

The burning question

an alternative to the billion dollar ivory deadlock researched



The Ranger Force will continue to be the backbone of the Wildlife Conservation and Management Service. Without them, it is not possible to conserve or manage wildlife in this country. Kano, Nigeria, October 1979. In addition to the ivory I examined 27 Rhino horns weighing a total of 26.6 kg. Several were defective. combating this menace and must be a National CONFIDENTIAL. decline of elephants over the past few years has last 3 years the known population of a National CONSPIROCY information in the report could be and the position is certainly extremely serious. this scale of slaughter continues, from the Mervu Park from a .458 Rifle highly vulnerable. Well armed, well organized and there have been cases the politics of conservation would involve far more than land 24th DOCS. Hong Kong were claimed as c. 146 tons, Hong Kong Park H.Q. 13. 1978. "The owner of this lot Post Facte 389, 8750-Kaisers. of a few greedy people who want to become rich quickly," he said. of well over 200 tons). C. 138,500 - undervalued by US \$29,81 per kilo of the orders, to export the commodity. Lauter N, West Germany." It was said to have belonged to a Nairobi "Look at some of these tusks of Parliament by a member. However it seems possible that some of the Ivory was destined to be included in this shipment, but all the remaining Park Units LOT 'A' - Destined to be sent to West Germany ban was announced. years from Garissa District. Two of the three men escaped. One rifle No. 930 the United States 974, bolt No. A.10766 Mk.4 recovered together with 153 rounds of ammunition. 11 32.8 12. 303 (New). Also four Rhino horns together with ID/Card No. 4404943 Top Priority 17 8.2 28. DENY IVORY CHARGE RESTRICTED; Anti Poaching Unit ivory from neatly packed cartons with cigarette and Tsavo East National Park. 40 Rangers, Rhinoceros are in very dire straits. Nov. 17th 525 kg KREMU estimated the population in 1977 to be 60,000. AUTOMATIC RIFLES Rhino was shot very close to be copied. I.U.C.N. Elephant Survey estimated a nationwide population of 68,000 - 71,500. Headquarters.

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A thesis submitted in partial fulfilment of the requirements of the award of Bachelor of Arts of Tilburg University

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Abstract

The 1989 CITES ivory trade ban has certainly slowed down the poaching of Elephants, nevertheless the African Elephant numbers have declined by 30% from 2003 to 2016. The parties to CITES are divided over the total ivory trade ban, especially since it denies the ivory producing countries from a valuable resource, argued essential in wildlife conservation.

This research sought the feasibility of an alternative: maintaining the total ban on ivory trade, while creating a legal ivory market restricted to Central Banks. The ivory would serve as collateral next to their gold reserves. Central Banks could either buy the ivory or be allowed to swap it with part of their Gold reserves, thus freeing up millions which then can be applied to anti-poaching law enforcement and wildlife conservation of the African Elephant.

The social, economical and physical characteristics of ivory strongly overlap with that of gold, indicating that ivory could be accepted as a reserve.

The primary functions of the Central Banks to ensure price stability, properly functioning payment systems and robust reliable financial institutions would not be threatened by the swap or purchase of the ivory. The current values of government held stockpiles range between 0.456 billion USD and 1.47 billion USD, the equivalent to 0.03%-0.11% of the World Central Banks' Gold Reserves.

Naidoo et al calculated that a sum of 26.5 million USD/year to be sufficient to ensure elephant numbers to do not increase not decrease. The current values of government held stockpiles would allow for the financing of 17 – 55 years of conservation.

The storing of ivory by Central Banks will provide an effective shield from the illegal circuit in contrast to the current storage rooms as it will count as a reserve. Furthermore it will provide as an incentive for governments to register their elephant populations and track illegally poached ivory.

A portable DNA tester that can be operated by unskilled operators in the field is in its development phase. This, in combination with cloud computing and other technological advancements, would make the creation of an online DNA register of living elephants and ivory stockpiles a possibility to make (false) certificates a thing of the past.

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Acknowledgements

I would like to take this opportunity to especially thank the assistance and contributions of a few. The people mentioned have encouraged me and sharpened my thought process to reformulate the idea.

Mr. Cees Bastemeijer for wanting to supervise me on this journey. His engagement, suggestions and enthusiasm surrounding the idea have allowed me to work on this thesis with much pleasure. I thank him equally for being a mentor on matters beyond that of academics, in particular in the challenges I have faced with my sports.

Mr. Ron Berndsén. Despite your busy schedule and central office being based in Amsterdam, you created some time to discuss the monetary aspect of my thesis. For this I am very thankful. But what's more is the manner in which you listened to my proposal, clarified my deficient knowledge on central banking and constructively provided solutions. This meeting propelled me forwards.

Mrs. Charlotte Davies (Environmental Investigation Agency) and Rachel Nuwer (freelance journalist and contributor to the National Geographic) for providing specific data to ivory burning numbers, being so swift in her replies and providing other valuable information.

Mrs. Marijke Langeveld (CITES coordinator in The Netherlands) for providing me the opportunity to discuss the idea with her and giving me some points of consideration. I hope this written report can provide her a clearer image and that we could work together in realizing this proposal.

And last but certainly not least, the ever-faithful, my parents. A debt of gratitude is owed to both who have supported and encouraged me in all of my walks in life and stood by when I most needed it. A special mention goes to my father. We have sparred about this idea for over 2 years and I could not thank you enough for solidifying the foundations of my research. Khanimambo pai!

Introduction

Since 1989, 21 countries have burned or crushed 263 tonnes of ivory, also referred to as "the White Gold".¹ Amongst these countries are Kenya, Mozambique and Malawi, some of them near the bottom of the world rankings of richest countries. It is a destruction of capital that does seem to miss all logic. The act is applauded and booed by wildlife conservationists worldwide, who both claim to aim to save the African Elephant from its extinction.² Two camps that, using the same data sets, claim to know the best way to achieve that same goal. Two camps that come together every two to three years for the Convention on International Trade in Endangered Species of Wild Fauna and Flora, CITES, to fight over the same measure: a total or partial ban of ivory trade.³

African countries invest in wildlife conservation to attract tourists from all over the world and elephants are a major attraction. While on a living elephant, the ivory is perfectly legal. But ivory is in high demand by the, mainly Asian, carving industry. The moment the elephant is killed and its tusks sawn off by poachers, the ivory becomes illegal. To protect their wildlife industry, African countries and foreign organizations invest heavily in anti-poaching operations. But when the poachers are caught, and the ivory is returned back to the rightful owners, it remains illegal and cannot be sold. Ivory, valued at \$730 per kg in February 2017 is being burned to ashes.⁴ Why is it illegal? Because CITES has agreed to a total ban on ivory trade. For African Governments It is as if the police returns to you your stolen car, but orders you to put it through the destroyer in at the scrap yard, because there are people trading stolen cars.

Does CITES have a point? Yes. Before the total ban on ivory trade, in 1989, the world experimented with certification of legal ivory, only to find out that the wheeling and dealing in false certificates had become another layer in the illegal trade. It was estimated that 90% of the ivory in the international trade was then from poached elephants.⁵

¹ Samper, C. (Ed.). (2016, April 29). WCS Praises Kenya for Massive Elephant Ivory and Rhino Horn Burn Scheduled for Saturday, April 30. Retrieved April 06, 2017, from <http://voices.nationalgeographic.com/2016/04/29/wcs-praises-kenya-for-massive-ivory-and-rhino-horn-burn-scheduled-for-saturday-april-30/>

² Nuwer, R. (Ed.). (2016, April 30). Kenya Sets Ablaze 105 Tons of Ivory. Retrieved April 15, 2017, from <http://news.nationalgeographic.com/2016/04/160430-kenya-record-breaking-ivory-burn/>

³ CITES - Conference of the Parties. (n.d.). Retrieved April 05, 2017, from <https://cites.org/eng/disc/cop.php>

⁴ Save The Elephants - Dramatic Changes In China's Ivory Trade. (2017, March 29). Retrieved April 15, 2017, from <http://www.savetheelephants.org/about-ste/press-media/?detail=dramatic-changes-in-china-s-ivory-trade>

⁵ Humane Society International - Elephant Ivory Trade-Related Timeline with Relevance to the United States. Page 2 (n.d.). Retrieved April 15, 2017, from http://www.hsi.org/assets/pdfs/Elephant_Related_Trade_Timeline.pdf

In 1989, and under protest of ivory producing countries like Zimbabwe, Namibia, Botswana and South Africa, CITES declared a total ban on Ivory trade.⁶ Since then the price of ivory has soared on the illegal markets and the poaching is now happening on an industrial scale. A recent study done by the Great Elephant Census determines that the current savanna populations are shrinking primarily due to poaching by 8% per year on the African continent.⁷ No data can be found stating the numbers in forest elephant numbers.

Ever since the ban, ivory producing countries have claimed their right to trade their legally produced, seized and stockpiled ivory. Only twice they have been successful. In 1999 the ban on ivory trade was partially lifted and Zimbabwe, Namibia, Botswana were allowed a once-off sale of Government stockpiled ivory to Japan.⁸ In 2008 this partial lifting of the ban was repeated and South Africa, Botswana, Namibia and Zimbabwe were allowed an another once-off sale of Government stockpiled ivory, this time to China and Japan.⁹

Opponents of the partial lifting of the ban, like the American Environmental Investigation Agency, (EIA) see proof in the data sequence that illegal ivory trade piggybacked on the legal ivory trade and argue that only a total ban can save the elephant. Analyzing the same data, MIKE and ETIS TAG see no evidence to support the piggyback claim.¹⁰

⁶ Ibid footnote 5. Page 3 (n.d.). Retrieved April 15, 2017, from http://www.hsi.org/assets/pdfs/Elephant_Related_Trade_Timeline.pdf

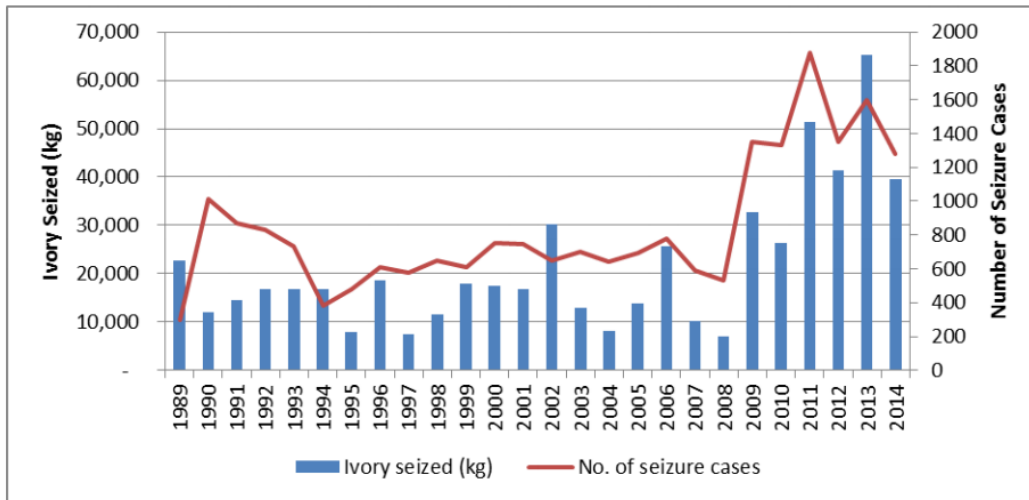
⁷ Chase MJ, Schlossberg S, Griffin CR, Bouché PJC, Djene SW, Elkan PW, Ferreira S, Grossman F, Kohi EM, Landen K, Omondi P, Peltier A, Selier SAJ, Sutcliffe R. (2016) Continent-wide survey reveals massive decline in African savannah elephants. Abstract. Page 1. PeerJ 4:e2354 <https://doi.org/10.7717/peerj.2354>

