



**GLOBAL  
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AGAINST TRANSNATIONAL  
ORGANIZED CRIME



# AFRICAN ELEPHANT IVORY



Daniel Stiles

AUGUST 2021

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## ABOUT THE AUTHOR

Daniel Stiles has been an independent illegal wildlife trade investigator since 1999, specializing in market studies of endangered live wildlife and their derivative products. His research has provided key price data on ivory and other products that has been used by UN agencies, the World Bank, the International Union for Conservation of Nature (IUCN) and TRAFFIC. Prior to that, he worked in academia and the UN in the field of past and present natural resource use and management. He has written or contributed to reports by the UN Environment Programme, the UN Office on Drugs and Crime, IUCN, TRAFFIC and a number of conservation NGOs.

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## BLACK MARKET BRIEFS

This is the first in a series of briefs by the Global Initiative Against Transnational Organized Crime (GI-TOC) that examines market dynamics and prices of selected live and derivative products in illegal wildlife trade (IWT).<sup>1</sup> These briefs are intended to present a snapshot of current product supply factors in East and southern Africa, demand levels in destination countries, the impact on species population numbers and overall conservation status.

These black market briefs will also consider how externalities such as statutory changes, economic conditions or the COVID-19 pandemic might influence market dynamics and prices. Market dynamics include description of the product, supply sources, means of acquisition, identification of the perpetrators, quantities traded, transport methods and routes, and changes in these elements over time.

The value of price studies is that knowledge of current producer, exporter and importer wholesale selling prices, when compared to historical prices, provides insights on

levels of demand, which can predict direction of trends in illegal off-take. Retail prices of processed wildlife products are much less useful, as there are too many variables to control that influence price, including quality, unknown quantity (as in medicinal products), location sold (street or online price is much lower for the identical product than in a luxury boutique or auction house), socio-economic status of the buyer and so on.

Price data for IWT products is difficult to collect accurately because of the covert nature of the market and the supply chains that feed it. There is no complete data for all points in the trade chain, from supply origin through the transport stages (which usually involve different middlemen) to the final destination country, processing point and distribution to consumers. Product supply can also derive from multiple types of sources (for example, wild or captive bred, field poached or legal stockpile leakage) that also influence the producer price at the beginning of the trade chain, which has knock-on effects at different points along the trade chain.<sup>2</sup>

# ACRONYMS AND ABBREVIATIONS

CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
ETIS	Elephant Trade Information System
GI-TOC	Global Initiative Against Transnational Organized Crime
IUCN	International Union for Conservation of Nature
IWT	Illegal wildlife trade
MIKE	Monitoring the Illegal Killing of Elephants programme
PIKE	Proportion of Illegally Killed Elephants
UNEP	UN Environment Programme
UNODC	UN Office on Drugs and Crime
WWF	Worldwide Fund for Nature



## OVERVIEW

**T**he COVID-19 pandemic has had a devastating impact on wildlife conservation due to the collapse in overseas tourism and hunting, which are important funding sources for national protected areas and community/private conservancies and game parks. Funding for anti-poaching efforts and basic operating costs, including staff salaries, has been slashed, creating opportunities for poachers as patrolling and other security measures decrease.<sup>3</sup>

Despite the reduced anti-poaching effort, however, elephant poaching appears to have dropped even more in 2020 than in 2019, when the Proportion of Illegally Killed Elephants (PIKE) fell to a continent-wide average of about 0.30, the lowest level since the Monitoring the Illegal Killing of Elephants (MIKE) programme began reporting in 2003.<sup>4</sup>

The reduced poaching seems to be the result of the dismembering through arrests and prosecutions of a large number of transnational organized criminal networks involved in ivory poaching and trafficking in East and southern Africa between 2014 and 2020. The estimated number of elephants poached fell from over 30 000 in 2011 to barely 11 000 in 2018.<sup>5</sup> The figures for 2019 and 2020 are not out yet, but they will in all probability be below 10 000 in each year based on modelling of poaching data.

The reduced ivory production from poaching appears to have stimulated the release of stockpiled ivory, as seizures increased in 2019, particularly of shipments weighing over 500 kilograms. China (7.48 tonnes) and Vietnam (9.12 tonnes) saw the two largest single ivory seizures on record ever in 2019.

▲  
Elephant poaching numbers have been lower in recent years in most parts of Africa.  
© Daniel Stiles

*COVID-19 likely checked the ability of wildlife traffickers to smuggle their products and of law enforcement to detect them.*

Reported ivory seizures decreased significantly in 2020, according to a study carried out by C4ADS, a US nonprofit that analyzes transnational security issues. The COVID-19 pandemic likely checked both the ability of wildlife traffickers to smuggle their products internationally and of law enforcement to detect them.<sup>6</sup>

## **Black market raw ivory prices rise**

After precipitous declines in raw ivory prices from late 2014 to mid-2017, as ivory demand moved away from investment back to consumer items, there has been a surprising resurgence of wholesale price in China, from approximately US\$750/kilogram in early 2017 to almost double that in late 2020.<sup>7</sup> A less drastic price rise was also observed in Vietnam, with the price of ivory hitting US\$689/kilogram in 2020 compared to an average of US\$629/kilogram in 2018.<sup>8</sup> Why this is occurring is not immediately clear, although it may be because imports were restricted in 2020 as a result of the decrease in air travel during COVID-19 lockdown periods, which reduced supply.<sup>9</sup>

### **Key points**

- Elephant poaching rate hits lowest level since 2003, when systematic records began.
- Raw ivory prices far below their peak in 2014, but rising again.
- The total weight of 500+ kilogram ivory seizures in 2019 highest since the peak of 2013, but plummet in 2020 due to COVID-19 restrictions.
- Chinese interest in ivory as an investment wanes.
- Breakup of transnational organized criminal networks involved in ivory poaching and trafficking in East and southern Africa lead to shift to West and central Africa.
- Stockpile ivory released into the market as fall in poaching reduces supply.



