international development funding to build and then run a community-owned ecotourism lodge in their area, the community then supports conservation and has allocated some of its land to wildlife. The neighbouring private reserve has also provided the community with controlled access to additional grazing on its land, and provided access to better markets for the community's cattle. Unfortunately the one black rhino in this community area was recently poached.
2. Support and engage in demand reduction campaigns in end user markets; this will require greater information and knowledge of how end user markets operate than is currently available.
3. Increased financial support for supplies and training for KWS, increased support for intelligence gathering.
4. Tackle corruption and links to organised crime (see section on governance issues).
5. Develop carefully thought out security plans for protection of rhinos, including increased use of informant networks, intelligence databases and data analysis.
6. Seek ways to increase incentives for the private sector and communities to conserve rhino. Example given under point 1 above.

South Africa

1. Increase incentives for private rhino owners to continue investing in rhinos to encourage continued expansion of rhino range and numbers. Historically, ecotourism, live rhino sales and limited sport hunting provided sufficient economic incentives, but this is changing in the context of greater risks and costs, and a decline

in economic incentives. As poaching increases there are also fewer surplus rhinos to sell.

2. South Africa has indicated it is considering the legalisation of the rhino horn trade and will be submitting a trading proposal to the next CITES CoP. However details of how such trading would work, what trading partners would be and how it would be controlled (to prevent significant laundering of illegal horn that could threaten rhinos in other countries) are not available. Such details need to be developed in order to assess likely pros and cons. Given the need to ensure policy actions make the situation better not worse, South Africa needs to outline its trade control proposals, continue with its econometric modeling and examination of alternative strategies to determine what courses of action are most likely to satisfy key rhino conservation objectives.
3. Investigate ways of empowering local communities to be more engaged in rhino conservation (e.g. capture greater economic benefits, create jobs, and encourage greater ownership of rhinos or progeny benefit sharing custodianship schemes or endowment schemes - like Zimbabwe). There is a need to tackle rural poverty to reduce incentives to poach and to look for ways rhino conservation could help to empower rural communities; in this regard it is important to allow for greater and wider levels of engagement with rhino conservation by different sectors of South African society.
4. Greater levels of consultation with communities in efforts to get their support so they become part of the solution to reducing poaching.
5. Engage in demand reduction strategies in end user markets. This will also require greater levels of knowledge of end user markets than we currently have.
6. Tackle corruption and links to organised crime.
7. Increased intelligence sharing and better capture and analysis of intelligence information. Continued efforts to arrest and convict ‘middlemen’ and ‘kingpins’ to disrupt the organised crime networks is essential.
8. Continued development of forensics capacity and more scene-of-crime training, to assist in greater levels of arrest and convictions through more and better quality investigators and investigations.
9. Continued development and trials of alternative approaches (intensive protection zones in high rhino density areas) to anti poaching, especially in Kruger National Park to develop a more effective response.
10. Increased cross border efforts to tackle poaching between Mozambique and South Africa; development of bilateral agreements with Mozambique and Viet Nam. Collaboration between South African (especially SANParks) and Mozambican law enforcement authorities has improved post CITES CoP 16. The two countries are in the final stages of signing a joint Operation Lembobo to improve cross-border cooperation focused on reducing rhino poaching.

Namibia

1. Support for private owners and private and community custodians of rhinos.
2. Work closely with local communities to ensure they continue to be fully engaged in, benefit from and support rhino conservation.
3. Continued development of enhanced and proactive rhino security plans.
4. The goal of Namibia’s approved white rhino strategy is for the species to contribute significantly to wildlife economy of the country. The strategy calls for facilitating growth of the white rhino industry outside Parks, increasing white rhino numbers and range inside Parks and investigating potential trading in horn.
5. Namibia should continue to investigate the pros and cons of alternative policy options with a view to limiting poaching, increasing range and numbers of rhinos, sustainably funding conservation (including effective rhino protection efforts) and empowering local communities.

6. Development of new revenue streams for local communities through wildlife via the national natural resources (Game Products Trust) fund.
7. Support and engage in demand reduction campaigns in end user markets, and recognise the need for greater knowledge of end user markets.

Zimbabwe

1. Work closely with local communities in areas near rhino populations. Continue with approaches that link successful rhino conservation to community benefits. For example, the Lowveld Rhino Trust has a scheme whereby the extent to which local schools benefit financially is linked to rhino poaching levels in neighbouring conservancies. An innovative endowment scheme is being tried in one Lowveld conservancy where additional founder white rhinos were provided to the conservancy but local communities stand to share in any benefits that accrue from growth in rhino numbers.
2. Continue with efforts to 'indigenise' rhino conservation so that local partners have a vested interest in expanding the range and number of rhinos.
3. Increased financial support for supplies and training for Zimbabwe Park and Wildlife Management Authority which is responsible a(s a parastatal) for raising its own funding, which has been difficult given the collapse in the Zimbabwe wildlife tourism industry.
4. Development of a more stable tourism industry (including ensuring that landowners conserving rhino can have access to licences and revenue from trophy hunting). The loss of hunting revenues at a time the tourism industry is not doing well threatens the ability of conservancy landowners to continue to undertake the effective monitoring and protection of rhinos on their land.
5. Examine ways that rhino owners and custodians can increase revenue from rhinos to pay for the increased costs of maintaining them.

Key Finding 1: Each range state requires a different menu of approaches that deal with both proximate and ultimate causes of the rises in rhino poaching

Proximate causes are specific to the particular range state and locality e.g. poverty drives local communities to poach; in contrast ultimate causes are more distant and complex, e.g. increases in both disposable income and population sizes in some East Asian countries appears to have triggered greater levels of demand. Any policy response needs to tackle both supply and demand. This also feeds in to the need for short, medium and long term strategies.