⁸ Ibid footnote 5. Page 3 (n.d.). Retrieved April 15, 2017, from http://www.hsi.org/assets/pdfs/Elephant_Related_Trade_Timeline.pdf

⁹ Ibid footnote 5. Page 3 (n.d.). Retrieved April 15, 2017, from http://www.hsi.org/assets/pdfs/Elephant_Related_Trade_Timeline.pdf

¹⁰ CITES - Report On Monitoring The Illegal Killing Of Elephants (MIKE). CoP17 Doc. 57.5 (2016, June 08). Paragraphs 12 13. Retrieved April 20, 2017, from <https://cites.org/sites/default/files/eng/cop/17/WorkingDocs/E-CoP17-57-05.pdf>

Figure 1: Estimated weight of ivory and number of seizure cases by year, 1989-2014 (ETIS, 25 January 2016)



On 25 January 2016, ETIS comprised 24,636 elephant product seizure records, representing law enforcement actions in 98 countries or territories since 1989. At this time, the year 2015 remains data deficient and is not considered in this assessment, which is mostly restricted to the eight-year period 2007 through 2014.¹¹

Proponents of the partial lifting argue that the total ban has led to soaring prices¹² and industrialization of the illegal poaching and that countries should be allowed to trade their ivory so that they can continue to invest in wildlife conservation and finance anti-poaching operations.¹³ They believe the restrictions under which the once-off sales were permitted, triggered large-scale poaching of elephants.¹⁴ Speculators anticipated the black-market price would skyrocket for this white gold following the ban and started stockpiling the ivory as an investment because of the scarcity.¹⁵

¹¹ CITES - Report On The Elephant Trade Information System (ETIS) CoP17 Doc. 57.6 (Rev. 1). (2016, July 27). Retrieved April 20, 2017, from <https://cites.org/sites/default/files/eng/cop/17/WorkingDocs/E-CoP17-57-06-R1.pdf>

¹² Harvey, R., Alden, C., & Wu, Y. (2017). Speculating a Fire Sale: Options for Chinese Authorities in Implementing a Domestic Ivory Trade Ban. *Ecological Economics*, 141, Page 23. Retrieved May 17, 2017, from <http://www.sciencedirect.com/science/article/pii/S0921800916311181>

¹³ Russo, C. (Ed.). (2014, August 30). National Geographic - Can Elephants Survive a Legal Ivory Trade? Debate Is Shifting Against It. Retrieved May 10, 2017, from <http://news.nationalgeographic.com/news/2014/08/140829-elephants-trophy-hunting-poaching-ivory-ban-cities/>

¹⁴ Ibid footnote 13. Retrieved May 10, 2017, from <http://news.nationalgeographic.com/news/2014/08/140829-elephants-trophy-hunting-poaching-ivory-ban-cities/>

¹⁵ Ibid footnote 12. Page 23. Retrieved May 17, 2017, from <http://www.sciencedirect.com/science/article/pii/S0921800916311181>

The burning of Ivory is applauded by supporters of the ban, but critics doubt if it passes a theatrical act. Ivory is a tooth, and only if sustained at high temperatures for a lengthy amount of time, does the burning destroy it. In 2008, the U.S. Fish And Wildlife Service (FWS) National Wildlife Forensics Lab tested the burning at a specialized arson facility. It found, after using oxygen-enriched propane to generate temperatures of 982 degrees Celsius, that an ivory tusk lost about a quarter ounce of its weight per minute. Indicating it would take months to burn one ton of ivory.¹⁶ The very own “burn architect” Robin Hollister who invented the technique in 1989 acknowledged that ivory doesn’t really burn. The burning in open plains, as it is done, chars the exterior but leaves the inside intact. An illusion is created for the world to believe that we are successfully removing ivory from the market, but is it really? Once the media, ministers and representatives of conservation groups disappear, the tusks lie up for grabs and can easily be sold onto the market again.¹⁷



When we see the declining numbers and butchered remains of this iconic animal, it’s only to applaud that people feel the need to act. It is therefore a pity that two camps, with the same objective seem to be in a deadlock. They both want to save the African elephant, based on the same data, they propose and defend two opposite measures. I would like to research the feasibility of a third alternative, that tries to combine a total ban on ivory trade in the "normal world", while opening a totally new market in a very specific part of this same world:

*Can we, while maintaining a ban on ivory trade,
develop a controllable and very restricted legal ivory market,
by allowing only Central Banks to trade and store ivory*

¹⁶ Neme, L. (2013, August 02). National Geographic - Destroying Elephant Ivory Stockpiles: No Easy Matter. Retrieved May 15, 2017, from <http://voices.nationalgeographic.com/2013/08/02/destroying-ivory-stockpiles-no-easy-matter/>

¹⁷ Ibid. footnote 16. Retrieved May 15, 2017, from <http://voices.nationalgeographic.com/2013/08/02/destroying-ivory-stockpiles-no-easy-matter/>

*as collateral and an alternative to their gold reserves,
thus freeing up millions that will be applied to
anti-poaching law enforcement of the African Elephant and thus
contributing to a more effective and sustainable Wildlife Conservation?*

The idea seems simple. Governments and private game reserves spend millions on wildlife conservation to create returns from the tourism industry. In order to protect their assets, they invest in anti-poaching measures and ivory seizure. But at the moment the ivory is seized, and brought back into the legal world, it has lost all of its value, but stockpiling, guarding and eventually crushing or burning imposes yet another cost to them. Therefore it often remains in unguarded in poorly equipped police stations from where it seeps back into the illegal market where its value is restored.

Central Banks have gold reserves totaling around 33,000 tonnes stored in extremely well-guarded bunkers.¹⁸ While the trade in gold is all but illegal, this gold will almost for sure physically never leave these bunkers. It mainly serves a collateral between central banks and is only administratively earmarked or transferred from owner to owner.

By allowing Central Banks to substitute a percentage of their gold reserves with ivory, the ivory does not enter the carving market, while restoring its value. The 'freed gold' can be applied towards wildlife conservation and anti-poaching operations. Equally, it could provide CITES with a solution to deliver the promise they made to pro-trade nations in 2008 to create a framework for selling ivory, an alternative to the so-called ivory trade decision-making mechanism (DDM) they were seeking to construct.¹⁹

¹⁸ World Gold Council - Reserves statistics. (2017, July 5). Retrieved May 25, 2017, from <http://www.gold.org/data/gold-reserves>

¹⁹ Christy, B. (2016, August 12). National Geographic - Southern African Countries Are Trying—Again—to Legalize Elephant Ivory Sales. Retrieved May 20, 2016, from <http://news.nationalgeographic.com/2016/08/wildlife-Namibia-Zimbabwe-ivory-trade-elephants-cites/>

The Research Question

The research question for this paper might look like a contradiction "in terminus" and is formulated as follows: Can we maintain a total ban on commercial ivory trade, while at the same time developing a controllable and very restricted legal ivory market by allowing only Central Banks to trade and store ivory as collateral and an alternative to their gold reserves, thus freeing up millions that will be applied to anti-poaching law enforcement and wildlife conservation of the African Elephant?

In order to answer the research question, and investigate the feasibility of the idea, a series of sub-questions will be answered.

Sub-questions

The economic viability

1. Are there macro-economic arguments from the central bank point of view against the ivory as a collateral and swapping a (small) percentage of their gold reserves for ivory?

The answer to this question starts by understanding the past and present role of gold in Central Banks and assesses the possible opposition Central Banks could present towards the idea of accepting ivory as a collateral and swapping it with gold, as well as the possible motives to engage with the idea.

The added value for anti-poaching initiatives

2. What is the added value of the idea for anti-poaching initiatives, what are the possible side effects, and are the expected benefits significant enough to have an impact?

Under this question I investigate the current spending's on anti-poaching worldwide and analyze how much money can be collected through the sales of ivory to Central Banks and contribute to the conservation of the African Elephant. I research the current amounts spent on combating International Wildlife Trade, investigate the economical losses the continent suffers due to the poaching of the elephants and how much is needed to keep the elephant populations steady and compare the figures to the value of the Ivory stockpiles.

The effect of a total ban and a legal market as opposed to the present a total ban and an illegal market

3. What are the dynamics of the present total ban and an illegal market and what dynamics can be expected if we can create a legal market next to the total ban?

Under this question I analyze the dynamics created by the current ban strategy between the different stakeholders and try to foresee how these dynamics might change when a restricted legal market would be created.

Future developments made possible by new technology

4. Is it likely that, in 25 or 50 years, new technological developments, like DNA tagging, will make it possible to permit Central Banks to put the ivory back into a legal commercial market, without compromising the conservation effort?

The total ban is often defended by looking back in history and finding proof of poaching taking place under cover of a legal trade. Under this question I try to look ahead and foresee how future technology can ease CITES to deliver the promise they made to pro-trade nations in 2008 to create a legal framework for selling ivory.

The economic viability

Gold reserves at Central Banks serve a purpose. The idea to swap a portion of that gold with ivory will never be acceptable to Central Banks if the swap would threaten the function of the gold. In this chapter I research if there are any macro-economic arguments from a Central Bank's point of view against the idea to substitute a percentage of the gold reserves by ivory?

The classical Gold Standard & Central Banks

Prior to the introduction of the Gold Standard in 1870, which actually only existed for 44 years until the beginning of the First World War, gold, silver or copper coins or by bank issued notes circulated through the economy. The Gold standard, initially in place in the United Kingdom and some of its former colonies, started to create its way as a global standard when Portugal, then still being a major colonial power, adopted it in 1854.²⁰

The attractiveness of accessing London's financial markets attracted many to join the standard. Germany was the first to join the trade in 1871 and before its demise, due to the first World War, all nations but China and some Central American countries had joined.²¹ Attempts to return to the standard had been made in the inter-war period, but none went beyond the Great Depression in the 1930's.²²

In the Gold standard era a nation's money supply and gold were linked, meaning the amount of fiat money in circulation represented the amount of gold in the reserves of central banks. A self-correcting International monetary system was in place. The underlying principle was that a country running a balance of payments surplus would experience an inflow of gold, an increase in money supply, an increase in the domestic price level, a decline in competitiveness and, therefore, a correction in the balance of payments surplus.²³ Other nations linked their currencies to that of a country which did so. As a result of each currency being fixed in terms of gold, exchange rates enabled gold to freely serve as a currency together with coins of other metals and notes.