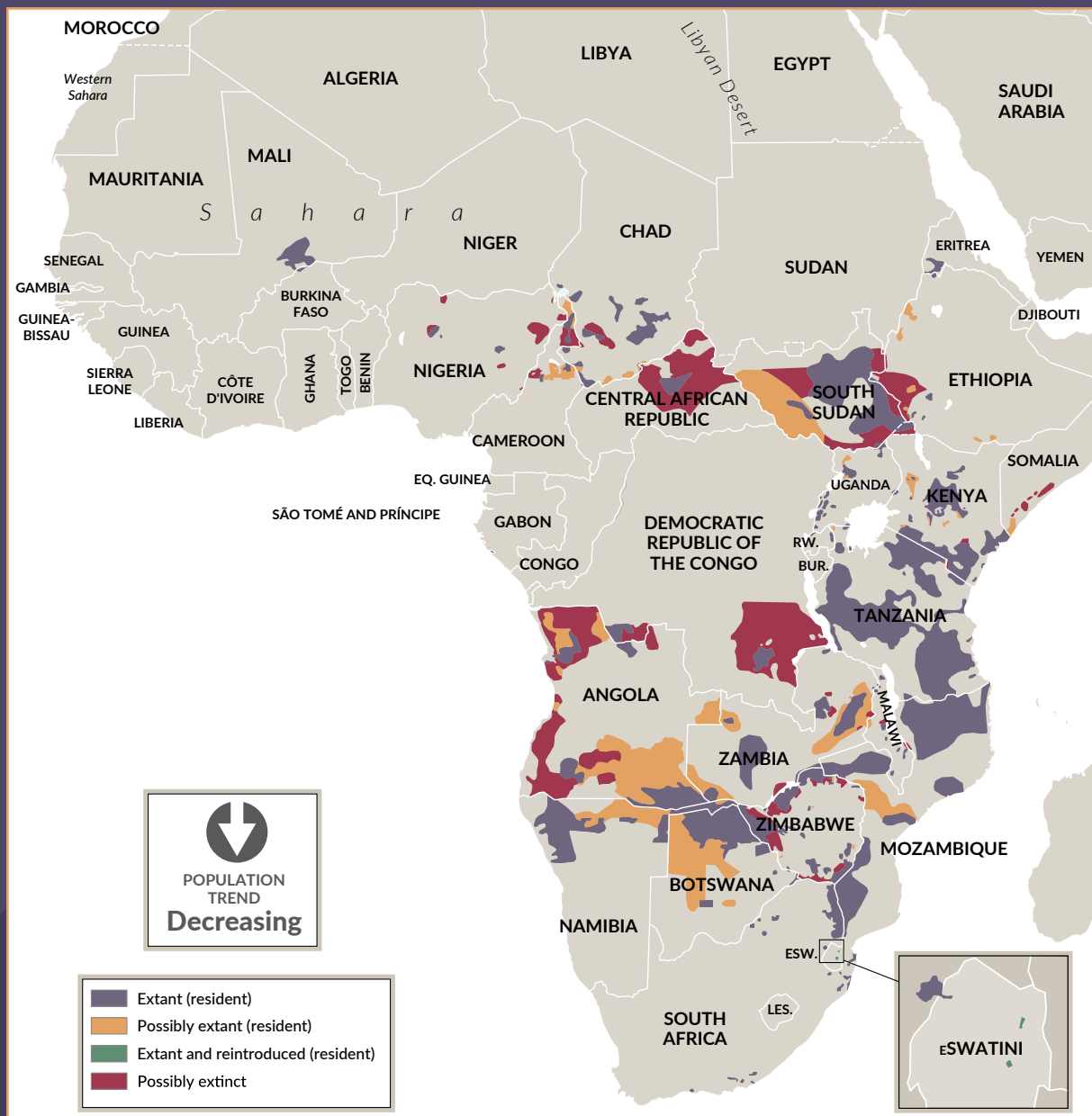


## MARKET SUPPLY

**E**lephants are found in 37 range states in sub-Saharan Africa. There are two species of elephants, the savanna elephant (*Loxodonta africana*), which is categorized as 'endangered' on the International Union for Conservation of Nature (IUCN) Red List,<sup>10</sup> and the forest elephant (*Loxodonta cyclotis*), which is categorized as 'critically endangered'.<sup>11</sup> The two species will be considered as one population in terms of ivory supply, consistent with all previous reports on elephant poaching and ivory trafficking, although the two species do have different range territories, as shown in Figures 1 and 2.

▲ Since about 2016, it appears that stockpiled ivory is increasingly becoming a major source of raw ivory in illicit markets. © Daniel Stiles





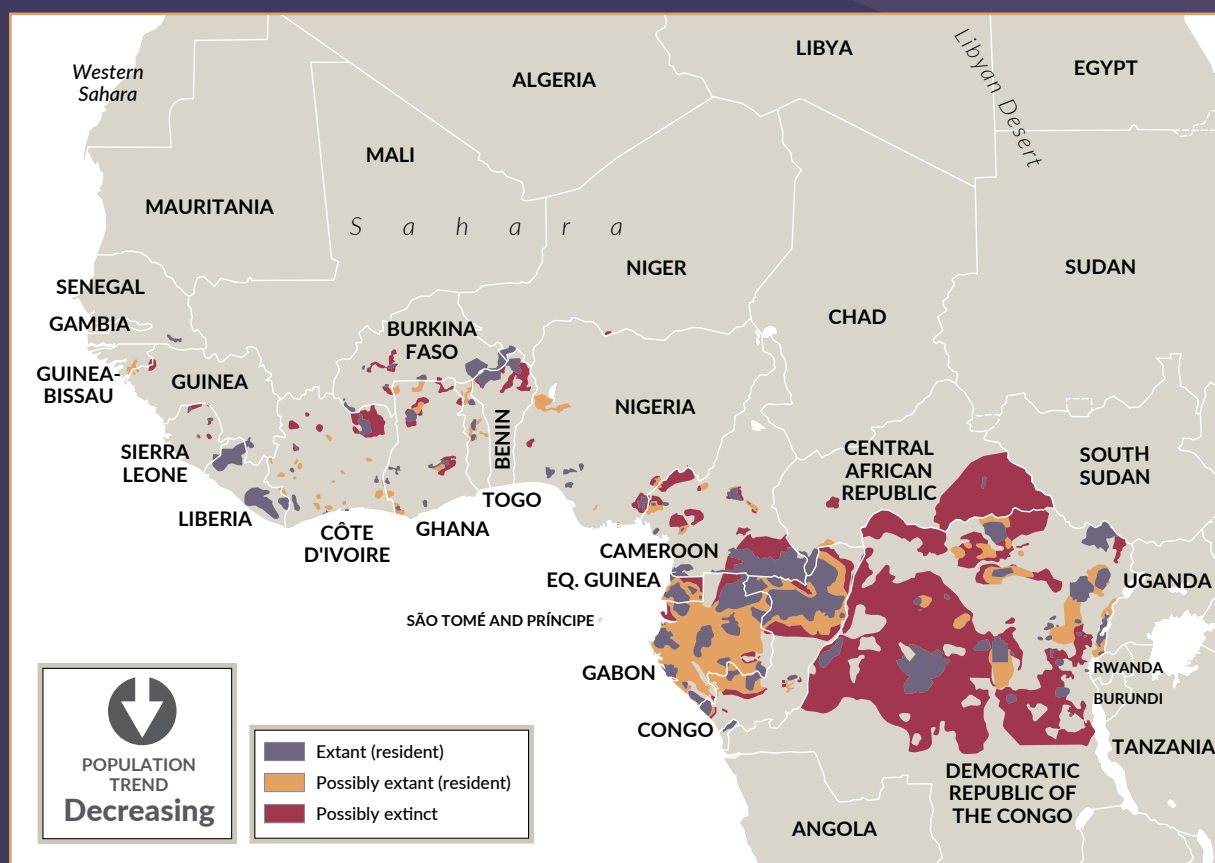
**FIGURE 1** Savanna elephant distribution.

SOURCE: IUCN Red List, 2021





Wild elephants are the main ivory supply source. © Daniel Stiles



**FIGURE 2** Forest elephant distribution.  
SOURCE: IUCN Red List, 2021

Both elephant species are listed in Appendix I of CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora), which prohibits commercial trade in ivory, except for the populations of Botswana, Namibia, South Africa and Zimbabwe, which are included in Appendix II subject to an annotation limiting product sales. The IUCN African Elephant Database reported in 2016 that there were an estimated  $415\,428 \pm 20\,111$  elephants in the 62% of the total range that has been systematically surveyed in the previous 10 years (i.e. 2006–2015). In the 38% of the range that has not been systematically surveyed there may be an additional 117 127 to 135 384 elephants.<sup>12</sup>

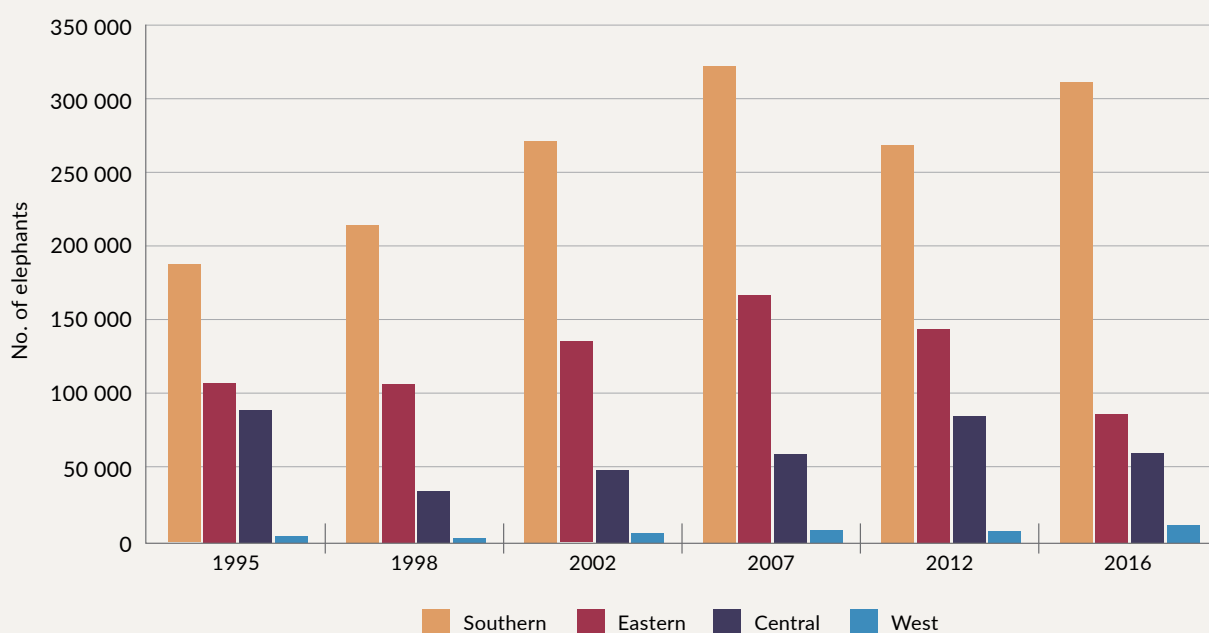
The minimum number, therefore, was closer to 512 000 elephants in 2016. This estimate differs considerably from the number published in nearly all NGO and media reports – invariably 415 000 – because they fail to include the 38% of range number.