Key Finding 2: Capturing the economic value of rhinos is important

Overall, a number of policy options revolve (particularly in southern Africa) around the need to capture the full economic value of rhinos to make conservation more financially sustainable in the longer term. In essence, this revolves around the debate about sustainable use, which can be achieved in consumptive and non-consumptive ways (Hutton and Leader-Williams, 2003; MET, 2012). This is especially important because the private sector is a major stakeholder in rhino conservation, especially in South Africa (Brooks et al, 2011; Ramutsindela, Spierenburg and Wels, 2011; Knight et al, in prep 2013). All black rhinos in Namibia are state-owned, but a custodianship programme operates which means that the private sector and local communities constitute important rhino 'managers' (du Preez, 2013b). Increased poaching rates have demanded increased levels of protection for rhinos, which is very costly and has increased the risks of investing in rhinos. In South Africa

economic incentives for the private sector and communities to conserve rhino have been further reduced by fewer live sales, lower turnover obtained at remaining sales and the clamp down on pseudo-hunting. The SADC Rhino Management Group, IUCN's African Rhino Specialist Group and South Africa's Private Rhino Owners Association (PROA) have all noted an increasing trend in South Africa towards private landowners disinvesting in white rhinos because of the increased costs and risks, as well as declining economic incentives (Knight et al. 2013 in prep, Emslie et al 2012, pers comm Pelham Jones pers comm). A February 2013 survey of South African private rhino owners by the Private Rhino Owners Association (data provided by Pelham Jones) indicated that 8.1% of the 128 respondents indicated they were in the process or have already sold their rhinos (not including some additional owners that had already moved their rhinos to Namibia). Another 44.7% of respondents indicated they had already considered or would consider doing so if poaching does not decline. So far this trend has primarily affected smaller private populations of less conservation significance, but there are concerns this could spread to larger wild populations. If this trend continues and escalates, it threatens to limit and reduce wild white rhino numbers and range in the main Range State, South Africa, as well as reducing funds available to conservation agencies for field conservation action. 97.5% of the rhino owners that responded in the PROA survey supported a controlled legalised trade in horn. Should the next CITES CoP send a strong message that the chance of any legalised trade in horn being approved is remote, this may further disincentivise wild rhino conservation by private owners and communities.

The trend of private land owners disinvesting in rhino has also occurred in Kenya; the Mugie Rhino Sanctuary was a rhino custodian but has opted to disinvest in rhino conservation due to the high costs and risks associated with recent escalation in poaching (KWS, 2012: 27; also see KWS, 2007). Legislative changes that might restrict the ability of the private sector to own white rhino could also further disincentivise private landowners.

The goal of Namibia's newly approved White Rhino Conservation Plan approved in 2012 is for this species to contribute significantly to the wildlife economy of Namibia. Inside state-run Parks the objective is high production – managing populations for high offtakes of trophies and sale of live animals to the private sector, whilst also seeking to increase white rhino numbers and range. Recognising that incentives will drive white rhino conservation, the Namibian white rhino strategy seeks to investigate a potential trade in rhino horn. The expressed hope is that such a trade will act as an incentive to expand the area of land available for rhinos and to increase the number of rhinos, and in the process, the trade could provide a sustainable source of funding for increased protection efforts (MET, 2012).

Kenya has a more protectionist philosophy and differs from the other Big 4 rhino range states which favour a sustainable use/livelihoods approach; although Zimbabwe is not currently investigating trading options and is focusing on trying to secure and grow existing populations.

Kenya has expressed its concerns that any future legalisation of trade may have negative consequences for their rhino, especially if controls are inadequate (KWS, 2012; KWS, 2007). Concerns have also been raised that discussions around a legalised trade may negatively impact on demand reduction efforts, which Kenya strongly supports.

Key Finding 3: Even though it is illegal, there is currently a market for rhino horn products in some countries

There clearly is a market for rhino products at the moment, which is served by the illegal trade. A combination of population growth and rising incomes in consumer markets like Viet Nam and China threaten to further increase demand for horn as growing numbers of

consumers will be able to afford it (Lockwood 2013). Poaching continues to escalate in South Africa, despite increased resources being applied to the problem, a growing number of arrests and some severe sentences for those convicted of illegal hunting (Emslie 2013). Poaching also continues to escalate in Kenya (pers comm Ben Okita-Ouma). Poaching is exacerbated by poverty in range states and neighbouring countries. This is especially the case in Mozambique, where despite a number of poachers being killed or jailed in South Africa, there appears no shortage of people from economically deprived rural areas willing to take the risk on behalf of criminal syndicates. Most of the arrests and convictions are from those at lower levels of the criminal chain (levels 1-3 out of 5, the majority of the arrests are at the lowest level 1). The biggest impact is likely if higher level 4 or 5 members of organised criminal syndicates can be successfully prosecuted. As with most organised crime, this is proving to be elusive given that such individuals usually live under some form of protection in other countries far away from range States.

Aside from 'more of the same' responses, such as increasing anti-poaching efforts or adopting improved investigation and prosecution methods, there are two main alternatives for future policy that were identified as long ago as 1994 (Michael t'Sas-Rolfes, pers comm). The first is to intensify efforts to reduce demand for rhino products, and Milliken (2013) has noted this has been successfully achieved in some consumer states in the past. Demand reduction is being encouraged by the CITES Rhino Working Group and Decisions approved at CITES CoP16. The second main alternative being proposed is a 'legalise trade' approach. This is being advocated in South Africa in particular, but is also being considered in Namibia. Pro traders argue that a legal trade offers the potential to reduce poaching by supplying some of the demand through substituting supply from sources that does not necessitate having to kill rhinos. Trade proponents further argue that the increased revenue that a legal trade would bring would increase incentives to conserve rhinos and help fund significantly enhanced anti-poaching and intelligence efforts (see below).

Lockwood's (2013) preliminary conclusion from his econometric modelling is that a multi-faceted approach may be required that seeks to curb illegal supply through anti-poaching measures, whilst simultaneously engaging in effective demand-reduction measures. Further, that legalisation of trade could reduce the price (and relative attractiveness of the market) to criminal syndicates, replacing illegal supply from poached rhinos with a legal source. The latter could also help to empower poor rural communities economically, if they are properly engaged as partners and managers of such schemes.

In sum, possible approaches include demand reduction and/or a possible legal trade in horn. Each option is covered in more detail below.