The two primary monetary policy functions for Central banks under the classical Gold Standard were:

²⁰ World Gold Council - Gold's role as money. (n.d.). Retrieved May 21, 2017, from <http://www.gold.org/about-gold/history-of-gold/money-and-gold>

²¹ Ibid, 20

²² Ibid, 20

²³ Ibid, 20

1. *Maintaining convertibility of fiat currency into gold at the fixed price and defending the exchange rate.*
2. *Speeding up the adjustment process to a balance of payments imbalance, although this was often violated.*²⁴

Point one meant that if a person wanted to redeem a bank's \$10 bill or cash its \$10 check, the bank is obliged to give him a \$10 in gold coin.

The speeding up of the adjustment process was done with the help of the discount rate (the rate at which Central Banks would lend to commercial banks or other financial institutions).²⁵ A rise or fall in the interest rate affected the entire market. A higher interest rate would:

- make the borrowing more expensive and as a result reduce investment spending and domestic demand. In turn this *would put downward pressure on domestic prices, enhancing competitiveness and stimulating exports.*²⁶
- *attract money from abroad, improving the capital account of the balance of payments.*²⁷

A fall would have the reverse effect. Furthermore, Central Banks uncommonly influenced the amount of money in circulation by the purchasing or vending of domestic assets. Because this required deep financial markets it only happened in nations such as the United Kingdom and Germany.²⁸

These final two mechanisms ensured that the economic imbalance was quickly fixed and *the physical transportation of gold from one country to another not needed.*

Why Gold?

Gold is a noble metal, resistant to corrosion and oxidation, but so is platinum, rhodium, palladium, silver, osmium, ruthenium, iridium. So why has gold become the standard?

The rarity of osmium, ruthenium, iridium, and rhodium simply make it unsuitable as a medium of exchange. The commercialization of platinum and palladium only started in the 1900's. Despite being a good store of value, its unequal distribution make it ineligible. South

²⁴ Ibid, 20

²⁵ Ibid, 20

²⁶ Ibid, 20

²⁷ Ibid, 20

²⁸ Ibid, 20

Africa holds 75% of the global platinum production.²⁹ The Russian company, Norilsk Nickel, holds roughly 40% of the world's palladium mine output, and since much is produced as a coproduct or byproduct determining its value is complex. As a result, gold and silver have both been the popular alternative currencies for many centuries.³⁰

For any chemist student it is clear that silver reacts with oxygen to create silver oxide, reducing its value. Gold is more noble and doesn't react with oxygen illustrating its store of value advantage. In short, gold holds no duration risk. Furthermore, its scarcity (growing only at 2% a year³¹) and the fact that it never had a massive industrial use that could spark a short term demand³² makes it a natural hedge to fiat money.³³

Managers of Reserve Banks want to invest in safe assets that help capital preservation, ensure portfolio diversification, adequately mitigate risks as much as possible, and serve as valuable collateral.³⁴ Gold provides this safety. An analysis of asset performance over some the past financial crises', indicates that gold outperforms other high-quality, liquid assets including US Treasuries, Japanese government bonds, German bonds, and UK gilts.³⁵

One of the reasons for this is because gold historically has a very low correlation with most other financial assets.³⁶ In times of economical crisis', assets like real estate and stock prices seem to plunge while gold prices go up.

Finally, gold also benefits from the universal acceptance of the asset. It remains a means of payment that everyone is always prepared to accept.³⁷

Ivory as an alternative next to gold

Ivory is a hard, smooth, yellowish white dentin that forms the main part of the tusks. Its beauty, durability and suitability are what make it so willed by the carvers. The chemical structure between tusks and teeth on any mammalian specie is identical indicating that tusks

²⁹ Wieler, S., & Crumb, J. (2015). Goldmoney Insights - Gold Price Framework Vol. I: Price Model. Goldmoney Insights, Page 6. Retrieved May 25, 2017, from https://www.goldmoney.com/images/media/Files/Insights/Goldmoney_Insights_-_Price_Framework_Vol_1.pdf.

³⁰ Ibid 29. Page 6.

³¹ Gold Investor. Do Something! (2017, February 16). Gold Investor, Page 21. doi:<http://www.gold.org/research/gold-investor/gold-investor-february-2017>

³² Ibid, 29 Page 6

³³ Ibid, 31 Page 21

³⁴ Gold: valuable reserve amid unprecedented policy environment. (2016, November 22). World Gold Council, Page 1. doi:<https://www.gold.org/hi/node/5325>

³⁵ Ibid, 34 Page 7.

³⁶ Ibid, 34 Page 8.

³⁷ Ibid, 34 Page 14.

are simply extremely large teeth projecting beyond the lips.³⁸ It isn't simply found in elephants but presents itself too in mammoths, killer/sperm whales, hippopotami, warthogs, and narwhal's. This ivory however is, because of its smaller size, of little commercial value.³⁹

*Foreigners have been decimating African elephants for generations. "White gold" was one of the primary reasons King Leopold II of Belgium turned Congo into his own personal fief in the late 19th century.*⁴⁰

The values attached to ivory are extremely diverse and range from social, to economic, religious, medical, and aesthetic.⁴¹ While researching in countries where ivory is known to be concentrated, namely, China, Thailand, Vietnam, the Philippines, and the United States, GlobeScan found ivory to be considered the "perfect gift,". This perception is created due to it being "*rare, precious, pure, beautiful, exotic, and importantly, that it confers status to not only the receiver but the giver of the gift*"⁴²⁴³ The specificity of the demand goes even further than this in some countries. A significant number of Chinese (44%) and Filipino (39%) believe it brings good fortune.⁴⁴

In China, the world's largest ivory consumer⁴⁵, ivory plays the identical role of a safety reserve as gold does in central banks. The possession of it illustrates one's wealth. It gives consumers a sense of prestige while equally serving as personal use in the style of decoration,

³⁸ Espinoza, E. O. (1999). CITES, WWF, TRAFFIC - Identification Guide For Ivory and Ivory Substitutes. Page 4. Retrieved May 26, 2017, from <https://cites.org/sites/default/files/eng/resources/pub/E-Ivory-guide.pdf>.

³⁹ Rafferty, J. P. (2011). [1]. Retrieved May 27, 2017, from https://books.google.nl/books?id=m-zX8zBKogAC&pg=PA275&lpg=PA275&dq=John+p.+Rafferty+-+Grazers+commercialvalue&source=bl&ots=3czeThAzRv&sig=KoawTK9I85wPCKAgKL7Cf_L9-fk&hl=nl&sa=X&ved=0OahUKEwiEzuqAjfLUAhWKJVAKHb4hCsgQ6AEIlzAA#v=onepage&q=John%20p.%20Rafferty%20-%20Grazers%20commercial%20value&f=false

⁴⁰ Gettleman, J. (2012, September 03). Elephants Dying in Epic Frenzy as Ivory Fuels Wars and Profits. Retrieved May 29, 2017, from <http://www.nytimes.com/2012/09/04/world/africa/africas-elephants-are-being-slaughtered-in-poaching-frenzy.html>

⁴¹ Gao, Y., & Clark, S. G. (2014). Elephant Ivory Trade in China: Trends and drivers. Elsevier - Biological Conservation, page 27. Retrieved June 7, 2015, from <https://conservationaction.co.za/wp-content/uploads/2014/10/Elephant-ivory-trade-in-China.pdf>

⁴² Strauss, M. (2015, August 12). Who Buys Ivory? You'd Be Surprised. Retrieved June 7, 2017, from <http://news.nationalgeographic.com/2015/08/150812-elephant-ivory-demand-wildlife-trafficking-china-world/>

⁴³ National Geographic & Globescan, Reducing Ivory Demand: An International Study. (2015). 13. Retrieved June 7, 2017, from http://press.nationalgeographic.com/files/2015/09/NGS2015_Final-August-11-RGB.pdf

⁴⁴ Ibid, 42

⁴⁵ Ibid, 12 Page 22. Retrieved May 17, 2017, from <http://www.sciencedirect.com/science/article/pii/S0921800916311181>

collecting or speculating.⁴⁶ The ease with which it can be carved and its absence of splintering paved it for a myriad of uses. In China during the Shang Dynasty (ca. 1600-ca. 1046 BCE) a carving tradition developed.⁴⁷ *The investment value that ivory provides is coveted as “white gold”*.⁴⁸ Furthermore, archeologists have during their diggings several artifacts made from ivory such as chopsticks, spear tips, billiard balls, to name a few.⁴⁹

The above plus the fact that ivory is extremely durable, not easily destroyed or burnt and scarcely affected by immersion⁵⁰ in water make it a natural substance that and I believe stand as a valuable threshold which could allow elephant ivory to serve as a reserve for central banks.

Analyzing the above, Ivory and Gold share many of the same social, economical and physical characteristics:

1. they both represent wealth;
2. they both have no massive industrial use that could spark their demand and value;
3. physically they do not corrode or degrade in time.

Geographically, the majority of the ivory resources are concentrated in a small number of countries, but its low monetary volume in comparison to gold does not make this into a geopolitical risk. It is my judgement that, from the above mentioned points it can be derived that ivory could very well serve as a collateral next to gold.

⁴⁶ Ibid, 41 page 27.