As will be shown below, the overall number of elephants illegally killed in Africa has been dropping since 2016, based on statistical modelling, and it is likely that there are more elephants in 2021 than there were in 2016.<sup>13</sup> Therefore, the IUCN Red List's 2020 assessment update that *Loxodonta africana* populations are decreasing will most likely be proved incorrect.

## Location, number of elephants and potential supply of ivory to market

Elephant numbers are closely correlated with available range. Elephants are most numerous in southern Africa and least in West Africa, where human population density is highest. Figure 3

shows that since at least 1995 the southern Africa subregion has held by far the most elephants, followed by eastern, central and West Africa, in that order.

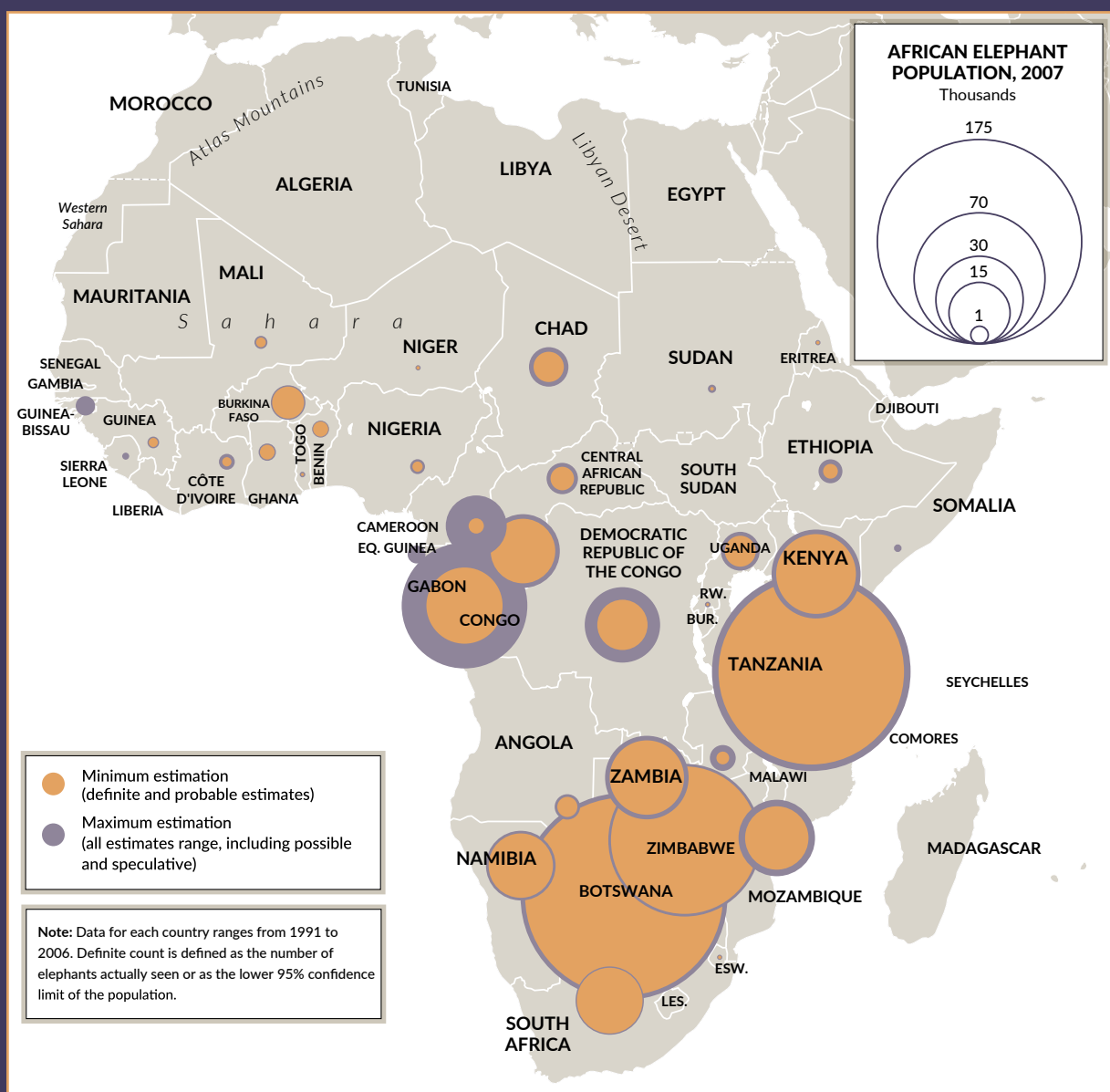


**FIGURE 3** Subregional African elephant population estimated numbers, 1995–2016.

SOURCE: IUCN African elephant status reports, <http://africanelephantdatabase.org>

The highest proportion of population loss from 2007 was in eastern Africa, while parts of southern Africa also lost significant numbers (Figure 3). The figures for central Africa are somewhat misleading, as new areas were surveyed for the first time for the 2016 report, adding 18 000 elephants.

The trend of population growth upward from 1995 was shattered after 2007 by a severe outbreak of poaching, mainly in East and southern Africa. Figure 4 shows where the elephant population concentrations were in 2007, just before the poaching onslaught began.



**FIGURE 4** African elephant population by country, 2007.

SOURCE: UNEP, CITES, IUCN and TRAFFIC, *Elephants in the Dust: The African Elephant Crisis*, UNEP and GRID-Arendal, 2013, [https://gridarendal-website-live.s3.amazonaws.com/production/documents/s\\_document/60/original/GRIDPublication.pdf?1483646235](https://gridarendal-website-live.s3.amazonaws.com/production/documents/s_document/60/original/GRIDPublication.pdf?1483646235); IUCN/SSC African elephant status report, 2007.



## Ivory supply source and quantity to market

The MIKE programme and the Elephant Trade Information System (ETIS) were created under CITES in 1997. MIKE was established to estimate rates of elephant poaching, while ETIS was set up to record ivory seizures reported by credible sources and analyze the data to identify ivory-trafficking problem countries. Together, they provide a relatively clear picture of trends in ivory supply to the black market. To estimate quantities reaching consumers, however, a few assumptions need to be made about average tusk weights and how much is exported, seized and stockpiled.

The MIKE programme consists of 69 monitoring sites in 32 countries in Africa, most of them protected areas containing in total about 50% of the entire African elephant population. From data provided by the field sites, the analysis team based at the UN Environment Programme (UNEP) headquarters in Nairobi determines the PIKE, which is

calculated as the number of illegally killed elephants found by field surveys, divided by the total number of elephant carcasses seen, aggregated by year for each site. The higher the PIKE score, the higher the degree of poaching.<sup>14</sup>

The CITES Secretariat has stated that PIKE levels above 0.5 indicate that elephant populations are very likely to be in net decline, as the illegal annual off-take is higher than the number of elephants born annually. The use of the 0.5 PIKE 'threshold' should be treated with some caution, however, and it is under review.<sup>15</sup>

The locations of varying rates of illegal killing and of the number and weights of ivory seizures can shed light on where the main supply sources are and which countries are the principal consumer demand hotspots. Seizures in transit countries can also offer valuable information on the transport routes through which illegal ivory moves.

