

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA



Eighteenth meeting of the Conference of the Parties
Colombo (Sri Lanka), 23 May – 3 June 2019

Species specific matters

Elephants (Elephantidae spp.)

REPORT ON THE ELEPHANT TRADE INFORMATION SYSTEM (ETIS)

1. This document has been submitted by the Secretariat.

ETIS reporting to CoP18

2. The Elephant Trade Information System (ETIS), established under Resolution Conf. 10.10 (Rev. CoP17) on *Trade in elephant specimens* and supervised by the Standing Committee, is conducted in accordance with the framework outlined in Annex 1 (Monitoring illegal trade in ivory and other elephant specimens) of the Resolution.
3. ETIS is managed and coordinated by TRAFFIC, in consultation with the MIKE and ETIS Technical Advisory Group (TAG) and in collaboration with the CITES Secretariat. Data and information on illegal trade in ivory and other elephant specimens are collected by TRAFFIC in collaboration with the CITES Secretariat, and the analysis and interpretation of data are handled by TRAFFIC.
4. Resolution Conf. 10.10 (Rev. CoP17) directs in paragraph 11 the CITES Secretariat to report on information and analysis provided by ETIS at each meeting of the Conference of the Parties. Comprehensive ETIS analyses have been submitted to the Conference of the Parties at its 11th, 12th, 13th, 14th, 15th, 16th and 17th meetings [CoP11, Gigiri, 2000, in document Doc. 11.31.1 (Annex 5); CoP12, Santiago, 2012, in document CoP12 Doc. 34.1; CoP13, Bangkok, 2004, in document CoP13 Doc. 29.2A; CoP14, The Hague, 2007, in document CoP14 Doc. 53.2; CoP15, Doha, 2010, in document CoP15 Doc. 44.1 (Rev. 1); CoP16, Bangkok, 2013, in document CoP16 Doc. 53.2.2 (Rev. 1); and CoP17, Johannesburg, 2016, in document CoP17 Doc. 57.6 (Rev. 1)].
5. Annex 1 to this document contains the comprehensive analytical ETIS report, prepared by TRAFFIC in collaboration with the CITES Secretariat, that is called for in Resolution Conf. 10.10 (Rev. CoP17).
6. The ETIS report prepared for the present meeting was for the first time shared with Parties concerned (i.e. Angola, Burundi, Cambodia, Cameroon, Congo, China, the Democratic Republic of Congo, Ethiopia, Gabon, Hong Kong Special Administrative Region, Kenya, Lao People's Democratic Republic, Malaysia, Mozambique, Nigeria, Singapore, South Africa, Turkey, Uganda, United Arab Emirates, United Republic of Tanzania, Viet Nam and Zimbabwe), as requested by the Standing Committee at its 69th meeting [SC69, Geneva, November 2017; see document (SC69 Sum. 10 (Rev. 1))]. At its 70th meeting (SC70, Sochi, October 2018), the Standing Committee requested the Secretariat, together with TRAFFIC, to prepare an annex with the comments received from these Parties on the ETIS report (if any), and to circulate it as part of the document to be considered by the Conference of the Parties at its 18th meeting [see document SC70 Sum. 12 (Rev. 1)]. The annex with comments received from the affected Parties will be prepared after the deadline for submission of comments (20 January 2019) and attached to the present document.
7. The Secretariat concurs with the assessment of the results of the cluster analysis and the categorisation of Parties based on the assessment.

8. The Secretariat will, in line with the *Guidelines to the National Ivory Action Plans Process* in Annex 3 of Resolution Conf. 10.10 (Rev. CoP17), develop recommendations for consideration by the 71st meeting of the Standing Committee (Colombo, May 2019), and provide an oral update in this regard at the present meeting.
9. Further recommendations by the Secretariat that are linked to this ETIS report are detailed in documents CoP18 Doc. 69.1 on *Implementation of Resolution Conf. 10.10 (Rev. CoP17)*.

Support to ETIS

10. The CITES Secretariat is grateful to the European Union for its financial support to ETIS as one of the elements in the MIKES project funded by the European Union.
11. The MIKES project is closing in December 2019 and, subsequently, external funding will be required for both ETIS and MIKE. A draft decision aimed at finding a long-term solution to ensure the financial sustainability of the two monitoring systems is proposed for consideration of the Conference of the Parties in document CoP18 Doc. 69.1.
12. The tentative budget required to implement ETIS is contained in Annex 2 to the present document.

Recommendation

13. The Conference of the Parties is requested to note this document.

The Elephant Trade Information System (ETIS) and the Illicit Trade in Ivory: A report to the 18th meeting of the Conference of the Parties to CITES*

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TRAFFIC
December 2018

Introduction

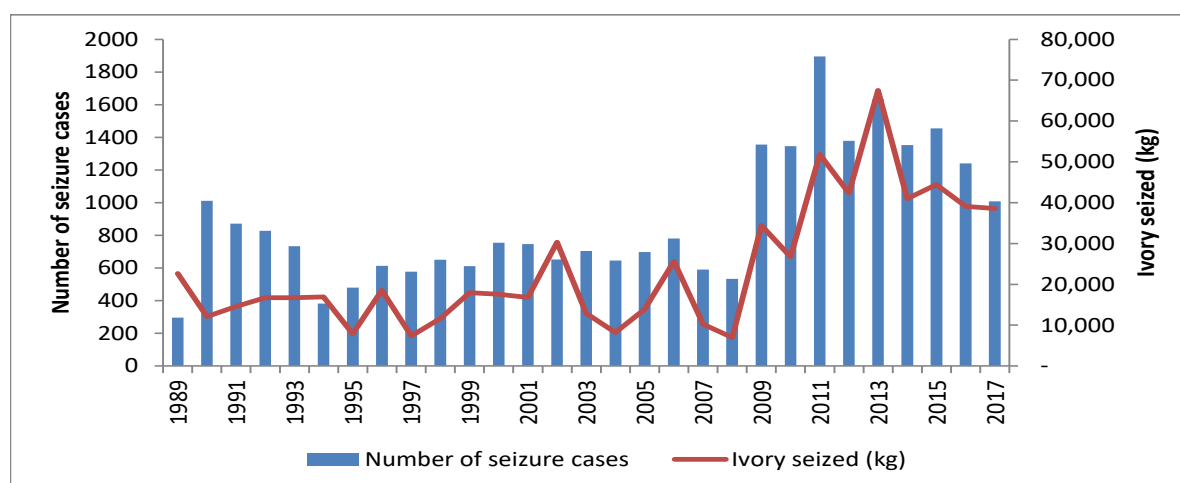
Resolution Conf. 10.10 (Rev. CoP18) mandates “a comprehensive report to each meeting of the Conference of the Parties” from the Elephant Trade Information System (ETIS). This report is the seventh major assessment of the ETIS data to the CITES Parties, and constitutes TRAFFIC’s reporting obligations for CoP18. Prior to submission to the CITES Secretariat, the document was reviewed by members of the MIKE-ETIS Technical Advisory Group (TAG) and those Parties identified in the cluster analysis as Category A, B or C countries pursuant to Annex 3 of Resolution Conf. 10.10 (Rev. CoP17). At the outset, TRAFFIC would like to acknowledge with gratitude the funding support from: the European Union’s “Minimizing the Illegal Killing of Elephants and Other Endangered Species” and the “Asia Wildlife Enforcement and Demand Management” projects; the United States Fish and Wildlife Service’s African Elephant Conservation Fund; the Governments of Belgium and the Netherlands; and WWF, for providing support for the operation and management of ETIS since CoP17, including the production of this report.

PART I: THE ETIS DATA

Number of Records:

ETIS had 28,490 records on 06 June 2018, of which 25,822 represented ivory seizures, with the rest being non-ivory elephant products. Figure 1 illustrates the reported number of ivory seizure cases and their estimated weights as raw unadjusted data in each year from 1989 to 2017. Figure 1 cannot be interpreted as a trend, nor is it suggestive of absolute quantities of ivory seized over time, because of inherent bias in the data in terms of rates of interdiction and reporting seizure data to ETIS by countries over time.

Figure 1: Number of ivory seizure cases and estimated weight of ivory by year, 1989 - 2017
(ETIS raw data, 06 June 2018)



A note on data completeness for 2017:

* The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat (or the United Nations Environment Programme) concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.

The number of ivory seizure cases reported to ETIS for 2017 totals 1,007 and represents nearly a 20% drop from the previous year and a 30% decrease against the 2015 data (Table 1). Unfortunately, late and incomplete reporting of seizure data to ETIS by the Parties characterizes the 2017 dataset. Indeed, another 179 seizure cases for 2017 have been verified for inclusion in ETIS since closure of the database for the current analysis. Further, TRAFFIC's annual data exchange with the World Customs Organization (WCO) was not possible with respect to 2017 owing to untimely personnel changes at WCO, but such data should become available in the future. Finally, for a number of countries which did submit data for this analysis, assessment of open source data suggests that the true number of seizure records could be considerably greater than what has been reported by various CITES Management Authorities. Although the statistical analysis does address bias related to differences in reporting effort, it is not currently able to deal with all issues of under-reporting described above. Thus, as more seizure cases become available, it is likely that future iterations of the ETIS trend analysis will probably show upward movement from the mean data points presented in this analysis for 2017. Consequently, the current analysis for the year 2017 may not fully represent the status of illegal global ivory trade owing to some degree of underreporting and results for the most recent year should be treated cautiously and not be over interpreted.

Weight of ivory represented in the seizures database:

In over half of the ETIS seizure records, the Parties have not specified the weight of the items seized, but rather only provided the 'number of pieces' by ivory type or given weight estimates instead of precise values. It is often not known whether 'pieces' concern whole tusks or cut pieces of raw ivory and, in the case of worked ivory, the specific product seized usually remains unidentified and could potentially range from a few grams to many kilograms. As a result, missing weight values have been calculated using updated regression models that have been employed for such purposes in all previous ETIS analyses. Finally, the inherent uncertainty surrounding weights has led to the use of weight categories (and not the actual reported or assigned weights of seizures) when analyzing the ETIS data. These caveats should be borne in mind when considering the estimated weight values described in this report.

Table 1: Estimated weight (rounded to nearest 100 kg) of ivory in raw ivory equivalent (RIE) terms represented by unadjusted ETIS seizure data, 2008-2017 (ETIS, 06 June 2018)

Year	Number of ivory seizure cases	Raw ivory weight (kg)	Worked ivory weight RIE (kg)	Total (kg)
2008	533	5,500	1,400	6,900
2009	1,355	27,600	6,700	34,300
2010	1,344	23,300	3,400	26,700
2011	1,892	45,600	6,100	51,700
2012	1,376	36,900	5,200	42,100
2013	1,634	59,900	7,500	67,400
2014	1,352	33,900	7,000	40,900
2015	1,455	39,000	5,800	44,800
2016	1,242	34,100	5,900	40,000
2017	1,007	34,600	3,700	38,300
Total	13,190	340,400	52,700	393,100

Raw ivory equivalent (RIE) values are used for all ivory seizure data examined in this report, so that an estimate of wastage that occurs during the manufacturing process for worked ivory products is considered as part of the weight; this allows worked ivory values to be comparable to, and aggregated with, raw ivory (see CoP14 Doc. 53.2 Annex for a description of the method used for this calculation). Table 1 provides a summary of the estimated ivory weights in RIE terms for each year in this analysis.

Assignment of country of origin to ivory seizures following DNA assessment:

Since the Parties agreed Decision 16.83 and incorporated recommendations for forensic examination in Resolution Conf. 10.10 (Rev. CoP16) at CoP16, ETIS has tracked the forensic examination of ivory in seizure cases and used the results to extend trade route information to encompass designated countries of origin as part of the known trade chains. Most of these results rely on published work undertaken at the University of Washington's Center for Conservation Biology under the direction of Dr. Sam Wasser. In this regard, the ETIS database has been designed to accommodate multiple countries of origin, and estimates of the proportion of weight relating to each country of origin identified through forensic results have become an integral part of such

records. Table 2 presents the number of seizure cases that potentially qualify for forensic examination against the number of actual cases for which forensic results have been integrated into the ETIS record. Overall, only 21 seizure cases out of the 107 records (19.6%) involving the seizure of 500 kg of ivory or more have been assessed forensically and the results communicated to TRAFFIC for inclusion in ETIS. Indeed, between 2015-2017, only six out of 46 (13%) such seizures were found to have been assessed forensically and the results reported to ETIS. It is evident that many CITES Parties are not making forensic examination of large ivory seizures a priority concern.

