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## Rhino poaching: what is the solution?

There are several practical and highly profitable ways to end the slaughter of Africa's rhinos, writes Michael Eustace

MICHAEL EUSTACE

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IN 1910, South Africa was said to have 100 white rhinos. With great care and good management, the number has increased to 19000 today.

There are also 2000 black rhinos in the country. In 1960, there were 100000 in Africa outside the South Africa, but by 1970 that population had fallen to 65000, and today there are only 3150.

If there had been no poaching from 1970, the black-rhino population in the rest of Africa, at its natural growth rate of 6% a year, would have increased to 700000 today. (There would not have been the habitat to accommodate that number of rhinos, but the arithmetic is interesting.)

There were 448 rhinos poached in South Africa last year, of which 252 were killed in the Kruger National



Picture: Reuters

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Currencies	Commodities	JSE Today
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ZAR/GBP	12.3625 ▼	0.06%
RAND/EURO	10.3860 ▲	0.39%
ZAR/AUD CALC	8.3585 ▼	0.40%
EUR/USD CALC	0.7678 ▼	0.05%
GBP/USD	0.6420 ▼	0.20%

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Park. To this number can be added about 200 rhinos shot in the country by pseudo-trophy hunters for the horn trade, along with rhinos poached in Zimbabwe (28), Kenya (27) and Swaziland (two). This makes 705 rhinos out of an African population of 26000, or 2,7%.

The net growth of the rhino population is about 6% a year, so the current level of poaching has not meant a decline in the total population. The concern is that the level of poaching in South Africa has increased by 35% over the past year (333 in 2010), and if the growth in poaching continues at this rate, then the country is looking at 805 (3,8%) being poached and pseudo-trophy-hunted this year, and 1017 (4,7%) next year. (I have assumed that the levels of pseudo-hunting will remain the same.) In 2015, the levels of poaching in South Africa may exceed the natural population growth rate.

## POACHING

Some commentators are surprised at the current high level of poaching, but it is relatively low compared with the 1960s, when more than 8000 animals a year must have been poached outside South Africa. (This takes into account that rhinos were breeding at the same time as their numbers were being reduced by poaching.)

The Kruger National Park increased its anti-poaching effort last year by about 50% over the 2010 level. Also, the army was co-opted and now patrols the border with Mozambique. Nevertheless, rhinos poached have increased from 146 in 2010 to 252 last year, or by 73%. Twenty-one poachers were shot dead in skirmishes last year and 82 arrests were made. (The national rate of rhino-poaching convictions relative to arrests is less than 5%.)

While there have been some notable successes, the Kruger is clearly not winning the war. It has about 10000 rhinos, or 48% of the national herd, and with the animals having been wiped out in countries to the north of South Africa, the park has become the focus for poachers.

The Kruger is 20000km<sup>2</sup> in extent and has a 400km border with Mozambique. It would be prohibitively costly to patrol effectively. The park has 400 rangers on patrol — that is 50km<sup>2</sup> per ranger. I doubt that one ranger could effectively protect more than 10km<sup>2</sup> per day. This implies a force of 2000 rangers, or five times the current force. Assuming only half the park needs to be patrolled intensively, because rhinos are concentrated there, then 1000 rangers would be needed.

The cost, including overheads, of an additional 600 rangers would be about R80m a year — more than the annual surplus of SANParks, which was R52,6m for the year to March 2011. It is not possible for SANParks to finance 1000 rangers; even if it were, there would still be a weakness that undermines law-enforcement efforts in most parks in Africa: corruption among law enforcers.

## GREAT REWARDS

The rewards of poaching are high and, at the bottom level, can be as much as R160000 for a horn-set of 4kg. (African rhinos have two horns, but for the sake of ease, a horn-set in this paper is referred to as "a horn".) This prize can be won in one night by two poachers armed with a rifle, a dart-gun or poisoned cabbage and an axe, and it represents six years of wages for each of the two poachers, at Mozambique rates. That is if they are lucky enough to have a job.