Legalisation of trade under CITES: The rhino horn trade was banned in 1977, it was a critical underpinning at the inception of CITES in 1976. However, rhino poaching continued and prices for rhino horn rose despite the ban e.g. 21 fold increase between 1975 and 1980 alone (IUCN, 1980: 26). Increasing prices and civil unrest combined with education efforts have coincided with the collapse of trade to Yemen which once was a major market for illegal rhino horn. The continued demand from end user markets in South East Asia (especially Viet Nam and China) (Nowell, 2012; Milliken and Shaw 2012; Vigne and Martin, 2013; Emslie et al 2012) coupled with high prices and declining economic incentives and increased costs for rhino owners and managers have led some to argue for a legalisation of the trade under CITES (see Biggs et al 2013; t'Sas Rolfes, 2012; Daly et al, 2011; Martin, 2012). At a continental level rhino horn stockpiles continue to increase, and this includes stockpiles held by private land owners in South Africa (Knight et al., 2013: 39; Department of Environmental Affairs, 2013a: 19). As discussed above, the argument by pro-traders is that trade bans merely drive up prices and increase incentives and opportunities for organised criminals to engage in and profit from illegal behaviours. This was the case with Prohibition in the USA and the illegal trade in drugs, and rhino horn may be no different. Pro-traders

argue that in the absence of successful cultural change leading to reduced demand for horn, prohibition of sales of very high value goods for which there is a demand, are unlikely to be successful. They argue that by bringing a high value commodity into a legal trade allows states, private owners and local communities to capture the full economic value of rhino horn, which can then be ploughed back into conservation; further, it can take profits and incentives away from criminal syndicates and shift the cost-benefit away from poachers (t'Sas Rolfes, 2011; Rivalan et al, 2007; Roe, 2006; Hutton and Dickson, 2000; Abernsperg-Traun, O'Criodain and D. Roe, 2011) and reduce poaching pressure on live rhinos. A similar rationale resulted in CITES approving one-off ivory stockpile sales to approved sellers and buyers (CITES, 2002; Duffy 2013); although some resource economists have been critical of one-off sales and favour alternative selling mechanisms (see below). While studies by Stiles (2004) indicate that these and earlier one off ivory sales did not increase poaching rates, elephant poaching has spiked since the last one-off ivory sale. The South African Government has indicated it intends to take a rhino horn trading proposal to CITES CoP17. However, at the time of writing, how such a trade would be structured and policed (at all stages of the supply chain) to prevent illegal laundering of horn through parallel illegal trading has not been spelt out. Neither have any willing potential trading partners been identified. The type of trading system proposed is also still under discussion.

Critics point out that legalisation will not work as imagined because of weak enforcement in range states and end user markets, that legalisation will result in a price drop and therefore the economic returns will not be as predicted. A price drop could also result in many more consumers being able to afford rhino horn in SE Asia and this might stimulate demand. This was the case with the controlled one-off ivory stockpile sales from Southern Africa 1999-2008 (Duffy, 2013: 235; Rivalan et al, 2007: 529–530; Stiles, 2004; MET, 2012; Rademeyer, 2013) in which buyers were able to collude to lower prices (allowing them to capture the bulk of profits, which reduced expected funding for conservation). For this reason, it is increasingly being argued that one-off sales are problematic and these should not be used if rhino horn trade was ever legalised. Some opponents of a legal trade in rhino horn have also raised concerns about the possible impact on rhinos in Asian and other African range states, where they may be less well protected, coupled with the risk that a significant parallel illegal market could develop. For these reasons, sharing of some of the revenues from horn sales with other rhino range states has been mooted as an option.

A second issue is that so little is known about the dynamics of the markets in East Asia that it is not clear how an end user market will respond to a legalised trade. For example, a recent TRAFFIC report notes that *'almost no empirical data exist for understanding the Vietnamese side of the equation, which comes into focus primarily through a growing body of observational and anecdotal accounts'* (Milliken and Shaw, 2012: 8). Pro traders are assuming that such markets will operate in a 'rational' way: end users will be incentivised and encouraged to switch to legal sources and shift away from illegally produced sources. It is not known, for example, if for cultural reasons end user markets will still demand illegally obtained horn from 'wild' populations rather than farmed or managed/de-horned populations (see below). Pro-traders also point out that, should trade legalisation be found to have unintended negative consequences, trade bans could be reinstated. Those who oppose trade call for increased demand reduction efforts to be given a chance and argue that re-opening a legal trade, or even discussing it, sends conflicting messages to user countries that might hamper and reduce the effectiveness of demand reduction initiatives.

Some have questioned the morality of proposals to sell a product that "doesn't work". Regardless of its actual efficacy as a medicine (for a review of trials see Nowell, 2012) it is the perception in user countries that matters, and it is clear that many in China still strongly believe it is a powerful and effective medicine that has fever reducing qualities (even if its use is currently prohibited). For these reasons demand reduction attempts will have to be done in a culturally sensitive way and preferably be driven by local citizens in user countries.

Certification and Formation of Central Selling Organisations. Some have argued for the creation of Central Selling Organisations to help to regulate and control a legal trade (Biggs et al 2013; Milliken and Shaw, 2012). However, others such as Michael t'Sas-Rolfes favour a more open (i.e. cartel free) market given the primary motivation for trading is conservation and not profit maximisation. It is possible to use a range of technologies to monitor and control the trade including micro-chipping and individually DNA profiling all legal rhino horns from stockpiles (using the Rhinoceros DNA Indexing System RhODIS). Any horn, or pieces of horn, found to have a DNA profile that is not on the list of deemed legal tradeable horns would therefore be illegal. With efforts to get as many live rhino and horns in stockpiles onto the RhODIS database, routine DNA analyses also offer the opportunity to increase knowledge about trade routes, determine the source of illegal horns, and forensic DNA analyses are routinely assisting investigations and prosecutions. However, how DNA analyses could be undertaken and funded at all stages of any legal trade still has to be outlined. Other techniques include better information systems, use of CCTV cameras for stockpiles, better enforcement of CITES permits, especially across international borders (see KWS, 2012: 27; and KWS, 2007; Knight et al. 2013b: 36). Certification for rhino horn, similar to that of the Kimberley Process[1] for diamonds has also been suggested. A properly controlled and regulated trade would require robust national systems and international monitoring/regulatory frameworks, therefore this is unlikely to be an option for states with weak governance structures, high levels of corruption and/or weak law enforcement. See 'governance issues' below.