Table 2: Estimated number of large-scale ivory seizures (>500 kg) which have been forensically examined pursuant to Resolution Conf. 10.10 (Rev. CoP17) and the results reported to ETIS (ETIS, 06 June 2018)

Year	No. of large-scale ivory seizures reported to ETIS	No. of forensically examined cases with results reported to ETIS
From June 2011	13	0
2012	14	3
2013	19	6
2014	15	6
2015	20	2
2016	18	2
2017	8	2
Total	107	21

PART II: THE TREND ANALYSIS

Resolution Conf. 10.10 (Rev. CoP17) calls for ETIS to measure “*levels and trends, and changes in levels and trends*” concerning illegal trade in ivory.

A note on methods

This report is based upon the analytical framework for ETIS described in Underwood *et al.*, (2013) and Burn and Underwood (2013) with some refinements. This basic framework has been used for each ETIS analysis since CITES CoP16. For the analysis to CoP18, the following modifications or refinements can be noted:

Time period of the analysis: This analysis addresses the ten-year period from 2008 through 2017, commencing with the year in which the second CITES-approved, one-off sale of ivory occurred between six Parties. Over the ten-year period, the ETIS database contained 13,190 seizure records that relate to raw or worked ivory, which collectively weighed an estimated 393,100 kg (Table 1). Individual records range from one gram to 7,013 kg of ivory and the largest 1% of these seizure records represents 58% of the total estimated weight of all ivory seized during this period.

Weight classes: Since CoP16, each ETIS analysis has described illegal ivory trade trends using weight classes for raw and worked ivory: small (less than 10 kg), medium (10 kg to less than 100 kg) and large (100 kg or more). Whilst this categorization has generally worked well, since CoP17 the medium and large worked ivory weight classes have been combined owing to the fact that there are very few seizures of worked ivory in the large weight class. Combining these two ivory weight classes leads to more robust analytical results.

Selection of countries: Using the point systems described in the CoP17 report (CoP17 Doc. 57.5 Annex), data from 66 countries in the period 2008-2017 were examined in this analysis, accounting for 99% of the seizures by both number and weight. It should also be noted that Portugal was excluded from the analysis because it was felt to be an atypical country, in particular, by producing anomalous results for the first two years of the trend and then contributing very little in the later years which are the primary focus of this analysis.

Bias adjustment of the ETIS seizure data: As in all previous analyses, the raw ETIS seizure data presented in Figure 1 cannot be regarded as an accurate representation of the pattern of illegal ivory trade because of inherent bias in the data. Bias occurs because of differences in the ability of countries to make seizures and/or report them to ETIS. It is necessary to correct for bias in order to make relatively meaningful comparisons between countries over time. To achieve this, independent proxy variables are sought to account for some of the differences in seizure and reporting rates between and within individual countries over time, as described in Underwood *et al.*,

2013. As in the CoP16 and CoP17 analyses, the *data collection score* and the *CITES reporting score* were the two variables that best described why countries differed in their ability to report seizures.

In the CoP17 analysis, only one of several proxy variables tested was found to describe the variability in how countries make seizures (the seizure rate); the previous, or lagged, year's *law enforcement effort ratio (LE Ratio)*, (the calculation of which is described in the fourth note of Table 5). In this regard, it should be understood that the LE Ratio calculation excluded countries that were implicated in the trade chain of a seizure if the shipment was seized before reaching the country in question and thereby foreclosing on any opportunity for law enforcement action. Although this gives a better reflection of law enforcement than the definition used prior to the CoP17 analysis, a consequence was that nations which mostly function as countries of destination end up with an artificially high LE Ratio. This is because shipments are not likely to leave a country of destination where they are ultimately consumed, unlike a country of origin which they usually leave and can then be seized by other countries. Thus, in comparing a country of origin with a country of destination that in both cases have exactly the same law enforcement effort, the country of destination will end up with a higher LE Ratio. This issue was noted in documentation concerning ETIS methods submitted by Singapore to the 69th meeting of the CITES Standing Committee (SC69 Doc. 29.3 Annex 5). To mitigate this effect, a new variable, the Trade Chain Index (TCI), was derived to characterise a country's role in illegal trade transactions. In general, countries often appear in multiple parts of the trade chain. For some shipments, they may be the country of origin, whilst for others they may be a country of export or destination. The TCI is designed to capture the relative importance of the different roles countries play in illegal ivory trade chains based on the trade chain information captured in the ETIS seizure records¹. The TCI is calculated for each country in each year and is the log of a country's Destination Score² (plus one) divided by a country's Non-destination Score³ (plus one). With this calculation, countries that are mainly countries of destination have a higher TCI than countries which are usually found at earlier points in the trade chain.

In the 2018 analysis, the variables that best described differences in the rate of seizure were the lagged LE Ratio and the Trade Chain Index. The bias adjustment for these two variables can be interpreted as follows: the higher the LE Ratio, the higher the estimated seizure rate, but for two countries with the exact same LE Ratio, the estimated seizure rate will be lower for the country with the higher TCI. This refinement to the estimation of the seizure rate is an improvement over previous analyses, although it should be noted that introducing this calculation does not change the results of the trend analysis in a substantive way.

The Transaction Index – assessing the frequency of illegal trade in ivory

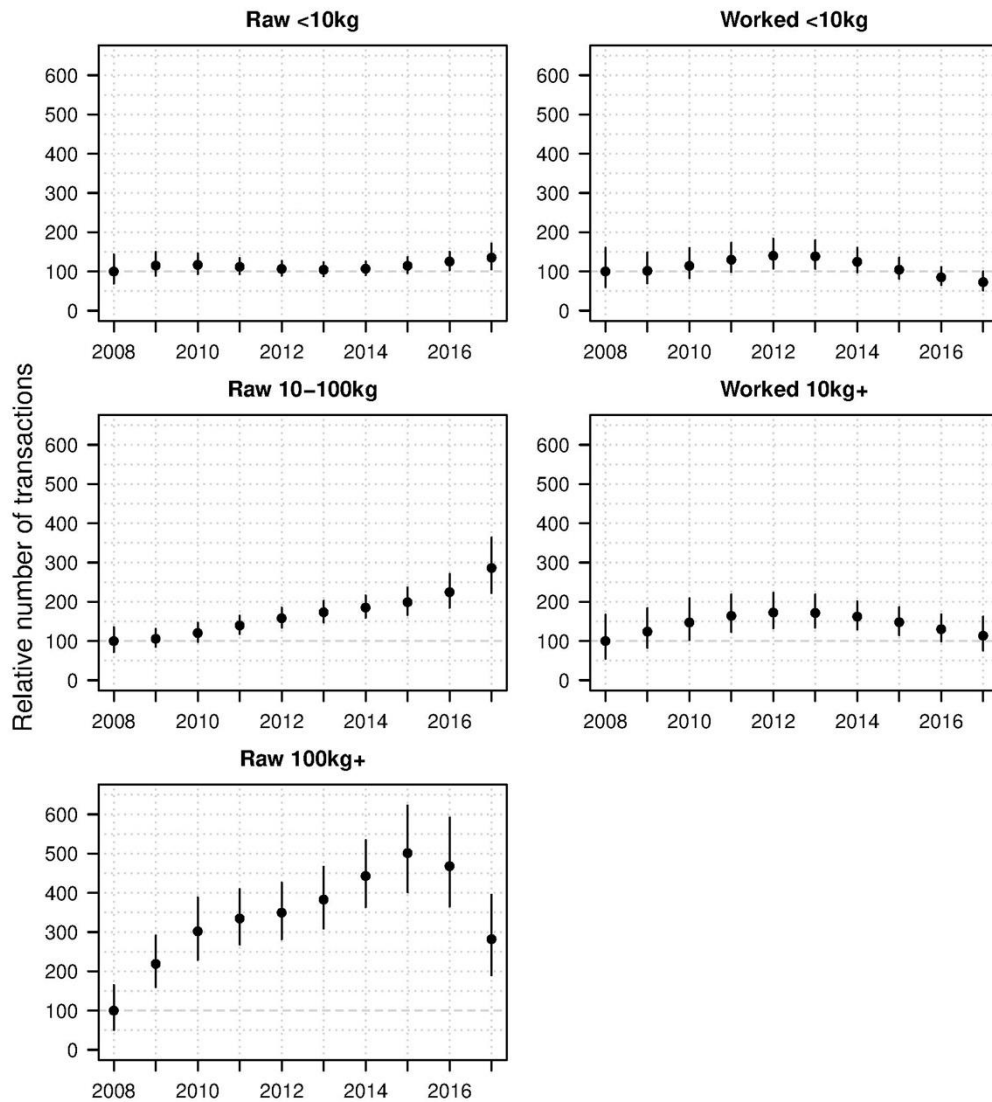
The Transaction Index presented in Figure 2 depicts global illegal trade activity in five ivory classes, two ivory types (raw and worked) and three weight categories (small, medium and large), although the last two are combined for worked ivory. Based upon bias-adjusted data, to account for variable seizure and reporting rates, each ivory class provides a measure of the frequency of raw and worked ivory transactions occurring over the period, with 2008 set to 100 to constitute the baseline.

¹ Seizure records typically include information on the countries of origin, export, transit or destination in the transaction as defined in the ETIS data collection form which was approved for use under CITES in 1998. Over 85% of ETIS records in the reporting period provide some information on the trade chain.

² The Destination Score for a country in a particular year is the number of seizures in which that country is listed as a 'country of destination' divided by the total number of seizures in that year for which a 'country of destination' is provided. This score is calculated separately for raw and worked seizures and then averaged.

³ The Non-destination score is the average of the Origin, Export and Transit Scores. These consider the number of seizures in which the country is listed as the 'country of origin, export and/or transit' and are calculated in a similar manner to the Destination Score.

Figure 2: Trends in Transaction Index by ivory type and weight category with mean (bold dot) and 90% confidence intervals, 2008-2017 (ETIS, 06 June 2018)



Each of the figures presents the pattern of trade activity by ivory class, with the best estimate of annual transactions being the bold dot with the vertical lines depicting 90% confidence intervals. With the exception of the 'raw 100 kg+' figure, it can be seen that the confidence range remains tight in all other classes. In general terms, the three figures for raw ivory are indicative of ivory supply from Africa, the principal source for contemporary illegal trade, whilst the two figures for worked ivory constitute a window on ivory demand and consumption globally. The underlying trade dynamics of each ivory class can be unique and reflect different aspects of illegal trade. For example, the small worked ivory class primarily relates to activity involving manufactured products seized from tourists or other individual buyers, whereas the large raw ivory class typically involves any number of commercial-scale transactions often put together pursuant to higher-level organised criminal enterprise. Viewing the ETIS data through the prism of ivory types and weight categories affords a more nuanced look at different players, locations and dynamics operating along the illegal ivory trade chain. As noted, dividing seizures into weight categories also helps mitigate the uncertainty around ivory seizure weights.

On the right side of Figure 2, illicit worked ivory trade transactions were at their highest levels in 2012/2013 and then began a gradual decline to 2017. This development coincides with a host of ivory market surveys in both Asia and Africa that generally show major reductions in the number of ivory products observed for sale in physical ivory markets, including those in China, Thailand and Singapore in Asia (Webber *et al.*, 2013; Krishnasamy *et al.*, 2016; Zhao, 2017; Yu, 2018), and Cameroon, the Congo, Ethiopia, Gabon in Africa (Nkoke *et al.*, 2017; Vigne, 2017). Moving to raw ivory transactions on the left side of the figure, the small weight class shows incremental increase, whilst the medium weight class shows a considerable upward movement in terms of illegal trade activity in 2017. On the other hand, this coincides with a major decline in the large raw ivory weight class in 2017, following an unbroken steady increase from 2008 to a peak in 2015. The decline in the large raw weight class is important as previously it was a key driver of the overall trend in illegal ivory trade throughout the entire period.

under examination. Both the increasing trend in the medium raw ivory weight class and the drop in the large raw ivory weight class could reflect changing trade dynamics, particularly the apparent emergence of illegal ivory processing within Africa for the export of products to Asian markets (CITES, 2017).

