

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

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Sixteenth meeting of the Conference of the Parties  
Bangkok (Thailand), 3-14 March 2013

Interpretation and implementation of the Convention

Species trade and conservation

Elephants

Monitoring of illegal trade in ivory and other elephant specimens

ETIS REPORT OF TRAFFIC

1. This document has been prepared and submitted by TRAFFIC International (T. Milliken, R.W. Burn, F.M. Underwood and L. Sangalakula)<sup>1</sup>.

Introduction

2. Resolution Conf. 10.10 (Rev. CoP15) mandates “a comprehensive report to each meeting of the Conference of the Parties” on the data held in the Elephant Trade Information System (ETIS), one of the two monitoring systems for elephants under CITES. The objectives of ETIS, which has been managed and operated by TRAFFIC since 1997, are:
  - i) *measuring and recording levels and trends, and changes in levels and trends, of illegal hunting and trade in ivory in elephant range States, and in trade entrepôts;*
  - ii) *assessing whether and to what extent observed trends are related to changes in the listing of elephant populations in the CITES appendices and/or the resumption of legal international trade in ivory;*
  - iii) *establishing an information base to support the making of decisions on appropriate management, protection and enforcement needs; and*
  - iv) *building capacity in range States.*
3. Covering the period 1996 through 2011, this report is the fifth major assessment of the ETIS data for presentation to the CITES Parties, and constitutes TRAFFIC’s reporting obligations for CoP16. This analysis was done in collaboration with the United Kingdom’s University of Reading, where Mr. Robert Burn and Dr. Fiona Underwood refined the analytical methods under a Darwin Initiative project and carried out the data analysis for this report. The interpretation of results, conclusions and recommendations draws particularly on research by and experience of TRAFFIC. Prior to submission to the CITES Secretariat, it was reviewed by members of the ETIS Technical Advisory Group. Further, technical papers on the methods and results of this analysis are being submitted to peer-review journals for publication in the scientific literature. TRAFFIC would like to acknowledge with gratitude the funding support from the United Kingdom’s Department of Environment, Food and Rural Affairs (Defra) Darwin Initiative programme, the U.S. Fish and Wildlife Service’s African Elephant Conservation Fund, the European Union’s MIKE phase

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<sup>1</sup> *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.*

two grant to the CITES Secretariat, and WWF for providing support for the operation and management of ETIS since CoP15, including the production of this report.

#### A note about this analysis

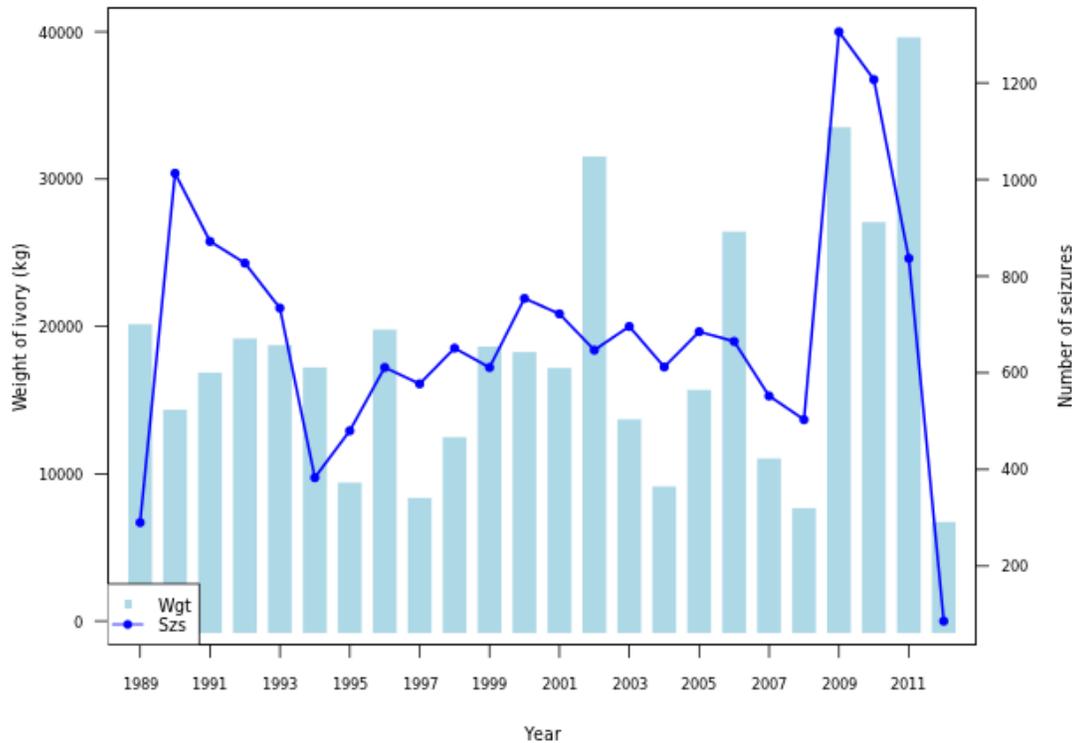
4. As described in the ETIS analysis to CoP15 (CoP15 Doc. 44.1 Annex), pursuant to a Darwin Initiative grant with the University of Reading, a refined analytical model has been developed for assessing the ETIS data and reporting to CITES on illegal trade in ivory. Whilst the basic conceptual framework previously outlined in the ETIS analysis to CoP12 still underpins this analysis (see CoP12 Doc. 34.1 Annex), on this occasion a methodological approach using Bayesian hierarchical modelling has been employed which refines and improves the robustness of the analysis. Firstly, better methods for bias adjustment and smoothing of the data to reduce anomalies not indicative of overall patterns have been introduced. This is accomplished through statistical estimation of relative 'seizure rates' and 'reporting rates' for each country for each year for all data past and present. Secondly, a refinement in the assessment of the ivory seizure data has occurred so that seizure records are considered according to ivory type, raw and worked (including semi-worked), and in three separate weight classes: less than 10 kg; between 10 kg and less than 100 kg; and greater or equal to 100 kg. This is done in recognition that ivory trade dynamics by ivory type and in each of these weight classes often relate to different parts of the trade chain and amplify different characteristics of illicit trade. For example, movements of large amounts of raw ivory are likely to represent highly organised criminal activity in comparison to confiscations of worked ivory products illegally entering a country as the 'personal effects' curio purchases of tourists returning home from foreign countries. Thirdly, the trend analysis features two new components, a Transaction Index of illegal ivory trade activity, and a Weight Index to assess trends in the weight of illegal ivory traded over time. In previous analyses, the trend was limited to an adjusted relative estimate of the weight of ivory that was traded each year.

### PART I: THE ETIS DATA

#### Number of Records

5. The ETIS data represent the largest collection of seizure records on elephant product trade in the world. On 26 June 2012, ETIS comprised 18,302 elephant product seizure records, representing law enforcement actions in 89 countries or territories since 1989. In comparison to the ETIS analysis prepared for CoP15 in 2009, this analysis is based upon nearly 4,000 additional elephant product seizure records (Appendix 1). With only 129 seizure records reported to ETIS for 2012, that year remains data deficit and is not considered in this report. Further, this analysis is restricted to the 16-year period 1996 through 2011.

**Figure 1:** Estimated weight of ivory and number of seizure cases by year, 1989-2012 (ETIS 26 June 2012)



6. Figure 1 depicts the estimated weight of ivory represented by the seizure records reported to ETIS, along with the number of seizure cases for each year since 1989. As emphasized in all previous ETIS analyses, inherent bias in the data prevent this representation of the raw data from being interpreted as a trend, nor is it suggestive of absolute trade quantities over time.
7. In terms of reporting, it is worth noting that the rate of data submission to ETIS appears to have increased since CoP15. Over the 34-month period since CoP15 analysis was prepared, an average of 115 elephant product seizure cases have been received each month, a 73% increase over the 66 cases per month during the period between CoP14 and CoP15. However, participation by some countries, including a number of elephant range States remains poor. It is worth noting that Angola, Benin, Equatorial Guinea, Liberia, Senegal, Somalia and Togo, all African elephant range States, and Cambodia, Laos and Myanmar, all Asian elephant range States, have never reported a single elephant product seizure case to ETIS over the 23-year period since 1989 (Appendix 1).

Weight of ivory represented in the seizures database

8. About half of the ETIS seizure records do not specify the weight for the items seized, but only provide the 'number of pieces' by ivory type. In other cases, the weight given is believed to represent an estimate and not an actual measured weight. Consequently, uncertainty in weights gives rise to a number of data modeling challenges. In this analysis, missing weight values continue to be assessed through analysis of data where both the number of pieces and weight are given by ivory type.

**Table 1:** Estimated weight of ivory in 'raw ivory equivalent' terms represented by unadjusted ETIS seizure data, 1996-2011 (ETIS 26 June 2012)

Year	Raw ivory Weight (kg)	Worked ivory weight - RIE (kg)	Total (kg)
1996	15,942	3,031	18,973
1997	6,213	1,335	7,548
1998	9,458	2,218	11,675
1999	15,237	2,596	17,833
2000	15,296	2,156	17,452
2001	12,891	3,482	16,373
2002	24,150	6,582	30,732
2003	10,503	2,385	12,889
2004	6,714	1,617	8,331
2005	13,672	1,211	14,882
2006	23,648	1,980	25,628
2007	8,623	1,604	10,227
2008	5,428	1,428	6,856
2009	27,580	5,128	32,708
2010	23,048	3,222	26,270
2011	35,294	3,515	38,809
<b>Total</b>	<b>253,697</b>	<b>43,490</b>	<b>297,187</b>

9. 'Raw Ivory Equivalent' (RIE) values are used for all ivory seizure data examined in this report, thus an estimate of the loss of scrap and wastage that occurs during the manufacturing process for worked ivory products is considered, allowing 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 weight of ivory represented by the ETIS data in RIE terms (as of 26 June 2012). Collectively, it is estimated that nearly 300 tonnes of ivory has been seized throughout the world and reported to ETIS from 1996 onwards. The three most recent years, 2009-2011, comprise three of the top four years in which the largest quantities of ivory have been seized; 2002, the fourth highest year, holds the largest seizure record in ETIS in which over seven tonnes of ivory was seized in Singapore.

#### Bias adjustment of the ETIS seizure data

10. Taken at face value, the ETIS seizure data cannot be regarded as a true representation of the pattern of illegal trade in ivory because of inherent bias in the data. Bias arises from two principal sources. Firstly, not all illegal ivory transactions in a country result in seizures, but the proportion that do is the 'seizure rate'. Secondly, only a proportion of all seizures that are made in a country are reported to ETIS and this is the 'reporting rate'. In previous analyses, it was not possible to explicitly estimate these two rates, but the new modelling framework has the capability of deriving *relative* estimates of both, allowing for valid comparisons to be made between countries and between years. To estimate seizure rate, it was assumed that it would partly depend on the general state of the country's governance and partly on their ability to make ivory seizures in particular. After investigating several candidate proxy variables for these measures, the best fitting model for seizure rate turned out to depend on the country's *rule of law*, one of the World Bank's governance indicators (available from <http://info.worldbank.org/governance/wgi/index.asp>), and the previous year's *Law Enforcement Ratio* (see CoP15 Doc. 44.1 Annex for a description). (The 'rule of law' dataset replaces Transparency International's Corruption Perception Index which was previously used as proxy variable for governance variable in the cluster analysis of earlier ETIS analyses). A similar process led to modelling the reporting rate by a combination of *CITES Annual Reporting Scores* (see CoP13 Doc.

29.2 for a description) and the *Data Collection Effort Score*, which has been applied to each individual seizure record to describe the process under which it was collected: targeted, routine, prompted or passive. (This scoring was done retrospectively to all previously collected records so that all data in ETIS have been comparatively scored). These bias adjusting factors were applied to the data to obtain relative indicators of numbers and weights of illegal ivory transactions by ivory type and weight class, allowing for meaningful comparisons to be made within and between countries over time. By correcting for bias in the data and applying smoothing techniques, the trends presented by ETIS illustrate a relative (not absolute) measure of the level of illegal ivory trade. Thus, changes in the seizures data which might be the result of improved law enforcement effort or better reporting are mitigated and the underlying patterns of illicit trade are more fully revealed.