⁴⁷ Walker, J. F. (2010). *Ivory's Ghosts: The White Gold of History and the Fate of Elephants*. Grove/Atlantic, Inc., 2010. Page 42. doi:<https://books.google.nl/books?id=ziguuqOvNE8C&hl=nl>

⁴⁸ Gao, Y., & Clark, S. G. (2014). *Elephant Ivory Trade in China: Trends and drivers*. Elsevier - Biological Conservation, page 6. Retrieved June 7, 2015, from <https://conservationaction.co.za/wp-content/uploads/2014/10/Elephant-ivory-trade-in-China.pdf>

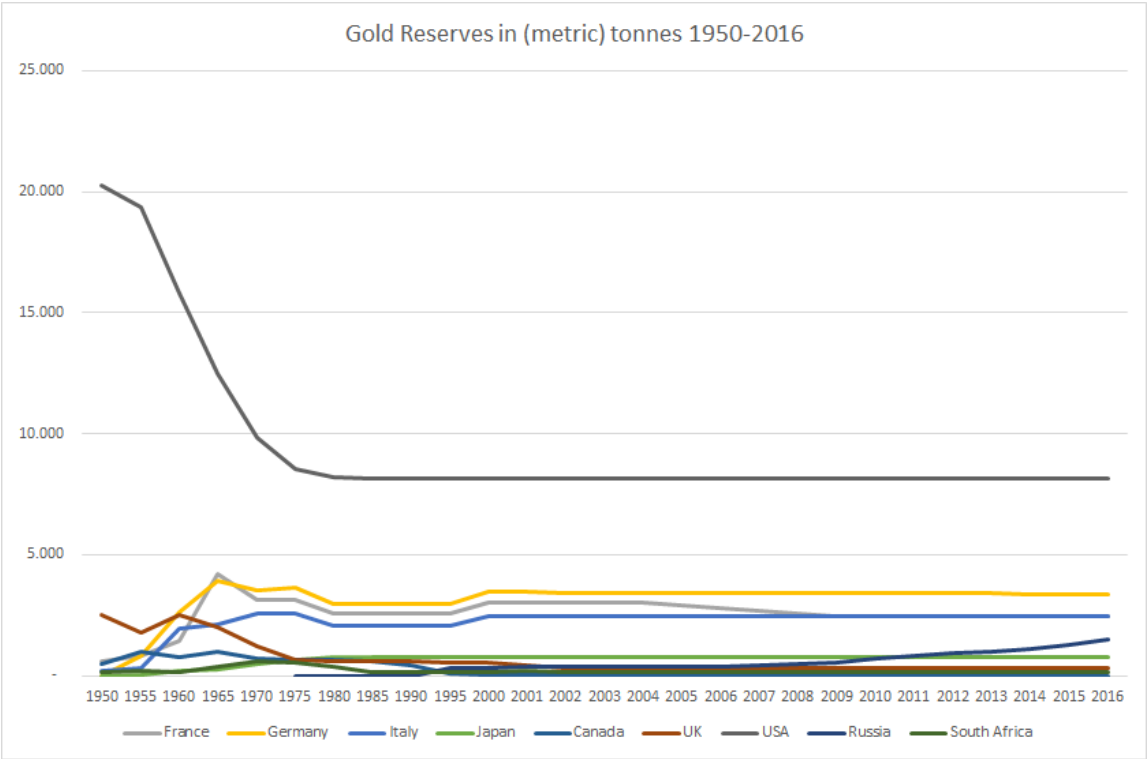
⁴⁹ Rosen, R. J. (2012, September 6). *Chinese demand for ivory is driving conflict in the Democratic Republic of Congo*. Retrieved May 30, 2017, from <https://www.theatlantic.com/business/archive/2012/09/what-is-it-about-an-elephants-tusks-that-make-them-so-valuable/262021/>

⁵⁰ Ibid, 39

The present role of gold for Central Banks

From World War I, the value of fiat currencies is no longer backed by the Gold Standard, but rather in the belief investors have that governments are willing and able to perform their duties. Nevertheless it continues to hold several currency characteristics and is the most traded asset in the world. *The London Bullion Market Association (a wholesale over-the-counter market for the trading of gold and silver) estimates the average daily turnover at \$240bn which is higher than the global daily turnover of any currency pair except for the dollar/euro, dollar/yen, dollar/sterling and dollar/Aussie dollar (Financial Times, 2011).*⁵¹ This indicates gold's competitiveness and the interest of investors in gold assets as a safety net, especially in times where governments implement inflationary policies.⁵²

Despite the fact that currencies are no longer backed by the gold standard for over a century, the management of gold and its price remains in the sphere of influence of Central Banks. Through a series of four Central Bank Gold Agreements, (agreed in 1999, 2004, 2009 & 2014) emphasis was placed on restricting gold sales by banks with the incentive to hold a relatively constant price of gold. A sharp rise in the price could cause doubts about the value of fiat money, impacting the US dollar as it holds the position of a global reserve currency.

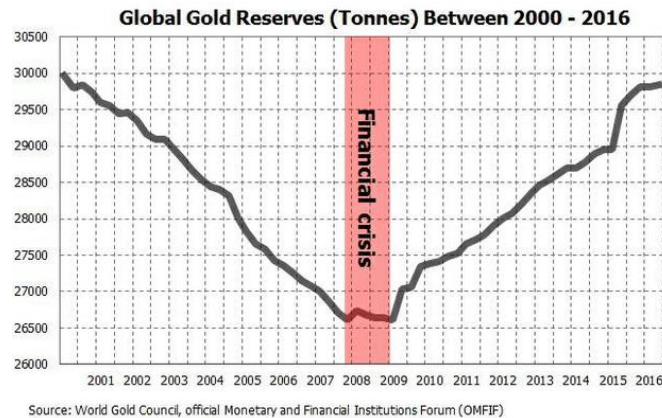


⁵¹ Baur, D. G. (2016). Central Banks and Gold. University of Western Australia, Page 2. Retrieved June 15, 2017, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2326606

⁵² Ibid, 31 Page 21.

The volume and value of the Central Bank's Gold Reserves

The Global Gold Reserves table below shows that as trust in world economic growth was growing, World Gold Reserves have been on the decline. Central Banks engaged in other ways to create collateral. While some might expect that in the 2008 financial crises countries would resort using their buffer and sell their Gold Reserves in order to stabilize their economies, the contrary actually happened. In general, Central Banks held on to their reserves and after the



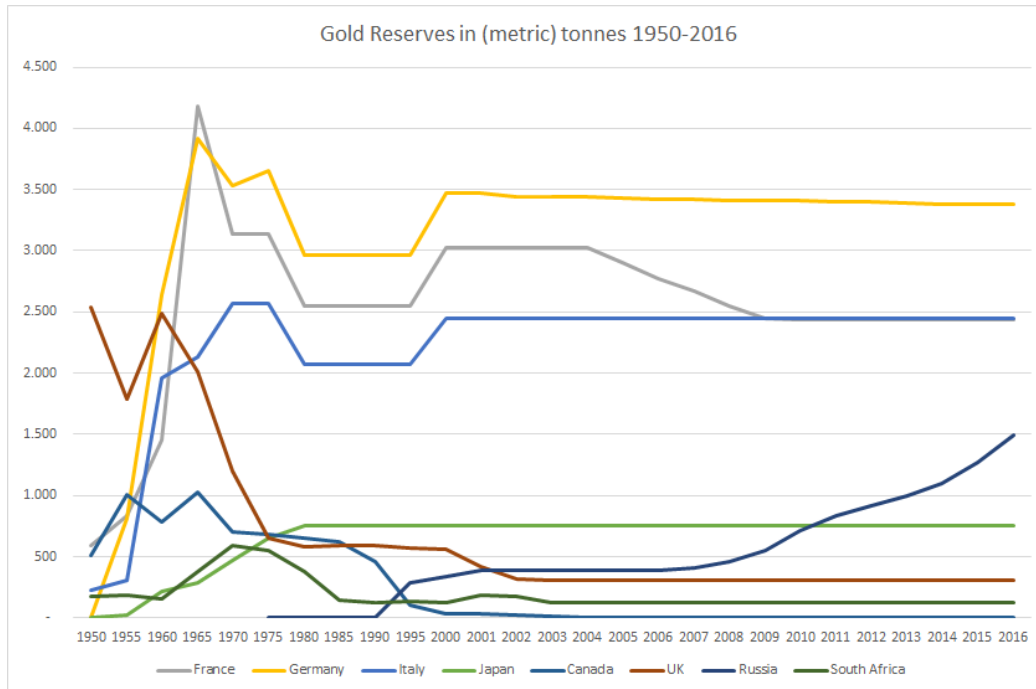
crises many started buying gold again.

The first thing any insolvent private person is forced to do is hand over the family silver. Striking to read from the chart above is that where a reserve should provide liquidity assistance to banks during times of crisis or limited access to liquidity, only Sweden swapped its gold to raise cash during the financial crisis in 2008.

Taking a closer look at the graph below, shows that the role of gold as a part of the foreign reserves, providing for diversification and a buffer between differs between nations.

⁵³ World Gold Council - Reserves statistics. (2017, July 5). Retrieved May 25, 2017, from <http://www.gold.org/data/gold-reserves>

⁵⁴ Green, T. (1999). Central Bank Gold Reserves - An historical perspective since 1845. World Gold Council, (23), Pages 18-19. Retrieved June 15, 2017, from <http://famguardian.org/Subjects/MoneyBanking/FederalReserve/CentralBankGoldReserves.pdf>



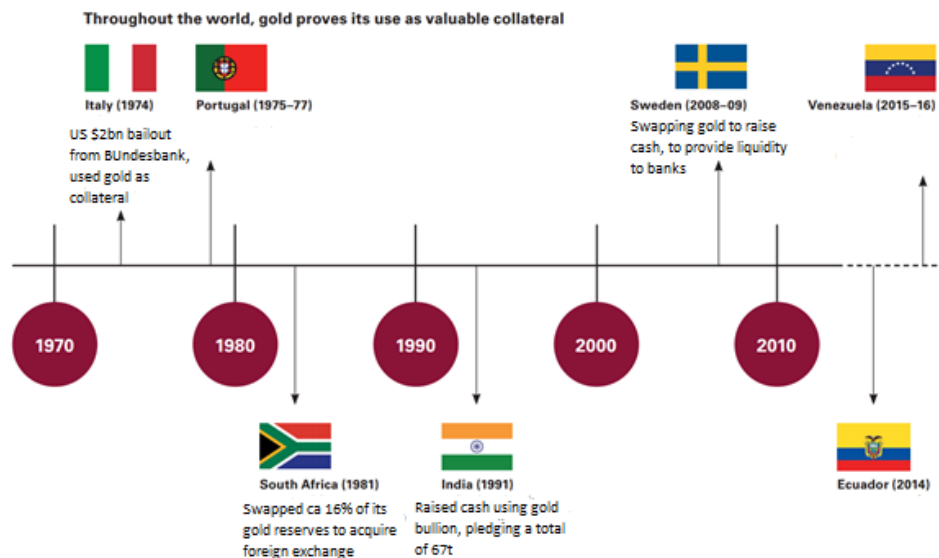
Graphs data derived from ⁵⁵56

After a period of trade, between 1950 and 2000, most countries shown here have been relatively stable about their Gold reserves. But some countries have taken their own course. Canada has reduced her gold reserves to almost zero, while Russia has been increasing its reserves, indicating that there is not 1 way of doing business.

The chart below illustrates the latest large sales or uses of gold as valuable collateral up to the year 2016.