Figure 3: Transaction Index combining weight classes by ivory type, 2007-2014 (ETIS, 21 June 2018)

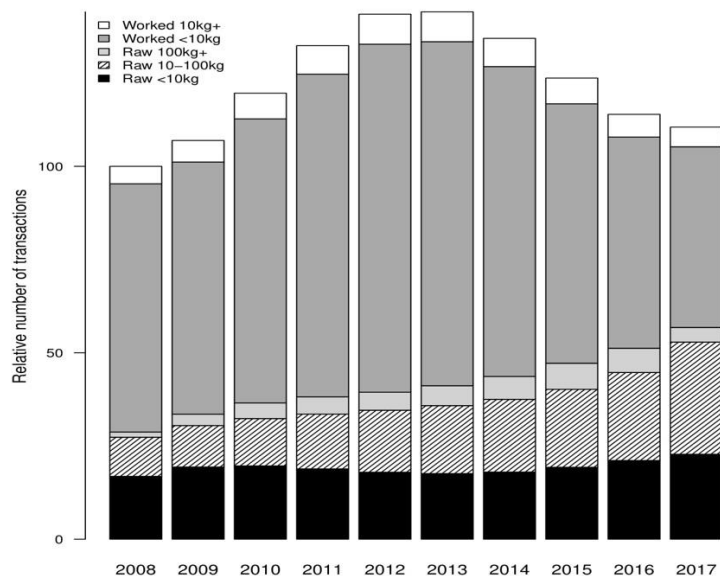


Figure 3 aggregates the overall trend by ivory type, showing a steady incremental decline in total ivory trade transactions from the peak years of 2012/2013, with the worked small weight class exhibiting the most pronounced decline. The drop in raw ivory transactions involving 100 kg or more is also apparent, but in terms of actual numbers of individual transactions the effect is much less. On the other hand, small and medium-sized raw ivory shipments have increased to the extent that all raw ivory transactions together surpass the estimate for all worked ivory transactions for the first time ever in an ETIS analysis. Again, whether this result is because the data in 2017 for worked ivory transactions remains deficient or not will only be understood in future iterations of the ETIS trend analysis.

Figure 4: Transaction Index composite of all ivory types and weight classes with mean (bold dot) and 90% confidence intervals, 2008-2017 (ETIS, 06 June 2018)

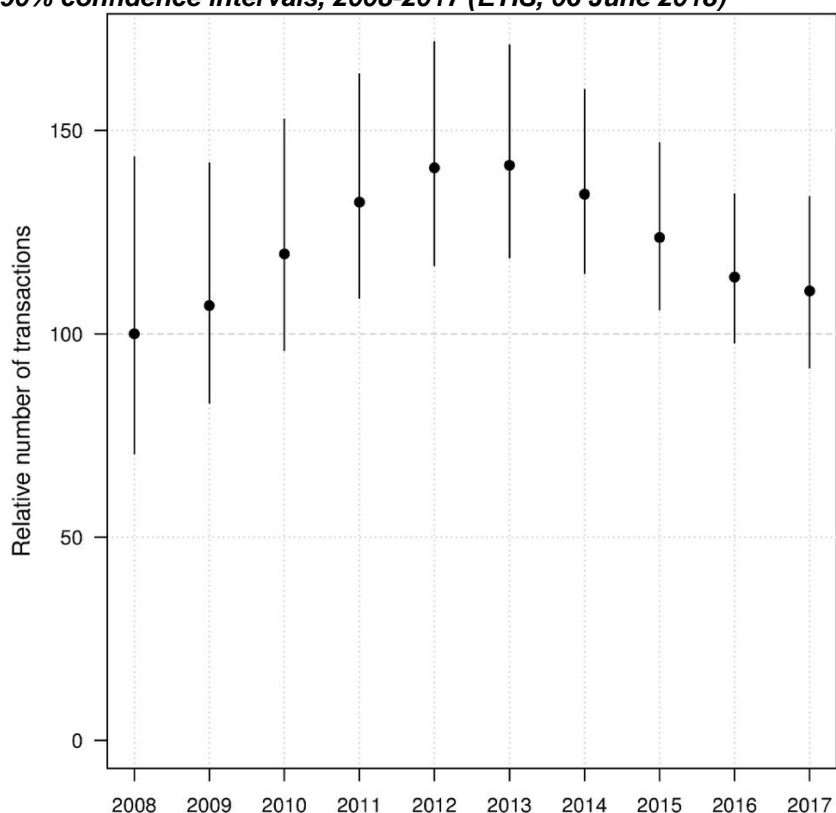
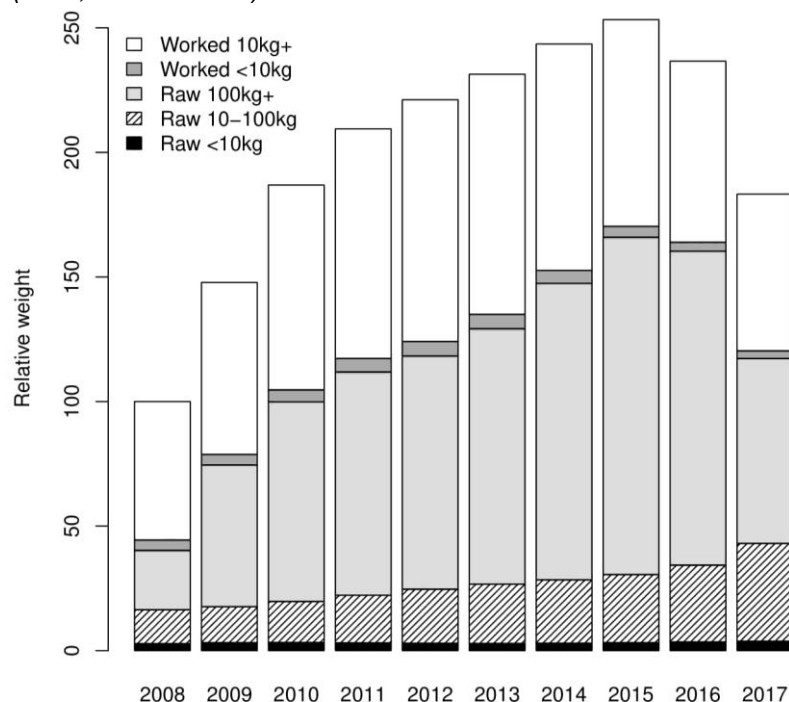


Figure 4 illustrates the overall consolidated trend of illegal ivory trade activity globally with 90% confidence intervals presented. Again, the analysis suggests a drop in illegal global ivory trade activity since 2013 but the extent of ongoing decline in 2017 remains unclear due to the data completeness issue described above. If additional seizure records are obtained subsequent to this analysis, 2017 could ultimately surpass the estimate for 2016. The overall conclusion is that there is a strong suggestion that the illegal ivory trade transactions have declined to some degree from peak levels, but the downward trend is still within the confidence bounds of the peak value. A precautionary interpretation is that the illegal ivory trade has more or less been fairly stable over the last two, possibly three, years.

The Weight Index – assessing the volume of illegal trade in ivory

The Weight Index allows for the relative quantity of ivory in trade to be assessed by ivory type in weight classes. This index results from combining the Transactions Index with a model for assigning weights to each seizure in each weight class. As previously emphasized, ETIS is not designed to provide absolute weight values of illicit ivory trade, rather the aggregated pattern of bias-adjusted data is indicative of the relative quantity of ivory being traded through illegal trade channels annually. It is also worth noting that impact on elephants becomes more apparent when assessing the Weight Index and relating ETIS results to MIKE results on the illegal killing of elephants, rather than when assessing the number of transactions. However as this is a relative index, the absolute impact on elephant numbers cannot be gauged from this analysis.

Figure 5: Weight Index combining weight classes by ivory types with 90% confidence intervals, 2008-2017 (ETIS, 06 June 2018)

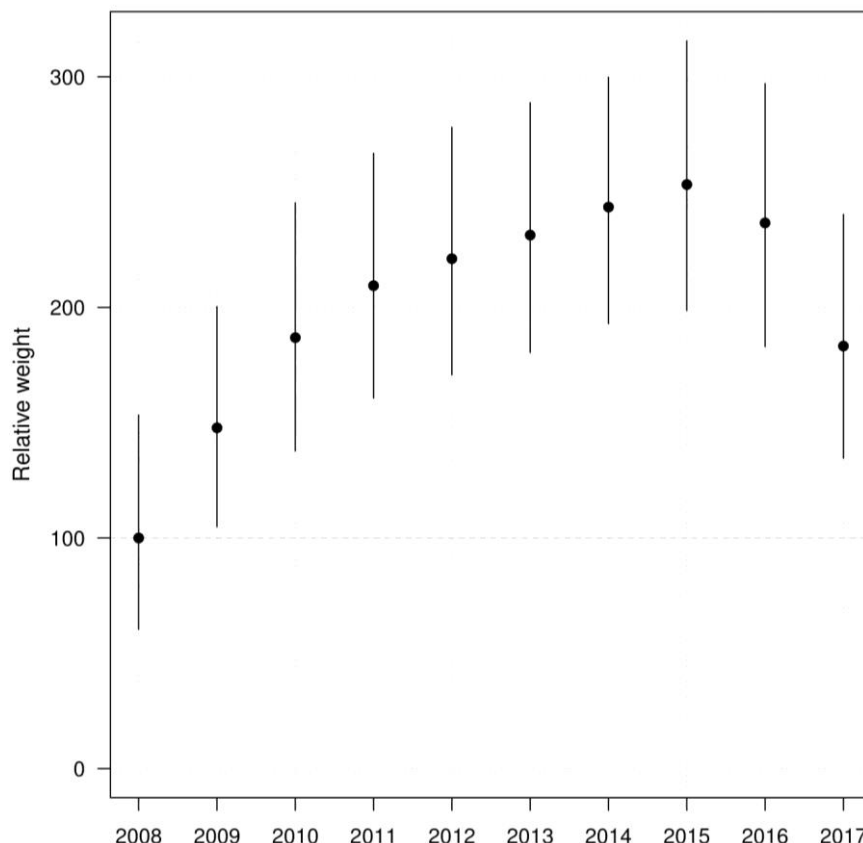


Aggregating all ivory types and weight classes, Figure 5 illustrates the relative contribution of each ivory class to illegal trade. It is evident that the large raw ivory class (the grey shading) has accounted for the greatest quantity of ivory in illicit trade overall during this period. The marked decrease in transactions in the large raw ivory weight class in 2017 has resulted in a major decline in the relative quantity of ivory in illegal trade. Current levels of trade by weight are the lowest they have been since 2010, seven years earlier. Indeed, in 2017, only the medium raw ivory weight class shows an increase in ivory quantity, possibly a reflection of changing trade dynamics. As ever, the most frequent ivory transaction entails worked ivory products weighing less than 10 kg (as illustrated in Figure 3), but when measured as aggregated weight by year, this weight class accounts for a very small proportion of the total weight of ivory in illegal trade (Figure 5).

Figure 6 presents an estimate of the relative weight totals by year with 90% confidence limits represented by the vertical lines. A steadily increasing trend in the large raw ivory class was previously driving the overall Weight Index trend to a peak in 2015. With the large raw ivory weight class now showing major decline for the first time, the overall quantity of ivory in illegal trade reflects a significant drop, rather than the more moderated decrease exhibited by the Transaction Index in Figure 4. Whilst any drop in ivory quantity in illegal trade should be

welcomed news for elephant conservation, it should be recognized that declining average tusk weights (an important variable that is neither tracked by the MIKE nor the ETIS programmes in terms of formal reporting protocols) could actually mask fairly stable or even increasing levels of illegal off-take if average tusk weights remained in a state of continual decline, which is certainly a strong possibility where heavily poached elephant populations experience ongoing attrition.