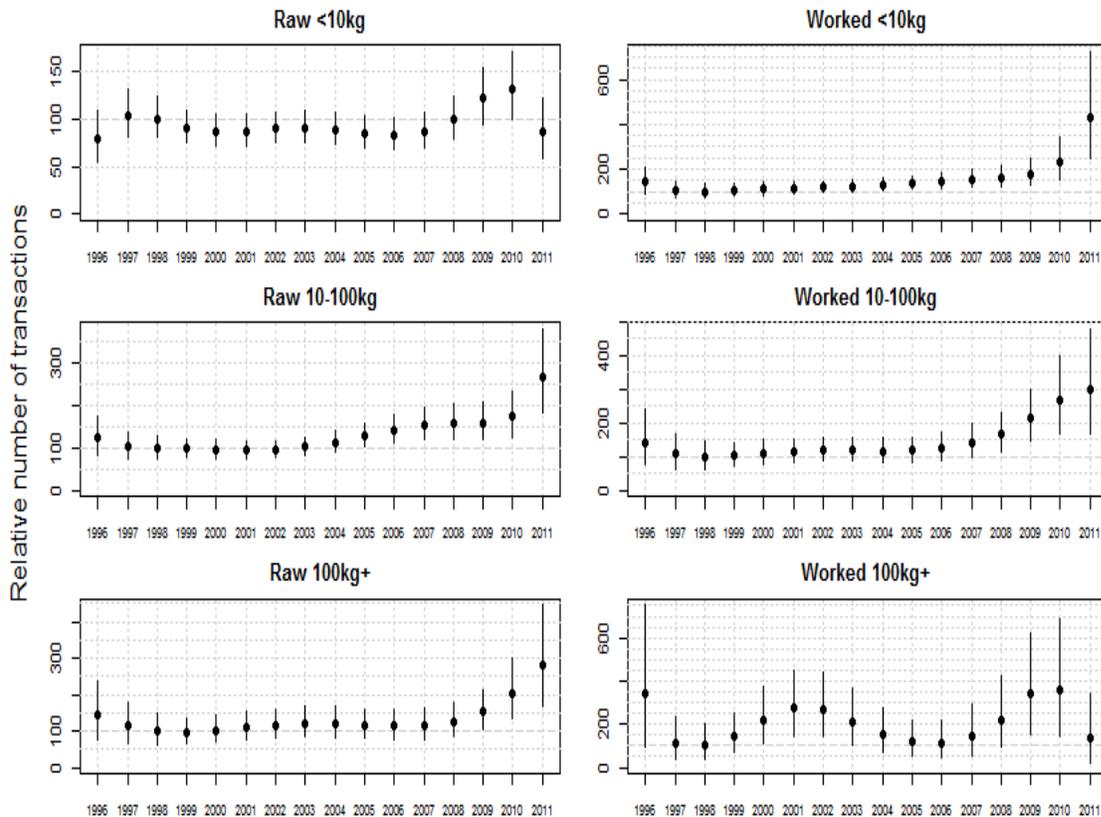
## PART II: THE TREND ANALYSIS

11. Resolution Conf. 10.10 (Rev. CoP15) calls for ETIS to measure “*levels and trends, and changes in levels and trends*” concerning illegal trade in ivory. In the period 1996 through 2011, the ETIS database contained 11,633 seizure records that relate to raw or worked ivory. In terms of weight, these records range from one gram to over 7.1 tonnes of ivory. Further, the largest 1% of these seizure records represents some 50% of the total weight seized during this period.

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

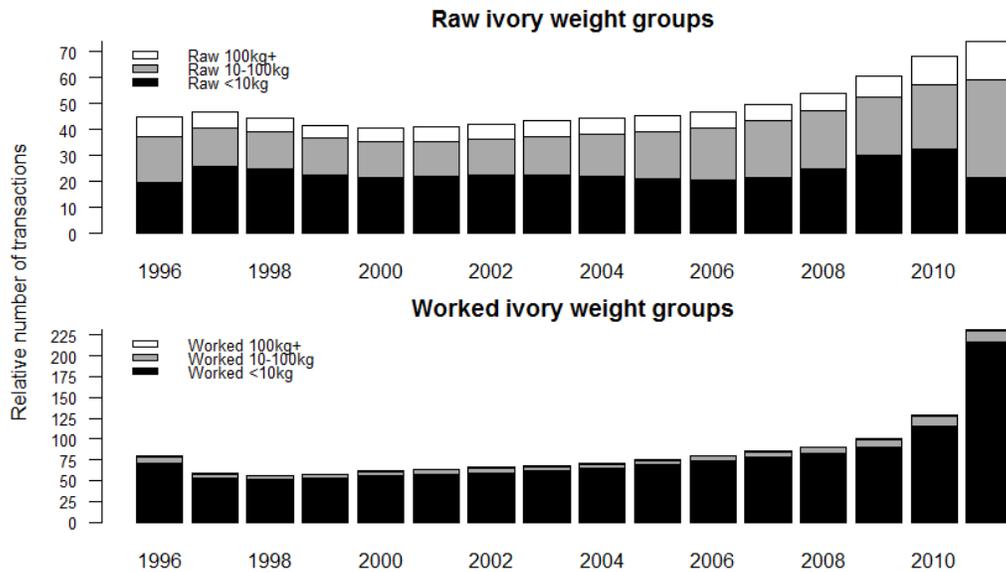
12. The Transaction Index presented in Figure 2 represents a new feature in the ETIS analysis and depicts global illegal ivory trade activity in six ivory type and weight categories. Based upon bias-corrected data, each figure provides a measure of the frequency of raw and worked ivory transactions occurring from 1996 onwards, with 1998 set to 100 to constitute a baseline for comparative purposes. Concerning the baseline, the CITES Parties agreed, at CoP10 in June 1997, the transfer of three African elephant populations from Appendix I to Appendix II and simultaneously mandated the development of the CITES monitoring systems for elephants, ETIS and MIKE. As a result, 1998 represents the first full year in which these developments were in place, making it a suitable baseline point of reference, whilst 1996 and 1997 are included to provide relevant context.
13. Looking at Figure 2, in very general but not exclusive terms, the three figures on the left for raw ivory trade largely reflect ‘supply’ side dynamics that are occurring in, or associated with, African elephant range States that function as the principal source of ivory today. These figures reflect illicit raw ivory trade activity which constitutes the most direct impact upon elephants. On the other hand, the three worked ivory figures on the right are useful in revealing ‘demand’ side dynamics that are unfolding in ivory markets found in both elephant range States and in end-use consumer countries around the world. This side of the dichotomy also captures the tourist trade in worked ivory curios or any other form of onward trade in finished ivory products. Viewing the ETIS data through the prism of ivory type and weight classes allows for many of the nuances surrounding supply and demand dynamics to be more readily amplified and understood.

**Figure 2:** Trends in Transaction Index by ivory type and weight class, 1996-2011 (ETIS 26 June 2012)



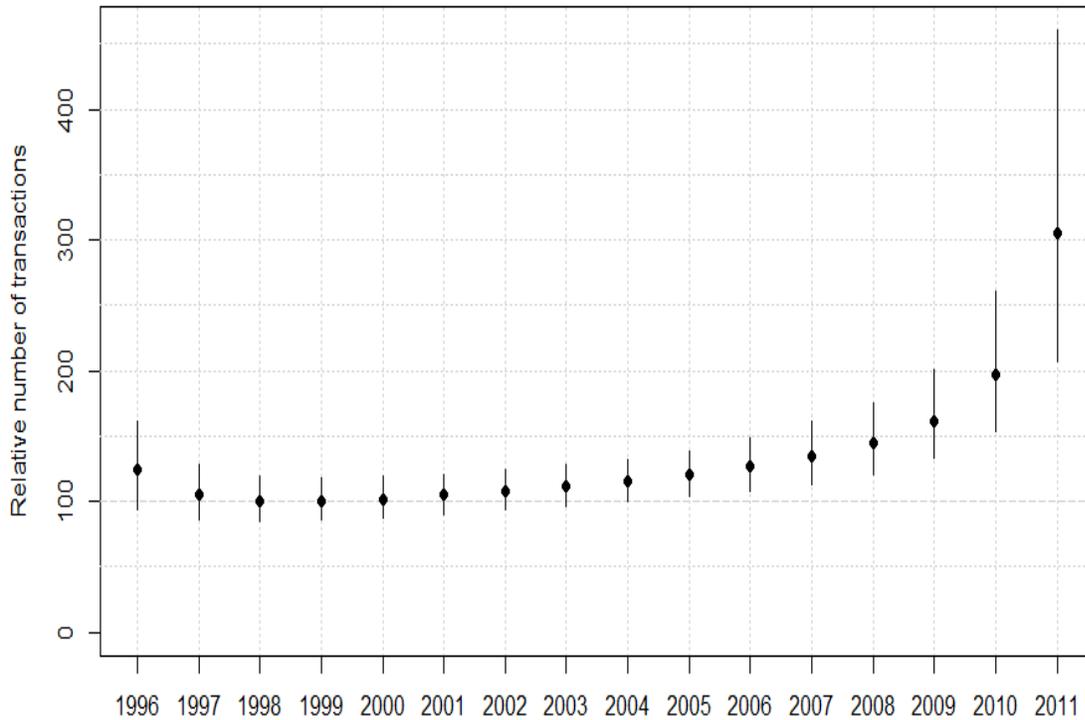
14. Noting differences in the vertical axis scale, Figure 2 presents the patterns of trade activity found in the Transaction Index for each ivory type and weight class. The best estimate of the trade is represented by the bold dot, while the vertical lines depict 90% confidence limits. Overall, it can be seen that in all weight classes, illicit trade transactions have steadily climbed since CoP14 in 2007 and, with two exceptions, 2011 represents the highest level of trade in this 16-year period. Considering the exceptions, raw ivory transactions that are less than 10 kg and worked ivory transactions that are 100 kg or more, both experienced a sharp decline in 2011, following a period of significant growth from 2007 through 2010. The decrease in small shipments of raw ivory could simply reflect the fact that, in source and export countries in Africa, ivory tusks are increasingly being aggregated into ever larger consignments as indicated by the prominent increase in the 10-100 kg and 100 kg+ weight classes in 2011. With respect to the 100 kg+ worked ivory category, the overall pattern is far more variable than the other groups and the wider confidence intervals suggest greater uncertainty as to the underlying pattern. In fact, as demonstrated in Figure 3, worked ivory seizures that weigh over 100 kg represent the least common type of ivory seizure in the ETIS data. This finding suggests that, in general, commercial-scale consignments of worked ivory products infrequently move beyond the national borders of where the raw ivory was originally processed.
15. In Figure 2, the steady escalation in transactions involving large quantities of raw ivory over 100 kg is a particularly worrying result and has persistently been highlighted in the ETIS reporting to the CITES Standing Committee in the intersessional period since CoP15 as an issue of major concern (see SC62 Doc. 46.1 in particular). Once again, this result points to a significant increase in raw ivory supply as measured by the frequency of raw ivory trade activity in this weight category, which in 2011 was at a level almost three times what it was in 1998. At the same time, the rapidly increasing scale of worked ivory transactions in the two smaller weight classes also indicates growth in end-use ivory market demand. In other words, more worked ivory trade activity is transpiring because more people are consuming ivory products, a pattern that has been observed in a number of key markets, such as China (Martin and Vigne, 2011b), Laos (Nijman and Shepherd, 2012) and Nigeria (Martin, in prep. 2012).