Rhino Horn Farming

Rhino horn is potentially a renewable/sustainable resource. It can be painlessly removed (provided some is left behind) and re-grows at a rate of approximately 2.5-6.6 cms per year (Pienaar et al., 1991). Therefore, there is an argument that rhino horn could be farmed as a profitable economic activity, but this would only work in the context of a fully legalised international trade (du Toit, 2013; Zimbabwe Parks and Wildlife Management Authority, 2011; andsee section on de-horning below). However some concerns have been raised about the apparent increase in numbers of game farmers wanting to set up intensive rhino farms because this might result in sub-optimal reproductive performance, and would create smaller pockets of land for farms (rather than incentivising the creation and maintenance of larger conservation areas). In addition, should there ever be selective breeding this could also create domesticated white rhinos that are genetically different to wild white rhino, and they could not be used later to restock national parks if needed. Those in favour of more intensive operations argue that such operations might help take some of the poaching pressure off wild rhinos.

Safari Tourism

Conservation and tourism have long been associated with each other (Brockington, Duffy and Igoe, 2008: 17-46; Butt, 2012; Adams, 2004). Tourism has also been one of the traditional ways to generate returns from rhinos and encourage their conservation. However, tourism alone cannot produce the level of funds needed to significantly increase anti poaching and intelligence efforts on the ground. In addition, tourists easily shift destination in response to situations of insecurity (e.g. conflicts, attacks on tourists etc). Large scale safari tourism has declined significantly in Zimbabwe, and has suffered peaks and troughs in Kenya. This has significantly reduced revenue available for conservation on the ground. The increasing poaching in Kruger National Park also poses a risk to tourism. In essence, global tourism is often an unstable sector.

Sport Hunting (lethal and non lethal)

[1]See http://www.kimberleyprocess.com/ for further information (accessed 30.08.13).

Sport hunting has been closely associated with the conservation movement since its inception (Adams, 2004; Brockington, Duffy and Igoe, 2008: 17-46). It is a key form of 'consumptive use' of rhinos, and has developed more fully in South Africa and Namibia (for further discussion see Adcock and Emslie 1994; MET, 2012; Leader-Williams et al, 2005; Barnes and Novelli, 2008; Novelli, Barnes and Humavindu, 2006; Novelli and Humavindu, 2005; Leader-Williams et al, 2005; Milliken and Shaw, 2012: 46-52). While the majority of rhinos hunted are white rhino, limited sport hunting of up to 5 surplus male black rhinos is also currently allowed in South Africa and Namibia. The latter is acting to further demographic and genetic conservation goals whilst dealing with the surplus male black rhino 'problem', as a by-product this produces additional revenue to help support and encourage conservation. Both South Africa and Namibia's draft and approved conservation plans for white rhino recognise and support continued sport hunting (Knight et al, compilers, 2013; MET, 2012).

Pseudo hunting was a problem until relatively recently in South Africa, and at one stage provided the second largest amount of horn to illegal markets (Emslie et al. 2012). Legislative changes in April 2012 largely solved this problem, although all importing countries around the world need to work with South African authorities to ensure that only bona fide hunters are given permits (Emslie et al 2012, Knight et al, 2013: 59; Milliken and Shaw, 2012: 52). Countries that import hunting trophies can assist by checking on hunters to ensure that any imported trophy horns remain non-commercial mementoes of a hunt.

The debates on the effectiveness of the rhino horn trade ban have been complicated by the overall rise in rhino populations, especially in countries that allow sport hunting. South Africa has allowed sport hunting of white rhino since 1968, and AfRSG data indicates that since hunting began, numbers of Southern white rhino have increased from 1,800 to over 20,000 in the wild. Since hunting started many white rhino have also been exported from South Africa to stock other African countries and to supply animals for zoos and safari Parks worldwide (where there are a few hundred). Apart from four ex-zoo northern white rhino in Kenya and a further three others in two zoos, all remaining confirmed white rhino are southern white rhino. These are all are ultimately descended from South African stock (derived from a single population of around 20+ in 1897). As hunting prices are set in US dollars, and rhino hunts are expensive, limited sport hunting has helped give white rhinos an economic value (encouraging conservation by the private sector). The Professional Hunters Association of South Africa (PHASA) argues that the revenues generated from sport hunting have allowed white rhino populations to grow on private reserves and ranches. However, it is also clear that in recent years some elements within the hunting industry have colluded with criminals seeking to secure rhino horn to supply to end user markets. The introduction of a national professional hunters register proposed by the South African government to better control professional hunters is therefore to be welcomed.

Kenya is opposed to the development of sport hunting rhinos as conservation tool, and it banned trophy hunting in 1977. However, it has been noted that the lack of incentives for people living with wildlife has contributed to the decline in wildlife outside protected areas in Kenya (Norton-Griffiths 2007). This is in contrast to the expansion of wildlife that has occurred outside protected areas in South Africa and Namibia.

Key Finding 4: Efforts need to focus on demand reduction in end-user communities, but there is insufficient knowledge of the dynamics of those markets

Reducing demand in end user markets could have a significant impact on poaching rates in Sub-Saharan Africa. Milliken's (2013) review of rhino horn trade noted that upsurges in demand for rhino horn appear to have been linked to economic development in SE Asian

countries and Yemen; the upsurge of trade recently in Viet Nam is a good example (also see Vigne and Martin, 2013; and (t'Sas Rolfes, 2012: 8). Historically, demand reduction in an Asian context has been successfully achieved in a number of countries to date such as Japan, South Korea, Taiwan/Chinese Taipei and China. Milliken (2013) states that there is no reason to feel Viet Nam will be any different despite the new uses for rhino horn in that country. Some have expressed concern that the discussions about legalising trade sends out conflicting messages that might reduce the effectiveness of demand reduction efforts and the enthusiasm of Governments in user countries that may have to police and control illegal rhino horn trading.

CITES recognises that demand reduction is a key element in addressing poaching and illegal rhino horn trade. Resolution Conf. 9.14 (Rev. CoP15) urged all implicated States to work with user groups and industries to reduce use and consumption of rhino horn. This was echoed at the 62nd meeting of the CITES Standing Committee which agreed to a *Recommendation* by the Working Group on Rhinoceroses to develop a demand reduction strategy. At CITES CoP16 in 2013 Viet Nam was urged to curb rising demand (CITES, 2013). Even South Africa has recognised the need for demand reduction efforts at a CITES CoP16 side event they hosted, even though the Government has stated that it will submit a proposal to legalise the rhino horn trade at the next CITES CoP17.