In the Zambezi valley, the experience was that it did not matter how many poachers were shot and arrested — the rewards were so great that there were dozens of candidates to take the places of those shot or jailed. The rhinos ran out before the poachers. The 21 poachers shot last year represent a ratio of 8% of the rhinos killed and the five likely convictions a ratio of 2% of the rhino shot, assuming the national average. These numbers suggest there is a 90% chance of a poacher avoiding any penalty.

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Only about 15 rhinos are shot in true trophy hunts in South Africa every year. About 200 are shot each year, mainly by Vietnamese, in pseudo-trophy-hunts where the hunter is solely interested in the horn for on-selling into the Asian market for horn. The Convention on International Trade in Endangered Species (Cites), to which South Africa is a party, allows trophy hunting. However, it is clear to everybody including the Cites management authority in South Africa, that most of those horns are for the trade and not to hang on a wall.

The Department of Environmental Affairs, embarrassed by the loophole, has offered to close down these Vietnamese hunts but the game farmers are opposed to the closure because it is a source of revenue of about R48m a year and they argue, convincingly, that they need the money to justify keeping and growing rhino numbers and paying for their security. These farmers own 5000 rhinos, or 23% of the national herd.

There is also a valid argument that if these hunts were not allowed, the level of poaching would simply increase by 200 a year, which would then transfer income from farmers to criminals and not reduce the overall number of rhino deaths.

#### MEDICINE MARKET

Rhino horn is sold into the Asian traditional medicine market where it is used in a cocktail of other substances to cure a range of ailments. The main market is China, and while there is some comment on Vietnam being a major market, it will also be a way into China. The Chinese have believed in rhino horn for centuries and although somewhat flimsy western medical research, paid for by a wildlife donor agency, claims that rhino horn is of no medicinal value, the Chinese buy it and pay no attention to western views. It is exotic, expensive, illegal (China banned its trade in 1993) and prestigious.

Only about 2g is used in each dose. It can be calculated that, in effect, less than 0,1% of the Chinese population use it and that is because of the prohibitively high price.

The traditional doctor demands to see the retailer shave the horn in front of him as he fears substitutes. This suggests there would be no market for artificial substitutes.

The Vietnamese "trophy hunter" pays R80000/kg for horn. This price probably doubles by the time it reaches the wholesale market and doubles again in the retail market. Over the years, there has been comment that horn trades at about the same price as gold, by weight. The current price of gold is \$52000/kg. The poacher, who might be a peasant, is being paid a maximum of \$5000/kg, so there is a spare \$5000/kg that can be used to pay a collecting agent and to bribe parks staff to stay away from a hunt or to inform on the whereabouts of rhino — or to bribe the police or army — before the total price of an informal hunt exceeds the cost of horn obtained in a formal Vietnamese hunt.

The gold price has risen by six times over the past 10 years, so the price of rhino horn might well have risen by a similar amount. The horn market is an imperfect one, spread over a large area, and there will be many prices at any one time.

#### HORN COUNT

Rhinos live for about 38 years so, on average, about 2,6% die every year. With that assumption, about 676 animals died of natural causes last year in Africa as a whole. Africa has a total rhino population of 26000. While most of the horns collected from dead animals find their way into official stocks, some would have been collected and sold illegally to the trade. The 20% collected illegally or stolen from stocks would amount to 135 horns.

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In addition, game farmers in South Africa are known to be selling horns illegally, and this is estimated at a further 100 horns. Add these horns to the original estimate of 705 and the total becomes 940. The purpose of this calculation is to estimate the total annual supply of horn. While we have no specific statistics on the demand, we can derive demand from the supply, as supply and demand must be equal.

Supply and demand are brought into equilibrium by the price of \$40000/kg. Above that price, volumes sought decline; below it, price sellers are reluctant to sell. Thus, there were about 940 horns sold last year for an average price of \$40000/kg at the retail level. Assuming the average weight per horn was 4kg, then 3760kg was sold for \$150m at the retail level and \$75m (R600m) at the wholesale price.

With the price having increased strongly in recent years along with other commodities, it is probable that speculators are buying and hoarding horn in the expectation of selling it at higher prices in the future. If speculators bought 20% of the volume, then the balance of 3008kg was sold into the medicinal market. At 10g for a course of treatment, there were 300800 patients that used horn, or 0,02% of the Chinese population of 1,3-billion. It is a minuscule proportion of that country's population that use rhino horn.