**Figure 3:** Transaction Index combining weight classes by ivory type, 1996-2011 (ETIS 26 June 2012)



16. Combining the Transaction Index by ivory types, it can be observed that illegal activity for both ivory types has been steadily increasing in recent years (Figure 3). In the upper figure, raw ivory transactions were generally stable at or below 1998 levels through 2006, but thereafter began to increase more sharply, especially from 2008 onwards. It can be seen that, overall, large consignments of raw ivory occur far less frequently than activity in the other two weight classes. Regardless, large-scale ivory trade transactions have increased in recent years, especially in 2010 and 2011. The downturn in raw ivory transactions that are less than 10 kg in 2011 has more than been compensated for by a major increase in the next weight class involving between 10-100 kg.
17. Turning to worked ivory trade, again relative stability is seen in the pattern between 1996 through 2006, with exceptionally modest incremental growth evident (Figure 3). After 2006, however, worked ivory trade activity began to exceed the level of trade experienced a decade earlier, with an accelerated upward trend from 2009, culminating in a major surge in 2011. Throughout this entire period, the overwhelming bulk of worked ivory trade activity concerns small transactions of less than 10 kg, indicating that the movement of large quantities of worked ivory products is, comparatively speaking, not a common occurrence.
18. When all ivory types and weight classes are viewed together, Figure 4 illustrates the overall trend in terms of illegal ivory trade activity globally. The bold dot indicates the best estimate of the data for the year in question, whilst the vertical lines depict 90% confidence intervals. In most cases, the confidence limits remain reasonably tight, however, the results for 2010 and 2011 in particular represent a far greater degree of uncertainty owing to the fact that these datasets remain somewhat incomplete, especially 2011. Looking at the overall picture, illegal ivory trade activity remained at or slightly above 1998 levels up to 2006. Thereafter, a gradual increase in illegal ivory trade activity commences, becoming progressively greater in each successive year, with a major surge in 2011. Looked at another way, Figure 4 shows that the frequency of an illegal ivory trade transaction in 2011 was roughly three times greater than the level of illegal trade activity found in 1998.

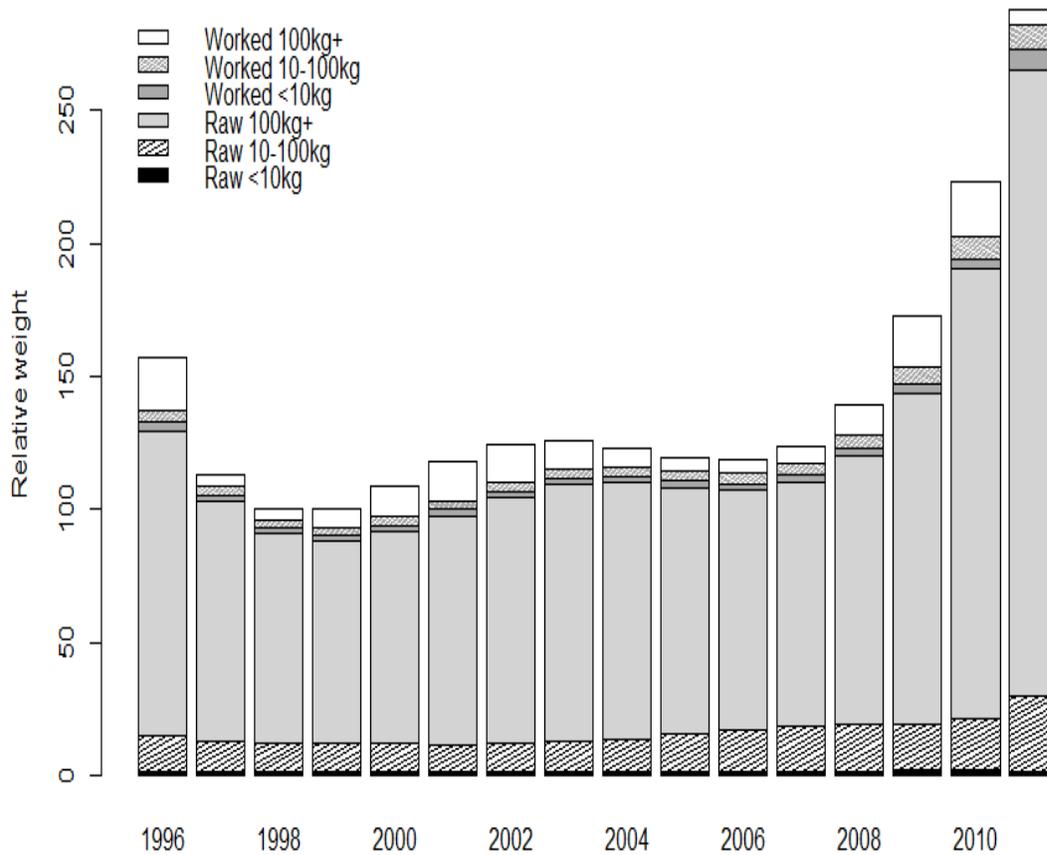
**Figure 4:** Transaction Index composite of all ivory types and weight classes with 90% confidence intervals, 1996-2011 (ETIS 26 June 2012)



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

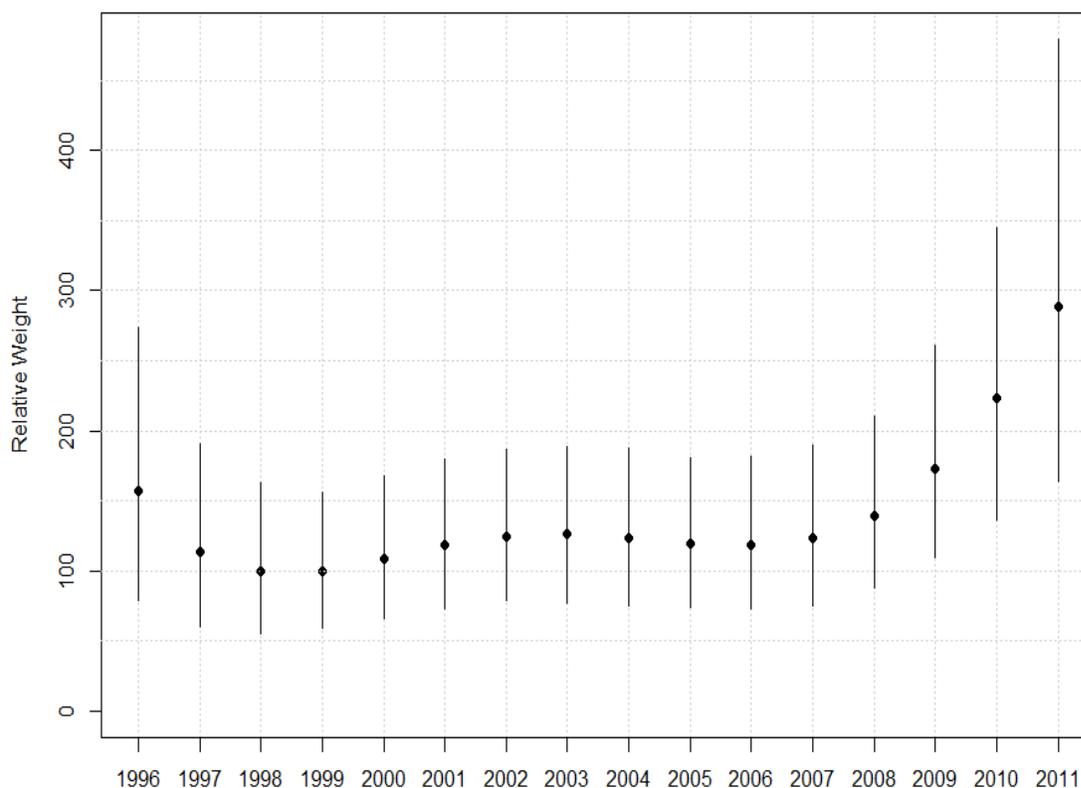
19. The Weight Index allows for the relative weight of ivory in trade to be assessed by ivory type and in three weight classes. This index results from combining the Transactions Index with a model of the weight per seizure. Whilst it needs to be emphasized that ETIS will never be able to express illicit ivory trade as absolute weight values, the aggregated pattern in the bias adjusted data for weights is indicative of the relative quantity of ivory being moved through illicit trade channels annually. Figure 5 elucidates the underlying pattern in the weight data and is presented showing the relative proportions of the weight accounted for by each of the six categories. The most prominent feature in the figure is the fact that raw ivory traded in consignments that are 100 kg or more account for the greatest portion of the illicit trade weight. Seizures of raw ivory in the 10-100 kg weight category are the next greatest proportion, followed by worked ivory in the 100 kg or more weight class. The most frequent ivory seizure transaction (as illustrated in Figure 3) entails worked ivory products weighing less than 10 kg, but when measured as an aggregated weight by year, this weight class accounts for a mere fraction of the total weight represented by the ETIS seizure data (Figure 5). In this regard, large numbers of small seizures are important when measuring illicit trade activity overall, but they actually contribute very little to the total estimated weight, which is the best measure for deriving trends in the illicit ivory trade in ivory in general. Understanding the relative weight values of raw ivory trade in particular is important for assessing impact upon elephants and relating ETIS results to MIKE data on the illegal killing of elephants.

**Figure 5:** Weight Index combining weight classes by ivory types, 1996-2011 (ETIS 26 June 2012)



20. To assess the underlying trend, Figure 6 presents an estimate of the relative weight totals by year with 90% confidence limits represented by the vertical lines. Generally speaking, there is more uncertainty in this weight model than the Transactions Index presented above as indicated by the wider confidence intervals. In this regard, it needs to be noted that the actual level of trade could conceivably be at any point within the lines, with the bold dot being the best estimate derived from the model. That said, and using 1998 as the base line (set to 100), there is relative stability in the trade through 2007, whilst thereafter it commences a fairly sharp upward climb. The level of ivory trade in 2011 as measured by weight is estimated to be nearly three times the level that was going into trade in 1998.

**Figure 6:** Weight Index composite of all ivory types and weight classes with 90% confidence intervals, 1996-2011 (ETIS 26 June 2012)



21. There is no doubt that illegal trade in ivory has progressively escalated since CoP14 in 2007 and this result strongly indicates that, globally, illicit trade in ivory is at its highest level over the 16-year period under examination. As that is the case, there is little evidence to suggest that implementation of the *Action plan for the control of trade in African elephant ivory* pursuant to Decision 13.26 under CITES has had any impact in reducing the upward trend in illicit trade in ivory over the last five years.

### PART III: THE CLUSTER ANALYSIS

22. Resolution Conf. 10.10 (Rev. CoP15) mandates ETIS to establish “an information base to support the making of decisions on appropriate management, protection and enforcement needs”. To address this objective, the ETIS data are assessed to identify those countries or territories most prominently implicated in the illicit trade in ivory so that appropriate interventions can be considered pursuant to the Convention. As in the past, using agglomerative hierarchical cluster analysis, countries and territories are grouped in a dendrogram to form a series of well-defined clusters that exhibit similar patterns in the seizure data. The characteristics of these groupings are described to understand underlying trade dynamics and factors. In this manner, cluster analysis serves the useful purpose of removing a lot of the ‘background noise’ and revealing the most important players and their roles in the illicit trade in ivory.