⁵⁵ World Gold Council - Reserves statistics. (2017, July 5). Retrieved May 25, 2017, from <http://www.gold.org/data/gold-reserves>

⁵⁶ Ibid, 54



Italy

In 1974 Italy used about 25% of its gold reserves. The gold was used to overcome an economic and currency crisis. The Deutsche Bundesbank negotiated financial help which took the form of a dollar-gold collateral transaction. The Bundesbank transferred US\$ 2 billion to the Banca d'Italia which, in return, set aside about 522 tonnes from its gold holdings stored at the Federal Reserve Bank in New York for the Bundesbank. At the same time it received a gold claim against the Bundesbank for the same amount. ([2A96 Deutsche Bundesbank Files, 1974, Bank of England Archives](#)).

The gold collateral was valued at \$149 per ounce based on a formula of 80% of the average London gold fixing price during July and August 1974.⁵⁷

South Africa

In 1981, South Africa swapped ca 16% of its gold reserves to acquire foreign exchange. A *swap is a simultaneous sale and purchase of an amount of gold at two different dates*.⁵⁸ A swap was considered to avoid weakening the gold price, as the gold does not really come onto the market, but by fixing the purchase rate at the time of sale. South Africa also hoped to make a

⁵⁷ Manly, R. (2016, September 23). From Gold Trains to Gold Loans - Banca d'Italia's Mammoth Gold Reserves. Retrieved May 15, 2017, from <https://www.bullionstar.com/blogs/ronan-manly/banca-ditalia-gold-reserves-trains-loans/>

⁵⁸ Weston, R. (1983). Gold (Routledge Revivals): A World Survey. Page 222. Retrieved May 22, 2017, from <https://books.google.nl/books?id=fuz6URNjyCgC&pg=PA222&lpg=PA222&dq=south+african+gold+swap+1981&source=bl&ots=Be6KzTw3nq&sig=0uziePSgzSkg6AVbLZtTmGp08A&hl=nl&sa=X&ved=0ahUKewiR0su0vPLTAhVGlxoKHdRuCEUQ6AEIzAA#v=onepage&q=south%20african%20gold%20swap%201981&f=false>

considerable gain on the transaction, speculating that at the time of the gold purchase date actual prices would be higher than the fixed purchase rate at the time of sale.

India

India faced a grave economic crisis in 1990. It experienced high fiscal and current account deficits, external borrowing to finance the deficits, rising debt service obligations, rising inflation and inadequate exchange rate adjustment. The balance of payments deficit came so far that the central bank refused new credit and foreign exchange reserves were reduced. The government couldn't even afford three weeks' worth of imports.

In a recovery attempt, the Indian government pledged a total of 67t, about 19% of its gold reserves. This was airlifted to the International Monetary Fund as collateral security. Twenty tonnes (20t) were sold to the Union Bank of Switzerland for a total of \$200 million. Another 47t were shipped to the Bank of England to raise \$405 million.⁵⁹

Sweden

Sweden had found that the gold percentage represented too large of a proportion of its total assets. As a result the Riksbank sold 15 tonnes of gold to raise cash during the financial crisis in 2008. The cash made available was then reinvested in interest-bearing assets in the currency reserve.⁶⁰

Three observations emerge from the above.

1. Central Banks prefer a mix of assets as collateral and while gold has proven its value, it also has its limitations
2. Even in more extreme situations, countries only use a minor part of their gold reserve;
3. The use of gold as a collateral often does not involve any physical movement of the gold.

All three are interesting facts in the context of this thesis. The first one shows that gold is not the only asset Central Banks holds, and thus there might be an opportunity for ivory. The second observation makes reduces the risk and makes it more easily acceptable for Central Banks to swap a small portion of their gold for ivory. The latter is especially of interest, since it means that trading of gold between Central Banks can be done largely without the need for

⁵⁹ Arunabha Ghosh (2006) Pathways Through Financial Crisis: India. *Global Governance: A Review of Multilateralism and International Organizations*: October 2006, Vol. 12, No. 4, pp. 413-429

⁶⁰ Annual Report. (2009). Sveriges Riksbank, 38. Retrieved May 22, 2017, from http://www.riksbank.se/Upload/Dokument_riksbank/Kat_publicerat/Rapporter/2010/ar2009_en.pdf

physical transport of the gold or ivory, thus fencing the Central Banks' market from the rest of the world.

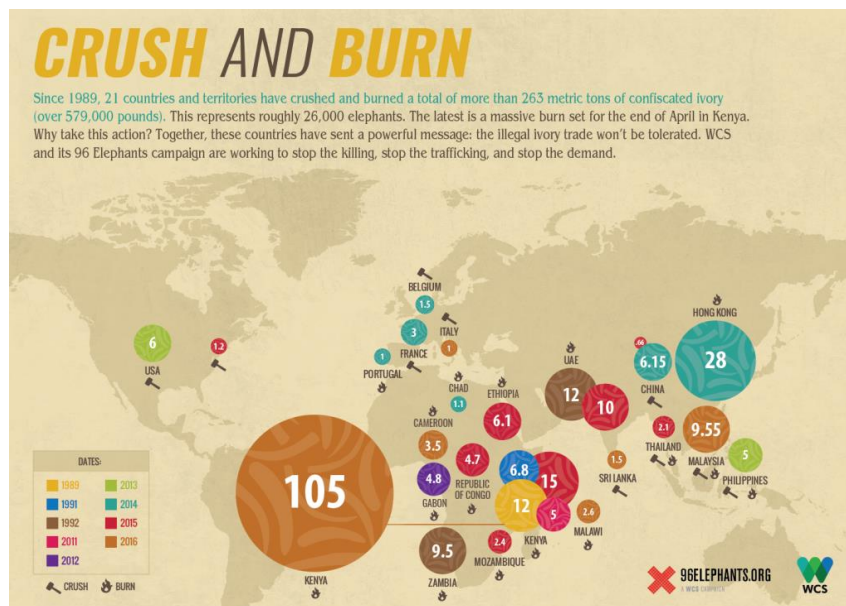
The volume and approximate value of the ivory stock

The volume of the ivory stockpiles

In order to put the alternative under investigation in perspective it is important to know the approximate value of Ivory as compared to Gold Reserves.

Governments who are parties to CITES are obliged under the Convention to report on the inventory of government-held ivory stockpiles and those privately held stocks. This obligation was laid upon the members to CITES at the Conference of the Parties meeting in 2016. On the 28th of February of each year the numbers are reported to the CITES secretariat.⁶¹ Written requests to CITES to supply data on the registered government and privately held stockpiles remained without a response. Internet searches did also not lead to reliable sources. Due to lack of data, I resorted to a combination of different sources to come to a best estimate.

In an article on the largest Ivory burning in Kenya in 2016, Rachel Nuwer states in National Geographic that the 105 tonnes burned by Kenya represented only 5% of the government stockpiles held across Africa. Contacting Mrs. Nuwer to understand the source of this percentage, she mentioned the figure to have been cited by Mr. Richard Leakey in his speech prior to the 2016 ivory burn in Kenya. No other information could be found to confirm the percentage. Assuming this figure is approximately correct, the total government stockpiles in Africa add up to $20 * 105 = 2100$ tonnes.⁶²



⁶¹ Elephant ivory stocks: marking, inventories and security. (2017). CITES & UNEP, Page 1. Retrieved May 25, 2017, from <https://cites.org/sites/default/files/notif/E-Notif-2017-008.pdf>

⁶² Ibid, 2

In the image above, retrieved from a report by the Wildlife Conservation Society (WCS) the amount of ivory crushed and burned since 1989 is indicated.⁶³

The government-stockpiles include "seized ivory" which is illicit ivory confiscated by the government as well as ivory found within the government's jurisdiction and has been obtained due to the natural death of an elephant.

The total value of the ivory stockpiles

In order to determine a value of the (Government) Ivory Stockpiles, in a situation where trade is illegal, and thus no legal market exists, I looked at the 3 values:

1. The value of the legal ivory sale in 1999 and 2008
2. The value in the present sales of pré-CITES ban ivory
3. China's legal and black market prices

The value of the legal ivory sales in 1999 and 2008

In 1999, under pressure of ivory producing countries, CITES allowed the first sale of ivory since its total ban in 1989. Fifty tonnes of ivory – which represented 5,446 tusks - to Japan for a total of USD 5 million or an average price of 100 USD/kg.

The second legal sale of ivory was completed in 2008 and done through four auctions under the supervision of the CITES Secretariat. A total of 101.4 tonnes of ivory was sold to authorized Chinese and Japanese traders for a total of 15,482,810 USD at an average price of 152.6 USD/kg. The sale gained a 50% higher price compared to the 1999 sale, 9 years earlier.⁶⁴

Assuming an equal nominal value increase of 52.6 USD in the period 2008-2017, the present value would come to 205 USD/kg. Assuming a 50% increase the 2017 market value is estimated at 229 USD/kg. For the sake of argument we'll assume the average of the two and set the 2017 market value at 217 USD/kg.

The total value of 2,100 tonnes of Government stockpiles then represent a total value of 2100 tonnes * 217 USD/kg = 0.456 Billion USD.

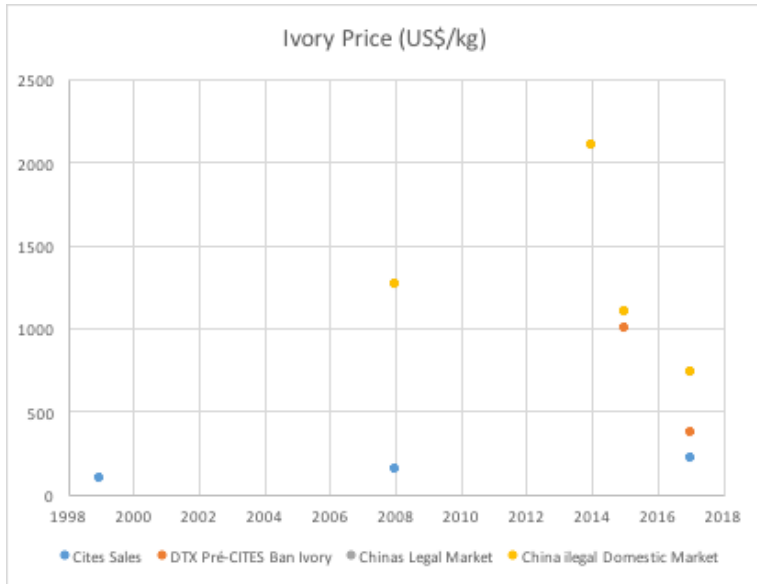
The value in the present sales of pré-CITES ban ivory

DTX Far East is based in Hong Kong and is a leading trader in the legal "pre-convention" ivory industry. Pre-convention ivory refers to ivory which was in circulation prior to the 1975 establishment of CITES. DTX buys and sell CITES certified ivory to Asian markets which are CITES

⁶³ Ibid, 1

⁶⁴ CITES. (2008, November 7). Press Release - Ivory auctions raise 15 million USD for elephant conservation. Retrieved May 25, 2017, from https://cites.org/eng/news/pr/2008/081107_ivory.shtml

party members. This is *old European (colonial) ivory that has been legally obtained pre-convention*.⁶⁵



Consulting their office in the Netherlands gave the following information. At present the demand for certified ivory was surprisingly low and sold between 280 and 450 USD/kg. At the height of its demand in 2015, DTX would sell certified ivory at 1,000 USD/kg. This latter price corresponds with the numbers presented in a TRAFFIC report by Victoria Mundy (2014) which studied the re-export of pre-convention ivory.⁶⁶

Averaging the current price range of 280-450 USD/Kg at \$365 per kilo, the current value of Government stockpiles is estimated at 2,100 tonnes * 365 USD/kg = 0.756 Billion USD.