TRAFFIC drafted a document for the CITES Rhino Working Group outlining a demand reduction strategy and this was included as an Annex to the report of the CITES Working Group to CITES CoP16 Doc 54.1 (Rev1), entitled "*A Strategy for Reducing the Demand for Rhino Horn Products of Illegal Origin*". The objectives of the strategy are to:

- influence consumer behaviour to eliminate consumption of illegal rhino horn products by developing effective demand reduction strategies that can be implemented on a scale adequate to have an impact or long enough duration to achieve measurable change
- identify specific messaging approaches and methods for specific target audiences
- strengthen the legal and enforcement deterrent by creating greater awareness of legislative provisions and penalties prohibiting trade in rhino products
- create greater awareness of the negative consequences, and impact of poaching, and consumption of illegal rhino products, particularly on wild rhino populations.

Reducing demand from users requires a combination of approaches. First, demand is based on the amount of rhino horn available combined with its price, e.g. a higher price cuts some demand out of the market; greater demand is also related to growing numbers of people with increasing disposable income (as in South East Asia). Demand reduction also requires behavioural change. Rhino horn is desired as a marker of status and wealth, and its medicinal use has been embedded in deeply held cultural beliefs and attachments to Traditional Chinese Medicine (TCM). TCM is a recognised body of medicine, and is expanding. Users are likely to place their own health needs above the needs of compliance with a global ban (t'Sas Rolfes, 2012: 5).

Demand reduction is also related to levels of law enforcement, which increases the risks associated with use of rhino horn. Law enforcement in China is strict, so illegal trade is underground; law enforcement is less strict in Viet Nam so illegal trade is more open. Milliken and Shaw note that South African authorities are frustrated with the lack of enforcement in end user markets such as Viet Nam (Milliken and Shaw, 2012: 145). T'Sas Rolfes points out that the Vietnamese market appears to present a serious enforcement challenge, given the alleged ubiquitous involvement of high-ranking officials (t'Sas Rolfes 2012: 13). However, it has been argued that while a demand still exists, it is the high margins and profits in end user markets that continue to drive trade and the same high

ranking officials would still profit from selling on horn irrespective of whether it has been sourced legally (e.g. from stockpiles from natural mortalities and dehorning) or illegally (primarily via illegal hunting).

Key Finding 5: Despite increased sentences in some range states, poaching continues to escalate in some countries, while some states do not have 'deterrence sentences' at all

There is very little understanding of the drivers of the behaviours of individuals engaged in illegal activities (St. John et al 2010; report HD059 by Duffy and St. John, 2013; Adams et al. 2009; Leakey 2001; Brockington, Duffy and Igoe, 2008: 77-78).

Increased penalties: This revolves around the idea that poachers work out the ratio of risk/reward, taking into account things like risk of detection, risk of prosecution, even risk of death and injury, balanced out against the financial reward for rhino horn. It is assumed that increasing the 'risks' when compared with rewards will reduce poaching overall (du Toit, 2011). T'Sas Rolfes suggests that if the cumulative probability of being detected, arrested, convicted and punished is perceived to be low (i.e. if the risk of arrest and severe future penalties is heavily discounted), even potentially harsh sentences will be disregarded. Experience with rhino horn shows that the ultimate probability of punishment is typically very low and in part this has been due to much lower recovery rates of illegal horn in Africa following the involvement of organised criminal syndicates and their well organised distribution channels (Emslie et al 2012, t'Sas Rolfes, 2012: 3; for wider discussion see Milner-Gullard and Leader-Williams, 1992; Ostrom, 2010; and St. John et al, 2013). Higher financial penalties or longer sentences may only deter opportunist poachers. Greater financial and legal penalties may not work well against highly organised and well-equipped criminal gangs; or against those using rhino poaching to finance conflicts in the region (see report HD059 by Duffy and St. John, 2013). Du Toit points out that an increase in jail sentences and financial penalties reduced opportunist poaching in Zimbabwe's lowveld, but a hard core of professional, well equipped commercial poachers remained (du Toit, 2013). While South African courts are increasingly handing down significant deterrent sentences, poaching continues to increase. Case prosecution rates have recently improved in Zimbabwe with a number of significant custodial sentences. Zimbabwe is also now using civil courts to pursue rhino poachers. Namibia also has a history of also imposing stiff sentences for those convicted of rhino crimes. By way of contrast, lack of adequate penalties has been identified as a problem in Kenya. Recent legislative changes in Kenya have (to some extent) addressed this problem although new maximum fines specified still would only represent a proportion of the profits made by an organised criminal syndicate. Measures such as increasing penalties (fines and prison sentences) may also backfire as judges typically demand better evidence to successfully prosecute more serious cases. If increased sentences and anti-poaching efforts effectively raise the fees paid to poachers to take those risks, this could encourage more poaching (t'Sas Rolfes, 2012: 12). Perhaps the biggest problem currently is that rhino poaching and dealing are currently only misdemeanours and not criminal offences in Mozambique. Diplomatic pressure on Mozambique to criminalise these activities, to introduce deterrence penalties and to increase their enforcement efforts could assist. Parties to CITES at CoP16 have also approved a number of specific decisions relating to Mozambique, in recognition of the challenge faced by South Africa from poachers based in Mozambique.

Key Finding 6: Dehorning can have a (limited) deterrence effect, but it is not a practical option for all rhino populations

Rhino horn is potentially a renewable/sustainable resource (see section on farming above; Zimbabwe Parks and Wildlife Management Authority, 2011; Daly et al, 2011; Department of Environmental Affairs, 2013: 17). In the mid-1990s the Zimbabwean Department of National Parks and Wildlife Management started a policy of dehorning rhinos to make them less attractive to poachers. In Kenya, black rhinos, that were recently translocated to set up a new population in a Wildlife Conservancy, were dehorned in an attempt to make them less attractive to poachers.[2] Some private conservancies have engaged in opportunistic dehorning of rhino e.g., when they receive other veterinary treatment, for example, Save Valley Conservancy (and other Conservancies) in Zimbabwe has also taken this approach (see du Toit, 2013; du Toit, 2011). The survival rate was higher for dehorned rhino. The main challenge is that rhinos need to be de-horned on an on-going basis this requires significant investment and although risks are low, mortalities can sometimes occur. Dehorning is also not practical or affordable in a very large population. Further, it has the potential to produce growing stockpiles of rhino horn in range states, which need to be managed and held in highly secure locations.[3] Finally, a recent study from South Africa found dehorning was not necessarily a disincentive to poach (Lindsay and Taylor, 2011; Biggs et al, 2013; Daly et al 2011), but for some smaller populations in vulnerable areas dehorning is an option that can be considered, provided law enforcement is always a critical part of any protection strategy. Experience has shown that dehorning on its own, without law enforcement, does not work.