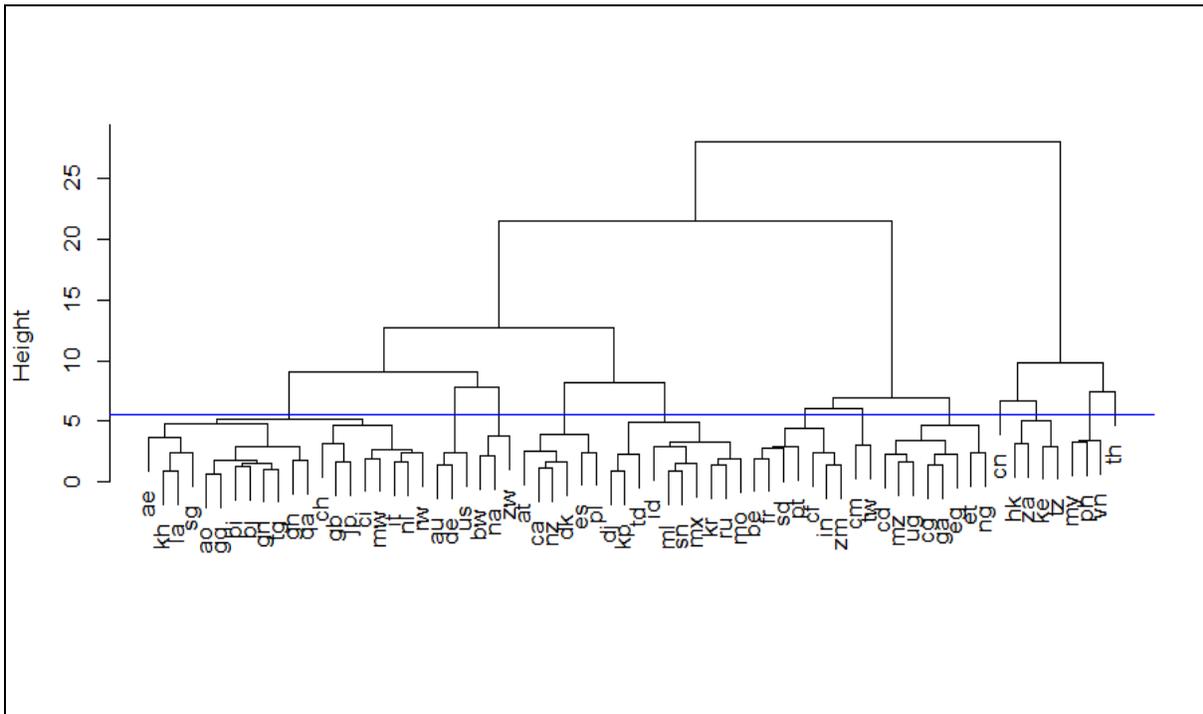
#### Forming the clusters

23. In this cluster analysis, bias adjusted data for 68 countries or territories for each year covering the period 2009 through 2011 were assessed using the following variables:
- the Transaction Index by ivory type by weight class;
  - the total number of seizures over one tonne (raw and worked combined);
  - total weight of seizures over one tonne (raw and worked combined);
  - total number of seizures out (i.e. seizures in which a country has been implicated as part of the

- trade chain but did not make the seizure itself); and
- total weight of seizures out.

24. The result is the dendrogram depicted in Figure 7, which is formed by countries or territories exhibiting similar characteristics grouping together. To create the groups, a horizontal line was drawn just above the 5 degree mark, creating clusters at the point where it intersects with the vertical lines holding the countries or territories under consideration. The end points of all groups should be considered as falling on the 0 point of the vertical 'height' axis.

**Figure 7:** The cluster analysis (ETIS 26 June 2012)



**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-Congo; CH-Switzerland; CI-Côte d'Ivoire; CM-Cameroon; CN-China; DE-Germany; DJ-Djibouti; DK-Denmark; EG-Egypt; ES-Spain; ET-Ethiopia; FR-France; GA-Gabon; GB-United Kingdom; GH-Ghana; GN-Guinea; GQ-Equatorial Guinea; HK-Hong Kong SAR; ID-Indonesia; IN-India; IT-Italy; JP-Japan; KE-Kenya; KH-Cambodia; KP-Democratic People's Republic of Korea; KR-Republic of Korea; LA-Lao People's Democratic Republic; ML-Mali; MO-Macao; MW-Malawi; MX-Mexico; MY-Malaysia; MZ-Mozambique; NA-Namibia; NG-Nigeria; NL-the Netherlands; NZ-New Zealand; PH-Philippines; PL-Poland; PT-Portugal; QA-Qatar; RU-Russia; RW-Rwanda; SD-Sudan; SG-Singapore; SN-Senegal; TD-Chad; TG-Togo; TH-Thailand; TW- Taiwan, province of China; TZ-Tanzania; UG-Uganda; US-United States; VN-Viet Nam; ZA-South Africa; ZM-Zambia; ZW-Zimbabwe.

25. The 5 degree mark was selected for forming the clusters as above that point results in fewer but far more aggregated groupings, causing a dilution of their salient characteristics; below that point yields a proliferation of groups that largely becomes a presentation of individual countries. Previous ETIS analyses have resulted in 13 or 14 clusters, whilst in this analysis 12 clusters are formed, comprising between one and 20 countries or territories in each grouping.

**Table 2:** Summary statistics for the 12 cluster analysis groups, 2009-2011

		<i>Measure of Frequency</i>	<i>Measure of Scale</i>	<i>Measure of Period of Activity</i>	<i>Measures of Law Enforcement Effort Efficiency and Rates of Reporting</i>		<i>Measure of Organised Crime</i>	<i>Measure of Internal Ivory Trade</i>
Group	Countries or territories	Mean no. of seizures <sup>1</sup>	Mean weight (kg) <sup>2</sup>	Percentage of weight in recent period <sup>3</sup>	Mean Rule of Law <sup>4</sup>	Mean LE ratio <sup>5</sup>	Percentage of large-scale ivory seizures to mean weight <sup>6</sup>	Mean market score <sup>7</sup>
1	TH	53	10,923	95	-0,23	0.23	0.77	12.0
2	MY, PH, VN	26	16,023	77	-0,17	0.25	0.94	5.7
3	HK, ZA, KE, TZ	261	15,561	75	0,02	0.44	0.74	1.6
4	CN	2'008	28,804	83	-0.38	0.65	0.65	7.5
5	CD, MZ, UG, CG, GA, EG, ET, NG	90	2,042	59	-0.85	0.21	0.24	6.4
6	CM, TW	25	1,088	15	-0.04	0.51	0.24	4.5
7	BE, FR, SD, PT, CF, IN, ZM	62	859	50	0.12	0.56	0.11	3.4
8	DJ, KP, TD, ID, ML, SN, MX, KR, RU, MO	3	50	33	-0.46	0.05	0.00	4.4
9	AT, CA, NZ, DK, ES, PL	11	54	39	1.54	0.25	0.00	0.8
10	BW, NA, ZW	91	3,119	65	-0.30	0.73	0.13	2.2
11	AU, DE, US	200	494	45	1.66	0.79	0.00	3.7
12	AE, KH, LA, SG, AO, GQ, BI, BJ, GN, TG, GH, QA, CH, GB, JP, CI, MW, IT, NL, RW	33	709	60	-0.03	0.10	0.23	5.1

- (1) *Frequency* is measured by the 'mean number of seizures' in the period 2009-2011 (i.e. the total number of all seizures which were made or have implicated a particular country/territory 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 weight' in the period 2009-2011 (i.e. the total weight of ivory represented by all seizures which were made or have implicated a particular country/territory divided by the number of entities in the cluster); high numbers indicate greater weights of ivory; low numbers indicate lesser weights of ivory.
- (3) *Period of activity* is measured by the 'percentage of weight in recent period' (i.e. the total weight in the period, 2009-2011, divided by the total weight from both periods 2006-2011); values show the percentage of the total weight which represents activity in the recent period.
- (4) *Law enforcement effort, effectiveness, and rates of reporting* is measured, firstly, by the mean World Bank governance indicator for 'Rule of Law' (i.e. the total Rule of Law score for each country in the period 2009-2011

- divided by the number of entities in the cluster divided by the number of years); scores range from -2.5 (weakest governance performance) to 2.5 (strongest governance performance).
- (5) Law enforcement effort, effectiveness and rates of reporting is measured, secondly, by the 'mean LE/reporting ratio' in the period 2009-2011 (i.e. the total number of in-country seizures divided by the total number of seizures 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).
  - (6) Involvement of organised crime is measured by taking the percentage of the mean weight in the period 2009-2011 that represents large-scale ivory seizures (i.e. those seizures which are equal to or greater than 800 kg of ivory raw ivory equivalent weight); high values indicate the presence of organised crime in the movement of ivory; low values indicate the absence of organised crime in the movement of ivory.
  - (7) Internal ivory trade is measured by the 'mean market score'; scores range from -2.5 (no or very small, highly-regulated domestic ivory markets) to 12 (large, unregulated domestic ivory markets).

26. It needs to be appreciated that not all clusters will exhibit a clear cohesion and, typically, one or two residual groups are formed which represent greater diversity and a weaker resolution in terms of definable roles and characteristics. Generally speaking, these residual groups comprise less important components of the cluster analysis, but could contain individual countries or territories that might emerge into more prominent clusters in the future. The key cluster groups, however, exhibit a fairly unambiguous logic in terms of their underlying attributes, which allows for relative prioritisation to be made for follow up attention.
27. To measure the degree of vertical separation between various clusters or individual components within a cluster, follow the lines of the dendrogram (like a stairway) upward to the highest point before moving in a downward direction. This represents the distance along the vertical axis and provides a relative measure of the degree of dissimilarity between clusters. For example, looking at Figure 7, to reach any of the nine countries which comprise the far right 'limb' of the dendrogram – Thailand (TH), Viet Nam (VN), Philippines (PH), Malaysia (MY), Tanzania (TZ), Kenya (KE), South Africa (ZA), Hong Kong SAR (HK) and China (CN) – from the three country group of Australia (AU), Germany (DE) and United States (US) in the middle left of the dendrogram, it is necessary to move from about the 2 degree mark up the vertical axis to the 28 degree mark which then begins the descent to the four groups on the right hand side. This distance indicates the relative degree of separation between these groups. In this way, it is evident that the eight countries and territories on the far right hand side of the dendrogram exhibit ivory trade patterns and characteristics that are collectively and remarkably unique in comparison to all other components in the figure. The proxy variables that reveal these characteristics are described in Table 2 based on the original ETIS data without benefit of bias adjustment.

#### Describing the results

28. Table 2 presents aggregated statistics for the 12 groups which serve to highlight the salient characteristics of the illicit ivory trade from various perspectives in each of the clusters. For single country clusters, the statistics definitively reflect the data for that particular country, but for clusters comprised of two or more countries, the statistics represent the mean of all of the constituent components. It is worth noting that the numbering does not denote ranking but simply follows the pattern in the dendrogram moving from right to left. The following can be said about each group in this cluster analysis:

*Group 1 – Thailand (TH):* For the first time, Thailand, an Asian elephant range State, falls in a cluster of its own rather than being grouped with the Democratic Republic of the Congo as was the case in all previous ETIS analyses. In terms of frequency, Thailand ranks in the middle range with a relatively small number of seizures relating to the country. Looking at scale, the fourth largest weight value is seen which indicates that Thailand's seizures comprise substantial quantities of ivory. Overall, Thailand infrequently reports ivory seizure information to ETIS, only 11 cases since CoP9 (although three more cases were received subsequent to this analysis), but the country is implicated in almost four times as many seizures through the data reported by others. In terms of period of activity, Thailand ranks first amongst all clusters, with 95% of the transactions by weight since 2006 occurring in the period 2009-2011. This indicates that Thailand's ivory trade has been exceptionally active over the last three years. Similar to previous analyses, effective law enforcement against illicit ivory trade in Thailand appears to be problematic as the scores for governance as measured by the World Bank's 'rule of law' index and the law enforcement effort ratio are generally low. On the other hand, Thailand itself has made six of the largest seizures in ETIS which have transpired since 2009, totaling over 8.3 tonnes of ivory. The measure for organised crime indicates that 77% of the ivory weight attributed to Thailand has been seized in the context of large-scale movements of ivory since 2009. This strongly suggests that organised criminal syndicates are deeply involved in the ivory trade that unfolds between Thailand and Africa. Thailand's domestic ivory market score ranks highest of all countries in this cluster analysis and is believed to exhibit poor compliance with the requirements for internal ivory

markets established under Resolution Conf. 10.10 (Rev. CoP15). The last comprehensive survey of the Thai ivory market by TRAFFIC documented the presence of 26,277 ivory products in 270 outlets in five cities (Stiles, 2009). Thailand's legislation continues to allow ivory trade at the retail level which complicates effective law enforcement action (see SC62 Inf. 11).