### Poaching rates

Figure 5 shows that in 2008, for the first time since MIKE began reporting PIKE scores in 2003, the continental PIKE average exceeded 0.5. PIKE levels peaked in 2011 and subsequently declined, although they remained high until 2018. Elephant poaching was at unsustainable levels: at the peak of the poaching, between 2010 and 2016, it is estimated that Africa was losing 15 000 to 30 000 elephants a year, possibly as high as 40 000 in some years.<sup>16</sup>

Even though PIKE levels were lower in southern Africa than in the other regions for the respective years, more elephants were poached in that sub-region than in the others between 2010 and 2018 due to the fact that so many more elephants are resident there. The UN Office on Drugs and Crime (UNODC) estimated that in the period 2010–2018, poaching exterminated over 71 000 elephants in southern Africa, 58 000 in eastern Africa and approximately 27 800 in central Africa (Figure 6).<sup>17</sup> These should be considered minimum numbers, as other studies using different methods have produced much higher numbers. Different assumptions

for population growth and mortality rates, poaching rates and so on that are selected for plugging into the models produce different results.

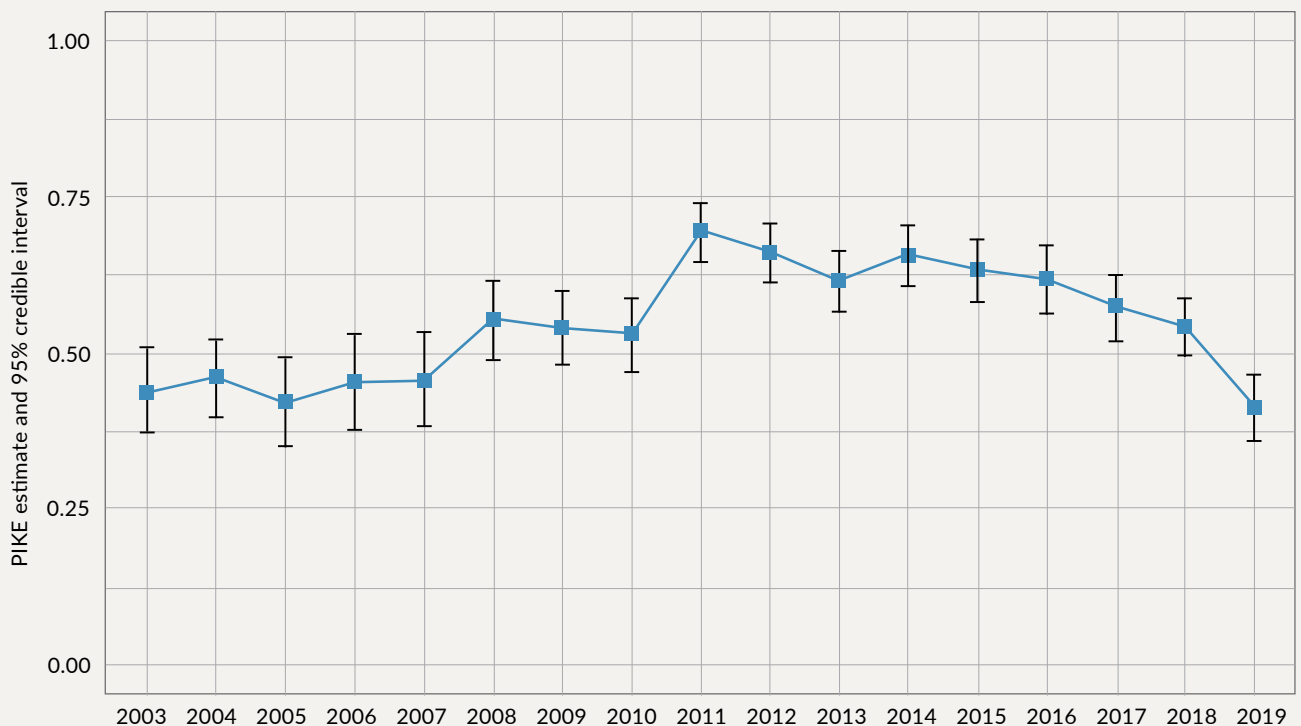
The total of over 156 800 dead elephants would have produced approximately 1 411 200 kilograms of ivory (or almost 1 500 tonnes), assuming an average combined tusk weight of 9 kilograms per elephant over the nine years. Tusk weights vary considerably depending on the age and sex of the elephant and have been falling in mean weight as a result of poaching pressure.<sup>18</sup>

However, the transnational organized criminal networks that were operating in East Africa and parts of southern Africa during the peak poaching years of 2010 to 2018 have largely been broken up. Feisal Mohammed Ali, Yang 'Ivory Queen' Fenglan, Boniface 'Shetani' Malyango, Mateso 'Chupi' Kasian, several members of the Shuidong network, the Sheikhs gang and the principal leaders of the Kromah network were all arrested between 2014 and 2020, resulting in several convictions and continuing court cases.<sup>19</sup>

There currently appears to be no large-scale organized criminal networks operating in East or southern Africa that are capable of sourcing the quantities of poached ivory that were seen between 2009 and 2016. Elements of the Shuidong network have moved from Mozambique to Nigeria, while smaller Vietnamese operations previously collaborating with the Kromah network in Uganda are now dispersed in Mozambique, central Africa and West Africa.<sup>20</sup>

However, the convictions of Feisal Mohammed Ali and 'Shetani' Malyango were overturned on appeal, and 'Chupi' Kasian was given a fine of US\$215 for attempting to sell poached tusks.<sup>21</sup> Furthermore, transnational organized crime networks have shown themselves to be very resilient, capable of regrouping and reorganizing after law enforcement or other setbacks,<sup>22</sup> so if long-term solutions to poaching and IWT are not found, another round of the 'poaching crisis' may be just over the horizon.

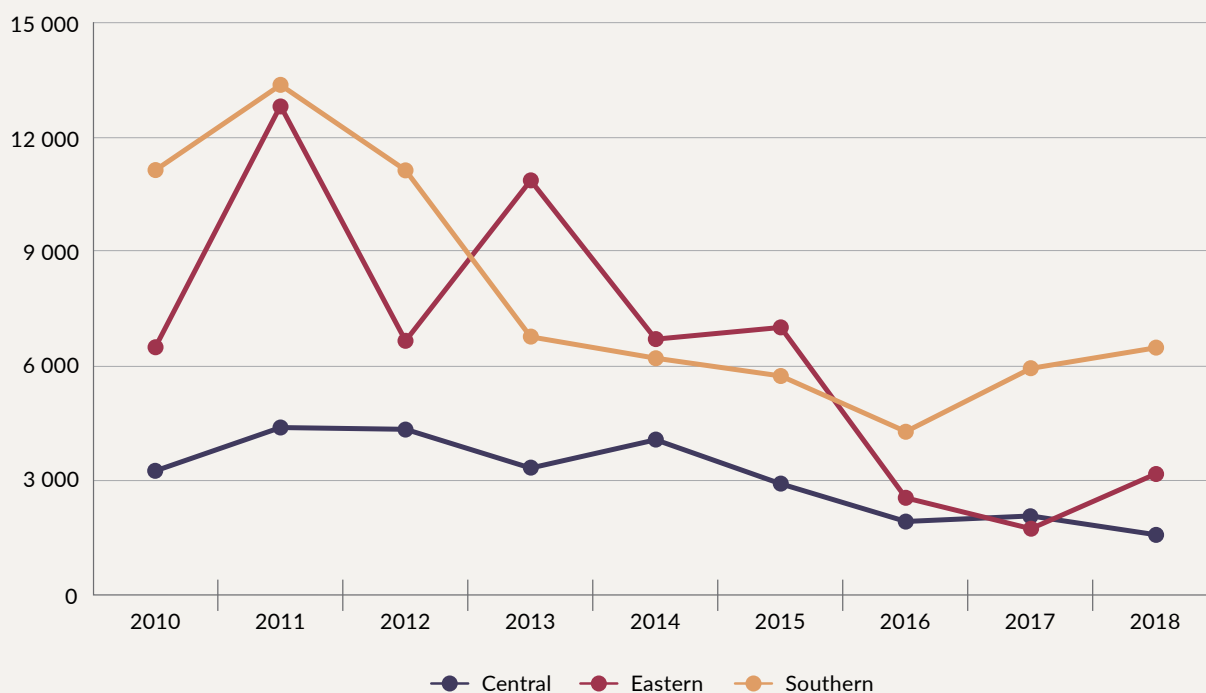
*If long-term solutions to IWT are not found, another round of the poaching crisis might be just over the horizon.*



**FIGURE 5** PIKE scores for Africa, all subregions combined, 2003–2019.

NOTE: Between 2008 and 2018, PIKE rates averaged above 0.50, considered to indicate that poaching off-take exceeded the reproduction rate.