Figure 6: Weight Index composite of all ivory types and weight classes with mean (bold dot) and 90% confidence intervals, 2007-2017 (ETIS, 06 June 2018)



In summary, this analysis suggests a recent reduction in illegal trade quantity, with the estimated weight of ivory in illegal trade now falling below the peak levels previously recorded. As this result coincides with four full years of implementation of the National Ivory Action Plans (NIAP) process, it is plausible that this result reflects a positive impact of this CITES oversight process on overall trade dynamics. However, the extent of the apparent downturn in both the Transaction and Weight Indices is somewhat challenged by the fact that a significant number of 2017 seizures were not considered in the results presented in this report due to late reporting, so some countries' records are likely to be incomplete. The prospect of upward movement in the 2017 results in future iterations of the ETIS trend analysis cannot be discounted and further effort is required if illegal ivory trade is going to be brought down to levels that do not undermine elephant conservation in elephant range States.

PART III: THE CLUSTER ANALYSIS

In each iteration of the ETIS analysis to CITES CoPs, agglomerative hierarchical cluster analysis has been used to identify countries with similar trade characteristics. This helps the Parties identify countries most prominently implicated in the illicit ivory trade so that appropriate interventions can be considered pursuant to the Convention. At CoP17, Resolution Conf. 10.10 was amended to include Annex 3 on *Guidelines to the National Ivory Action Plans Process*, with Step 1 on the "Identification of Parties to participate in the National Ivory Action Plans Process" clearly stating:

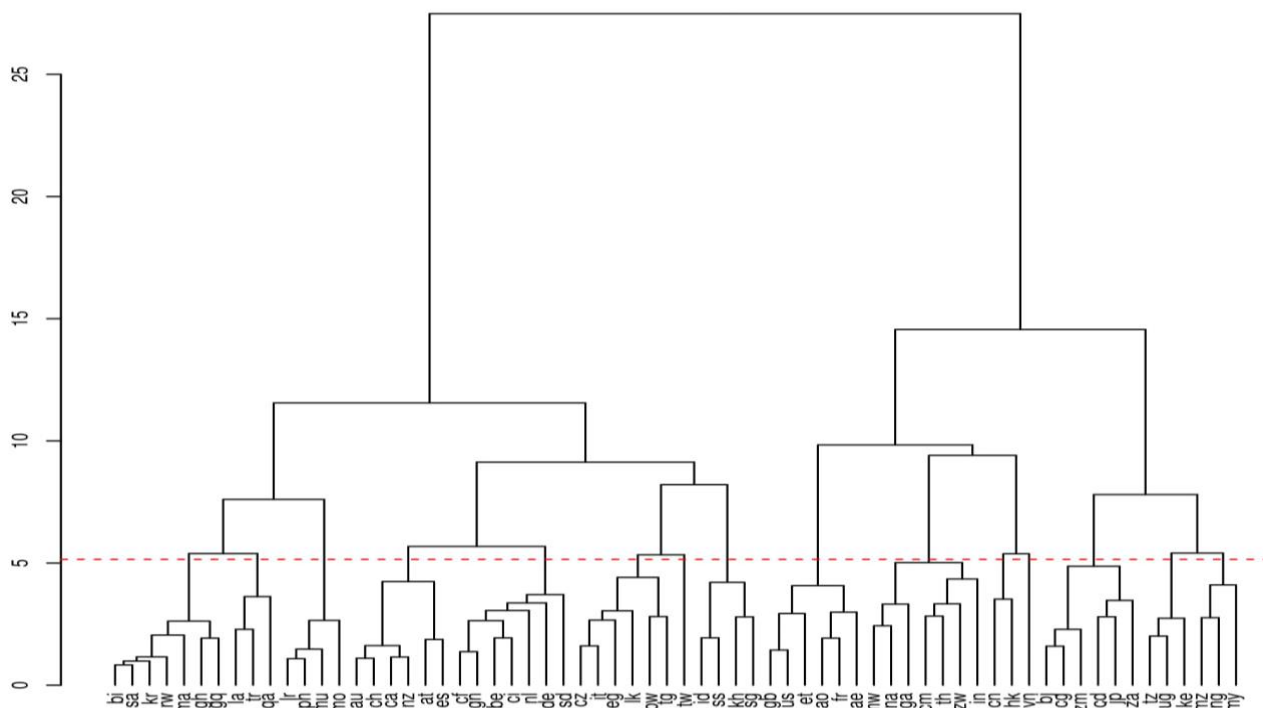
The foundation for identifying Parties to participate in the National Ivory Action Plans Process (NIAP) process is the ETIS report submitted to each meeting of the Conference of the Parties under this Resolution.

This cluster analysis is the underlying piece of the ETIS report that assists Parties in that identification and this assessment was undertaken with that in mind.

Forming the clusters:

Figure 7 depicts the cluster analysis for CoP18 in which 66 countries or territories were assessed for the years 2015 through 2017, the most recent years of ETIS data (whilst the analysis for the CoP17 addressed the years 2012-2014, an entirely different set of data).

Figure 7: *The cluster analysis (ETIS data, 06 June 2018)*



Key: AE-United Arab Emirates; AO-Angola; AT-Austria; AU-Australia; BE-Belgium; BI-Burundi; BJ-Benin; BW-Botswana; CA-Canada; CD-Democratic Republic of the Congo; CF-Central African Republic; CG-Republic of the Congo; CH-Switzerland; CI-Côte d'Ivoire; CM-Cameroon; CN-China; CZ-Czech Republic; DE-Germany; EG-Egypt; ES-Spain; ET-Ethiopia; FR-France; GA-Gabon; GB-United Kingdom of Great Britain and Northern Ireland; GH-Ghana; GN-Guinea; GQ-Equatorial Guinea; HK-Hong Kong SAR; ID-Indonesia; IN-India; IT-Italy; JP-Japan; KE-Kenya; KH-Cambodia; KR-Republic of Korea; LA-Lao People's Democratic Republic; LK-Sri Lanka; LR-Liberia; MA-Morocco; MO-Macau SAR; MU-Mauritius; MW-Malawi; MY-Malaysia; MZ-Mozambique; NA-Namibia; NG-Nigeria; NL-Netherlands; NZ-New Zealand; PH-Philippines; QA-Qatar; RW-Rwanda; SA-Saudi Arabia; SD-Sudan; SG-Singapore; SS-South Sudan; TG-Togo; TH-Thailand; TR-Turkey; TW-Taiwan Province of China; TZ-United Republic of Tanzania; UG-Uganda; US-United States of America; VN-Viet Nam; ZA-South Africa; ZM-Zambia; ZW-Zimbabwe. The dotted line is the point where the clusters are formed.

The data used to form the cluster analysis comprised the three-year totals of the following eleven bias-adjusted variables. The variables assessed were designed to draw out the general characteristics of a country's involvement in illegal ivory trade (i.e. 1 - 5), differentiate law enforcement performance (i.e. 6, 7), and consider total ivory trade flows, especially those representing the greatest trade volumes (i.e. 8, 9, 10, 11):

- 1 – 5. the Transaction Index by ivory type in five weight classes for each country – these measures serve to compare the relative role of each country in the trade (raw and worked separately).
6. the total of 'seizures out' (i.e. the number of seizures in which a country has been implicated as part of the trade chain but did not make the seizure itself although it had an opportunity to do so) that were less than 500 kg (raw and worked combined) – this measure serves to compare law enforcement performance, but only in cases where law enforcement action would have been possible.
7. the total of 'seizures out' (i.e. the number of seizures in which a country has been implicated as part of the trade chain but did not make the seizure itself although it had an opportunity to do so) that were 500 kg or more (raw and worked combined) – this measure serves to compare law enforcement performance, but only in cases where law enforcement action would have been possible.
8. the total of 'weights in' (i.e. the weight in kg of seizures made by a country) that were less than 500 kg

(raw and worked combined) – this measure serves to compare the relative quantity of ivory being seized coming into a country in smaller consignments.

9. the total of 'weights out' (i.e. the weight in kg of seizures in which a country has been implicated as part of the trade chain irrespective of where the seizure took place) that were less than 500 kg (raw and worked combined) – this measure serves to compare relative ivory trade flows in terms of the quantity of ivory coming from, leaving or moving through a country in smaller consignments.
10. the total of 'weights in' (i.e. the weight in kg of seizures made by a country) that were 500 kg or more (raw and worked combined) – this measure serves to compare the relative quantity of ivory being seized coming into a country in larger consignments.
11. the total of 'weights out' (i.e. the weight in kg of seizures in which a country has been implicated as part of the trade chain irrespective of where the seizure took place) that were 500 kg or more (raw and worked combined) – this measure serves to compare relative ivory trade flows in terms of the quantity of ivory coming from, leaving or moving through a country in larger consignments.

The result of this assessment is the dendrogram depicted in Figure 7 whereby countries which exhibit similar characteristics are grouped together. The degree of vertical separation between different countries/territories provides a relative measure of dissimilarity based upon the distance traveled along the vertical axis. For example, it can be seen that the two sides of the dendrogram are clearly divided between the 38 countries falling on the left-hand side and the 28 countries on the right-hand side (Figure 7); this separation constitutes a critical division in this cluster analysis, with those clusters on the right having far greater values for every variable assessed, meaning that in relative terms the data show a greater association with illegal ivory trade.

Because the dendrogram shows the hierarchical relationship between countries, a horizontal line can be drawn at any height in the diagram to partition the countries into a number of clusters. A cluster consists of all countries joined by the vertical line that intersects the horizontal line. For example, drawing a line at the 20 mark (a cut-off of 20) gives the two groups described above. A cut-off (or line) at around seven would result in 10 groups forming and a cut-off (or line) close to zero gives 66 different groups – one for each country. Just as individuals in a taxonomic tree can be grouped at different resolutions, for example by species, family, genus or order, so can the countries in this analysis. Changing the resolution, and therefore the cut-off and the number of groups, does not change the structure of the dendrogram or the relationship between countries; it merely provides a different level of detail for describing ivory trade characteristics of the countries in each grouping.

For the purposes of this report 15 groups are described, comprising between one and seven entities in each grouping; the horizontal line drawn just above the 5 degree mark indicates the cut-off for this grouping. While subjective to a degree, this cut-off was chosen after careful inspection of the data because it was felt to give sufficient detail to discriminate between countries taking different roles in the trade. At best, the cluster groups exhibit an unambiguous logic in terms of the underlying attributes, but not all groups have a clear cohesion in terms of all definable characteristics. The description below identifies this where necessary and the dendrogram provides additional information on the nuances of the groupings. Finally, given that the variables in the cluster analysis are based on modelled outputs, a sensitivity analysis was conducted to assess the interconnections and unity of the components that form each cluster. With some exceptions (noted in the text below), a very high degree of cohesiveness was found, especially for those clusters considered for prioritisation later on in this report.

Describing the results:

Table 3 presents aggregated summary statistics of raw data for the 15 groups which are then used to comparatively describe salient characteristics of the various groups. Some of these explanatory variables are based on, or derive from, the original ETIS data provided by the contributors of data to ETIS, prior to bias adjustment. The cluster analysis uses bias-adjusted summaries of these data, but it is reasoned that using summaries of the original data as provided by the Parties is the best way to explain the characteristics of the clusters. In addition, other independent sources of data are used to describe the clusters, such as the corruption measure of Transparency International or the domestic ivory market score, as they implicitly serve to comparatively assess the domestic environment in which illegal ivory trade unfolds at a comparative national scale. For single country clusters, the statistics reflect the data for that particular country only, but for clusters comprised of two or more countries, the statistics represent the mean of all constituent components.