China's legal domestic market and black market prices

China is being criticized for making good business from the legally bought ivory stock putting the price up. Having bought the ivory in 2008 for 152.6 USD/kg, legal tusks, weighing between 5-10 kg, were sold at 1,582 USD/kg, slightly higher than the illegal tusks that were sold at 1,266 USD/kg.⁶⁷

Save The Elephants analyzed the average wholesale price of illegal, good quality, raw small to average-sized (1-5 kg) tusks in China. They recorded a downward trend since 2014. Early 2014 the wholesale price was 2,100 USD/kg. By late 2015 it had fallen by nearly 50% to 1,100 USD/Kg. In February 2017 this has been registered at 730 USD/kg.

⁶⁵ <https://www.dtx-trading.hk/mission>

⁶⁶ Mundy, V. (2014). The Re-export of Pre-Convention/Antique Ivory from the European Union. European Commission, 11. Retrieved May 22, 2017, from http://ec.europa.eu/environment/cites/pdf/Ivory%20report_Nov%202014.pdf

⁶⁷ Vigne, L., & Martin, E. (2017). Decline in the Legal Ivory Trade in China in Anticipation of a Ban. Save The Elephants, Page 9. Retrieved May 25, 2017, from http://www.ifaw.org/sites/default/files/default/2017_ChinalvoryBan_Report.pdf

Using a conservative China's domestic market price of 700 USD/kg to estimate the present value of Government stockpiles, the total value of the Government stockpiles can be estimated at 2,100 tonnes x 700 USD/kg = 1.47 Billion USD.

The total value of Government stockpiled ivory is estimated to be somewhere between 0.456 and 1.47 Billion USD. The 2017 prices in the above scatter diagram represent the estimated prices.

The value of ivory compared to the Gold Reserves

The thesis is based on the proposal that Central Banks will be allowed to swap part of their gold reserves for ivory, thus freeing up cash to be deployed for wildlife conservation and anti-poaching measures. It will be clear that Central Banks will only engage in such a deal if it is not conflicting with their primary role: creating financial stability.

The current Global Gold Reserves are estimated at approx. 33,000 tonnes⁶⁸. At a current gold price of 40,000 USD/kg, the total Gold Reserves represent a value of 1,320 Billion USD. The total Government ivory stockpiles represent an estimated value ranging from 0.456 Billion to 1.47 Billion USD. That is only 0.03% to 0.11% of the Global Gold reserves. For a country as the Netherlands, with a present Gold Reserve of 612.5 tonnes, worth 24.5 Billion USD, the total value of the Government hold ivory stockpiles would represent only 1.9% to 6.0% of its Gold Reserves.⁶⁹

Comparing the value of the total Government Ivory Stockpiles to the Gold stockpiles, it can be concluded that swapping some of the gold for ivory would not pose any threat to the financial system and confidence in the currency.

Risks for Central Banks to engage in ivory stock

To test the proposal under research, I consulted Mr. Berndsen, a high level representative of the Market Infrastructures Policy Department at the Dutch Central Bank about my proposal to create a restricted ivory market and possible objections from a monetary point of view. It must be stated that his views are personal and do not reflect the position of the Dutch Central Bank. The interview must be seen as a "sparring session" with the sole purpose of testing the feasibility from a Central Bank's point of view.

⁶⁸ World Gold Council - Latest World Official Gold Reserves. (2017, July 7th). Retrieved May 26, 2017, from <http://www.gold.org/research/latest-world-official-gold-reserves>

⁶⁹ World Gold Council - Reserves and Statistics. (n.d.). Retrieved May 26, 2017, from <http://www.gold.org/data#reserves-statistics>

Berndsen stressed that every Central Bank has a mandate which is first of all to maintain price stability, properly functioning payment systems and robust and reliable financial institutions. Inflation is aimed at being kept below but close enough to 2%. Only gold and other financial assets are prescribed in the mandate as reserves. At present, Ivory is not one of them.

According to Berndsen, the ivory values as described above are insignificant to cause a problem to financial stability, especially if it would be done within a pool of countries. As a comparison he mentioned that the European Union is currently injecting 60 billion euros a month into its monetary system alone.⁷⁰ The total value of ivory stockpiles derived from my calculations represent the following percentages of the monthly value injected by the European central banks altogether: *0.456B USD = 0.76%*; *0.756B USD = 1.26%*; *1.47 B USD = 2.45%*.

While from a financial point of view there would not be any major threads, Berndsen emphasized that the Dutch Central Bank could not do this on its own. The Dutch Central Bank works together with authorities as the ministry of Finance and the Authority for the Financial Markets to maintain financial stability in the country.⁷¹ The proposal would therefore need a global level of perception and consensus from all political levels and institutions such as the [International Monetary Fund](#) and the [Financial Stability Board](#). The mandate would need to be interpreted a little broader and include ivory as a reserve.

A risk could be that the acceptance of this proposal by the Central Bank could spark other noble and sympathetic initiatives and draw the Central Bank into all kinds of other tasks that are not its primary tasks. Further fear was put on reputation. An example was given when in the summer of 1998 the Dutch Central bank purchased the last unfinished painting from Piet Mondriaan as a gift to the Dutch people. *Victory Boogie Woogie (USD 40 m)* was at that time the 5th most expensive painting in the world and now is on display in the Museum of The Hague.⁷² The purchase raised several eyebrows and resulted in many to critique the move by the central bank. Different sections of the public found it an expensive purchase.

The threshold here would be the non-reactive natural substance of ivory which make it a credible reserve. Where the beauty and function of this painting lies in the eye of the beholder, the swap of gold for ivory could have a positive effect on the reputation risk of Central Banks around the world. Engaging in Social Corporate Responsibility and supporting a sustainable world tourism industry by rescuing the elephants, while saving a centuries old asset

⁷⁰ European Central Bank - Press Conference. (2017, April 27). Retrieved May 20, 2017, from <https://www.ecb.europa.eu/press/pressconf/2017/html/ecb.is170427.en.html>

⁷¹ De Nederlandsche Bank - How does DNB promote financial stability? (n.d.). Retrieved June 5, 2017, from <https://www.dnb.nl/en/about-dnb/duties/financial-stability/how-does-dnb-promote-fs/index.jsp#>

⁷² Janssen, R. (2016, December 7). Een schilderij voor een gulden. Retrieved June 1, 2017, from <https://www.groene.nl/artikel/een-schilderij-voor-een-gulden>

from burning to ashes, might be sellable to a larger audience in many countries. For the Dutch Central Bank such a swap could for instance fall under its *Sustainable and Social Corporate Responsibility* protocol. By making the purpose of the swap clear, no false signal is sent to the public that gold is no longer valued which could cause inflation to the dollar.

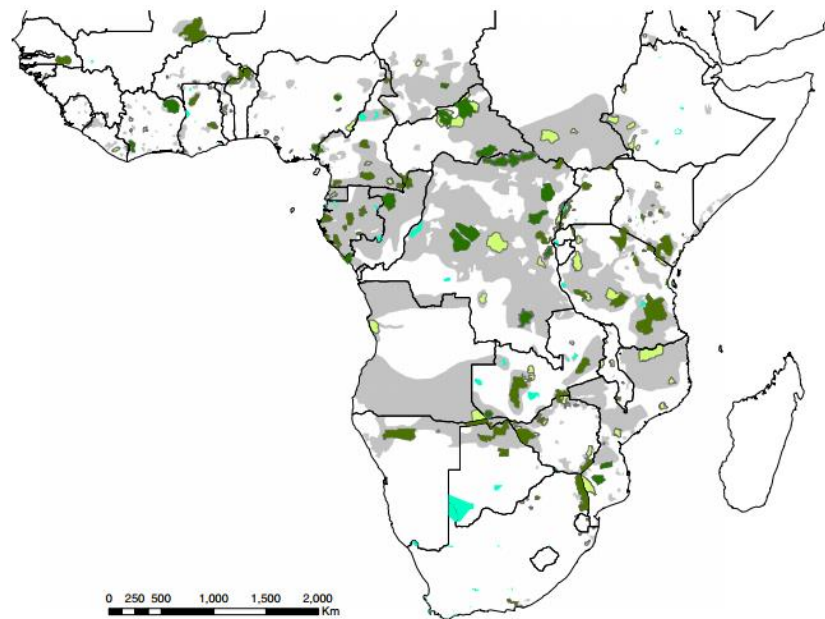
The final remark Mr. Berndsen had was a practical one. Given the physical properties of ivory it would make it a credible reserve the idea to swap ivory for gold was understandable. But he proposed separating the two transactions, as the swapping and selling of gold would be a lengthy process. He suggested that the ivory could be purchased by the Central Bank using extra money by selling government bonds and this money is directly invested in conservation.

This remark underlines that the proposed idea of creating a restricted market for ivory among Central Banks that can allow countries to convert ivory for cash for conservation, while maintaining a full international trade ban, is a valid option to be studied. Whether it is by swapping ivory for gold or by buying ivory directly.

The value of the ivory stockpiles compared to anti-poaching spendings worldwide

While the total estimated value of ivory stockpiles is low compared to the global gold reserves, and with no principal objections from a Central Bank's point of view, it is now interesting to compare the value of the stockpiles to the anti-poaching budgets. If the total value is low, as compared to anti-poaching investments, it would not make a lot of sense to try to push for the proposal. But if the value is significant, then the ivory producing countries and ban supporters could hopefully meet in the middle.

The cost of elephant poaching and anti-poaching measures



Protected areas and elephant distribution in Africa. Combined range of the two African elephant species (grey), with International Union for Conservation of Nature Category II-VI protected areas⁴⁶ that harbour elephants (dark green indicating $n = 110$ that have tourist visitor data and light green indicating those without visitor data) and protected areas with no elephants for which we have tourist data (blue, $n = 54$).

Robin Naidoo et al (2016) researched the lost economic benefits due to the poaching of elephants, grouping both species together. They build on the already available global and continent scale models of tourist visits to Protected Areas (PAs) and quantify the marginal contribution of elephant densities to the expected number of visits to a PA. They analyzed 164 PAs within 25 elephant range-state countries (these 25 countries collectively contain >90% of Africa's elephants).⁷³ The image above indicates the PAs researched.