SOURCE: CITES Secretariat, Monitoring the Illegal Killing of Elephants (MIKE) Report: PIKE trend analysis – methodology and results, September 2020, [https://cites.org/eng/MIKE\\_PIKE\\_Trends\\_report\\_elephants\\_CITES\\_16112020](https://cites.org/eng/MIKE_PIKE_Trends_report_elephants_CITES_16112020)



**FIGURE 6** Estimated annual numbers of illegally killed elephants in central, eastern and southern Africa (median figures), 2010–2018.

SOURCE: UNODC, World Wildlife Crime Report 2020, May 2020, [https://www.unodc.org/documents/data-and-analysis/wildlife/2020/World\\_Wildlife\\_Report\\_2020\\_9July.pdf](https://www.unodc.org/documents/data-and-analysis/wildlife/2020/World_Wildlife_Report_2020_9July.pdf)

*A minimum of 816 tonnes of African elephant ivory has been stockpiled or seized from 1989 through October 2013.*

### Stockpiles and thefts

Several African countries have quite sizeable government and private ivory stockpiles, mainly in southern Africa, but also Tanzania. CITES parties with elephant ivory government and private stockpiles are recommended to report them to the CITES Secretariat each year for use by MIKE and ETIS in data analysis.<sup>23</sup> The response rate from parties has been low, however, and the CITES Secretariat stated in 2019 that ‘comprehensive and recent data on the size of global or country-specific stockpiles is not officially available’.

In the absence of official CITES data, an attempt was made in 2014 to estimate global government-held ivory stockpiles, and concluded that ‘a minimum of 816 tonnes of African elephant ivory has been stockpiled or seized from 1989 through October 2013. Some of these stockpiles are very large, in the range of 50–100 tonnes. Even this is likely to be a significant underestimate of global ivory stocks.’<sup>24</sup>

Taking into consideration stockpile growth and incidents of stockpile destructions – Kenya for example destroyed 105 tonnes in 2016 – there are probably a minimum of 900 tonnes of government and private stockpiled ivory in Africa in 2021.



In addition, the CITES Secretariat is aware of a number of thefts of ivory from government-held stockpiles in recent years, but in order to avoid raising potential security risks, it has not included details of the information it has received from the Parties in any documents.

That said, ivory from one large privately owned stockpile under government management is known to have been entering illegal trade at least since 2015. Burundi banned the ivory trade in late 1987 and controversially put an inventoried 16 437 tusks weighing 87 562.5 kilograms belonging to private traders into sealed storage.<sup>25</sup> In 2004 TRAFFIC audited the stockpile and documented 15 485 tusks

weighing 83 978 kilograms.<sup>26</sup> TRAFFIC found no seals on the seven containers they inventoried, so they affixed customs seals on them after the audit. Nevertheless, since 2015 four ivory seizures have included several tusks or pieces with markings attributable to the Burundi stockpile. According to the CITES Secretariat, 'potentially nearly 84 tonnes of ivory could be in illegal trade and the government of Burundi has yet to make any statement regarding this longstanding ivory stockpile'.<sup>27</sup>

Serious ivory theft from official government stockpiles has also occurred in Mozambique, some of which was subsequently seized in a large-scale confiscation in Cambodia.<sup>28</sup>

### Trophy hunting records

Some African range states permit sport hunting of elephants, a practice that forms an integral element of those countries' wildlife management and community support programmes.<sup>29</sup> Botswana, Mozambique, Namibia, South Africa, Tanzania and Zimbabwe in 2020 applied to CITES for a

combined quota of 2 404 tusks.<sup>30</sup> Since 2008, the start of the increased poaching phase, to 2020, approximately 35 750 tusks have been allocated in hunting export quotas. Not all permitted hunts take place, and of those that do, not all tusks are exported internationally.

Private individuals, mainly in southern Africa, can hold substantial stocks of ivory. These can be legal if all local laws have been observed, but the ivory cannot legally be exported for commercial purposes. © Daniel Stiles



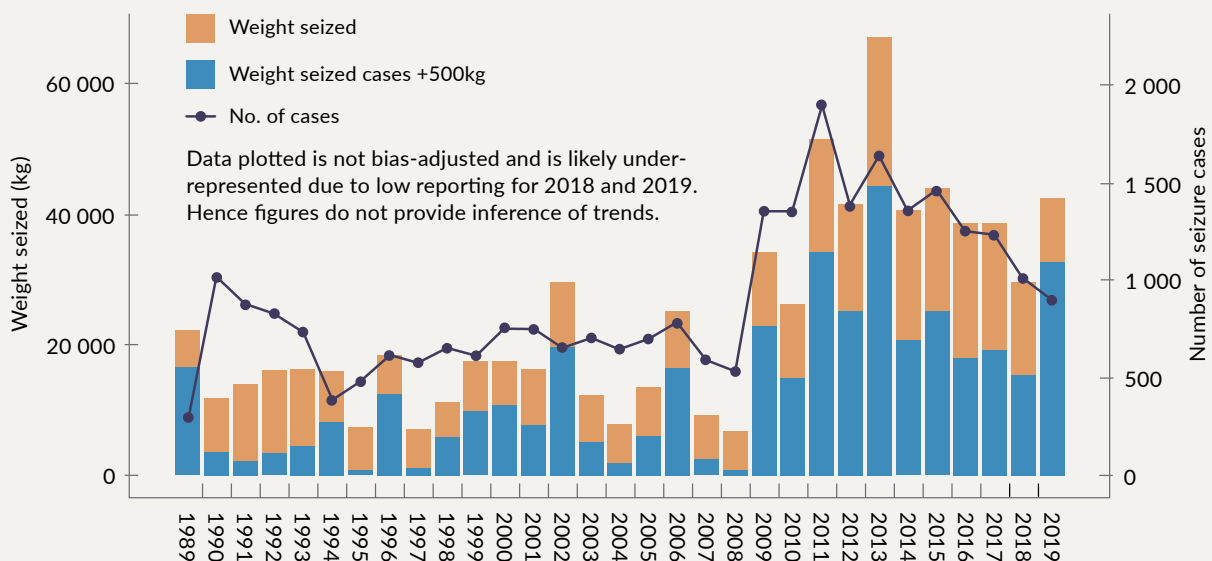
The GI-TOC analyzed the import entries in the CITES trade database for hunted (H source code) tusks, trophies, teeth and specimens between 2008 and 2019 (the latest entries) for mainland China, Hong Kong SAR, Vietnam, Taiwan, Thailand, Cambodia and Laos. China imported approximately 1 150 tusks weighing about 7 tonnes. Most of the ivory was from Zimbabwe, which provided exported weights, allowing a fairly accurate weight estimate to be made. The average tusk weights were between 6 and 8 kilograms – well below what are considered trophy tusk weights, which currently is a minimum of about 40 pounds (18.2 kilograms).

Since there is no tradition of trophy hunting in China,<sup>31</sup> it is likely that most of the declared trophy tusks were used for commercial purposes. A similar type of scheme involving the ‘pseudo-hunting’ of rhinos for rhino horn in South Africa was operated by South East Asians to supply consumers mainly in Vietnam. A rhino horn trafficking ring colluded with South African wildlife professionals to arrange bogus trophy hunts and ‘legally’ export rhino horn as hunting trophies.<sup>32</sup>

The trophy tusk imports of the other countries were insignificant: 26 for Thailand and only one each for Vietnam and Cambodia.

## Actual ivory market supply based on seizures

The high rates of elephant killing after 2008 were reflected in the number of ivory seizures and weight of ivory seized (Figure 7).