Table 3: *Summary explanatory variables to describe the 13 cluster analysis groups based on ETIS seizure data before bias adjustment and other sources of data, 2015-2017. Clusters shaded grey are in the major right-hand side cluster grouping (indicating higher levels of illicit trade).*

		<i>Measure of Frequency</i>	<i>Measure of Scale</i>	<i>Measures of Law Enforcement Effort Efficiency</i>		<i>Measure of Organised Crime</i>	<i>Measure of Domestic Ivory Trade</i>
Group	Countries or territories	Mean no. of seizures ¹	Mean weight (kg) ²	Mean CPI ³	Mean LE Ratio ⁴	Proportion of large-scale ivory seizures to mean weight ⁵	Mean market score ⁶
1	MY, MZ, NG	112	16,849	34.44	0.21	0.75	4.67
2	KE, TZ, UG	194	11,836	28.11	0.90	0.59	1.33
3	BJ, CD, CG, JP, ZA, ZM	88	3,589	39.17	0.61	0.45	4.00
4	VN	153	32,054	33.00	0.46	0.69	6.00
5	CN, HK	611	13,919	57.83	0.90	0.57	6.50
6	CM, GA, IN, MW, NA, TH, ZW	93	3,451	34.33	0.77	0.30	3.43
7	AE, AO, ET, FR, GB, US	275	2,490	57.72	0.69	0.00	4.17
8	ID, KH, SG, SS	16	5,957	38.67	0.41	0.76	3.25
9	TW	9	963	62.00	0.88	0.89	3.00
10	BW, CZ, EG, IT, LK, TG	21	646	44.56	0.82	0.00	2.83
11	BE, CF, CI, DE, GN, NL, SD	42	727	48.14	0.60	0.34	4.00
12	AT, AU, CA, CH, ES, NZ	25	318	78.22	0.70	0.00	3.00
13	LR, MO, MU, PH	1	6	30.50	0.00	0.00	2.50
14	LA, QA, TR	25	3,486	44.67	0.11	0.59	4.00
15	BI, GH, GQ, KR, MA, RW, SA	11	241	37.81	0.00	0.00	2.86

1. *Frequency* is measured by the 'mean number' of reported seizures in the period 2015-2017 (i.e. the total number of all seizures which were made by, or have implicated, each country/territory in the group divided by the number of entities in the cluster); high numbers indicate greater frequency; low numbers indicate lesser frequency.
2. *Scale* is measured by the 'mean estimated weight' of reported seizures in the period 2015-2017 (i.e. the total estimated weight of ivory represented by all seizures which were made by, or have implicated, each country/territory in the group divided by the number of entities in the cluster); high numbers indicate greater weights of ivory; low numbers indicate lesser weights of ivory.
3. *Law enforcement effort, effectiveness, and rates of reporting* is measured by the mean Corruption Perception Index of Transparency International (i.e. the total CPI score for each country in the period 2015-2017 divided by the number of countries/territories in the cluster divided by the number of years); scores range from 1 (weakest governance performance) to 100 (strongest governance performance).
4. *Law enforcement effort, effectiveness and rates of reporting* is measured by the 'mean LE Ratio' in the period 2015-2017 (i.e. the total number of in-country seizures divided by the total number of seizures which were made by, or have implicated, each country/territory in the group divided by the number of entities in the cluster); ratios range from 0.00 (no law enforcement effort) to 1.00 (best law enforcement effort).
5. *Involvement of organised crime* is measured by taking the proportion of the mean weight in reported seizures that represent large-scale seizures (i.e. those seizures which are equal to or greater than 500 kg of ivory (RIE) weight in which a particular country/territory either made or was implicated in) in the period 2015-2017; high values suggest the presence of organised crime in the movement of ivory; low values suggest the absence of organised crime in the movement of ivory.
6. *Domestic ivory trade* is measured by the 'mean market score'; scores range from 1 (no domestic ivory market) to 9 (very large domestic ivory market).

It should be noted that in this report seizures of 500 kg or more have been used as the threshold indicator for assessing ivory movements that are assumed to be linked to organised criminal activity (previously 800 kg was used but 500 kg conforms with the threshold first agreed by the Parties in Decision 16.83 and is now part of Resolution Conf. 10.10 (Rev. CoP17)). For assessing corruption, the Corruption Perception Index of Transparency International that was previously used in earlier iterations of the ETIS analyses is used to describe comparative national-level assessments of the general governance environment. Finally, the numerical order of the cluster groups is not a ranking of their relative importance, but simply indicates their order moving from right to left across the dendrogram.

The following can be said about each group in this cluster analysis:

Group 1 – Malaysia (MY), Mozambique (MZ), Nigeria (NG): Malaysia has previously been identified as playing a major transit role in the illegal ivory trade for containerized consignments, whilst Mozambique and Nigeria function ivory entrepôt or exit points within Southern and West Africa, respectively. These three countries fall together in a cluster for the first time, collectively exhibiting the fifth highest mean number of seizures made in this time period, but also having the second largest weight value, indicating that frequency and scale in the illegal ivory trade are important factors. Nearly 60% of the total weight seized related to seizures of 500 kg or more, suggesting that the bulk of the illicit ivory traffic moving through and from these countries represents higher-level organised criminal activity. In terms of making seizures, the LE Ratio (21%) is the fourth poorest in the cluster analysis, indicating that only one in five seizures in which these countries are part of the trade chain is being made by one of these countries. The CPI value for governance is also the fourth lowest which means that corruption could potentially be a serious issue inhibiting performance against illegal ivory trade; in this regard, Malaysia has better CPI values than either Mozambique or Nigeria. Finally, the domestic ivory market score is the third largest owing to the market situation in Mozambique (Huang, 2013), and even more so in Nigeria where the Lekki market continues to offer relatively large quantities of ivory (Nkoke, in prep.). On the other hand, it is known that domestic ivory trade in Malaysia is virtually negligible (Martin & Stiles, 2002).

Group 2 – Kenya (KE), United Republic of Tanzania (TZ), Uganda (UG): These three East African elephant range States, whose illicit ivory trades have been interlinked for the last decade as sources and exporters of ivory or transit countries for consignments put together elsewhere, now all fall together in a cluster for the first time (although Kenya and Tanzania were paired in the CoP17 analysis). In terms of frequency, this group has the third largest number of seizures, but all of these countries are regularly making and diligently reporting seizures to ETIS. Collectively, these countries exhibit the fourth greatest value for ivory weight in this analysis, but compared to the CoP17 analysis this actually represents a major decline. Further, with a collective LE Ratio of 90%, some nine out of ten seizures in which this group is involved are being made by the group itself, which also is a very good result. About 60% of the trade by weight, however, still reflects large-scale ivory movements which are the hallmark of transnational organised crime and corruption could be a dogged factor as this group has the lowest CPI score in this analysis. On the other hand, the domestic ivory market score is the best of any cluster in this analysis, indicating that local commerce in ivory has been largely eradicated, which is another positive development.

Group 3 – Benin (BJ), Democratic Republic of the Congo (CD), Congo (CG), Japan (JP), South Africa (ZA), Zambia (ZM): This cluster comprises five African elephant range States together with Japan, an ivory consuming country in Asia. This group represents mid-range variables in terms of the mean number of seizures and the mean weight value. The LE Ratio collectively indicates adequate performance with some 60% of the total number of seizures being made by the cluster group itself, but Japan and the Democratic Republic of the Congo individually exhibit poor performance well below the group's average. Further, just less than half of the total weight value represents large-scale movements of ivory, suggesting a considerable level of criminal activity operating in many of these countries. In terms of corruption, the CPI score is a mid-range point amongst all cluster groups, but the score itself is below the average, however, Japan's individual score is nearly twice the group average. The domestic market score is the fifth highest in this analysis, mostly owing to the more active markets in Japan and the Democratic Republic of the Congo.

Group 4 – Viet Nam (VN): For the first time, Viet Nam falls alone in a single country cluster. Long recognized as a major Asian destination and transit conduit for large quantities of ivory, the illegal ivory trade situation in this analysis is comparatively more problematic. In terms of the mean number of seizures, Viet Nam is in the fourth position, however, with respect to the quantity of ivory in trade it holds the number one position with a value that is double the second place position and nearly three times greater than the third place position, a rather remarkable result. Nearly 70% of the weight value comprises large-scale ivory movements signalling the presence of organised criminal syndicates in the trade. At 46%, the LE Ratio is just fair, but the measurement for corruption using CPI scores is the second poorest in this analysis. Viet Nam also has the second highest domestic ivory market score in this analysis.

Group 5 – China (CN), Hong Kong SAR (HK): For the first time, China is not in a single country cluster alone but is paired with Hong Kong Special Administrative Region (SAR). Indeed, this pairing is not surprising as the ivory trades of China and Hong Kong SAR have long been interlinked. In terms of the mean number of seizures, this group is paramount with the highest value in this analysis. The measure for scale is also very significant in the third highest position, indicating a trade characterised by a large quantity of ivory. More than half of this weight variable represents large-scale movements of ivory, suggesting the involvement of transnational criminal syndicates. A very positive attribute of this cluster is the exceptionally high LE Ratio which stands at 90%, indicating their very strong policing performance. Equally, the CPI variable as a measure of corruption collectively is the third best in this analysis. The domestic ivory market score is the highest value in the analysis, indicating that ivory trading was occurring throughout the period examined, though it is worth noting that, except under rare conditional circumstances, China's legal domestic market was closed on the last day of 2017.

Group 6 – Cameroon (CM), Gabon (GA), India (IN), Malawi (MW), Namibia (NA), Thailand (TH), Zimbabwe (ZW): All seven countries in this group are either African or Asian elephant range States. Collectively, this cluster exhibits mid-range variables in terms of the mean number of seizures and the mean weight value very much akin to the values seen for Group 3, but with a superior LE Ratio of 77%; this means that on average, three-quarters of the seizures in which this cluster is identified in the trade chain are seized by the countries in the group. Just less than a third of these seizures involve large-scale movements of ivory, so some, though not a notable degree of, organised criminal activity is apparent. Corruption is likely to be a serious issue in some countries in this group as the cluster holds the third poorest CPI score, with Namibia offering the best score and Zimbabwe the worst. In terms of the domestic ivory market score, the cluster as a whole falls in the middle range, however, as individual countries, Zimbabwe's score is more than double the aggregated mean.

Group 7 – United Arab Emirates (AE), Angola (AO), Ethiopia (ET), France (FR), United Kingdom of Great Britain and Northern Ireland (GB), United States of America (US): This cluster represents an eclectic grouping of two African elephant range States, a major Middle East transit hub connecting Africa with Asia, and two European and one North American destination countries or sources of mostly old 'legacy' ivory. In terms of the frequency measure, this cluster is collectively making lots of seizures, holding the second highest value in this analysis. The very high frequency, however, translates into a mid-range weight value and none of the weight value derives from large-scale movements of ivory, suggesting no evidence of organised crime as it relates to moving large consignments of ivory. Indeed, the complete absence of reported seizures over 500 kg for any of these countries is the key factor that results in this group coming together, followed by a relatively high aggregated weight value for seizures less than 500 kg. At 69%, the LE Ratio indicates that more than two-thirds of the total number of seizures that these countries are implicated in are being seized by these countries and not elsewhere. That good performance is generally supported by the group collectively having the fourth best CPI score, but there is considerable variability when individual country scores are assessed independently, with, for example, Angola and Ethiopia facing the greatest challenges on the corruption front. The domestic market score for this group is in the mid-range, with Angola, and the ivory trade legacy markets of the United Kingdom and the United States having the highest national scores within the group, but the closure of the domestic market in Ethiopia continuing to hold firm.

Group 8 – Indonesia (ID), Cambodia (KH), Singapore (SG), South Sudan (SS): This grouping comprises three Southeast Asian countries, two of which are Asian elephant range States, and one African elephant range State in Africa's newest country, but all function as transit countries to some extent, although Indonesia and Cambodia might also be end-use destinations in their own right. Overall, the group ranks low in terms of the frequency measure as seizures are rarely made and reported to ETIS. However, this cluster collectively renders the fifth highest weight value, indicating that the consignments in which these countries make or are implicated in are generally large. Indeed, this group has the second highest score (76%) in terms of the proportion of the weight value that relates to large-scale movements of ivory that are likely to represent organised criminal activity. At 41%, the LE Ratio indicates that less than half of the seizure cases in which these countries are involved with are interdicted by one of these nations. The average CPI corruption score is not particularly good suggesting that corruption could be a challenge in some countries, but certainly not Singapore which has the third best CPI score of any country assessed at this time. The group's domestic ivory market score is collectively in the lower range, but Cambodia is the outlier on this measure with a domestic ivory market score well above the average.