Use of poison: Some rhino owners have at some cost used a new treatment claiming to pressure inject rhino horns with poisons and dyes[4] designed to indicate that the horn is contaminated and that it will make the end user seriously ill (Department of Environmental Affairs, 2013: 18). Ethical and practical concerns have been raised that innocent people could be poisoned after unwittingly ingesting affected horn, and that black market dealers will find ways to disguise the dye (e.g. by bleaching the horns) or simply cut out affected parts of horns. If effective, this treatment would effectively reduce the quantity of saleable horn resulting in higher black-market horn prices further incentivising criminals. As with dehorning, due to continued horn growth the costs of poisoning horns are likely to be substantial and on-going. Also if poachers cannot tell the difference between treated and untreated rhinos in the field, then treated rhinos will also get poached. The effectiveness of such expensive treatments have also not been satisfactorily demonstrated. Instead, evidence to date from a number of recovered treated horns that have been sectioned, shows that the dye (and presumably also poison) has failed to penetrate into the treated horns suggesting this treatment is completely ineffective. [5]

Key Finding 7: CBNRM can have a (limited) deterrence effect

Community oriented approaches attempt to deter poaching and encourage local participation in conservation. This is primarily done via systems of incentives and mechanisms that devolve management to local communities, allowing them to benefit financially from using

[2]Kenya: Will rhino dehorning stop poaching? At http://allafrica.com/stories/201308301154.html (accessed 03.09.12)

[3]'*Horn trade pressures some rhinos*' 06.06.07, http://news.bbc.co.uk/1/hi/sci/tech/6726569.stm

[4]'*South African Reserve poisons rhino's horns to prevent poaching'* The Guardian 01.04.13 at http://www.theguardian.com/environment/2013/apr/04/rhino-horns-poisoned-poachers-protect (accessed 03.09.13)

[5]http://www.savetherhino.org/latest_news/news/326_poisoning_rhino_horns (accessed 03.09.13); http://www.sanews.gov.za/south-africa/poisoned-rhino-horn-wont-deter-poaching-kruger (accessed 03.09.13).

wildlife in their area. The best known is Campfire in Zimbabwe (see Abernsperg-Traun, M., C. O'Criodain and D. Roe (eds), 2011). The rationale was that local communities should have full control of wildlife resources in their area, and financial gains could be captured via sport hunting, safari tourism or sales of wildlife products. Returns could be significant e.g. in Masoka and Mahenye in Zimbabwe (Murphree, 2001; Murphree, 2005; see report HD059 by Duffy and St. John, 2013). Such an approach is likely to deter subsistence poaching, or encourage reporting of poaching in the local area; for example du Toit (2013) indicates that awareness amongst local communities regarding the rhino conservation crisis, and their willingness to provide information on poaching incursions through their areas, has been enhanced through the Lowveld Rhino Trust's community incentives scheme. ZSL is also involved in working with local communities as surveillance networks in Kenya, via building capacity and providing support (pers comm, ZSL). The most significant and successful conservation of rhinos by communities has been in the Kunene area of Namibia where communities and conservancies have played a key role in the recovery of the "desert black rhino" in this area. Some communities surrounding conservation areas in KwaZulu-Natal reportedly expressed concern at not being consulted on rhino poaching and the provincial conservation agency EKZN Wildlife is looking at ways to involve communities more through the creation of rhino ambassadors in the community. In KwaZulu-Natal tourists visiting EKZN Wildlife Reserves pay a community levy which provides funds for local community projects. However, the benefits from CBNRM are very unlikely to deter a 'hard core' of poachers linked to organised crime or corrupt government officials that are making substantial income from poaching. This links back in to the point that the response to poaching very much depends on which kinds of poachers are involved in illegal activities. The importance of finding substantive (not just token) ways to economically empower and uplift poor local communities around or near to rhino areas (to provide alternative livelihoods to rhino poaching and build support for conservation) is increasingly being recognised.[6] Some Pro-traders have argued that a legal rhino horn trade could possibly be used to catalyse expansion of rhino range into community lands creating jobs and wealth in the process.

Key Finding 8: Each of the 4 range states faces a different combination of threats and their circumstances differ, therefore enforcement efforts need to be tailored and targeted

Enforcement can include a range of activities, three are covered below.

Militarisation: The appointment of Major General Johan Jooste (retired) as coordinator of anti-poaching for Kruger National Park in South Africa in 2012 underlines the increasing militarisation of anti-poaching efforts in the face of rising levels of armed incursions. With the involvement of organised crime, poaching gangs are increasingly well armed and becoming more aggressive, producing a greater response from those mandated with protecting rhinos. Major General Jooste clearly identifies poaching as a declaration of war, linking it to wider regional security issues, such as immigration and governance failures (see Humphreys, forthcoming, 2014; Rademeyer, 2013).[7] Kenya too has increased its anti-poaching efforts; 2011 was declared as the 'year of the rhino' to direct focus and resources; the rhino ranger force has been expanded by more than 25% during 2011, because rhino scouts on private lands have been converted into Kenya Police Reservists; formal training of community scouts in wildlife protection has been offered, sniffer dogs have been used at international ports, tracker dogs have been used for monitoring, and rhinos have been relocated from

[6] This was recently recognised by the former President of Mozambique, Joachim Chissano at the launch of his Foundation's rhino conservation initiative in Maputo, Mozambique in Nov 2013 and was also recognised at a South African Parliamentary Portfolio meeting in December 2013