**FIGURE 7** Number of ivory seizure cases and estimated weight of ivory by year, 1989–2019.

SOURCE: Tom Milliken et al., The Elephant Trade Information System (ETIS) and the illicit trade in ivory, presented at the 18th meeting of the Conference of the Parties, CoP18 Doc. 69.3 (Rev. 1), Annex 1, 2018. From CITES, Elephant Trade Information System, 2020, <https://cites.org/esp/prog/etis>





Vietnam has become a major player in black market ivory. © Daniel Stiles

The number of ivory seizure cases and weight of total ivory seized found in ETIS in 2009 clearly marks a leap from previous years, but China started reporting non-criminal ivory seizures that year for the first time, adding hundreds of mostly small-scale cases to its data set that previously had not been reported, which fits the PIKE data (see Figure 5). From implementation of the CITES trade ban in 1990 through 2007, more than 322 tonnes of ivory were estimated to have been seized worldwide.<sup>33</sup> Some might question whether a figure that large, taking into consideration that only a small fraction of all smuggled ivory is seized, is an indicator of great success of the CITES-imposed trade ban, especially as much more ivory was seized after 2007.

The large quantity of ivory seized in 2019, and in particular the large number of >500 kilogram seizures, strongly suggests that stockpiled ivory was being shipped out of Africa. In 2019, the largest quantities were seized in China, including Hong Kong (10.7 tonnes), Vietnam (10 tonnes), Singapore (9 tonnes), Uganda (4.7 tonnes), Kenya (1.6 tonnes), Zimbabwe (1.5 tonnes) and Namibia (1.4 tonnes).<sup>34</sup> Nigeria was implicated in over 3 tonnes of the ivory in those seizures, and in January 2021 a large 8.8 tonne seizure of pangolin scales, ivory and other wildlife parts was made in the Lagos port.<sup>35</sup> In all, 48 217 kilograms of ivory were seized in the main demand countries of China/Hong Kong, Vietnam, Thailand, Laos and Cambodia in 2019.<sup>36</sup>

The significant seizures in China, Vietnam and Singapore in 2019 indicate that the authorities are taking the illegal ivory trade seriously. These three countries have been targeted in ETIS reports as countries 'greatly affected by ivory trade'. CITES has imposed on them the responsibility of preparing onerous National Ivory Action Plans aimed at halting illegal ivory trade. Rather than be viewed as failures, however, such large seizure numbers should be considered successes. If enough seizures can be made to render ivory trafficking unprofitable, the criminal networks will either shift to other wildlife products or leave wildlife trafficking entirely.

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*In 2017, China prices increased from US\$728/kilogram in the first part of the year to over US\$1 000/kilogram in the second half.*

A recent study by C4ADS collected national customs and media reports in 15 languages of seizures of ivory, rhino horn and pangolin scales for 2015 through 2020. The number and weights of all three types were lumped, so the exact number of ivory seizures or weights for each year cannot be specified, but the total of all three declined from almost 1 000 seizures in 2019 to 466 in 2020. The average weight of each ivory seizure was reported, and this dropped by 72% between 2019 and 2020, from about 90 kilograms to approximately 20 kilograms.<sup>37</sup> More complete ivory seizure data for 2020 will emerge when ETIS makes its next report, but the C4ADS study strongly suggests that the number of ivory seizures and the weight of seized ivory dropped substantially in 2020 as a result of COVID-19 transport restrictions.

## The ivory price rollercoaster

After steadily rising since the beginning of the millennium, raw ivory prices have steadily declined from late 2014 (Figure 8), indicating either dropping demand or increasing supply, or most likely a combination of both.

Poacher prices from different parts of Kenya averaged about US\$15/kilogram in 1999. This price had doubled to US\$33/kilogram in 2008 and skyrocketed to US\$190/kilogram in 2014 – the peak year of poacher prices.<sup>38</sup> By 2016 the average poacher price in Kenya had dropped to US\$88/kilogram, falling further to about US\$52/kilogram in 2018 (with a wide range of US\$30–79/kilogram, indicating uncertainty in the market). Only two poacher prices in Kenya could be obtained in September 2020, as demand for ivory was extremely low, both of KES 6 000/kilogram, which at the time of collection was about US\$56/kilogram.<sup>39</sup> These prices are for tusks that usually weigh less than 10 kilograms.

In Vietnam, raw ivory wholesale prices in 2001 averaged a little over US\$400/kilogram for <3 kilogram tusks, almost tripling to over US\$1 100/kilogram in 2008 and peaking at an average of almost US\$1 300/kilogram in 2014. Prices dropped to around US\$1 090/kilogram on average in 2015 and US\$630/kilogram in 2018, but fluctuated greatly, bottoming at US\$400/kilogram in April 2018. Prices appear to have picked up during the COVID-19 period, reaching about US\$690/kilogram in July 2020 (Figure 8).<sup>40</sup>

In China, wholesale black market ivory prices rose rapidly between 2000 and 2014 from around US\$370/kilogram to an average of US\$2 572/kilogram in 2014. (Prices ranged from US\$1 710/kilogram to US\$3 740/kilogram in 2014, depending on weight and quality.<sup>41</sup>) But prices then crashed, probably beginning in late 2014, to reach an average of US\$960/kilogram in 2015.<sup>42</sup>

In 2018, after China had closed the legal ivory market, prices hovered in the US\$1 000 per kilogram range, according to a Chinese source, but in 2019 TRAFFIC China found that raw ivory importer selling prices were down to an average of about US\$570 per kilogram. Prices are complicated by the fact that they are much higher in the north (Beijing) than in the south (Guangdong Province).<sup>43</sup> In 2020, the wholesale price rose to an average of US\$1 450/kilogram, but much, if not all, of this ivory seems to be resale of stockpiled ivory.<sup>44</sup>



**FIGURE 8** Raw ivory price trends at the poacher and import country wholesale points in the trade chain, using Kenya, Vietnam and China as examples, 1999–2020.<sup>45</sup>

The raw ivory price pattern correlates closely with the African elephant poaching and ivory trafficking rate trend lines derived from PIKE scores and ETIS ivory seizures. (The rise to the peak price of 2014 and subsequent crash is explored in the next section, ‘Market demand’.)

The apparent rises in poacher price in Kenya and wholesale prices in Vietnam and China in 2020 should be watched closely and confirmed by further investigations. The price rises in Asia could be a result of the resale of old stockpiled ivory, which would sell at a higher price than newly acquired ivory because the tusks were purchased when prices were higher. Alternatively, the Asian wholesale price increases in 2020 may be the consequence of ivory trafficking networks moving to West and central Africa, where poacher and middleman supply prices are much higher than in East and southern Africa. TRAFFIC found that export prices in Cameroon of tusks that originated mostly in surrounding countries averaged US\$336/kilogram for all sizes combined in 2014/2015. In Kinshasa, Democratic Republic of the Congo, prices were even higher, averaging US\$500/kilogram.<sup>46</sup> By 2018, the Cameroon export price had risen to US\$572/kilogram.<sup>47</sup>

*Asian wholesale price increases since 2018 may be the consequence of ivory trafficking networks moving to West and central Africa.*

## New supply producers and products

Increasing Chinese investment in Africa and the Belt and Road Initiative have brought infrastructure projects and Chinese workers to Africa in large numbers. China is now the largest trade partner with Africa. Direct contract workers from China have numbered about 200 000 in Africa for over a decade and other long-term Chinese immigrants setting up businesses add another approximately 800 000.<sup>48</sup> In addition, there are many Chinese who come and go between China and Africa conducting informal business, including illegal trade in wildlife and other commodities.

Chinese craftsmen are among these immigrants setting up operations in Africa. ETIS data shows an increase in Chinese-owned ivory processing operations within Africa for exporting worked products to Asian markets,<sup>49</sup> with at least 24 cases from four African countries, representing 1.11 tonnes of worked ivory moving from Africa to Asia in 2017 alone. The movement of such significant quantities of ivory indicates the increasing involvement of transnational organized criminal networks in the trade.<sup>50</sup> These largely Chinese networks, focusing on the manufacture and illicit export of worked ivory, are different from those that were broken up in eastern and parts of southern Africa that poached elephants and supplied raw ivory to market. This could be a response to the Chinese legal ivory market closure at the end of 2017, which halted legal ivory processing in China.