*Group 2 – Malaysia (MY), Philippines (PH) and Viet Nam (VN):* All of these countries are found in Southeast Asia, and Malaysia and Viet Nam represent Asian elephant range States. All three nations were highlighted in the ETIS analysis to CoP15 as being secondary countries of concern in the illicit trade in ivory. Grouped together in this analysis, these countries exhibit a very low value for the mean number of seizures during the period of 2009-2011, but exhibit the second highest value for weight, indicating that seizures when they do occur are very large-scale events. Only Viet Nam seems to be reporting ivory seizures with any degree of regularity, although Malaysia has improved since CoP9 by providing data for 2011. On the other hand, with only a single seizure case over the last three years, Philippines rarely participates in ETIS. Over three-quarters of the ivory trade since 2006 that involves these countries has occurred over the last three years, as evidenced by the period of activity score. Although major players in the illicit ivory trade, governance challenges are apparent looking at the scores for 'rule of law' and the law enforcement effort ratio, indicating that only a quarter of the potential seizures are actually being made and reported to ETIS. The exceptionally high score for the measure of organised crime means that virtually all ivory flows to and through these countries constitute very large shipments of ivory. The high market score also is indicative of the presence of domestic ivory markets, especially in Philippines and Viet Nam. The prominence of ivory carving for the production of religious artefacts in the Philippines was previously highlighted in the ETIS analysis to CoP14, whilst the Cholon district of Ho Chi Minh City is where Viet Nam's largest ivory market is found (Stiles, 2008). Overall, however, more than end-use consumers, these countries function as transit points for illicit raw ivory trade linking, in particular, source countries Kenya and Tanzania with end-use consumers China and Thailand (see SC61 Doc. 44.2 [Rev. 1] Annex 1 and SC62 Doc. 46.1 Annex).

*Group 3 – Hong Kong SAR (HK), South Africa (ZA), Kenya (KE) and Tanzania (TZ):* This cluster comprises a major ivory market and transit territory in Asia for mainland China, Hong Kong SAR, and three African elephant range States through which significant exports of illicit ivory have transpired over the last three years. Hong Kong SAR and Kenya regularly report data to ETIS, whilst South Africa and Tanzania are far more sporadic in their reporting; Tanzania's data set for 2011 is very incomplete and comprises only a single seizure case. In terms of frequency, this group offers the second highest number of seizures, indicating frequent and ongoing illicit trade in ivory. Further, with the third largest value for weight in the analysis, the scale of the trade to, within and through these countries is very large. Kenya, Tanzania and, to a somewhat lesser extent, South Africa all represent exit conduits for large quantities of ivory from other parts of Africa moving to Asian markets. These rapidly developing contemporary trade routes were previously pointed out in the ETIS reports to the CITES Standing Committee (see SC62 Doc. 46.1 Annex), which identified the Indian Ocean seaports of Kenya and Tanzania as the paramount exit point for large illicit consignments of ivory from Africa at the present time, with South Africa, especially the port of Cape Town, also emerging as an important exit point over the last three years. The period of activity measure shows that three-quarters of the trade since 2006 has transpired over the last three years, indicating that all of the entities in this group are major contemporary players in the illicit trade in ivory. In terms of governance, the 'rule of law' indicator and the law enforcement effort ratio represents fairly average middle-ground scores. Interestingly, Hong Kong SAR and South Africa provide the best scores for 'rule of law', but then simultaneously reflect the lowest law enforcement effort ratios which, in the case of Hong Kong SAR, results from an upsurge in worked ivory product seizures by China from individuals moving across the border between Hong Kong SAR and mainland China. Nearly three-quarters of the trade since 2006 is represented by large-scale seizures, which indicates the strong presence of organised criminal activity behind the ivory trade occurring in these countries. The market score is fairly low owing to the fact that only Hong Kong SAR has a highly visible domestic ivory trade.

*Group 4 – China (CN):* China is once again a single country cluster with unique attributes as the premier end-use market. This is evidenced in this analysis by China holding the distinction of simultaneously having the highest values for the mean number of seizures and mean weight. Thus, over the last three years, in terms of frequency and scale, the Chinese market has been more heavily implicated in illicit trade in ivory than any other country. Whilst hundreds of small ivory seizures are regularly occurring, large-scale ivory seizures are also a problematic issue, thus the weight value is over 12 tonnes greater than any other cluster group. Indeed, 83% of China's ivory trade since 2006 has occurred over the last three years. As an end-use consumer, this value strongly signals that the Chinese ivory market is more active than in any previous ETIS analysis. Because of these

characteristics, China remains the single most important contemporary player in the illicit trade in ivory and the pattern of seizures confirms the global reach of China's illegal trade activity. The number of ivory seizures that China has made over the three-year period 2009 to 2011 is nearly nine times greater than the three-year period 2006 to 2008, owing to the fact that China now reports small 'personal effects' seizures that do not constitute criminal offences but which are nonetheless illegal and result in mandatory forfeiture. Importantly, the number of seizures made by other countries which implicate China in the trade has also increased by nearly five-fold over the same period of time. Using the World Bank's 'rule of law' as a governance indicator, China's score is well below average, but China's law enforcement effort ratio is the third highest in this analysis. Continuing to demonstrate improvement, a law enforcement ratio of 65% indicates that China is actively engaged in the interdiction of illegal trade in ivory. The high number of seizures with low weight values indicates persistence in policing people and cargo coming into China, but overall does not seem to seriously alter the flow of illicit ivory coming into the country. China's domestic ivory market score is the second highest and reflects growing evidence of an increase in ivory products being marketed outside of the regulated domestic ivory trade system. The level of illegal processing and retail sales remains unknown, but constitutes a major threat to the legal ivory trading system. A total of 65% of the trade by weight since 2006 represents large-scale ivory transactions, the key indicator suggesting involvement of highly organised crime syndicates in the traffic. Since 2002, ETIS has identified the Chinese market as the key driver behind illicit trade in ivory.

**Group 5 – Democratic Republic of the Congo (CD), Mozambique (MZ), Uganda (UG), Congo (CG), Gabon (GA), Egypt (EG), Ethiopia (ET) and Nigeria (NG):** All countries in this group are African elephant range States, with the exception of Egypt in North Africa that functions as a significant ivory market although it is far removed from any extant elephant populations. In the ETIS analysis to CoP15, the Democratic Republic of the Congo and Nigeria were identified as the two most problematic countries in Africa in terms of illegal trade in ivory, whilst Mozambique and Gabon were seen as important countries of secondary concern. The Democratic Republic of the Congo, Mozambique, Congo and Gabon are all important sources of ivory, much of which is illegally exported by the African countries identified in Group 3. Uganda, Ethiopia and Nigeria rarely supply ivory from local elephant populations, but frequently function as entrepôt and/or exit countries for ivory sourced elsewhere. Seizure data to ETIS is rarely reported by the Democratic Republic of the Congo, Mozambique, Uganda, Egypt and Nigeria, whilst Gabon and Ethiopia have all submitted more data than was the case for the CoP15 ETIS analysis. Congo's profile has benefited from the NGO Project d'appui à l'application de la Loi sur la Faune Sauvage (PALF) submitting data on ivory seizures. Overall, Ethiopia accounts for three-quarters of the number of seizure records reported to ETIS by this group, providing data on 163 cases in 2011. Collectively, this group falls in the middle range in terms of frequency and scale, but it is recognised that much of the raw ivory generated in these countries loses its identity as it moves through the trade chain. In terms of period of activity, 59% of the trade since 2006 falls in the time period since CoP15, indicating increasing illegal ivory trade activity. The governance values for this group are amongst the lowest in this analysis. Collectively, the 'rule of law' score is the poorest of any group in this analysis, whilst the law enforcement ratio is tied with Group 6 in the third lowest position. In terms of large-scale ivory movements, about a quarter of the trade from these countries falls into that category indicating that organised criminal elements play a role in the illicit ivory trades within, from and through these countries. And finally, the domestic ivory market score is the second highest in this analysis, providing another aspect to the illegal trade, although the situation is highly variable. Some countries, such as the Democratic Republic of the Congo, Mozambique, Nigeria and Egypt also continue to have large domestic ivory markets, which have repeatedly been documented in ETIS (Milliken et al., 2006; Courouble et al., 2003; Martin and Vigne, 2011a). Others, such as Ethiopia, Gabon and Congo have taken active measures to suppress local ivory markets and appear to be meeting this challenge with some success (Lagrot, in prep.; Martin and Vigne, 2009).

**Group 6 – Cameroon (CM) and Taiwan, province of China (TW):** Both Cameroon and Taiwan, province of China, have previously been identified in ETIS analyses as representing countries or territories of concern. An African elephant range State which witnessed the slaughter of some 300 elephants in a single national park since CoP15, Cameroon is both a source of ivory in trade and a regional entrepôt for exports out of its Atlantic Ocean seaport, Douala. Taiwan, province of China, largely serves as a transit point for ivory most frequently moving to the Chinese mainland or to the Philippines. Neither Cameroon nor Taiwan, province of China, regularly submit seizure data to ETIS, but Cameroon's profile continues to benefit from the submission of ivory seizure records from the non-governmental organization the Last Great Ape Organization (LAGA). Although showing the third lowest value for the mean number of seizures, the mean weight is relatively higher, indicating that seizures occasionally represent moderate weights of ivory. Ivory trade in the earlier period, 2006-2008, was far more active than that which has occurred over the last three years. In fact, the data

indicate that this cluster has been the least active since 2009 of any other cluster group. This results from the fact that in 2006, Taiwan, province of China, and Cameroon both made or were implicated in three very large seizure cases in which over nine tonnes of ivory was seized, whilst in the more recent period, 2009-2011, only a single large-scale seizure event concerned this group. Governance issues are a problem with a less than average 'rule of law' score and a middle point law enforcement ratio that seems to fluctuate widely from year to year. About one-quarter of the ivory seized in the period 2009-2011 was in the context of large-scale seizure events, indicating that organised criminal activity is a factor in the trade. The domestic ivory market score also holds middle ground in this cluster analysis, indicating that some domestic trade in ivory is present although both markets are greatly reduced over early assessments. Overall, this is a cluster that, in comparison to all the groups which have preceded it, has remained relatively dormant over the last three years. That said, given the ivory trade histories of Cameroon and Taiwan, province of China, either entity could easily re-emerge with greater significance in a future ETIS analysis.

**Group 7 – Belgium (BE), France (FR), Sudan (SD), Portugal (PT), Central African Republic (CF), India (IN) and Zambia (ZM):** This group is a bit of a 'mixed bag' comprising three of the four most important former European colonial powers on the African continent, Belgium, France and Portugal, three Africa elephant range States, Sudan, Central African Republic and Zambia, and the largest Asian elephant range State, India. Reporting to ETIS by this group is somewhat erratic overall, but Belgium, France and Zambia regularly provide data, whilst Portugal has not provided any data whatsoever over the last three years. In terms of frequency and scale, this group of countries is involved in a relatively modest number of seizures which generally have small weight values, although on fairly rare occasions larger seizures of raw ivory are made in the African range States, especially Zambia. Larger shipments of ivory are also occasionally interdicted in Europe whilst in transit to Asian markets. In terms of the activity measure, this group sits right in the middle with trade weights showing equal levels of activity between the two periods examined, 2006-2008 and 2009-2011. The governance indicators are higher, but there is considerable variability within the group with France and Belgium providing high World Bank 'rule of law' scores and the Central African Republic and Sudan providing the poorest scores. The law enforcement ratio is generally above average overall, but is pulled down considerably by the very poor scores for Sudan and Portugal since 2009. A very small percentage of the trade since 2009 has involved large-scale movements of ivory, a single shipment seized in Belgium, so the organised crime indicator reflects only modest activity with respect to this group. The generally low mean market score also indicates very modest domestic trade in ivory within this group.