[7] http://www.sanparks.org/about/news/default.php?id=55388 (accessed 03.09.13)

areas of high risk to areas of low risk (KWS, 2012: 24). The MET in Namibia recognises that the Government of Namibia is wary of being complacent about poaching and believing that Namibia's populations were secure. More recently the MET has therefore begun to develop security plans for protection of rhinos and elephants in its regions, including micro-chipping and ear marking all animals (du Preez, 2013a: 5-10) and training on law enforcement and the creation of a rapid response vehicle to move rhinos deemed to be under threat from poachers (du Preez, 2013a: 25-26). South Africa's management plan for black rhino also points to the critical importance of better intelligence systems to prevent poaching, rather than relying on prosecutions after a rhino has been killed (Knight et al., 2013: 38; Department of Environmental Affairs, 2013: 20). South Africa now offers a cash reward of R100,000 for information which leads to arrest and R1,000,000 for successful conviction of the heads of criminal poaching gangs. The initiative links in with Crime Line and allows the public to give anonymous information via SMS.[8] One clear conclusion from all 4 range states is that the provision of basic equipment and training is vital, and is often lacking due to financial constraints. For example, in order to maintain ranger motivation it is important that they have basic equipment, including good tents and adequate clothing, plus proper housing at base. As poaching has increased, the pressure on rangers has risen, e.g. they may be unable to visit families in between operations, have to cope with longer working hours and engage in more stressful patrols (pers comm, Ben Okita; this is also reflected in du Preez, 2013b). In South Africa changes to labour laws have created problems in that conservation agencies may not be able to afford overtime, thus reducing the time staff can patrol. In a review of why some populations in KwaZulu-Natal experienced higher poaching than others (Conway 2012, 2013), a number of factors were identified to be of importance including leadership, density of anti-poaching staff and whether or not standard operating procedures were being followed. Further, some private and state agencies engaged in anti poaching express concern about the lack of indemnity when they are engaged in armed conflict with poachers, and fear prosecution for murder if they use lethal force.

Increasing militarisation is not intended as a return to the past. Today increasing efforts are being made to work with communities and build good relations and find ways in which communities can be empowered and benefit from wildlife. Improved relationships with neighbours are leading to better intelligence and in some cases tip offs have helped rangers stop and arrest poachers before they kill rhino. Conservation areas (parks, reserves etc.) can be important employers in rural areas where jobs are limited.

One of the dangers of an escalating war for biodiversity is that it might lead to highly repressive and coercive policies (Neumann, 2004; Dowie, 2009). Some studies question whether heavy-handed anti-poaching tactics will in fact be counter-productive in the longer term (Roe et al. 2010; Neumann 2004; Butt, 2012; Lunstrum, 2013; Peluso, 1993; Dressler at al, 2010). This concern is clearly stated in the Government of Namibia's *Management Plan for White Rhino* which notes that draconian penalties result in an undesirable sociological outcome (MET, 2012: 8). Field rangers in Africa face the heavily armed and increasingly aggressive poachers that threaten their own lives; they have to regularly deal with the emotional trauma they confront at poaching crime scenes. As such, they are likely to dismiss such questions as naïve, and not engaging with the difficult realities on the ground. If anti-poaching efforts on the ground had not been scaled up, most feel poaching would have been even higher and the fact that poaching has disproportionately hit less well-protected rhinos indicates that anti-poaching has had an effect. Restrictions on the private sector carrying certain semi-automatic weapons, or delays in issuing fire arm licenses for such weapons, can make it difficult for private sector owners and managers to deliver effective anti-poaching of this kind.

[8] http://www.sanparks.org/about/news/default.php?id=55388

New technologies: Conservation agencies and NGOs have begun develop an interest in the use of new technologies, or new uses of existing technologies. These include the use of UAVs (drones), camera traps, thermal imaging, Radio Frequency Identification (RFID) tags and GPS trackers for rangers to aid the anti-poaching efforts. There is increasing interest in using drones and camera traps for conservation law enforcement, especially as park rangers currently have to patrol large areas (Marris, 2013). Protected areas in Kenya, Namibia and South Africa have started using drones as part of anti-poaching surveillance (Duffy, forthcoming 2014; du Preez, 2013a: 11; pers comm Ben Okita). The MET in Namibia has concluded that strategic deployment of such new technologies, coupled with increases in staff capacity and regional co-operation will lead to quicker detection of incursions (du Preez, 2013a). Google recently granted more than US$5 million to WWF to develop approaches for using drones and camera traps for poacher detection; this was part of Google's Global Impact Awards, which has a fund of US$23 million to develop tech uptake in a range of areas, including conservation and humanitarianism.[9] ZSL is also part of a group (along-side WWF, WCS, Frankfurt Zoological Society, Columbia Zoo and CITES AND MIKE) working on developing a Spatial Monitoring and Reporting Tool (SMART) and use of camera traps and other surveillance technologies to increase coverage (pers comm, ZSL). However, in the apparent rush to try out new technologies, such as drones, there is a need to carefully evaluate how well they work and to think through whether they will be accepted by local communities. For example it was recently reported in Malta that a drone was shot down because it was used to enforce locally unpopular conservation legislation.[10] Further, such technologies still require personnel on the ground to make them effective, which is well documented in the case of technological approaches to warfare (see Rogers, 2013). In addition to flying the drones, someone has to evaluate pictures coming back in real time, and there needs to a reaction unit able to immediately respond to any problems the drone detects. Conservation agencies are currently being inundated with requests from those selling drones or related services. For the most part the drones being offered appear inadequate for the task. The South Africa's Council for Science and Industrial Research has been assisting conservation agencies by evaluating and testing alternative high tech solutions. Drones also scored below many other actions in a recent review of benefits and risks of different tools and options in Kruger National Park (Sam Ferreira pers.communication). Concerns have also been raised that a focus on such high tech tools could detract funding and attention away from other higher priority activities and basic security needs.

Helicopters and microlights are also being effectively used in anti-poaching work. Those experienced in anti-poaching acknowledge that while technology can help, it is not a substitute for the basics such as having a sufficient density of well trained, equipped and motivated and well-led field rangers (pers comm Brian Harris, Conservation Outcomes).

RhODIS DNA analysis is now routinely providing valuable evidence for investigations and court cases and is helping ensure convictions with custodial sentences for rhino crimes. The publishing of a paper outlining the RhODIS methodology and the commencement of the process of ISO accreditation should also encourage the adoption of a single compatible system world-wide. The Southern African Rhino and Elephant Security/Interpol Environmental Crime Working Group has cautioned against the development of multiple incompatible rhino DNA systems around the world. So that proper comparisons can be made, African rhino range states have agreed to only use RhODIS for such work. RhODIS

9 Coldewey, K. 'Predator Becomes Prey: Google funded drones to hunt poachers in Africa http://www.nbcnews.com/technology/predator-becomes-prey-google-funded-drones-hunt-poachers-africa-1C7456194 (accessed 03.09.13)

10 Times of Malta < http://www.timesofmalta.com/articles/view/20120830/local/cabs-sending-32-bird-guards-to-malta.434991 > (accessed 24.07.13)

can also help develop better knowledge of trade routes and identify where some of the recovered horn has come from. The routine use of rhino DNA as a law enforcement tool is also supported by the CITES Secretariat and IUCN's World Conservation Congress (IUCN recommendation 138) and is called for in Decisions approved by Parties at CITES CoP16.