#### TRADE BAN

Cites, which is made up of 175 parties, or countries, banned international trade in rhino horn in 1977. While well intentioned, the ban has been a miserable failure. All it did was to push the trade underground where it has thrived and made money for criminals. In the process it has impoverished parks, where the money rightfully belongs.

Southern Africa could supply the market with 676 horns a year from natural deaths alone. There are also stocks of 5000 horns collected over many years. Southern Africa could easily supply the market with 940 horns a year and increase this by 40 horns a year from the increment of natural deaths, provided poaching was controlled. It would be 19 years before existing stocks were exhausted.

In addition, private farmers in South Africa could provide the equivalent of 1000 horns, or 4000kg a year, by cropping their rhinos. The horn regrows at the rate of 0,8kg a year. The cropping process appears not to harm the animal provided about a third of the horn at the base is left behind when it is cut, which is the normal practice. In theory, Southern Africa could provide the market with 1940 horns a year, or more than twice the current demand.

This greatly increased supply could be achieved without the need for the killing of one rhino.

To trade internationally, Cites needs to approve a change in the rules, and for that to happen, 66% of the 175 member countries, or 116 countries, need to vote in favour of the change. The argument in favour of trade is compelling but Cites can be driven more by political game playing than logic. The wildlife donor agencies that attend the meetings and have their own agendas often shape the debate. The next meeting is due in March 2013 and a proposal needs to be made six months before then. South Africa, being the owner of 80% of Africa's rhinos, is the obvious choice to make the proposal.

SANParks has asked the Department of Environmental Affairs to put the proposal to the next meeting, and the SADC Rhino Management Group has asked for the same action.

#### RHINO STUDIES

The department has also asked for two studies, as a result of a ministerial rhino summit held in October

2010. The terms of reference were only published nine months later and the contract for one study awarded towards the end of last year.

The awarded study concerns South Africa's internal trade in rhino horn, over which Cites has no control. There was a moratorium placed by the department on internal trade in February 2009 because horn was finding its way on to the illegal market.

There is no end-user market for horn in South Africa and without external trade being possible, internal buyers would be confined to speculators who would buy horn in the expectation of international trade being allowed by Cites at some stage in the future. This horn would need to trade at a large discount to the (illegal) market price because of the uncertainty over when it might become tradable.

Yields required on venture capital investments are about 25% a year. As there is only a Cites meeting every three years, speculators would require a discount of at least 50% if they anticipated having a waiting period of three years before disposal. At that discount, there will be a temptation for the originators and speculators to sell into the illegal market for a quick profit. To prevent this, there will need to be a set of cumbersome controls and audit procedures.

It is difficult to see why a study on the internal market in horn should be an issue worthy of costly delay.

The other study, which has not yet been awarded because of a lack of a suitable candidate, has to do with international trade. The terms of reference ask for estimates of the size of the market, prices, why people buy, whether there is a trading opportunity and how trade might operate. All these issues are covered in this paper and are, in any case, well known. Of course there are "nice to knows" but there is very little that we need to know that we don't already know.

I fear that these largely irrelevant studies are a delaying tactic because the Department of Environmental Affairs is anxious about putting a controversial proposal to Cites that the donor agencies and their followers will oppose. The argument needs to be presented by top South African lawyers who would be a good investment: we are losing 448 rhino a year, which is worth \$14m, a year and we could be making \$75m from the sale of 940 horns. The differential is \$89m a year (R712m) or R2m per day.

If this loss continues for a further four years, which it looks set to do unless there is more urgency, the country will lose \$356m (R2,8bn). The ministers of finance, planning, and trade and industry must surely support greater urgency.

## CENTRAL SELLING

Rather than a free-for-all, it would make sense to have all sales of horn conducted through a central selling organisation (CSO) where the volumes can be controlled and the legality of the origin of the horn can be assured. The CSO would act as a broker and receive a small commission of, say, 5% on the value of the horn sold. The plan would be for it to make a small profit but for most of the proceeds to go to the suppliers. An essential component is to have market expertise to manage the sales, and there should be scope to replace managers when and if that becomes sensible.