**Group 8 – Djibouti (DJ), North Korea (KP), Chad (TD), Indonesia (ID), Mali (ML), Senegal (SN), Mexico (MX), South Korea (KR), Russia (RU), Macau, SAR (MO):** This diverse group of nine entities is another catch-all for countries or territories that have rather modest involvement in the illicit trade in ivory as evidenced by having the lowest values for frequency and weight of any cluster in this analysis. The period of activity measure shows only one-third of the ivory trade activity since 2006 has occurred in the most recent period, 2009-2011. On the other hand, the governance indicators for this group are amongst the poorest with the second worst score for 'rule of law' and the poorest law enforcement effort ratio of any group. At the present time, however, the data do not suggest significant involvement in the illicit ivory trade, as there is no recent evidence of large-scale ivory flows through or in any of these countries or territories. Overall, domestic ivory market scores are also fairly modest, suggesting that most countries or territories are not consuming ivory locally, although Macau SAR, Senegal and Indonesia (primarily in Bali) have been identified in the past as featuring ivory products in their arts and crafts markets (Martin and Stiles, 2003; Lagrot, 2007).

**Group 9 – Austria (AT), Canada (CA), New Zealand (NZ), Denmark (DK), Spain (ES) and Poland (PL):** This group of European nations and Canada and New Zealand also reflects very modest values for frequency and scale, with the second lowest scores for the mean number of seizures and mean weight. As well, ivory trade activity has diminished over the last three years as indicated by the low percentage of the trade that has occurred since 2009. The governance indicators go in two directions, with the 'rule of law' score the second highest of any group, whilst the law enforcement ratio is relatively low. This latter score is somewhat compromised by the fact that Canada has not reported any ivory seizures to ETIS over the last three years. There is no evidence of large-scale flows of ivory from, to or through these countries, and the market score is the lowest of any cluster group indicating that there is almost no domestic ivory trade activity in these countries.

**Group 10 – Botswana (BW), Namibia (NA) and Zimbabwe (ZW):** Interestingly, this group comprises the three African elephant range States whose elephant populations were transferred to Appendix II in 1997. Overall, this southern African group reflects the middle range in terms of mean number of

seizures, but the measure for scale is the fifth largest in this analysis, indicating that most seizures fall in the 10-100 kg weight class. The fact that 65% of the ivory trade since 2006 has occurred since 2009 presents some cause for concern as it indicates that illegal ivory trade is increasing. Governance indicators are mixed, with a much lower than average World Bank 'rule of law' score, but the second highest law enforcement ratio of any group. Zimbabwe is the country that pulls these scores down in both cases, especially the 'rule of law' score, indicating that far greater challenges exist in that country. There is also evidence of large ivory trade flows in this group as indicated by the 13% score for measuring the percentage of ivory that relates to large-scale ivory seizures. This again relates to Zimbabwe which was the source of nearly two tonnes of worked ivory seized in Cape Town, South Africa in 2009. The domestic ivory market score is low, reflecting the general absence of domestic ivory trade in Botswana and the relatively low level of trade in Namibia.

**Group 11 – Australia (AU), Germany (DE) and United States (US):** Although widely separated geographically, this group comprises three nations that routinely report ivory trade seizure data as a result of well-developed national systems designed to capture such information. That said, Australia has still not provided seizure data for 2010. The frequency and scale measures show a relatively large number of mostly low weight seizures, indicating the persistent interdiction of worked ivory 'personal effects' from returning tourists and other similar seizures. Within this group, ivory trade activity has only marginally dropped in the most recent period with 45% of the total trade by weight from 2006 occurring over the last three years. This group displays the best governance values with the highest scores for 'rule of law' and the law enforcement ratio. Further, there is no evidence of large-scale ivory movements within this group, indicating that none of these countries currently lie along ivory trade routes used by organised criminal syndicates. The domestic ivory market score is in the lower middle range, reflecting the situation in the United States and Germany which have active domestic ivory trade. The German market appears well-regulated even though a 2005 study found 16,444 locally carved ivory products in 188 outlets (Martin and Stiles, 2005). In the United States, a 2008 ivory market survey documented a total of 24,004 ivory products in 657 outlets in 17 American cities, with the authors speculating that some 31% of the items appeared to be new items possibly from China (Martin and Stiles, 2008).

**Group 12 – United Arab Emirates (AE), Cambodia (KH), Laos (LA), Singapore (SG), Angola (AO), Equatorial Guinea (GQ), Burundi (BI), Benin (BJ), Guinea (GN), Togo (TG), Ghana (GH), Qatar (QA), Switzerland (CH), United Kingdom (GB), Japan (JP), Côte d'Ivoire (CI), Malawi (MW), Italy (IT), Netherlands (NL) and Rwanda (RW):** The last cluster of 20 countries is the ultimate catch-all, residual group in this analysis. African elephant range States include Angola, Equatorial Guinea, Benin, Guinea, Togo, Ghana, Côte d'Ivoire, Malawi and Rwanda, and Cambodia and Laos represent Asian elephant range States as well as emerging importance as transit countries for onward trade to Thailand and China. Burundi and Singapore are other African or Asian export or transit countries but not range States, whilst the United Arab Emirates and Qatar are transit countries in the Middle East. Japan represents a major ivory consumer in Asia and the beneficiary of both one-off ivory sales under CITES over the last two decades. Finally, Switzerland, the United Kingdom, Italy and the Netherlands are occasional European destinations for small weights of worked ivory products, but sometimes (more frequently in the past) play the role of a transit country for ivory moving to Asia. With such diversity, the distinctive attributes of this cluster are difficult to ascertain and describe cohesively. Reporting rates are generally very poor: ten countries have not reported a single seizure in the period examined, 2006-2011 (Angola, Benin, Cambodia, Côte d'Ivoire, Equatorial Guinea, Ghana, Guinea, Laos and Togo) and five others only reported between one and five seizures over the six year period (Burundi, Qatar, Rwanda, Singapore and the United Arab Emirates). Italy, Malawi and the Netherlands are better at reporting but are not consistent, failing to provide data for between one and three years during this period. Only Japan, Switzerland and the United Kingdom provide data to ETIS regularly, with these countries accounting for 71% of all seizures reported by this group during this period. In terms of frequency, a very small mean number of seizures is apparent for such a large group of countries, but the relatively higher mean weight variable indicates that at least some of the few seizures that are made represent larger weights of ivory. Collectively, this group has been somewhat more active in the recent period 2009-2011. The governance indicators for this group are generally low, with a less than average 'rule of law' score and the second lowest law enforcement ratio in the analysis. At the individual country level, however, the positive 'rule of law' scores (in descending order) of the Netherlands, Switzerland, United Kingdom, Singapore, Japan, Qatar, United Arab Emirates and Italy are offset by the negative 'rule of law' scores of the rest of the group. Some large movements of ivory have occurred with certain countries in this group as nearly a quarter of the mean weight figure represents large-scale ivory seizures, indicating the involvement of organised crime syndicates. In this regard, Singapore, Qatar and United Arab Emirates have all served as transit countries, and Cambodia and Laos as destinations, for seven of the largest ivory seizures, totalling over 10.1 tonnes,

made in 2010 and 2011. The fifth highest score for domestic ivory markets indicates that certain countries in this group have thriving local trade in ivory, including Angola, Guinea and Cote d'Ivoire in Africa and Japan, Laos and Singapore in Asia. Various countries in this cluster deserve watching, especially Angola as a potential source, entrepôt/export country and domestic market operating outside of the CITES arena; Laos and Cambodia as emerging destination and transit countries for illegal trade to Thailand and China; Qatar, the United Arab Emirates and Singapore as transit countries for illicit trade to and within Asia, including large-scale ivory shipments; and Japan as a traditional consuming market and potential driver of illicit ivory trade.

#### Discussion: Assessing the results of the cluster analysis

29. Looking at Figure 7, Groups 1 to 4, which hang on the far right-hand side of the dendrogram, have the greatest degree of separation from all other clusters in this analysis. The characteristics and factors that separate these four groups make **Thailand, Malaysia, the Philippines, Viet Nam, Hong Kong SAR, South Africa, Kenya, Tanzania** and **China** the priorities of greatest concern in the illicit trade in ivory at the present time. These groups are regularly involved in illicit ivory trade and collectively account for three-quarters of the total mean weight of the ivory represented by the ETIS data in Table 2. All four of these groups have been far more active in the illicit ivory trade over the last three years and are prominently involved or implicated in large-scale transactions of ivory that represent higher-level criminal activity. In some cases, governance issues could be an inhibiting factor lying behind seizure and reporting rates for these countries and territories. Finally, these groups contain some of the largest ivory markets in the world today.
30. Assessing this issue in more detail, the two single country clusters which hold **Thailand** (Group 1) and **China** (Group 4) are the most important end-use markets driving illegal ivory trade today. In fact, over the last three years, the ETIS data indicated that China's illegal ivory trade has been about two and half times greater than Thailand's trade. Whereas consumption of ivory in China is predominantly due to domestic consumerism with most worked ivory products remaining in the country, the Thai ivory trade is heavily linked with its very large tourist industry so that worked ivory products purchased in Thailand are continually moving to other global destinations, especially North America, Europe and Australia. Another critical difference between these two countries is that China's law enforcement ratio score is nearly three times better than the equivalent value for Thailand. Most large-scale movements of ivory, which have greatly increased since CoP15 as shown in Figure 2, are directed at the markets in these two countries. Any future decline in illicit trade in ivory will depend upon the actions taken by China and Thailand to deal with outstanding problematic issues in their ivory markets. Looking more specifically at these two countries:
- **Thailand** typically makes ivory seizures at the point of importation, which usually involves large consignments of ivory illegally entering the country as cargo, but law enforcement at the retail market level rarely, if ever, occurs. Overall, Thailand's strategy may prevent large quantities of ivory from being imported, but if raw ivory shipments go undetected at the point of entry, the ivory is seemingly processed and freely marketed with very little intervention once inside the country. Thailand's legal allowance of trade in ivory tusks from domesticated Asian elephants is exploited to market African elephant ivory as worked products through hundreds of retail outlets (see SC61 Doc. 44.2 [Rev. 1]; SC62 Inf. 11). Legal measures to prevent the sale of products derived from Africa elephant ivory are reportedly under consideration, but have not yet been promulgated and implemented although things may change in the near future. The requirements of Resolution Conf. 10.10 (Rev. CoP15) for internal trade in ivory are not fully implemented. Thailand has reported to the Standing Committee that, pursuant to the Commercial Registration Act of the Ministry of Commerce, and since 2008, all retailers, wholesalers and carving businesses must register and that 67 traders had done so with municipal, provincial or national authorities (see SC62 Inf. 11). Ivory market surveys, however, have identified far more players: for example, in 2001, 194 retail outlets and at least 70 ivory carvers were identified (Martin and Stiles, 2002), and in 2006-2007, 201 retail outlets and at least 60 carvers were found (Stiles, 2009). Thailand's report to the Standing Committee indicates that 16 ivory dealers in Bangkok are among those who have registered (see SC62 Inf. 11), but ivory market surveys in Bangkok consistently indicate that there are about ten times more retail ivory outlets in the capital city (Stiles, 2009), suggesting poor compliance with registration requirements. Further, it is unclear if all of the 67 traders who have registered are now free to market their ivory products without further verification concerning their legality and origin. In terms of compulsory trade controls over raw ivory, Thailand reports that raw ivory trade requires authorisation under permit from the Department of Livestock Development in the Ministry of Agriculture and Cooperatives, but no information on the weights and origin of raw ivory registered under this system have been provided to the Standing Committee, only that the government has authorised the movement of ivory on 40 different occasions in the period 2011

to mid-2012 (see SC62 Inf. 11). With respect to a “*comprehensive and demonstrably effective reporting and enforcement system for worked ivory*”, Thailand has stated that a Ministerial Order of 5 March 2009 requires ivory processors and vendors to record and keep records and documents that relate to trade in ivory for inspection. It is not known, however, whether or not any of the dealers in question have been subsequently investigated, or whether any punitive actions have ever been taken against any dealers failing to meet any of the requirements. This is an important consideration as hundreds of individuals in Thailand’s ivory industry appear not to have registered and fall outside the system. The absence of law enforcement action against individuals failing to comply with the ivory trade controls outlined to the Standing Committee could suggest some degree of official tolerance. In the ETIS report to CoP14, it was reported that “*The revision of key legislation, including the drafting of an elephant-specific law, and the adoption of regulatory requirements for ivory dealers to provide inventories of their stock are in progress*”. This process to amend the Wildlife Conservation Act, as well as adopt a new Elephant Act, appears to have been seriously derailed subsequent to CoP14. In the meantime, the large ivory movements to Thailand in recent years are suggestive of the scale of demand for raw material for the country’s clandestine ivory processing industry. There are also reports that seized ivory stocks in Thailand have subsequently gone missing (Christy, 2012). Thailand’s ongoing domestic trade in ivory remains a problematic issue facing elephant conservation under CITES.