Group 9 – Taiwan Province of China (TW): Taiwan Province of China, surprisingly falls in its own unique cluster for the first time. The frequency measure is the second lowest in this analysis, indicating very little involvement in illicit ivory trade in terms of either making seizures or otherwise being implicated in them. However, the measure indicating scale is more robust owing to the fact that Taiwan Province of China, was only implicated in a single large-scale movement of ivory in 2015 and then virtually nothing since. Because of this, this cluster has the highest proportion of the weight value (89%) representing large-scale ivory movements associated with organised crime, but again it is based on a single data seizure case. Taiwan Province of China, demonstrates a

very high LE Ratio (88%) and the second best CPI score in this analysis. The domestic market score is also low, implying very little activity locally.

Group 10 – Botswana (BW), Czech Republic (CZ), Egypt (EG), Italy (IT), Sri Lanka (LK), Togo (TG): Another diverse group of two African elephant and one Asian elephant range States, a North African nation that functions as an end-use market, and two European countries. The frequency and scale measures point to a rather small number of mostly medium weight seizures, with no involvement in the large-scale ivory movements which are the hallmark of organised crime. At 82%, four out of five seizures in which these countries are implicated are made by the nations in this group themselves, thus overall the high LE Ratio shows generally good law enforcement. Overall, the CPI score falls in the middle range, but there is considerable variability between the countries in this cluster, with Togo and Egypt at the challenging end of the spectrum in terms of corruption and Botswana and the Czech Republic offering the best scores.

Group 11 – Belgium (BE), Central African Republic (CF), Côte d'Ivoire (CI), Germany (DE), Guinea (GN), Netherlands (NL), Sudan (SD): This group is an eclectic mix of four African elephant range States (although the status of the Sudan is unclear since South Sudan, with most of previous Sudan's extant elephant range, gained independence), and three European nations. Overall, the group falls right in the middle in terms of the mean number of seizures, but, in fact, the three European nations account for over 90% of the seizures made by these countries; the Sudan did not report any seizures to ETIS and the Central African Republic reported only one. Equally, the mean weight value is at the lower end of the scale measure, but the three European countries again account for over 90% of the weight, with about one-third representing large-scale ivory seizures which probably link to organised crime. The LE Ratio (60%) is high, again owing to the performance of Germany and the Netherlands. The CPI score falls at the upper end of the middle values, but the three European countries individually exhibit scores within the ten best countries, whilst the Sudan, Central African Republic and Guinea are greatly challenged by corruption. The domestic ivory market score is tied with two other clusters in the fifth position with Germany, Côte d'Ivoire and the Sudan having national market scores above the group's average.

Group 12 – Austria (AT), Australia (AU), Canada (CA), Switzerland (CH), Spain (ES), New Zealand (NZ): This cluster of relatively wealthy nations in Europe, Oceania and North America generally exhibits good values across the entire spectrum and are not generally involved in significant illegal ivory trade in the period examined. The measure for frequency falls at the lower end of the scale, whilst the weight value is the third lowest in this analysis, indicating that most seizures involve worked ivory products in trade as personal effects. None of this trade links with large-scale movements of ivory that could be linked with higher-level organised crime and the high LE Ratio means that 70% of the transactions in which these countries are involved are made by one of countries in the group. The group also exhibits the highest CPI score indicating that corruption is not really an issue. Finally, the domestic ivory market score is in the fifth lowest position indicating some presence of mostly 'background' antique or pre-Convention ivory.

Group 13 – Liberia (LR), Macau SAR (MO), Mauritius (MU), Philippines (PH): This cluster comprises one African elephant range State, an Indian Ocean island nation, a Chinese Special Administrative Region and an Asian country that has a small ivory industry producing religious artefacts. None of these entities reported any ivory seizures to ETIS from 2015-2017 and collectively this group was only implicated in a total of five other seizures, totalling 24 kg. Thus, both the mean number of seizures and their weight as measures for frequency and scale, respectively, are the lowest of any cluster in this analysis. Equally none of the trade captured in ETIS represents large-scale ivory movements, whilst the LE Ratio is zero as none of these countries reportedly made any seizures. The mean CPI is a mid-range score. The domestic ivory market score is also the second lowest in this analysis.

Group 14 – Lao People's Democratic Republic (LA), Qatar (QA), Turkey (TR): An Asian elephant range State, Lao PDR is an important transit and destination country that shares a border with China, whilst Qatar and Turkey function as significant transit nations owing to the market growth of their national airlines in connecting Africa with a range of Asian destinations. Whilst the measure for frequency falls at the lower end of the scale, the weight value is in the upper mid-range, suggesting that most seizures involve commercial levels of trade. Indeed, 59% of the weight value is related to large-scale ivory movements that were most likely orchestrated by transnational criminal syndicates and, with a LE Ratio of just 11%, barely one in ten seizures in which these countries are implicated were made by these nations themselves. Although the overall CPI value falls in the middle range, the national score for Lao PDR is much lower and suggests that corruption is an important challenge. This is worrying as the mid-range domestic ivory market score largely reflects the growing ivory market in Lao PDR.

Group 15 – Burundi (BI), Ghana (GH), Equatorial Guinea (GQ), Republic of Korea (KR), Morocco (MA), Rwanda (RW), Saudi Arabia (SA): This catch-all group includes three African elephant range States, another African country with no elephants in recent history but still functioned as an important ivory trade entrepôt in the past, and three countries from North Africa, the Middle East and Asia. Like Group 13, none of these countries

have reported any ivory seizures to ETIS during this period, but they have collectively been implicated in 73 seizures made elsewhere, with two-thirds originating in Equatorial Guinea and Ghana. However, the weight value of this trade has been relatively low placing this cluster in the second lowest position in terms of the measure for scale. None of this trade has involved large-scale ivory consignments, suggesting an absence of organised crime in the trade. However, the LE Ratio stands at zero because no in-country seizures were made, nor is the CPI score particularly good, both factors that could potentially compromise effective law enforcement. The low domestic ivory market score suggests that none of these countries have significant local trade in ivory.

Assessing the results of the cluster analysis:

The National Ivory Action Plans (NIAPs) process is a practical tool under the direction of the Standing Committee to address illegal ivory trade by strengthening ivory trade controls, supporting law enforcement and improving awareness by identifying countries in three categories of concern:

- Category A Parties consist of Parties most affected by the illegal trade in ivory;
- Category B Parties consist of Parties markedly affected by the illegal trade in ivory; and
- Category C Parties consist of Parties affected by the illegal trade in ivory.

As detailed in Annex 3 of Resolution Conf. 10.10 (Rev. CoP17), each country-specific action plan outlines a series of urgent actions or activities that need to be implemented against specified time frames and milestones for implementation. Once completed, the CITES Standing Committee agree to allow countries to exit the oversight process. The ETIS analysis to each CITES CoP is the mechanism for identifying countries that might be included in the NIAP process based on analysis of contemporary patterns in ivory seizure data, but the CITES Parties, through the Standing Committee on recommendation from the CITES Secretariat, hold all decision-making powers.

‘Category A countries’

Looking at Figure 7, the explanatory statistics presented in Table 3, and the descriptions of the clusters, Groups 1 and 4 can be considered Category A countries. **Malaysia, Mozambique, Nigeria** and **Viet Nam** collectively account for over half (51%) of the seized and reported estimated ivory weight in this time period, of which nearly three-quarters represents large-scale seizure events that point to higher-level criminal activity (Table 3). The generally low LE Ratio and CPI scores are indicative of persistent challenges on the law enforcement front, and most of these countries -- Malaysia being the sole exception -- have illegal domestic ivory markets of concern. For similar reasons, all of these countries have previously been identified as first or second-tier priorities in the ETIS analyses to CoP16 and CoP17, and all are currently part of the NIAP process under the direction of the CITES Standing Committee.

Despite addressing a series of issues in its NIAP, **Viet Nam**'s status in the current analysis has worsened considerably. It is of concern that, in terms of scale, the estimated weight value for illegal ivory trade that involves Viet Nam has increased by one-third compared to what was found in the period 2012-2014 for the CoP17 report; this substantial increase is particularly noteworthy as it simultaneously occurs when the total estimated weight of ivory in illegal trade in the period 2015-2017 has actually shown a marked decline of around 20% over the previous three-year period. Based on the data available for this report, Viet Nam now functions as the leading destination for illicit ivory, surpassing China (including Hong Kong SAR), which previously accounted for the majority of the weight value in every previous ETIS analysis since CoP12 in 2004. Ivory processing continues to be documented in Viet Nam and a range of ivory products move through the country's illegal retail outlets and internet/social media trading channels, servicing both domestic clients as well as large numbers of cross-border buyers from China (Nyugen *et al.*, 2018; WJC & IISD, 2016; Vigne & Martin, 2016). Vietnamese dealers also engage in raw ivory re-exports into the Chinese mainland, offering a 20% mark-up in price if buyers wish for delivery within China rather than risk crossing the border with the contraband themselves (Xiao, 2018; WJC & IISD, 2016). Recent studies also have documented ties with emerging ivory manufacturers and retail outlets in Lao PDR and Cambodia (EIA, 2018a). Finally, law enforcement data strongly indicates that Vietnamese syndicates are operating from hubs in Africa, especially in Angola, Congo, Mozambique South Africa and Togo, to move ivory from Africa to Asia, often directing shipments to Malaysia, Lao PDR or Cambodia before moving the ivory on to Viet Nam (EIA, 2018a).

Malaysia continues to be considered a Category A country for its role as an important transit country in the illegal trade but, in the period under examination, the country has also become an ivory entrepôt in the region consolidating ivory for eventual export. Indeed, investigations have shown that the largest ivory seizure (7,030 kg) in this period made in Hong Kong SAR in July 2017, not only was exported from Malaysia, but the container

had actually been packed within Malaysian territory prior to export to Hong Kong SAR (CITES, 2018a). Forensic examination of the ivory revealed most of it had come from Central Africa, including Gabon, Congo, Cameroon and the Central African Republic (McEwing *et al.*, 2018), so it appears that exceptionally large quantities of ivory from Central Africa had been smuggled into Malaysia and stockpiled prior to export to Hong Kong SAR. It also appears that another large-scale seizure made in Viet Nam in 2017 of 1,400 kg of ivory also originated in Malaysia and did not involve containerised transit trade (CITES, 2018a). Thus, the illegal ivory trade involving Malaysia is no longer restricted to shipments in transit, but also involves the country as an important consolidation and distribution point (UNODC, 2017). Malaysian nationals have also been identified in Africa and Asia-based ivory smuggling operations on numerous occasions, often in collaboration with Vietnamese or Chinese operatives in the illegal ivory trade (EIA, 2018a). For these reasons, Malaysia remains a Category A country.

Two African countries, **Mozambique** and **Nigeria**, now move into Category A for the first time, as important sources and exporters of illegal ivory. The estimated weight value for illegal ivory trade coming from these two countries has increased by some 40% in this period over what was found in the previous three years, 2012-2014, reported to CoP17. Partially in response to Kenya, United Republic of Tanzania and Uganda collectively moving to strengthen ivory trade law enforcement within their borders, there is evidence that transnational criminal syndicates previously operating in those countries have shifted their operations to Mozambique and Nigeria (EIA, 2017). With very few elephants of its own, Nigeria functions as an entrepôt for illegal ivory from West, Central and even East Africa (Milliken *et al.*, 2016; Wasser, 2015), whilst Mozambique has seen many of its own main elephant population severely impacted by poaching for illegal ivory trade (Thouless *et al.*, 2016). The presence of ivory in Mozambique's physical markets has contracted, but ready under-the-counter availability continues if specifically requested (Huang, 2013; McKenzie *et al.*, 2018), whilst Nigeria also has a continuing highly visible domestic ivory market, especially in Lagos (Nkoke, in prep.). Production of ivory products for export to Asia is particularly pronounced in Nigeria which ranked second by numbers of seizures and third by weight of the products seized in an assessment of commercial exports of worked ivory products from Africa to Asia (Table 4). Since CoP17, serious ivory theft from official government stockpiles has occurred in Mozambique (Frey, 2018), some of which was subsequently seized in a large-scale seizure in Cambodia (Frey, 2017a, b). These two countries become the two most prominent African ivory trade bases in this analysis.