The CSO could be owned by the owners of rhino, pro rata, roughly, to the number of animals they own or are custodians of — for example, SANParks, 45%; Ezemvelo KwaZulu-Natal Wildlife, 20%; South African private farmers, 20%; Namibia, 10%; Zimbabwe, Botswana, Kenya, Tanzania and Swaziland, 5%. The structure should probably not allow for one organisation to have control. The inclusion of Namibia, Zimbabwe, Botswana, Kenya, Tanzania and Swaziland is necessary because they need to be in the net and not selling independently against the best interests of the whole.

Monthly sales could be held at OR Tambo International airport. The managers could assess the demand in the market and call for a specific amount of horn in accordance with a quota system. Horn would then be offered to a selected range of buyers at a particular price per parcel on a "take it or leave it" arrangement, like De Beers used to have in the diamond market. It would not be an auction. All horn would be properly marked and have a DNA signature. Payment would be made to the undoubted suppliers and the horn immediately loaded on to an aircraft for export. There would be no room for laundering of illegal horn or corruption.

## HORN BUYERS

The buyers would mainly be Chinese state pharmaceutical companies with whom the CSO had a partnership arrangement and who would buy and expect to retail at a 100% profit. Having a profitable investment in the industry, these pharmaceutical companies would see that the Chinese government closed down the illegal operators. To prevent collusion, there should be scope to include buyers other than China, such as Vietnam, Taiwan, South Korea and Yemen. Given a legal trade, these countries would need to close down their illegal trade, and partnership arrangements would help with this.

In the long term, the CSO needs to be able to sell as much horn as is sustainably possible at as high a price as possible. Initially it might drop the price below \$20000/kg to clear out the speculators and damage the illegal trade. Inevitably there will still be some illegal trade (200 horns a year) but the risks will be much higher because Africa will have more money for law enforcement and China will be harsh with the illegal trade. Profits to the criminals will also be much lower because illegal goods typically trade at a discount of about 30%; if the Chinese police are severe, it will be more.

If southern Africa was to sell 1200 horns a year or 4800kg at \$20000/kg, it would produce income of \$96m (R768m) a year, which is substantial in conservation terms and approximates the total annual tourism, retail and concession income of SANParks.

There are hundreds of donor agencies that profit from rhino being in crisis. Their outputs are seldom measured and there are far too many that are accountable to no one.

Their main strategy is to change the Chinese mindset away from the belief that horn is a useful medication. How much success have they had? The Chinese are not going to listen to the west on this subject. The strategy is futile.

## LAW ENFORCEMENT

Another major focus is on encouraging increased law enforcement. This is unaffordable in Africa given the more important priorities such as food, health and education. Conservation comes way down on the list. Law enforcement is important but it is undermined by corruption in Africa and at currently affordable levels is not winning, even in rich and well-managed parks such as the Kruger.

The agents like to say that demand is insatiable and that there are too few rhinos left to satisfy the demand. They ignore price and the fact that price brings whatever level of demand there is into balance with supply.

They suggest that the introduction of a legal trade will stimulate the illegal trade, whereas the reverse is probable. A legal trade will satisfy the market and there will be little room for the illegal trade. The criminals will be left to trade at low prices and high risks and disruption by the CSO. It is unreasonable to believe that the traditional Chinese medicine market and the Chinese government would accommodate an illegal market run by criminals, given a legal trade.

At present, the only way to satisfy demand is to kill the animal. This will become unnecessary given a legal trade.

## BENEFICIARIES

The agencies say that trade will benefit only a few wealthy individuals. The reality is that governments own 80% of the rhinos and national and provincial parks will be the beneficiaries of 80% of the profit. Governments will also collect taxes from private sector profits.

They suggest that if Africa traded, then endangered populations of rhino in the rest of the world would come under increased pressure. In fact, pressure would be taken off those animals because Africa would fill the market with legal goods at cheaper prices and there would be fierce policing of the illegal trade in China.

The experience in the crocodile, ostrich and vicuna markets is that commercial farming has taken poaching pressure off wild populations.

The agents refer to the "precautionary principle", which means that because we do not fully understand the illegal trade and the prices and the routes and the people involved, we cannot risk a legal trade. The current trade is secret and by definition we are never going to know all the details, but we know enough. If for some unexpected and unlikely reasons a regulated trade did not reduce poaching, then it could be closed down. Hiding under the precautionary principle in the past has been at great cost to the rhino.