In their report they find that "the lost economic benefits that elephants could deliver to African countries via tourism" to equvalate to US\$ 25.5 million annually. This is composed of; direct economic losses from reduced PA visitation due to elephant poaching run to a mean of US\$ 9.1 million (USD 2016; 95% Bayesian credible interval (CI) US\$ 4.86–US\$ 15.7 million), with an additional mean loss of US\$ 16.4 million (95% CI \$8.56– \$28.9 million) in indirect and induced spending.

Naidoo et al (2016) also estimated the costs for stopping the elephant numbers from declining. They adopted a regression model used in the 80's to calculate the investment needed to ensure no increase or decrease of elephant numbers in 2016. Analyzing 58 PAs containing

⁷³ Naidoo, R. et al. Estimating economic losses to tourism in Africa from the illegal killing of elephants. *Nat. Commun.* 7, 13379 Page 2 doi: 10.1038/ncomms13379 (2016)

over 1,000 elephants each, it was found that an annual investment of USD 26.5 million would be enough for stopping the elephant numbers from declining. From this total the mostly forested PAs of central Africa would receive USD 16.9 million, as poaching here has been the heaviest.⁷⁴

If the above figure is correct, the total value of Government ivory stockpiles, between USD 0.456B and USD 1.47B is a significant amount when it comes to financing anti-poaching measurements and activities. USD 26.5 million put against the value of the ivory stock can lead to significant years of financing conservation, which as illustrated above bolsters other areas of national economies. To illustrate: 456M USD/26.5M USD/yr = 17 years; 760M USD/26.5M USD/yr = 28.5 years ; 1.47B USD/ 26.5M USD/yr = 55 years.

African Action Plan

The figures presented by Naidoo seem low compared to the "international noise" about elephant poaching. In 2010 an African Action Plan was been signed and approved as a consensus document by all 35 African Elephant Range States at the 15th meeting of the Conference of the Parties in Doha, 2010. *The document was facilitated by the AfESG and the CITES Secretariat in response to a Decision of the CITES Parties to develop such a plan and an African Elephant Fund with an indicative budget of US\$ 97 million to implement the eight priority objectives aimed at securing, and restoring where possible, sustainable elephant populations throughout their present and potential range in Africa.*⁷⁵

This plan was sadly never carried out, but could have easily been financed fully through the Government ivory stockpiles.

Hopefully the SADC Law Enforcement and Anti-Poaching Strategy agreement designed in 2015 between SADC members does come to completion. The overall objective *is to significantly reduce the level of poaching and illegal trade in wildlife fauna and flora and enhance law enforcement capacity in the SADC Region by 2021.*⁷⁶

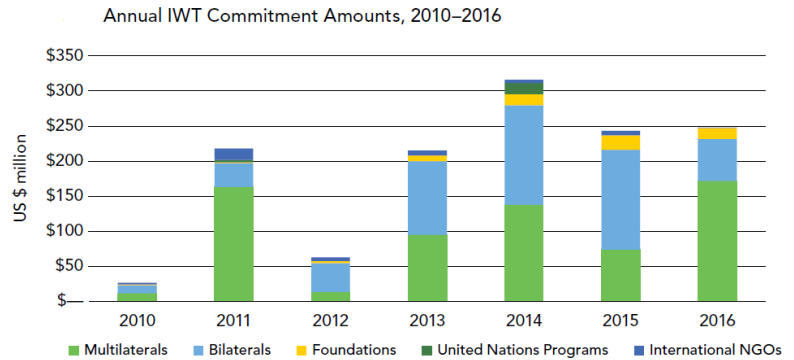
⁷⁴ Ibid, 73 Page 4

⁷⁵ Law Enforcement and Anti-Poaching Strategy 2016 – 2021. (2015). Southern African Development Community, Page 12. Retrieved June 2, 2017, from http://www.gaborone.diplo.de/contentblob/4715602/Daten/6225495/sadc_leap_final.pdf

⁷⁶ Ibid, 75 Page 12.

**Total Wildlife Trafficking
Investment**

In order to further establish its significance, the value of Government stockpiles is compared to the total donations to Government and NGOs combating International Wildlife Trade in Africa and Asia. The first document tracking donations was delivered in 2016 and is a product from The World Bank. It was developed upon request by the members of CITES after the 16th meeting of



Donors Included in the Portfolio Analysis (Bilateral Agencies Grouped by Country)

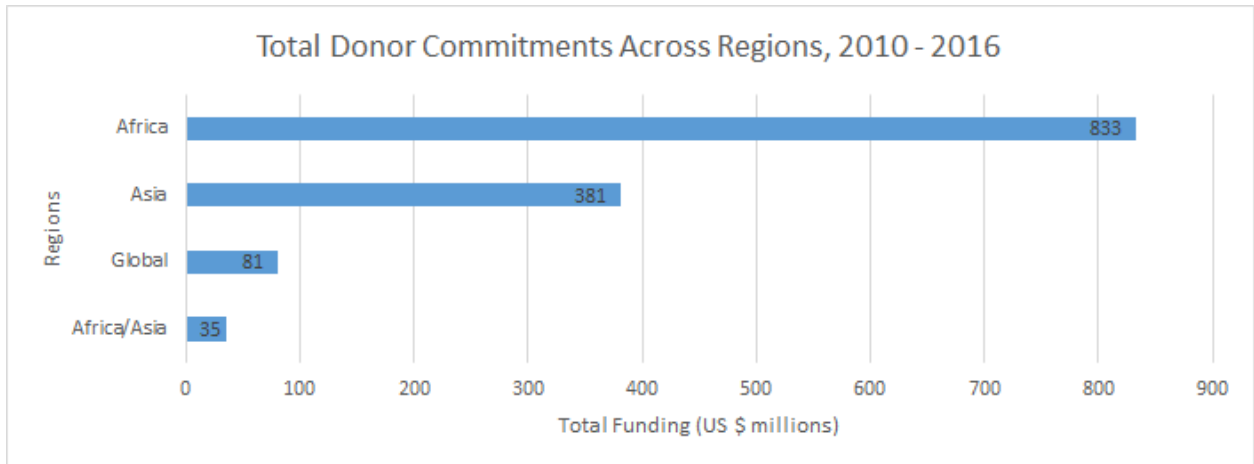
Bilaterals	Multilaterals	Foundations
1 Canada	1 Asian Development Bank	1 Vulcan Philanthropy
2 France	2 European Commission	2 Wildcat Foundation
3 Germany (BMZ/BMUB)	3 Global Environment Facility	3 Oak Foundation
4 Japan	4 World Bank Group	
5 Netherlands (Economic/Foreign Affairs)		
6 Norway (Foreign Affairs/Climate Change & ENV)		
7 Spain		
8 Sweden		
9 United Kingdom		
10 United States (USAID/USDOS/USFWS)		
	United Nations Programs	Internationals NGO's
	1 United Nations Development Program	1 Fauna & Flora International
	2 United Nations Environment Program	2 WildAid
		Wildlife Conservation Society
		World Wildlife Fund
		Zoological Society of London
Additional Implementing Partners		
1 Convention on International Trade in Endangered Species of Wild Fauna & Flora		
2 International Union for Conservation of Nature		
3 United Nations Office on Drugs and Crime		
4 International Fund for Animal Welfare		
5 TRAFFIC International		

the Conference of the Parties held in Bangkok in 2013.⁷⁷

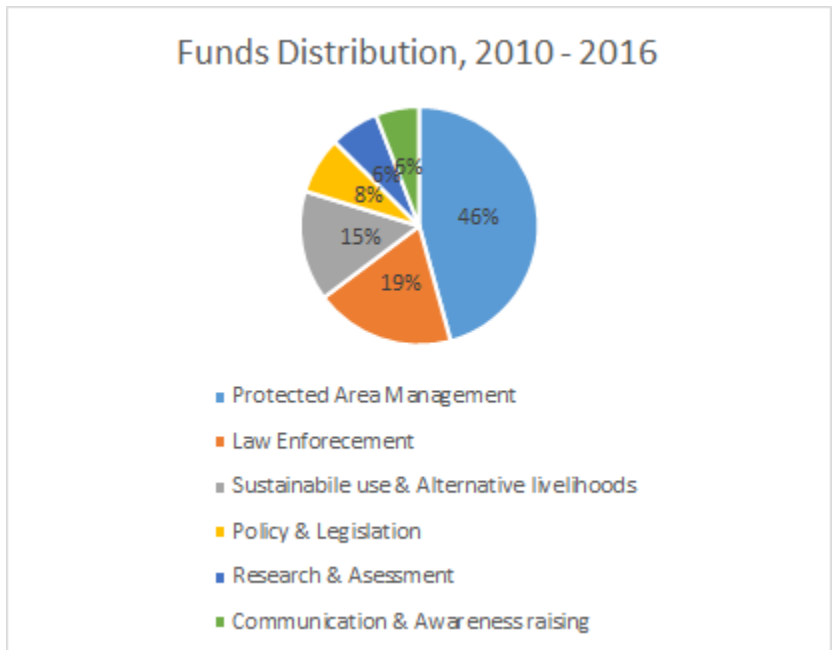
According to the report, in the period between 2010 and June 2016, \$1.3 billion had been committed by 24 international donors. Or an average of USD 200M/year. Below you find an image and graph indicating where the donations are coming from and the average annual commitments.⁷⁸

⁷⁷ Analysis of International Funding to Tackle Illegal Wildlife Trade. (2016). World Bank Group. Retrieved June 1, 2017, from <http://documents.worldbank.org/curated/en/695451479221164739/pdf/110267-WP-Illegal-Wildlife-Trade-OUO-9.pdf>

⁷⁸ Ibid, 77 Page 9



From these funds it is estimated that approximately 46% (US\$ 609 million) goes to fund supported protected area management to help prevent poaching, 19% (USD 253 million) towards law enforcement including intelligence-led operations and transnational coordination, 15% (US\$ 199 million) towards sustainable use and alternative livelihoods, 8% (US\$ 103 million) towards policy and legislation, 6% (US\$ 88 million) towards research and assessment, and 6% (US\$ 79 million) towards communication and awareness raising.⁷⁹



The report concludes the total amounts going to anti-poaching, but does not specify the amount going to the conservation of elephants solely. It can also be questioned if elephant anti-poaching measures will be effective, if not combined with other anti-Wildlife Trade measures. For this research it is also not interesting to have a further breakdown into species. From the

⁷⁹ Ibid. 77 Page 6

data it can be read that the estimated value of Government ivory stockpiles USD 0.456B-1.47B is equivalent to 55% to 113% of the total donor investment in anti-Wildlife trafficking in Africa over a period of 6.5 years. The significance of the stockpiles for the African continent is herewith undisputedly proven.