'Category B countries'

It is considered that Groups 2 and 5 constitute Category B countries in this analysis. Accordingly, **Kenya, United Republic of Tanzania, Uganda, China and Hong Kong SAR** fall in these clusters and together account for another 27% of the estimated ivory weight between 2015-2017, with 58% representing transactions involving large-scale movements of ivory that are believed to be put together by organised criminal syndicates (Table 3). Whilst the scale of involvement in illegal ivory trade is significant, it is encouraging to note that these two groups exhibit the highest LE Ratio values, indicating effective law enforcement in the face of persistent major illegal trade challenges during the period under examination. This characteristic basically serves to distinguish this group from the clusters designated in Category A. That said, the three African nations do have the lowest CPI value in this analysis (Table 3), so corruption could be a negative factor to guard against, whilst the two Asian countries hold the highest domestic ivory market score indicating that local ivory demand persists as an important driving force. All of these nations have participated in the NIAP process since CoP16, and all have marked considerable progress in addressing a variety of concerns related to wildlife trafficking. Indeed, China formally closed its domestic ivory market on 31 December 2017, and Hong Kong SAR has taken administrative steps to phase out its domestic ivory trade by the end of 2021. At the 70th meeting of the CITES Standing Committee (October 2018), the Committee agreed that China, Kenya, Uganda and the United Republic of Tanzania had 'substantially achieved' their NIAPs and could exit the process, whilst Hong Kong SAR was to remain in the process and was asked to submit a comprehensive report to the 73rd Standing Committee on any further measures taken to implement its NIAP (CITES, 2018b). On the basis of this analysis, and in particular their association with continuing high volume illegal ivory trade flows, China, Kenya, Uganda and the United Republic of Tanzania are now regarded as Category B priorities, whilst Hong Kong SAR is considered to join them moving from Category A to Category B.

Next to Viet Nam, **China and Hong Kong SAR** together still rank as the second most prominent destinations for illegal ivory in the period under examination, although their collective proportion of estimated trade quantities is now less than half of what it was in the ETIS report to CoP17. This is clearly a positive development and could partially be related to recent policy changes that have begun to constrict trade in local ivory markets. Commencing in early 2017, formerly-accredited legal ivory selling shops in China began a transition to comply with a trade ban and by the end of the year had either all closed or moved into non-ivory product sales, whilst the presence of illegal ivory products in other physical markets has contracted significantly in the largest metropolises, but trade in China's less policed second and third-tier cities remains a significant problem (Zhao *et al.*, 2017; Xiao, 2018). Internet trading of ivory products has also notably reduced in the face of concerted actions, but less observable levels of illegal trade through restricted social media channels still presents a major challenge to law enforcers

and shows far less signs of decline (Zhao *et al.*, 2017; Xiao, 2018). Rapidly growing cross-border markets in neighbouring Viet Nam, Laos and Myanmar continue to present challenges (Vigne & Martin, 2016, 2017, 2018; Nguyen *et al.*, 2018; WJC & ISSD, 2016). Hong Kong SAR has also moved to close its domestic ivory market but falls out of sync with mainland China as delayed implementation will allow commercial trade in ivory to continue until the end of 2021 in the territory. Various other studies continue to document the presence of Chinese-led criminal syndicates operating from bases in Africa to move major shipments of raw ivory illegally to Asia (EIA, 2017; EIA, 2018a), and evidence of Chinese-owned ivory processing operations continue to emerge in many parts of Africa (Nkoke *et al.*, 2017); ETIS data indicate that seizures of worked ivory products leaving Africa for Asian destination has increased significantly and that nearly 60% of the worked ivory products being exported from Africa-based ivory processing operations have been directed to China or Hong Kong SAR as the country or territory of destination (CITES, 2017). These latter seizures are another aspect of organised criminal activity with movement out of Africa involving couriers who typically are Chinese nationals with ivory items concealed on their bodies using purposely designed clothing (CITES, 2017).

With the passage of time, the past distinction between China and Hong Kong SAR as separate markets has faded and there actually seems little justification for continuing to analyse the two data sets separately 21 years on since the former British colony reverted back to China. Although ivory trade is still ostensibly governed by separate policy prescriptions in the mainland and the territory, as a collective ivory market there is little to suggest that the two entities function separately. Although legal movement of any ivory between the China and Hong Kong SAR is officially subject to the CITES permitting system and violations should be seized, there is little evidence that this is happening as ETIS has only three seizure cases made in China for illicit ivory coming from Hong Kong SAR in the period 2015-2017. In contrast, in the periods 2012-2014 and 2009-2011, there were 59 and 383 such seizure cases, respectively, made in China of ivory products coming from Hong Kong SAR. Recent trade studies in Hong Kong SAR, however, continue to report that mainland Chinese buyers are the principal consumers for Hong Kong SAR's ongoing ivory trade (Lau *et al.*, 2017; Martin & Vigne, 2015). Reporting of seizures involving cross-border regions with China is also very sparse. For example, it has been reported that 80% and 90% of the ivory products sold in the rapidly growing ivory markets of Laos and Myanmar, respectively, involve consumers from mainland China (Vigne & Martin, 2017, 2018). However, China's seizure data for 2016 and 2017 includes only two ivory seizures coming from Viet Nam and nothing whatsoever for Laos, Myanmar or Cambodia, another country with a growing ivory market predominately catering to Chinese consumers (Nguyen and Frechette, 2017). Further, in recent years, the data submitted to ETIS by the Chinese CITES Management Authority does not seem to include any seizures which have been made beyond the purview of the country's Customs Authority at ports of entry. In fact, open source media reports detail many seizures being made by provincial Forest Public Security Bureaus and various police agencies in the interior of the country, but these cases are not part of the data reported to ETIS. Thus, any under-reporting would be a factor of concern with respect to the China dataset in ETIS analyses.

In the period 2009-2014, East Africa was the primary exit point for illegal ivory from Africa with the trades of **Kenya**, **United Republic of Tanzania** and **Uganda** all heavily interlinked, especially large consignments moving through the seaports of Mombasa, Dar es Salaam and Zanzibar. Overall ivory trade flows from, through and into these three countries have collectively dropped by some 60% compared to the period 2012-2014, but each nation still individually ranks in the top ten in terms of the scale of ivory trade in this analysis. Under the NIAP process, all three nations have significantly improved legislation and law enforcement performance, resulting in more arrests, prosecutions and higher penalties to address ivory trafficking, but culmination in successful outcomes has been compromised owing to careless, even criminal, actions taken by the police, prosecutors and the judiciary during investigations and court deliberations (Karani, 2018a, 2018b; Morris, 2018). Thus, well-financed criminal syndicates have continued to use these countries for illegal trade purposes. In Kenya, for example, the high-profile conviction of an INTERPOL Red List suspect, Feisal Mohamed Ali, in a 2014 seizure of 2,152 kg of ivory was subsequently overturned by the High Court two years after his conviction and he was released from jail in August 2018; the judicial decision cited a long list of investigative and judicial transgressions (Chepkwony, 2018). One observer stated that the case "*reveals critical challenges in the criminal justice system that undermine the fragile progress in strengthening Kenya's response to wildlife crime*" (Karani, 2018a). Three out of eight (37.5%) large-scale seizures (>800 kg) that occurred prior to November 2016 in the United Republic of Tanzania are known to have been successfully prosecuted through the Courts resulting in the conviction of suspects, but progress in expediting the other five cases appears very slow (TRAFFIC unpublished data). These examples highlight how issues and developments beyond the purview of conservation authorities can impede sustained progress in curtailing wildlife trafficking.

'Category C countries'

All other countries and territories included in the cluster analysis are to some extent "affected by the illegal trade in ivory", but among them are a number that exhibit particular characteristics which merit careful tracking going forward. These include the **Democratic Republic of the Congo**, **Congo** and **South Africa** in Group 3,

Cameroon, Gabon and **Zimbabwe** in Group 6, **Angola, United Arab Emirates** and **Ethiopia** in Group 7, **Cambodia** and **Singapore** in Group 8, **Lao People's Democratic Republic** and **Turkey** in Group 14, and **Burundi** in Group 15. These fourteen nations all play roles in the illicit ivory trade that potentially could become more problematic if conditions change in the near future.

Within Africa, the four Central African nations of **Cameroon**, the Republic of **Congo**, the **Democratic Republic of the Congo** and **Gabon** remain of concern owing to the fact that they continue to be major sources of ivory in a subregion where elephant populations have experienced major declines (Maisel *et al.*, 2013), but still exhibits the highest percentage of illegally killed elephants (PIKE) values for 2017, indicating a very serious poaching threat still remains (CITES, 2018c). Although their identification as countries of origin in many illegal ivory transactions is often lost in terms of the known trade route information, all of these countries have relatively high weight values in the period 2015-2017. However, because forensic examination of seized consignments of ivory that are 500 kg or more has not regularly occurred during this period (see Table 2), the scale of the ivory trade attributed to these countries is most likely considerably under-represented in this report. It is believed that the greatest proportion of the ivory illegally shipped from Nigeria and Benin in the current assessment originates from Central Africa, as was also the case for ivory exported from Nigeria and Togo in the CoP17 analysis (Wasser *et al.*, 2015). Further the largest seizure in this period, Hong Kong SAR's interdiction of 7,013 kg. of ivory from Malaysia, was found to comprise ivory from the Central African region focused on these countries; however, estimated weight values were not assigned to individual countries in this report because the cross-border movements of affected elephant populations confounded specific assignment of ivory quantities at the national level (McEwing *et al.*, 2018). Cameroon often plays a transit country role in ivory moving from Central Africa to West African ports of export and for the ivory carving industry in Nigeria, and in the recent past the port of Douala was an exit point for large consignments of ivory. Recent studies indicate that the Democratic Republic of the Congo remains the only country in this group that still has a significant domestic ivory market (Nkoke *et al.*, 2017), and commercial scale exports of worked ivory products to Asia continue to occur (CITES, 2017; EIA, 2018b). There have been reports of government steps to close domestic ivory trade in Kinshasa, the country's capital city, but the current status of the local market remains to be examined. All four of these countries have been part of the NIAP process since the 65th meeting of the Standing Committee and remain engaged implementing their action plans.

Moving to Southern Africa, considerable quantities of ivory have entered international trade from **South Africa**, including one large-scale shipment of 2,478 kg to Viet Nam in 2017, the fifth largest seizure in this time period. Although PIKE levels have increased for South Africa's largest elephant population in Kruger National Park (CITES, 2018c), most of the ivory in the Vietnamese seizure from South Africa is believed to originate from outside of the country. Other seizure records show that small quantities of raw ivory from Botswana, Malawi, Mozambique and Zimbabwe are entering South Africa on occasion, so there is some concern that consolidation of ivory from neighbouring countries for future illegal export is a factor. Clandestine ivory processing for export is also occurring in South Africa, with some 116 worked ivory seizures reported in this period representing 364 kg of ivory, including seven cases where between 125 and 852 worked ivory products were found. As a regional air transport hub, direct flight connections between Johannesburg's O.R. Tambo International Airport and various Asian destinations are possible, and even more indirect connections occur by transiting the United Arab Emirates (Dubai and Abu Dhabi), Qatar (Doha) and Turkey (Istanbul) for onward travel to Asia. The synergistic involvement of transnational criminal groups that shift between illegally trafficking in abalone, rhino horn and elephant ivory remains a well-established law enforcement challenge in South Africa (Rademeyer, 2016 a, b). The MIKE report documents an increase in elephant poaching in Southern Africa as a whole in 2017 (CITES, 2018c), which, if sustained, could make South Africa a more prominent exit point for illegal ivory moving to Asia.