Between 2011 and 2014, huge single shipments of worked ivory were being shipped from Zimbabwe to China as 'personal' (P purpose code). Single shipments in 2011 weighed 3 080 kilograms, 2 864 kilograms in 2012 and 3 303 kilograms in 2013, while in 2014 a gargantuan 7 810 kilograms went from Zimbabwe to China. All in all, 17 057 kilograms of worked ivory were shipped over these four years.<sup>51</sup> These weights, indicating tens of thousands of pieces, were obviously not personal effects. These large shipments have not been seen after 2014, but indicate that Zimbabwe has – or had – a very large underground ivory carving industry. Chinese craftsmen were known to be working in Zimbabwe.<sup>52</sup>

A 2017 TRAFFIC investigation also uncovered the presence of Chinese ivory carvers in Cameroon and the Republic of Congo. A Congolese ivory carver in Brazzaville named Jean Claude complained, 'They [Chinese] come here and take all the big contracts and now are even taking away our means of living which is carving. I have been in this business for about 50 years and you think I can change from doing this?'<sup>53</sup>

Relevant authorities and NGOs need to monitor the development of illegal Chinese worked ivory production in Africa and large-volume worked ivory exports of the type seen in Zimbabwe between 2011 and 2014.

**A Chinese-owned wildlife products shop in Longcheng Plaza, outside of Harare, Zimbabwe. The owner employed Chinese carvers to produce Chinese-style carvings. © Daniel Stiles**







## MARKET DEMAND

Ivory markets around the world have been undergoing a profound transformation since 2014 when the US Fish and Wildlife Service announced its Director's Order No. 210, which outlined severe new restrictions on the import, export and trade of elephant ivory in the US.<sup>54</sup> In addition, significant, coordinated campaigning by a multitude of conservation and animal rights NGOs targeting legal ivory trade through the media and at CITES conferences have succeeded in achieving the closure of legal ivory markets in China, Singapore, Vietnam and Myanmar, and increased restrictions in Thailand, the UK and the EU, with pressure to close entirely. The Hong Kong ivory market is slated to close later in 2021. Japan is holding out, but is under increased pressure from NGOs and the media to close as well.<sup>55</sup> There are some exemptions to trade restrictions, usually to allow the sale of expensive antiques or composite items such as musical instruments that contain small amounts of ivory, but neither is of much interest to most consumers.

However, while it is tempting to link fluctuations in poaching and price to regulatory changes, it is important to take into consideration other factors at play, namely, possible changes in the type of demand. In the period leading up to the peak ivory price in 2014, the trend in ivory consumption changed from worked ivory for consumers to raw ivory for investment; after the 2014 peak, this appears to have shifted back again. As explored below, this change highlights how, for a period during the global financial crisis of 2007–2009, the illicit ivory market intersected with the licit upperworld of the stock market, and how demand dynamics may be multiple and various.

▲ Thailand has been the largest market for ivory in South East Asia since at least the 1990s. Based on seizures and knowledge of who the traffickers in Africa are, Vietnam is now the main destination for black market raw ivory.  
© Daniel Stiles

Recent studies of demand drivers in Asia have uncovered demand for ivory as an investment commodity.

## Types of demand

Most studies of ivory trade have assumed that the only type of demand driver is consumption of worked items by consumers. All demand surveys to date involve canvassing only the general public – usually in the Asian countries with high ivory demand – to assess what kinds of people are most likely to buy worked ivory, how often, why and where. It is assumed that as demand by consumers rises, so does the quantity of raw ivory that will be needed to supply that demand. If legal raw ivory is unavailable, it will come from illegal sources, most often from poached elephants.

So, it is assumed that there is a direct relationship between consumer demand and poaching: high consumption translates to elevated poaching. Hence the great efforts being directed at consumer demand reduction. However, recent studies of ivory market demand drivers in eastern Asia have uncovered a different type of demand – demand for ivory as an investment commodity, even in raw form.<sup>56</sup> This type of demand is largely independent of consumer demand for worked ivory, as the purchasing and use motivations are quite distinct.

## Ivory uses

Yufang Gao, a Chinese graduate student at Yale University, conducted in-depth research on the Chinese ivory market during the poaching crisis between 2012 and 2014. Gao found that the average consumer purchased worked ivory for social, cultural, aesthetic, religious or medical reasons, the last being the least important (Figure 9). Gao commented on these multiple uses of ivory, and how they sometimes overlap depending on the intended use:

People buy ivory either for personal use (decorating, collecting, and speculating) or gift giving. Gift giving involves *guanxi*, *renqing* and face, which are deemed important by Chinese for maintaining interpersonal relationships. Ivory with its diverse values is considered a precious present. Gift giving is also closely related to bribing. Upscale ivory artworks were reported in some official corruption cases.<sup>57</sup>

Motivation	Use	Types of items
Economic	Investment, speculation	Raw tusks, antiques, fine art carvings
Social	Gift-giving, bribes	Jewellery, chopsticks, polished and carved tusks
Cultural	Home or business adornment	Chinese sages, legendary figures, Laughing Buddha, folk tale figures
Religious	Blessing, protection, good luck	Buddha amulets, Buddha, Guan Yin, Eight Immortals
Aesthetic	Personal or home adornment	Jewellery, vases, carved composite pieces, carved tusks, ivory panelling
Medical	Treat maladies, purge toxins, anti-convulsant, bone diseases	Ivory powder, medicine doll

**FIGURE 9** Motivations and uses of different types of elephant ivory for Chinese buyers.



Ivory carvings such as these can cost US\$250 000 or more in antique auctions, which are still permitted in China. They can act both as investments and home or business premise adornments. Before the 31 December 2017 closure of the Chinese ivory market, items with a certificate attesting that the ivory originated from the 2008 CITES-authorized sale could be resold at higher value than items with no certificate. Today this is not an advantage, especially for ivory art objects being passed off as antiques. © Daniel Stiles

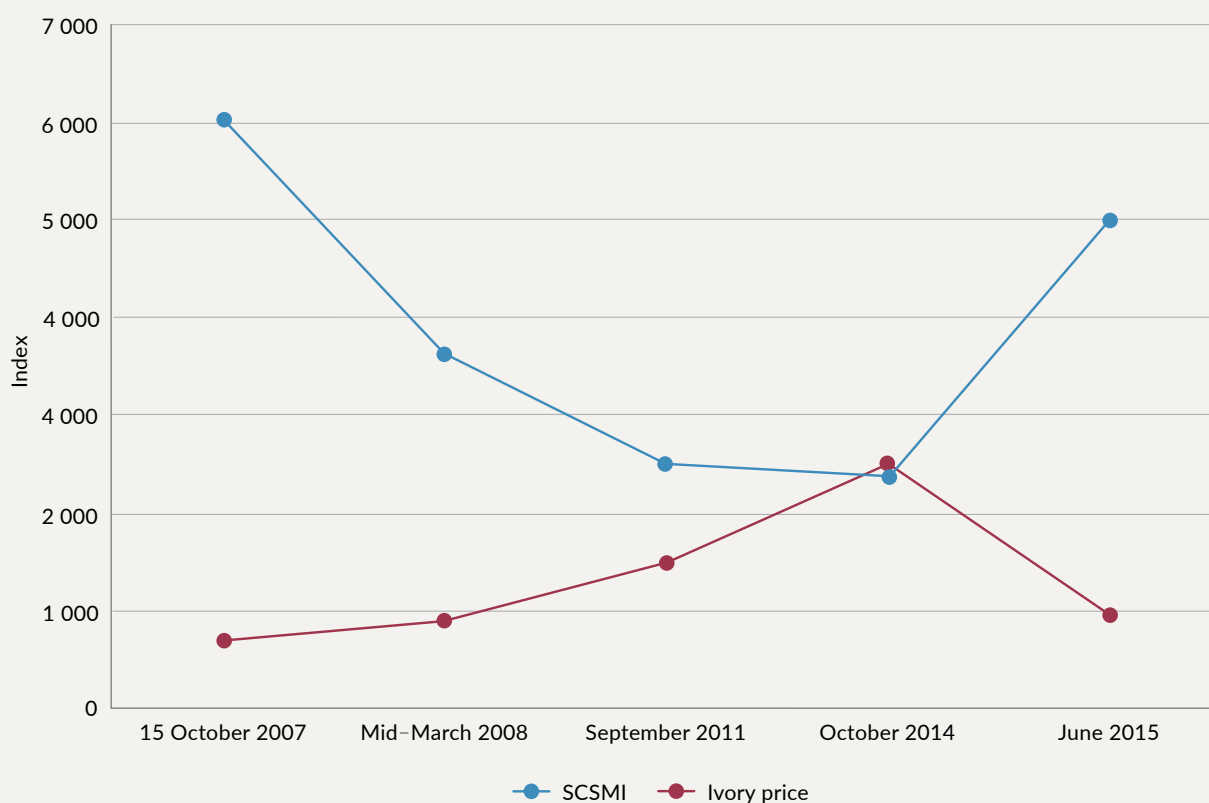
But Gao also identified another type of ivory buyer, the investor, who purchased ivory because it was *bao jia* (inflation-proof) and possessed the quality of *zeng zhi* (value appreciation).<sup>58</sup> A study of ivory demand drivers in 2015 enlarged on Gao's findings, concluding that the most likely driver of the 2008–2016 elephant poaching increase was the global financial crisis of 2007–2009, which led to significant changes in Chinese investment patterns.<sup>59</sup>