Intensive Protection Zones (IPZs) and other management models (Fenced Sanctuaries and fenced larger Rhino Protection Areas): The critical need for minimum densities of staff engaged in anti-poaching has long been recognised (Leader-Willams et al 1990; Emslie and Brooks 1999; Du Toit et al 2006; Emslie et al 2009). The majority of rhinos in Africa today occur in fenced sanctuaries and larger fenced rhino conservation areas where efforts can be concentrated. Fences also assist with early detection of illegal incursions into rhino areas and prevent bombshelling of rhinos over a vast area that is difficult to effectively patrol (such as happened in Tsavo East National Park in Kenya). In unfenced areas there has been an increasing trend to set up IPZ's within larger areas where the rhinos are concentrated, so that law enforcement and monitoring efforts can be more concentrated and effective. Zimbabwe established four IPZs in the 1990s (Sinamatella, Matusadona, Chipinge and Matopos), the number of IPZs was expanded, and these were partly responsible for the success in reducing poaching from the 1990s (Zimbabwe Parks and Wildlife Management Authority, 2011: 4). However, it has proved challenging to staff IPZs at sufficient levels to be effective. The size of areas surrounding IPZs can also play an important role, for example, a major custodianship population in Zimbabwe is about 3,000 km², which means potential poachers have to cross a much larger area, with increased risk of detection, before they can reach rhinos (du Toit, 2013). In Kenya, Tsavo East National Park and Laikipia Nature Conservancy recorded negative overall growth in rhino numbers due to poaching, this led to a management plan to secure the remaining in a fenced sanctuary within the Park and the decommissioning of Mugie Rhino Sanctuary and Laikipia Nature Conservancy with relocation of their rhinos to safer conservation areas (KWS, 2012: 21; also see Department of Environmental Affairs, 2013: 20). IPZs in a number of Kenyan National Parks are important sites of rhino conservation. The Kenya Wildlife Service aims to encourage the development of new IPZs in sanctuaries, especially on private lands. The problem KWS faces is the high costs of maintaining an IPZ may mean it is not viable for private land owners. (KWS, 2012: 27) whose options to raise revenue to pay for conservation from wildlife are more restricted than in other countries.

Key Finding 9: Effective Governance Matters

The need for robust governance structures is a theme that underpins all other approaches.

National and Regional Governance

1. State capacity to protect rhinos needs to be more effective via training, equipment and funding (KWS, 2012; Knight et al., 2013; Zimbabwe Parks and Wildlife Management Authority, 2011). Integrated but secure databases with information on rhino numbers, movements, permits etc. 1are required and a project is underway in South Africa to achieve this.
2. Corruption at the national government level, as well as corruption and collusion by other actors involved in rhino management (e.g. vets, private owners, professional hunters, permit issuing officials) is a serious threat to rhinos. Corruption invariably goes hand in hand with the involvement of organised crime. In essence, poachers and criminal trading syndicates could not operate without complicity from officialdom e.g. see the case of poaching in the 1980s, which required complicity at the highest levels of government, and involvement of state-level armed forces (Reeve and Ellis, 1995; Leakey, 2001: 38; report HD059 by Duffy and St. John, 2013).

3. Regional governance frameworks may need to be harmonised to ensure that potential poachers from neighbouring countries are deterred by legislation and a penalty system that links in with that of range states. This is especially important for Kenya-Somalia and South Africa/Zimbabwe/Swaziland-Mozambique. Emslie et al (2012) and CITES have flagged Mozambique as a particular problem given that rhino offences are currently only considered as misdemeanours and not crimes. Given the increasing involvement of Mozambicans in rhino poaching in South Africa and threats also posed to rhino conservation in Zimbabwe and Swaziland, Mozambique (along with Viet Nam) was singled out for special attention in decisions passed at the last CITES CoP16. Increasing diplomatic pressure on Mozambique and Viet Nam, backing CITES decisions, may have a positive effect.

Where there is regional insecurity, poverty and/or weak systems of penalties and prosecutions for poachers, the risks associated with poaching are much lower (Milliken and Shaw, 2012: 85; Humphreys, forthcoming 2014).

International Governance and Regulation

Tackling poaching and trafficking requires an international scale effort. This can combine high level diplomatic initiatives with end user countries and Mozambique, alongside greater commitment to tackling illegal trading networks. Poaching and trafficking are heavily inter-linked with organised crime and illegal trading networks from conflict zones;[11] this presents a critical challenge to enforcement and regulation. Interpol launched Operation Worthy in 2012 to combat trafficking and poaching in Africa (as part of Project Wisdom, to tackle ivory and rhino horn poaching funded by DEFRA and IFAW).[12] Tackling organised crime networks does require a combined approach by conservation agencies with law enforcement agencies including Interpol, the UK Serious Organised Crime Agency (SOCA),[13] UN Convention Against Transnational Organised Crime and the United Nations Office on Drugs and Crime (UNODC).

The involvement of global scale networks of organised crime presents a critical challenge for international regulation; for example, CITES regulates the international trade in flora and fauna but does not have capacity to grapple with organised crime (TRAFFIC, 2008; United Nations, 2013; Milliken and Shaw, 2012: 76-78). Illicit trading via the internet (and DarkNet) is a key means of linking suppliers, traders and end users (Milliken and Shaw, 2012: 147; IFAW, 2008), but it represents a critical challenge to existing models of regulating/monitoring the (legal and illegal) wildlife trade.[14]

11 http://www.traffic.org/home/2013/5/29/un-chief-takes-poaching-concerns-to-security-council.html (accessed 04.08.13)

12 http://www.interpol.int/News-and-media/News-media-releases/2012/PR049

13 See http://www.soca.gov.uk/ (accessed 04.08.13)

14 This is the subject of an on-going study to develop software to detect illegal internet trading by Dr David Roberts, DICE, University of Kent. NERC grant number NE/L00075X/1

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