Zimbabwe and **Angola** are recognized as Category C countries as the two most important countries of origin or export for commercial shipments of worked ivory products leaving Africa for Asian markets. Data covering the period 2015-2017 are presented in Table 4, with Zimbabwe and Angola the source of some 38% of this trade by number of seizure cases and by the weight of the ivory products involved. This trade most frequently involves the use of couriers travelling by air and, overall, the items typically being moved concern ivory bangles, pendants, chopsticks and name seals, with two-thirds by weight and 83% by number of seizures destined for China, Hong Kong SAR or Viet Nam. Ivory carvers who are Asian nationals are believed to be active in both countries. Zimbabwe is also a major source of raw ivory, with 3,552 kg seized in this period, including more than half a tonne in South Africa from Zimbabwe. Angola as well has made or been implicated in the seizure of 1,732 kg of raw ivory. Angola was identified as Category C country at both CoP16 and CoP17 and has been part of the NIAP process since the 65th meeting of the Standing Committee. Zimbabwe, however, is now identified as a Category C country for the first time.

Table 4: Country of origin or export behind commercial movements of worked ivory products (10+ kg) from Africa 2015-2017 (ETIS, 06 June 2018)

Country	No. of Seizures	Weight (kg)	Country	No. of Seizures	Weight (kg)
Zimbabwe	34	1,403.71	Uganda	2	68.57
Angola	16	926.77	South Africa	3	62.05
Nigeria	29	833.90	The Congo	2	55.91
Côte d'Ivoire	7	735.90	Senegal	1	50.18
Egypt	2	342.86	South Sudan	2	49.29
Democratic Republic of the Congo	5	310.50	Djibouti	1	41.04
Kenya	2	270.00	Ghana	1	40.90
Zambia	5	257.54	Central African Republic	1	29.14
Malawi	3	226.29	United Republic of Tanzania	1	16.43
Ethiopia	6	207.29	Guinea	1	15.46
Burundi	2	120.00	Benin	1	14.29
Namibia	3	75.67	TOTAL	130	6,153.70

With highly successful national airline carriers, **Ethiopia**, the **United Arab Emirates** and, increasingly in the period 2015-2017, **Turkey** all play major roles as transit hubs connecting Africa with Asia. Concerning the movement of processed ivory from Africa to Asia, the United Arab Emirates made or was implicated in 44 seizures, representing 1,749 kg of ivory, presented in Table 4; of these, only eight cases, weighing 688 kg, were seized in the United Arab Emirates. Ethiopia was the country of origin or export in another 18 seizures presented in Table 4, weighing 838 kg, but only three were seized in Ethiopia, whilst another four seizures, representing 135 kg of ivory, successfully transited Turkey without being interdicted. Indeed, out of a total of 2,334 kg of ivory that moved through Turkey in transit during this period, only 1 kg was seized by the authorities. The growing evidence of ivory processing in Africa for export to Asian markets suggests that such trafficking will only increase with a heavy reliance on air travel to connect producers with consumers. Thus, strategic vigilance along specific airline routes is essential as weak links will be continually exploited to move illicit ivory to end-use buyers.

With no elephants of its own and very modest involvement in only four illegal ivory trade transactions in this reporting period, **Burundi** is regarded a Category C country for one principal reason: it holds one of Africa's oldest, largest and often controversial CITES-registered ivory stockpiles that is now steadily leaking into international trade. First registered under CITES in 1989, the year following Burundi's accession to CITES in November 1988, the detailed history of this stockpile is outlined in CoP13 Doc. 29.6 of October 2004, in the report "*Ivory Stock Verification Mission to Burundi: Report to CITES Secretariat, 23rd September 2004*" by Mr. Simon Milledge and Mr. Edison Nuwamanya, and in SC50 Doc. 21.4 which gives the perspective of the Burundi government. At the bequest of the CITES Secretariat, the stockpile was audited by TRAFFIC and the CITES MIKE programme in 2004, with each piece re-counted, re-weighed and a computerised database of the entire stockpile compiled for the 15,485 tusks weighing 83,978 kg. The entire stock was resealed into seven shipping containers held within a guarded military compound in Bujumbura, the country's capital city. Following a March 2015 seizure in Uganda at Entebbe Airport of four drum cans labelled 'Shea Butter' on the verge of export to Singapore, TRAFFIC subsequently identified 18 tusks that clearly bore registration markings of the 1989 Burundi ivory stockpile. A confidential report was prepared by TRAFFIC and immediately tabled with the CITES Secretariat in April 2015. Since then, at least three more seizures, two in Kampala, Uganda in September 2016 and February 2017, and one in June 2016 in Juba, South Sudan, have included tusks and ivory pieces that exhibit markings commensurate with the 1989 Burundi stockpile. 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. At SC70, an intervention by the government Uganda noted the lack of progress and called upon the Secretariat to clarify the status this stockpile. Because this matter has remained unresolved since first reported over three years ago, Burundi is regarded as a Category C country to watch.

Moving to Asia, three countries have relatively high weight values when ivory trade flows are considered using trade chain information irrespective of where seizures actually occurred. In this regard, **Singapore**, at over 12.7 tonnes of ivory for the period 2015-2017, has the sixth largest weight value of all countries in this analysis, of which 5.3 tonnes were seized by the Singaporean authorities. Authorities in Kenya, Uganda and Zimbabwe seized other large ivory shipments slated for transit through Singapore on six occasions during these years. This is not surprising given that over 30 million containers move through Singapore's port each year, making it the world's second largest container port in the world throughout this entire period. With no domestic ivory market in

Singapore, these ivory movements are strictly of a pass through nature to China, Hong Kong SAR or Viet Nam where demand for ivory is found. The 'transit challenge' appears to be well appreciated by the authorities who recognize the need for continued vigilance, but for reasons of ivory trade flow scale in this analysis, Singapore is considered to fall in Category C.

Cambodia and **Lao People's Democratic Republic**, also Southeast Asian nations, are in Category C because they primarily function as end-use destinations with growing domestic ivory markets, but also sometimes play the role of transit countries for ivory moving to other locations. In this regard, Cambodia has been used by transnational criminal syndicates as a 'back door' for ivory moving on to southern Viet Nam (Gray *et al.*, 2017; EIA, 2018a; 2018b), and Lao PDR has been a conduit for both Viet Nam and China (EIA, 2015; 2018b). The weight values for ivory trade flows involving Cambodia and Lao PDR in the trade chain was 6.7 tonnes and 7.2 tonnes, respectively, in the period under examination (which are the second and third highest amongst all Category C countries). In recent years, Lao PDR's domestic ivory market has grown exponentially, with a majority of the ivory selling outlets being owned by traders from mainland China and Chinese buyers purchasing some 80% of the ivory being sold in Laos in one comprehensive market survey (Vigne & Martin, 2017). Recent government pressure in Laos has resulted in some contraction of the market (EIA, 2018b), but overall law enforcement remains poor. Similarly, studies in Cambodia have found that ivory markets in the country are "*mainly fuelled by foreign demand, particularly Chinese nationals*", although local consumption of ivory products also occurs, especially in Phnom Penh, the Cambodian capital (Nguyen & Frechette, 2017). Cambodia was recommended as a Category C country in the CoP16 ETIS analysis but moved to Category B in the CoP17 report, whilst Lao PDR has been identified as a Category C country in both the CoP16 and CoP17 ETIS analyses. Since the 65th meeting of the Standing Committee both countries have been engaged in the NIAP process.

PART V: CONCLUSIONS

Conclusions of the trend analysis:

This analysis presents the trend in illicit trade in ivory from 2008 through 2017 with illegal ivory trade activity tracked through Transaction and Weight Indices. The following conclusions can be made:

- Over the last four years, our best estimate of global illicit ivory trade activity has shown annual incremental decline after peaking in 2012 and 2013, although broad confidence intervals characterize the results (Figure 4). Whilst the inclusion of additional seizure data for 2017 may alter this result somewhat in future analyses, illegal ivory trade activity appears to be exhibiting some measure of reduction, especially in the large raw ivory weight class. Under sustained pressure from the CITES-led NIAP process and major new policy interventions such as China's landmark closure of its domestic ivory market, there is little doubt that the illegal ivory trade is experiencing more global oversight and law enforcement pressure than previously was the case. The current period of flux and adaptation suggests that trade activity is beginning to drop but whether it will be sustained will need to be carefully watched. Further, it needs to be recognized that any decline in illegal ivory trade activity is also occurring in conjunction with an overall decline in elephant populations in Africa (Thouless *et al.*, 2016).
- Concerning the weight of ivory in illicit trade, the major drop in large-scale ivory seizures has resulted in an equally large decline in the best estimate of the relative quantity of ivory by weight in global commerce. If this decline is confirmed when a more complete dataset for 2017 becomes available, this will be a welcome and long overdue development. However, any such trend may be partially influenced by a shift in ivory processing from Asia to Africa and will need to be carefully monitored. Further, the drop in weight may not necessarily translate into reduced pressure on Africa's elephants if average tusk weights are also in decline; in this regard, younger elephants with smaller tusks could make up a greater proportion of the trade if poaching pressure continues to target already reduced populations.

Conclusions of the cluster analysis:

With respect to the cluster analysis, which focused upon assessment of illicit ivory trade data in the period 2015-2017, the following conclusions can be made:

- This cluster analysis indicates some important shifts from the results presented in previous assessments. In this regard, **Malaysia, Mozambique, Nigeria** and **Viet Nam** are now regarded as priorities for consideration under **Category A** owing to their linkages to the greatest illegal ivory trade flows over the period under examination.

- **China, Hong Kong SAR, Kenya, United Republic of Tanzania** and **Uganda** are regarded as priorities for consideration under **Category B**, which does signal an improved position for all of these entities as in previous iterations of the cluster analysis they were regarded as Category A priorities.
- It is reasoned that the 14 countries, **Angola, Burundi, Cambodia, Cameroon, Republic of the Congo, Democratic Republic of the Congo, Ethiopia, Gabon, Lao People's Democratic Republic, Singapore, South Africa, Turkey, United Arab Emirates** and **Zimbabwe** are regarded as priorities for consideration under **Category C**.

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TENTATIVE BUDGET AND SOURCE OF FUNDING FOR THE IMPLEMENTATION OF DRAFT RESOLUTIONS OR DECISIONS

According to Resolution Conf. 4.6 (Rev. CoP16) on *Submission of draft resolutions, draft decisions and other documents for meetings of the Conference of the Parties*, the Conference of the Parties decided that any draft resolutions or decisions submitted for consideration at a meeting of the Conference of the Parties that have budgetary and workload implications for the Secretariat or permanent committees must contain or be accompanied by a budget for the work involved and an indication of the source of funding.

The estimated budget for the implementation of ETIS (2020 – 2023) is presented below. Provision has been made for ETIS in the proposal submitted to the European Union for the next phase of the implementation of the MIKE Programme. As mentioned in Annex 2 of document CoP18 Doc. 69.2, the European Union indicated that it will not be able to provide funding to cover the full cost reflected in the budget proposal submitted for the MIKE Programme in Africa for 2020 – 2023 and therefore additional funding will have to be secured to cover the total cost associated with the ETIS programme (shortfall of approximately USD 200,000).

Result area	Budget
The operational integrity of ETIS as a world class monitoring system tracking illegal trade in ivory and other elephant products is maintained.	USD 360,000
An on-line ETIS website for the benefit of the CITES Parties in two languages is maintained.	USD 100,000
Monitoring techniques, research protocols and analytical methods for understanding the drivers, trade routes, markets and other related factors behind illegal trade in elephants and elephant products are refined and/or developed.	USD 218,000
Analytical results, data and information from ETIS to support decision making for, and foster awareness and understanding of, elephant product trade is produced, disseminated and communicated.	USD 202,000
Total	USD 880,000