- **China** appears to take a comprehensive approach to law enforcement with strategies that target and interdict ivory at its ports of entry, both seaports and terrestrial border areas, including policing Chinese citizens returning home from Hong Kong SAR and destinations abroad. At the same time, law enforcement actions in retail markets throughout the country occur. Altogether, China is making, on average, about two ivory seizures every single day, a fact that underscores how rampant the illicit ivory trade to and within China has become. Yet, it is difficult to ascertain a deterrent effect emerging from China’s law enforcement efforts as the Chinese market for illicit ivory continues to grow without respite (see Figure 8). Since CoP15, China has reportedly experienced a serious lapse in the regulation of its legal ivory market exacerbating the presence of ivory products of illicit origin in the Chinese market, which was outlined in SC62 Doc. 46.1 to the CITES Standing Committee in July 2011:

*Various observers to China, including TRAFFIC’s own monitoring programme, have found government-accredited ivory trading retail outlets persistently selling ivory products without the benefit of product identification certificates (Martin and Vigne, 2011b; EIA, 2012), which were recognized as an integral discriminating feature in the Chinese control system as described in the Annex to document SC53 Doc. 20.1. China’s ivory database system was specifically designed to track ivory products at the retail level back to legal stocks of raw ivory held by approved manufacturing outlets. Allowing retail vendors the option to sell ivory products without the display and issuance of product identification certificates means that such items would not be captured in the database. This circumvention creates an opportunity for laundering products from illicit sources into the legal control system.*

31. China has since reported to SC62 that the authorities have addressed this issue by shutting down “*at least 10 officially designated ivory manufacturers and retailers*” involved in illegal trade in ivory and seizing “*thousands of ivory items*” in the domestic market in 2012 (although such data has not yet been reported to ETIS and cannot be verified at this time) (see SC62 Inf 8). China also reports jailing “*hundreds of illegal ivory dealers in the past decade and around 30 ivory smugglers have been sentenced to life imprisonment*” (see SC62 Inf 8). Although unable to verify all of the facts in these statements, it is clear that China is seriously engaged in law enforcement actions. China reports that “*all carved ivory can only be sold at the designated retailers with certificate*” but it is not clear what the penalties are for failure to do so and how frequently such infractions occur. Further, it is also not clear whether the product identification certificates must be displayed together with the worked ivory products being sold. TRAFFIC has visited accredited retail shops in which no product identification certificates have been displayed which seems to defeat the function that such certificates play in the legal control system. Internet trading of ivory has also been documented by TRAFFIC and others as a serious internal issue with respect to the ivory trade, but action on that front is apparently underway. Further, the involvement of Chinese nationals in Africa with the procurement and shipment of ivory to Asia remains a serious and seemingly expanding issue of concern.
32. Moving on to other priority countries and territories for attention, the raw ivory trade traffic to China and Thailand is facilitated using international trade routes that currently most often involve Kenya, Tanzania and South Africa (Group 3) in Africa as the primary points of export, and then move through or otherwise use Malaysia, Philippines, Viet Nam (Group 2) or Hong Kong SAR (Group 3) in Asia as transit points. All of these countries or territories currently play problematic roles in the illicit trade in ivory:

- Since CoP15, **Kenya** and **Tanzania** have rapidly ascended to become the two most prominent countries connecting African ivory with Asian demand. In the ETIS analysis to CoP15, Tanzania was already identified as a country of concern with respect to large consignments of illicit ivory leaving the African continent, whilst Kenya was described as an emerging force having been implicated twice in large shipments of central African ivory through its principal seaport, Mombasa. In the intervening three years, the ETIS data show that both countries have consolidated their positions as the primary conduits for large shipments of ivory to be exported to Asia. These two countries have seen 16 large-scale ivory shipments, totalling some 35 tonnes of ivory, be interdicted at, or successfully moved through, their Indian Ocean seaports of Mombasa, Dar es Salaam and Zanzibar. This represents nearly half of the 34 large-scale ivory seizures by number and 58% of the associated weight of such seizures during the period 2009-2011. Further, this development constitutes a major shift in trade routes, with the East African subregion eclipsing the Central/West African Atlantic Ocean seaports of Cameroon, Gabon and Nigeria as the epicentre of illegal ivory trafficking out of Africa at the present time.
  - In comparison, **South Africa** is currently playing a lesser role in the export trade than Kenya and Tanzania, but nonetheless is increasingly implicated in large-scale ivory movements, which is the reason this country falls in Group 3. One such seizure in 2009 comprised an estimated 1.5 tonnes of worked ivory products coming from Zimbabwe possibly for onward export, whilst two other cases in 2011 totalled over 3.8 tonnes of raw ivory destined for Asian markets out of the seaport in Cape Town; of these later cases, one consignment was seized prior to shipment, but the other one was successfully exported but subsequently seized in Malaysia. Although forensic examination was not undertaken, this ivory is not believed to have originated in South Africa, indicating that the country appears to be becoming an exit point for ivory from other parts of southern Africa. Overall, South Africa's participation in ETIS has become somewhat erratic with ivory seizure data from many of the provincial authorities not being provided.
  - Although in separate but closely aligned clusters, **Hong Kong SAR** (Group 3) and **Malaysia, Philippines** and **Viet Nam** (Group 2) share similar attributes. In the ETIS analysis to CoP15, all of these countries and territories were identified as second-tier entities of concern owing to their role as transit points in the context of large-scale movements of ivory. That characterisation is now even stronger with these four countries and territories collectively having made or been implicated in 21 (62%) of the 34 large-scale ivory seizures made since 2009, totalling 41.1 tonnes of ivory. The sheer quantity of cargo moving through the major seaports of Hong Kong SAR, Malaysia, Philippines and Viet Nam clearly involves tens of millions of containers each year, thus careful targeting and use of intelligence information is required for law enforcement to be effective. Typically, these transit points are used to change the identity of containers originating in Africa so that their onward shipment to China or Thailand does not attract oversight attention. In the case of Viet Nam, ivory is being imported and then moved overland across the terrestrial border with China as evidenced by China's seizure of 707 ivory tusks just inside the border in April 2011. Ivory stock management of seized ivory is also an issue. For example, in the Philippines relatively large amounts of ivory have reportedly gone missing from government custody (see SC54 Doc. 26.1 [Rev.1]). Owing to the large quantities of ivory that has been seized, the ivory stock management systems in these countries and territories is an important consideration to ensure that ivory is not leaking back into illegal markets. In sum, these four countries and territories currently constitute the frontline defence for preventing large-scale movements of ivory into the two key end-use markets and any assistance that improves their collective performance is a step forward in terms of elephant conservation.
33. In this analysis, the countries and territories in Group 5 and Group 6, comprising **Nigeria, Ethiopia, Egypt, Gabon, Congo, Uganda, Mozambique, Democratic Republic of the Congo, Taiwan**, province of China, and **Cameroon** represent the second tier level of concern. With respect to these countries and territories, the following can be said:
- The ETIS analysis to CoP15 identified the **Democratic Republic of the Congo** and **Nigeria** as two of the three countries most heavily implicated in the illicit trade in ivory, and further noted that this finding was the case in all previous ETIS analyses. These two African range States continue to function as major sources of illicit ivory in international trade and continue to host two of the largest unregulated domestic markets on the African continent. A recent survey of Nigeria's Lekki market in Lagos revealed a far greater number of ivory items for retail sale than two previous surveys in 1999 and 2002 (E. Martin, pers. comm.), whilst the Democratic Republic of the Congo's Kinshasa market also continues, although it is somewhat diminished from previous levels of trade. Further, Nigeria was the source of more than one tonne of ivory seized in Hong Kong SAR in 2010, and over one tonne of ivory seized in Thailand in 2011. Equally, the Democratic Republic of the Congo was the country of export behind 230 ivory tusks and pieces seized in Belgium in 2010. Finally, Nigeria was the

destination for nearly one tonne of ivory seized in Cameroon in 2009 and 1.3 tonnes of ivory seized in Kenya in 2011. With a very small elephant population of its own, Nigeria has primarily functioned as a regional entrepôt pulling in vast quantities of illicit ivory from Central Africa for illicit export to Asia. The Kenyan seizure, however, represents the first time that Nigeria's procurement of ivory has expanded to eastern African source countries, which is a very worrying development in its own right. Whilst the longstanding CITES trade ban against Nigeria that had been in effect since July 2005 was rescinded by the CITES Standing Committee in August 2011, there are still many issues to resolve on the ivory trade front. Nigeria's participation in ETIS has only marginally improved with one case submitted in 2010 and five in 2011, while 108 seizure cases submitted by other countries and territories implicate Nigeria over the same time period. Likewise, only two seizure records were available for the Democratic Republic of the Congo over the last three years, but other ETIS contributors report 55 seizure cases involving ivory coming from the country. The Democratic Republic of the Congo is still believed to be the source of much of the ivory moving through Uganda, Kenya and Tanzania, but elephant numbers are reportedly substantially reduced in that country and there are real concerns of an impending collapse in the near future (see SC61 Doc. 44.2 [Rev.1]).

- **Congo** and **Gabon** probably hold the largest remaining elephant populations in the Central Africa subregion, making them important sources of illegal ivory from the Congo Basin, which in the past often used the port of Douala in neighbouring **Cameroon**, as the exit point. All three countries have moved to suppress their domestic ivory markets in the capital cities of Brazzaville, Libreville and Yaounde, respectively (Lagrot, in prep.), which is reflected in their low market scores in ETIS. Further, Gabon in particular has gained high-profile international attention for incinerating its government-held stocks of ivory in June 2012, in an event demonstrating strong leadership for the conservation of African elephants. The burning of ivory stocks was taken to prevent leakage into illegal trade, a serious issue for all countries in this subregion. Apart from Cameroon seizing nearly one tonne of ivory crossing into Nigeria in 2009, none of these countries have been overtly implicated in any large-scale ivory seizures over the last three years. However, the fact that ivory trafficking occurs through obscure trade chains in and out of the Central African subregion serves to mask the origin of the ivory in question. For that reason, the strong application of DNA testing of ivory seized in conjunction with large-scale ivory seizures would serve a useful purpose in fostering understanding of the scale of elephant poaching affecting these two countries. Central Africa is still regarded as a primary source of illicit ivory moving to Asian markets.
- The ivory trade in **Uganda** continues to be inextricably linked with the Democratic Republic of the Congo as a source and Kenya as the principal conduit for onward export. Since CoP15, further allegations concerning the involvement of the Ugandan military in ivory trade out of the Democratic Republic of the Congo have surfaced, this time with military helicopters allegedly ferrying illicit ivory out of Garamba National Park (Gettleman, 2012). More typically, ivory is moving across the long terrestrial border between the two countries in trucks and then containerised for onward shipment to Asia, especially Thailand. Two large-scale shipments of ivory, totalling over 1.8 tonnes, were seized in Thailand in 2009 coming from Uganda via Kenya. Other shipments of ivory seized in Kenya, for which trade chain documentation is lacking, could have originated in Uganda. Uganda remains a country of concern because of its position as a transit country connecting Central African ivory with East African exit ports.
- **Ethiopia** falls in this group owing to its importance as a major transport hub through which ivory frequently moves from Africa to Asia. The international airport in Addis Ababa, the country's capital city, is the base for Ethiopian Airlines which has one of the best flight networks connecting Central and West African countries with, in particular, Thailand (Bangkok) and China (Guangzhou and Beijing). Whilst Ethiopia has generally failed to provide ETIS data for 2009 and 2010 (only six cases), in 2011, every one of the 163 seizures that Ethiopia reported were made at Bole International Airport, and the ivory products in all but 12 cases were destined for export to China. At the other end of the trade, over the period 2009-2011 (but not including all data from China for 2011), China and Hong Kong SAR together made 252 ivory seizures, which totalled 552 kg, from mostly Chinese travellers arriving from Ethiopia. These data provide insight into the scale of the ivory trade that is occurring between these countries. At the same time, the ivory curio market in Addis Ababa continues but less ivory is displayed for fear of seizure by local authorities. The last major study was undertaken in July 2009 when 1,340 ivory products were observed for sale in 37 outlets (Martin and Vigne, 2009). Whilst this figure reflected a considerable reduction from the nearly 10,000 ivory products found for sale a decade earlier by the same authors, it nonetheless shows some degree of resurgence following two major law enforcement actions described in previous ETIS analyses. Implementation of Resolution Conf. 10.10 (Rev. CoP15) remains an issue for Ethiopia, as does ivory stockpile management.