Some agencies suggest flooding the market with horn from stocks to bring down the price to a level where poachers find poaching no longer profitable. This cannot work on a sustainable basis as 100g for only 200000 Chinese would eliminate the entire stockpile in one year. In all probability, speculators would buy all the cheap supply knowing it could not be sustained and that there would be a large profit to be made when stocks ran out.

## DEHORNING

Dehorning as a solution has also been widely advocated, but all it does is to move poaching from populations that have been dehorned to populations where they have not. Furthermore, it is expensive and has to be done every two years because horn grows at the rate of 0,8kg a year and about 1,2kg is left behind in the stump after cropping. Thus the horn has a total weight of 2,8kg after two years, which is attractive to a poacher. Consider regular dehorning of the Kruger's population of 10000 rhino. It is not practical, desirable or affordable.

Burning horn stocks is also a suggestion that the agencies make to help the rhino. Destroying stocks would reduce potential supplies to the market and encourage speculators to stockpile, which would increase prices and increase poaching. It makes no sense. Selling one horn from stocks may save the life of one rhino. Kenya was keen to destroy stocks and put a proposal to the last Cites meeting, which it later withdrew because there was no support for it.

Most donor agents appear not to like the idea of a regulated trade; maybe because it is the most likely solution, and a solution is not what they seek?

The public should be cautious about donating money to these agencies. They may be perpetuating the crisis.

Filtering poisoned horn on to the illegal market would have a dramatic effect on demand if the traditional Chinese medicine market began to fear there was a chance of horn doing more harm than good. While this has been discussed, there has been very little support for it but in the absence of trade and increased poaching, it may well happen.

About 150 live rhinos were sold by South Africa to China on the understanding that they were for educational purposes and not for commercial purposes. This was allowed within the Cites rules. However, it was later found that the horns were being shaved and that there was a business plan for commercial use. The exports were stopped by the Department of Environmental Affairs. Selling live rhinos to other countries is the wrong strategy and undermines Africa's competitive advantage — one of the best that we have.

## BENEFITS OF REDUCTION

Poaching will never be totally stopped, but if it is reduced to about 200 rhinos a year, the current population of 21000 rhinos in South Africa will double to 42000 over the next 12 years. The country could sell the annual increment to parks in southern Africa. Selling 1260 rhino a year would produce income of \$39m (R312m). This would then increase South Africa's total income from rhino to R1bn a year.

Assume that the World Bank, some other organisation or even a wealthy individual financed these sales over 12 years for a total investment of \$500m. The financier could retain ownership of the animals and their increment of 6% a year. If the parks farmed the horn from half the animals, they would produce 8400kg of horn a year with a current wholesale value of \$168m. Typically, this would pay for the anti-poaching and operational costs of 168 parks.

There would need to be an assurance that the rhino would be protected in these parks, and part of the transaction would need to be that an organisation such as African Parks or Frankfurt Zoo managed the protection of the rhino using existing park rangers. (There are often sufficient numbers of rangers, but they are poorly managed.) The operation would be self-financing and while the rhino were being protected, other animals in the park would be too. For a park to thrive, all that needs to happen is for poaching to be controlled. In most of Africa's parks this is not happening, and most are in decline. One good man and a reasonable budget can make a big difference to a park.

The whole of Africa has fewer tourists visiting every year. Parks and wildlife are Africa's competitive advantage — if we could attract an additional 1-million tourists a year, and they stayed for an average of 10 days at \$200 per day, then that would generate income of \$2bn a year

We have the opportunity for turning around a conservation tragedy into the biggest contribution to conservation in Africa imaginable, with rhinos as the catalyst.

It is hard to believe that the world, as represented by Cites, can choose to continue with a failed strategy (the ban on trade), sacrifice 705 rhinos a year and fund criminals when there is the potential from a regulated trade to produce annual profits of billions for African conservation and secure 168 parks, all without the need to kill one rhino.

South Africa should not waste time collecting more data. We have enough and the time has come to put a proposal to Cites.

- Eustace is an investment analyst.