On 15 October 2007, the Shanghai Composite stock market index hit an all-time high of 6 030.<sup>60</sup> At that time gold in China was about US\$760 an ounce.<sup>61</sup> By mid-March 2008, the Shanghai Composite had crashed to around 3 630 – a drop of 40%. Gold, on the other hand, hit US\$1 000 an ounce in mid-March, an increase of 24% in value. In September 2011, gold in China hit US\$1 800/ounce for the first time, up 237% from October 2007. The Shanghai Composite, however, was hovering around 2 500, down 41% over the same period.<sup>62</sup>

Comparison of the Chinese stock market performance with the luxury commodity gold suggests that investors were selling out of stocks and reinvesting some of the proceeds in gold. The same pattern appears to have occurred with ivory, another luxury commodity. The price of ivory appreciated from about an average of US\$655/kilogram in 2006 to US\$1 500/kilogram in 2011, representing a 229% increase – a good investment by any standard.

The Shanghai stock market remained in the doldrums, around the low 2 000s, but in October 2014 it shot up, hitting 5 000 in June 2015. During this same period the price of raw ivory in China crashed from around US\$2 500 to US\$960.<sup>63</sup> The pattern strongly suggests that investors were selling their ivory to buy stocks. The ivory speculation bubble had burst (Figure 10).





**FIGURE 10** Relationship between the wholesale price of ivory in China and the Shanghai Composite Stock Market Index (SCSMI).

NOTE: Regression  $\hat{y} = -1.73076X + 6176.7635$ , indicating a robust inverse relationship.

The elephant poaching and ivory price patterns observed from the early 2000s to late 2014 are therefore largely unrelated to levels of mass consumer demand for relatively inexpensive worked ivory items, but rather relate to what much less numerous wealthy investors were doing with raw and expensive antique ivory. While the stock market remained depressed, investors were storing raw ivory in large quantities in the expectation that prices would continue to rise as elephants became rarer due to poaching. Ivory production and processing modelling estimated that approximately 1 000 tonnes of raw ivory was unaccounted for and most likely stockpiled in 2014, mostly with investors but also a portion with illegal manufacturers for future processing. Ivory prices then crashed in late 2014 as investors sought to sell off their stockpiles and reinvest in the stock market.<sup>64</sup>

There has been no high correlation between ivory price and the Chinese stock market since mid-2015. A 2018 USAID Wildlife Asia consumer survey in China found that of those who had purchased ivory in the last 12 months, investment was a relatively low motivation (score of 2.71 out of 10) for buying.<sup>65</sup> Motivations for buying ivory greater than investment included 'rarity, spirituality, beauty, brings luck, indicates wealth and brings good health'.

On 1 January 2018, most types of ivory became illegal to sell or buy in China.<sup>66</sup> This may have lowered demand for investment ivory, as trading now has become more difficult and attracts a new risk factor.

## Where and how is ivory purchased?

The recent domestic ivory market bans in China and Vietnam have caused the entire market to go underground. Most sales, however, are still done in shops, market stalls or person-to-person. In addition to domestic markets, up to 50% of Chinese purchase their ivory outside China while travelling,<sup>67</sup> which has increased illicit ivory market activity considerably in countries where law enforcement is weak (such as Myanmar, Laos and Cambodia) to meet Chinese demand.<sup>68</sup>

Thailand still has a legal ivory market so ivory can be sold openly, but only natural mortality tusks or ivory tips harvested from domestic Asian elephants are permitted to be carved and sold. Japan also has a legal ivory market. The country was once a top ivory consumer, along with Hong Kong, but demand and ivory consumption have been falling steadily since the CITES ivory trade ban in 1989.<sup>69</sup>

More consumers are buying their ivory online, a shift that has been accelerated by the pandemic and regulatory restrictions. A few traditional crafts villages around Hanoi in Vietnam were selling large quantities of ivory to Chinese tourists, but this has largely stopped because of government pressure and COVID-19 travel restrictions. They are, however, still selling online and sending the ivory to customers by post or courier.<sup>70</sup>

**Ivory from Asian elephants can still be sold legally in Thailand in outlets with permits. © Daniel Stiles**







▲ Human population growth and conversion of wildlife habitat to human uses are the biggest threat facing elephants in future years.

© Daniel Stiles

## WHAT DOES THE POST-COVID WORLD HOLD FOR AFRICAN ELEPHANTS?

**H**igh levels of ivory seizures and consumer market surveys in recent years indicate that there is still considerable demand for ivory in eastern Asia.<sup>71</sup> The good news is that raw ivory as an investment is no longer considered to be an important motivation of demand. In fact, sales of stockpiled ivory both in Africa and China appear to have depressed the ivory price and rates of elephant poaching from 2015 onward (Figure 5).

The recent rises in the ivory wholesale price in Vietnam and China suggest either that stockpile sales are decreasing, thereby constricting supply, or that the sourcing shift from East and southern Africa to West and central Africa is the cause. Whether the higher prices will motivate increased levels of poaching in the near future to restock supply remains to be seen.

With COVID-19 persisting in many parts of the world, prompting sporadic city and country lockdowns, transport and travel will continue to be disrupted in unpredictable ways, affecting the movement of illegal wildlife product shipments, particularly by road or air. Once the virus has been contained by large-scale vaccinations, projected to be early 2022 in the US and the UK, later in 2022 for the EU and 2023 for the rest of the world,<sup>72</sup> it is likely that poaching will resume to supply pent-up demand.



## Reasons for hope

A recent study found that African elephants currently occupy only 17.2% of suitable range, or about 3.13 million square kilometres out of a possible 18.2 million square kilometres. Elephants do not occupy the other 82.8% of potential habitat because of human activities and fear of conflict, including poaching for ivory. Elephants tend to congregate in or near protected areas.<sup>73</sup>

There is scope, therefore, not only for conserving the 500 000 or so elephants that remain in Africa, but also for expanding their range and population numbers. Human population growth in Africa is a constraining factor, however, and the population of sub-Saharan Africa is projected to double by 2050 to over two billion people from today's 1.1 billion.<sup>74</sup>

If elephants are to survive in Africa, the anthropogenic actions driving socio-economic and infrastructure development (for example, agriculture, energy, roads and railways) must be carefully planned and implemented to maintain protected areas and ensure their connectivity. In addition, increased efforts need to be made to work with African communities who live with elephants to find ways for them to co-exist with lower levels of conflict, which is a major driver of poaching.<sup>75</sup>

If the domestic legal ivory market closures succeed in reducing consumer demand, and if law enforcement and the judiciary enforce the trade bans effectively, there may be hope of keeping poaching at levels that allow for elephant population growth once again. The most recent GlobeScan-WWF ivory consumer survey in China reported that 12% of participants surveyed had purchased ivory in 2020, down from 31% in 2017, before the domestic legal market closure.<sup>76</sup> In a country of well over one billion consumers, 12% is still too high, but at least the direction is encouraging.

But the recent raw ivory price rises in China are worrisome. Transnational organized criminal networks are resilient and resourceful: if there is a will, there is a way. Corruption and social media platforms provide the way; which side can show the strongest will?

*Increased efforts need to be made to work with African communities who live with elephants to find ways for them to co-exist with lower levels of conflict.*

## NOTES

- 1 The series will include forthcoming briefs on rhino horn, cheetahs, abalone and cycads.
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