The effect of a ban in combination with a restricted legal market

The current strategy held within CITES is that of a ban on trade to reverse the over-exploitation of African Elephants. This is done in combination with attempts to reduce demand and counter perceptions that ivory is a fashionable and exotic status symbol worldwide, particularly in the two nations where the demand is the largest, China and the United States.⁸⁰⁸¹

Nations a party to the CITES treaty have been instructed to seize the ivory. No common consensus has been agreed as what to do with this after. Not all nations within CITES and against trade are burning their stockpiles. Ivory producing nations, such as Botswana, refuse to do this for two reasons; (1) *burning ivory would demonstrate [to communities] that [elephants have] no value* and (2) *they see it as a wasteful loss of a lucrative natural resource.*⁸²



As the selling of ivory is illegal, Botswana has in turn used the ivory for artworks and educational tools.⁸³ Others simply store it in rooms which don't provide much of a shield from the illegal circuit as can be seen in the image above. The unsecure storage conditions have, according to recordings from the Environmental Investigation Agency, lead to 13 thefts from

⁸⁰ Bale, R. (2015, September 25). U.S.-China Deal to Ban Ivory Trade Is Good News for Elephants. Retrieved June 3, 2017, from <http://news.nationalgeographic.com/2015/09/150925-ivory-elephants-us-china-obama-xi-poaching/>

⁸¹ Ibid, 80

⁸² Ibid, 2

⁸³ Ibid, 2

government held stockpiles since 2000.⁸⁴ The total amounts stolen are not available, but the data available from the Environmental Investigation Agency indicates a total of 124 tonnes. Although one (1) dubious major theft took place in China, totalling 110 tonnes, ten (10) thefts have taken place on the African continent totaling 7.8 tonnes. The data of two thefts are unavailable.⁸⁵ From these 10 thefts, 6 have occurred in countries which would favour a legal market, possibly indicating the unwillingness from these nations to invest in the security of ivory.

Part of the seized ivory doesn't even reach the Government stockpiles and disappears from the police stations. Seizing, secure storage, crushing and effective burning of ivory is costly for Governments. The total ban on ivory trade turns it from an asset into a liability for its once legal owners. Creating a restricted legal market between Central Banks could bring another dynamic into the playing field. Governments, Central Banks and Finance Ministers will now become keen to take the seized ivory out of the hands of easy to corrupt police officials and ensure the ivory is stored in well protected storage rooms as to if it were gold, thus effectively keeping it from seeping back into the illegal market. See the image below.



⁸⁴ Environmental Investigation Agency - Illegal trade seizures: Elephant ivory Mapping the crimes. (n.d.). Retrieved June 15, 2017, from <https://eia-international.org/illegal-trade-seizures-ivory>

⁸⁵ Ibid, 84

A Future Legal Carving Market

The properties of ivory seem to make it a credible reserve asset to swap with a portion of gold from central bank reserves. They both represent wealth, have had no massive industrial use that could spark their demand and value, and are extremely durable.

The only difference between Ivory and Gold as a reserve asset would be that there is a legal gold market outside the Central Banks, while, as far as this proposal is concerned, there would not be a legal market for ivory, at least for now.

When CITES banned the ivory trade, the idea "was sold" with the prospects of a future legal ivory market. Governments started to stockpile ivory in the hope be able to cash in later. The promise of a future legal market was never realized, except for two one-off sales in 1999 and 2008. However, the illegal ivory trade is said to piggyback ride on the sale of CITES certified ivory using false certificates and although there is no proof of large scale piggyback riding,⁸⁶ it is exactly this discussion that holds the pro- and con- camp in a deadlock.

While I have already argued that a restricted ivory market between Central Banks alone is a viable alternative, it would become even more interesting for Central Banks, if there is a future outlook for a legal carving and artefacts market outside the Central Bank system, as even CITES originally envisioned and proposed.

A prerequisite for such a legal market would be to have the possibility to determine almost instantly whether ivory is legal or illegal, even on market places and remote border controls. CITES used paper certificates that have shown to be vulnerable to falsification. Future new technology will permit much more effective and sensitive detection methods. Currently the University of Leicester is developing a portable DNA tester that can be operated by unskilled operators in the field.⁸⁷

Cloud computing together with the possibility to instantly DNA test at market places and remote border controls, now makes it interesting to establish a central DNA register of the living elephants. With drone technology, elephant owners, state and private, can take DNA samples and register their elephants in a wildlife register. By creating a central register, seized ivory and other wildlife artefacts can be returned to its legal owners at any moment in time, whether it is seized from poachers in the park, found at a border control, in a carver's

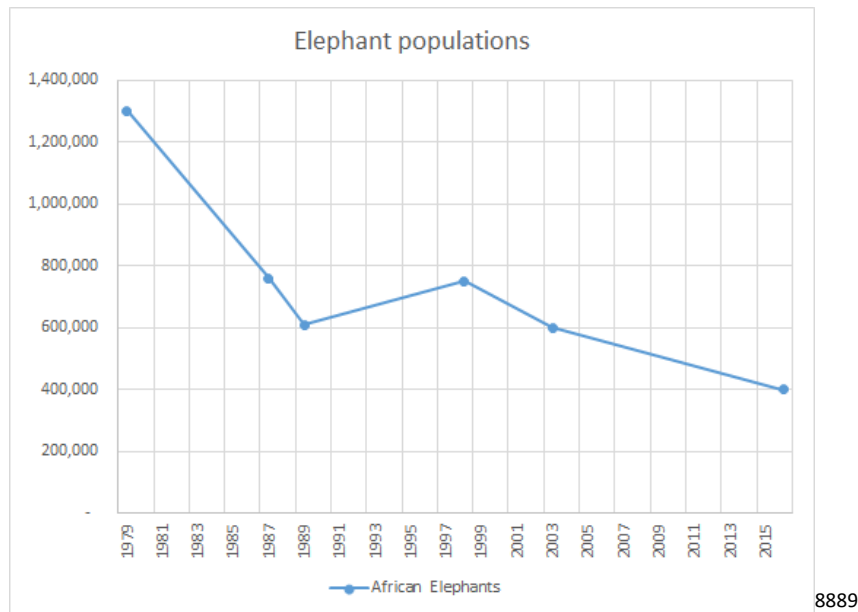
⁸⁶ A Statement from the MIKE and ETIS Technical Advisory Group On Recent Claims That The CITES-Approved Ivory Sales In 2008 Caused A Spike In Poaching Levels. (2016). CITES, 3. Retrieved May 25, 2017, from <https://cites.org/sites/default/files/eng/cop/17/InfDocs/E-CoP17-Inf-42.pdf>.

⁸⁷ Wildlife Crime Challenge - Prize Winner Profiles. (n.d.). Wildlife Crime Technology - Prize Winner Profiles, 25. Retrieved June 22, 2017, from https://wildlifecrimetech.org/templates/Prize_Winner_Profiles.pdf.

warehouse or even on a street market or in a private house 50 years after the killing of the elephant.

Before a legal market can be created there are several hurdles to take. DNA technology should pass beyond its development phase and become widely available to government law enforcement agencies worldwide. Legal issues as *who owns migrating elephants and wildlife*, will have to be solved. But it is my belief that the creation of a legal ivory market could in the end be the biggest threat for the illegal market.

Conclusions



The (African) elephant is under threat. Although the ivory ban has certainly slowed down the poaching of Elephants, the numbers remain in the decline. From 2003 to 2016 the numbers have further declined by 30%. The parties to CITES are divided over the total ivory ban, especially since it denies the ivory producing countries from a valuable resource, argued essential in wildlife conservation.

This research sought the feasibility of an alternative: maintaining the total ban on ivory trade, while creating a legal ivory market restricted to Central Banks alone. The ivory would serve as collateral next to their gold reserves. Central Banks could either buy the ivory or be allowed to swap it with part of their Gold reserves, thus freeing up millions which can be applied to anti-poaching law enforcement and wildlife conservation of the African Elephant.

The primary function of Central Banks is to ensure price stability, properly functioning payment systems and robust and reliable financial institutions. The social, economical and physical characteristics of ivory strongly overlap with that of gold, indicating that ivory could be accepted as a reserve. The current values of government held stockpiles range between 0.456 billion USD and 1.47 billion USD, the equivalent to 0.03%-0.11% of the World Central Banks' Gold Reserves, and therefore a swap or purchase hereof should not pose a threat to the financial institution.

⁸⁸ African Elephants (*Loxodonta africana* and *L. cyclotis*) Fact Sheet, 2008. c2008-2016. San Diego (CA): San Diego Zoo Global; Retrieved May 15, from http://ielc.libguides.com/sdzc/factsheets/african_elephant.

⁸⁹ Key Milestones in Elephant Conservation. (n.d.). Retrieved June 29, 2017, from <http://www.greatelephantcensus.com/background-on-conservation/>

The added value for conservation initiatives is significant. Nandoo et al calculated an annual sum needed to ensure elephant numbers do not increase or decrease at 26.5 million USD. The current values of government held stockpiles would allow for the financing of 17 – 55 years of conservation.

CITES instructs party nations to seize illegal ivory, yet no common consensus has been agreed on what to do with this ivory hereafter. One nation, Kenya, has taken a lead role in the destruction of Government stockpiles, but most nations are unwilling to burn their stockpiles. Instead ivory is stored in meagerly secured storage rooms, which provide little shield against the illegal circuit. This proposal provides an incentive for governments to register their elephant populations, track illegally poached ivory and take into a very secure Central Bank storage storage, out of the hands of (often corrupt) officials.

The supporters of the total ban have a major argument that allowing legal trade will spark illegal trade as the difference between the two cannot be easily detected and CITES certificates easily falsified. While it is not a necessary element of the proposal under research, I have looked into the present and future technological developments and if in the future a open, non-restrictive, legal ivory market could be a possibility.

The University of Leicester is developing a portable DNA tester that can be operated by unskilled operators in the field. This, in combination with cloud computing and other technological advancements, would make the creation of an online DNA register of living elephants and ivory stockpiles a possibility to make (false) certificates a thing of the past. A DNA register would stimulate Governments, and private game farmers, to claim ownership of the ivory while still on the living elephants and seized ivory can be returned to its legal owners at any moment in time, whether it is seized at a remote border post or in 50 years' time on a artefact market. This would make illegal poached ivory into a liability for its owners, while legal ivory could gain in value and the regulation of ivory will be strongly enhanced.

Recommendations

While there remain many issues to be solved before this idea can be turned into reality, this research has found no principal objections to the proposal. It encourages any organization committed to the cause of the elephant or nations a party to CITES to look beyond their differences, engage in an open discussion, and conduct further research on the proposal as a means to break the deadlock and serve the conservation of the most iconic land mammal.

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