- **Mozambique** only rarely reports ivory seizure data to ETIS, but remains a country of concern for the same reasons noted in the previous ETIS analysis: the continuation of its unregulated domestic ivory market, the ongoing flow of raw ivory to neighbouring Tanzania or directly to Asia, especially Viet Nam, and reoccurring thefts of ivory stocks from government custody. Concerning this last issue, 266 pieces of elephant ivory, totalling nearly 1.1 tonnes, reportedly went missing from the central ivory stockpile in Maputo in February 2012 (see SC62 Doc. 46.1.). Since then, it has been reported that the ivory stockpile in Pemba in Cabo Delgado Province has also disappeared, the second time this has occurred (M. Foloma, pers. comm. to TRAFFIC, 2012). These events continue to indicate the presence of organised criminal syndicates as a potent element in the country's illegal ivory trade. Mozambique's position within the illicit ivory trade has not improved since CoP15.
  - **Egypt** is of importance due to its rather large and unregulated domestic ivory market. Although geographically far away from any elephant populations, Egypt's ivory trade has traditionally been based upon illegal imports of tusks which primarily originate in Central Africa and are acquired through neighbouring Sudan. In 2005, over 10,700 ivory products and approximately 50 active carvers were identified in Cairo, Luxor and Aswan (Martin and Milliken, 2005), whilst the latest survey found 9,261 ivory products in 94 outlets in Cairo and Luxor (Martin and Vigne, 2011a). The apparent stability in the market is worrying as previously, from 1998 to 2005, the market had declined by an estimated 43% in terms of the number of ivory objects observed for sale. The study documented the advent of new buyers, Chinese tourists and residents, and as a consequence the market may actually be growing. There is little evidence of law enforcement at the retail level and Egypt fails to implement the provisions of Resolution Conf. 10.10 (Rev. CoP15) that relate to internal sales of ivory. Further, since 2003, Egypt has only reported two ivory seizure cases to ETIS. The lack of participation in ETIS and the ongoing tolerance of local ivory markets sustained through the illegal procurement of ivory serves to undermine elephant conservation under CITES.
  - **Taiwan**, province of China, also remains a territory to watch given its prior history as another Asian transit point through which large weights of ivory have moved to the Chinese mainland or on to other regional entrepôts such as the Philippines. Like Cameroon, which falls in the same cluster as Taiwan, province of China, ivory trade activity has been relatively dormant over the last three years, in comparison to previous ETIS analyses. The island's geographical location, however, offers strategic positioning to link with Fujian province where China's second largest ivory processing industry is found. For this reason, Taiwan, province of China, remains of interest in terms of trade routes for illegal ivory consignments.
34. Finally, although somewhat obscured in the sense of being embedded within one of the residual groups in this cluster analysis, several other countries are noted as emerging concerns which may become clearer in future iterations of the ETIS analysis. In this regard, **Angola**, a non-CITES Party in Africa, **Laos** and **Cambodia** in Asia and **Qatar** and the **United Arab Emirates** in the Middle East could all potentially emerge as key export or transit countries for large consignments of illicit ivory. In view of its past designation as an acceptable ivory importing country under CITES, **Japan** also remains a country of importance to watch, although in this analysis involvement in illicit ivory trade appears to be negligible.

#### PART IV: ASSESSMENT OF FACTORS GIVING RISE TO ILLICIT TRADE IN ELEPHANT IVORY

35. Resolution Conf. 10.10 (Rev. CoP14) mandates that ETIS assess "*whether and to what extent observed trends are related to changes in the listing of elephant populations in the CITES appendices and/or the resumption of legal trade in ivory*".

#### A word about large-scale ivory seizures

36. As reported at Cop15, the frequency and scale of large-scale ivory seizures continues to increase. Such seizures are indicative of the presence of the organised crime in the illicit trade in trade. From 2009 through 2011, 34 such seizure events occurred, a record number in ETIS. It is disappointing to note that almost none of the seizures made in these countries or territories have resulted in successful investigations of the criminals behind these transactions. Indeed, in most cases it appears that forensic evidence is not taken and analysed so that the origin of the ivory in question can be ascertained. Other countries along the trade chain through which individual consignments have moved are usually not informed in a timely manner so collaborative investigations transpire. Finally, there is also little evidence to suggest that controlled deliveries of large-scale ivory shipments are being made so that the criminal webs behind these transactions can be better understood and unravelled. In most cases, the employment of

collaborative law enforcement to curtail large-scale ivory trade crime in these countries and beyond is not occurring effectively. Without the benefit of dedicated law enforcement that has the capability to bridge Africa and Asia along the primary trade routes, it is difficult to see how illicit trade in ivory will be curtailed.

#### Correlation between CITES-approved one-off ivory sales and the trend in illicit ivory trade

37. The perennial issue of whether the observed trends in the illegal trade in ivory are related to events and decisions under CITES has been discussed in all previous ETIS analyses. The issue of CITES decision making and the “signals” that are sent, however, is not straightforward. It is often not clear what exactly the “signals” are and whether the impact of such “signals” is felt in elephant range States, in end-use markets or just generally globally. Further, the confounding issue of “mixed signals” was noted in SC62 Doc. 46.1 submitted by CITES MIKE, ETIS and the IUCN/SSC African and Asian Elephant Specialist Groups to the CITES Standing Committee:

*It is worth noting that the 2008 ivory sale coincided with the beginning of a nine-year moratorium on further ivory sales by range States whose populations are currently on Appendix II. The decisions to allow an ivory sale and at the same time prevent further legal sales effectively constitute mixed signals. Such mixed signals make it difficult to discern whether trends in MIKE data result from CITES decisions or from other factors. In order to detect effects of policy interventions, such as ivory trade decisions, such interventions would need to be unequivocal and associated with distinct points in time. This was not the case with the international ivory sale that eventually took place in late 2008, which had been the subject of CITES discussion since 2002. In addition, any hypothesis of a causal link between legal ivory sales and subsequent poaching levels would have to be clearly and carefully articulated by its proponents, specifying the expected direction, duration and spatial distribution of any effect, the expected length of any time lags, and the hypothesized causal mechanisms linking such sales to poacher behaviour. Well-articulated hypothesis and well-designed and implemented policy interventions would effectively constitute quasi-experiments, from which the MIKE and ETIS systems would eventually be able to discern any true impact of CITES decisions on poaching and possibly learn about causal links.*

In this regard, two essentially confounding questions arise:

“Did the CITES-approved one-off ivory sale subsequently stimulate an increase in illegal trade in ivory?”

or

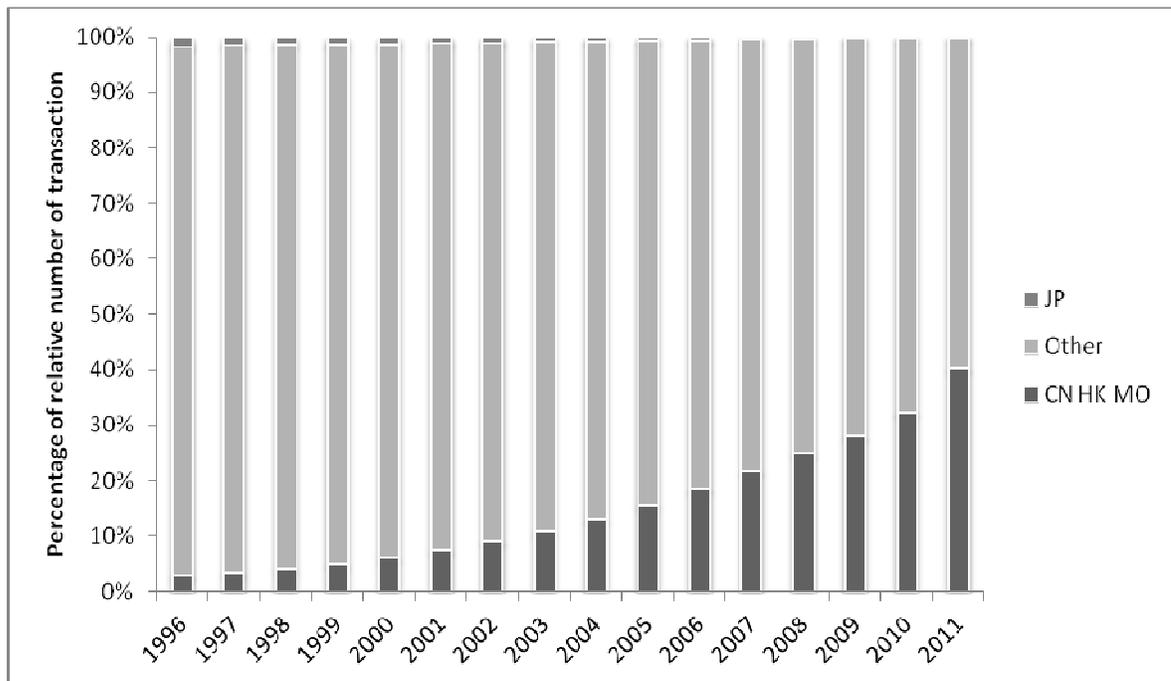
“Did the CITES-approved nine-year moratorium on ivory trade subsequently stimulate an increase in illegal trade in ivory?”

38. The first question suggests the notion that ivory consumption increased in various markets (especially – presumably – in the countries that participated in the one-off sale) because of a “signal” that it was legal and acceptable to buy ivory. The second question holds that ivory traders and industry insiders acted in the face of an impending restricted supply and commenced the stockpiling of ivory as a business strategy to prepare for an uncertain future. It needs to be appreciated that neither ETIS, nor MIKE, are designed with capabilities to disentangle these seemingly opposing scenarios with any degree of certainty. Indeed, both scenarios could simultaneously be operative motivational factors behind increasing trade in ivory.
39. The first one-off ivory sale under CITES took place in June 1999, when 49,574 kg of ivory from Botswana, Namibia and Zimbabwe was sold to buyers in Japan. In this analysis, the best estimate of the bias adjusted and smoothed trends presented in Figures 4 and 6 are represented by the bold dots. In the years following this event, a marginal but statistically insignificant increase in illicit ivory trade can be seen as measured by overall trade activity and relative weight, respectively. The degree of increase is slightly more pronounced in the Weight Index (Figure 6) than in the Transaction Index (Figure 4). Overall, however, given the confidence intervals depicted by the vertical lines in either figure, (meaning that there is a 90% probability that the trend falls within the lines), the salient pattern is really one showing relative stability for the decade spanning 1997 through 2007. It is noted that in previous ETIS analyses using somewhat different methods the best estimate of the smoothed and adjusted trend in illicit trade in ivory subsequently showed some level of decline in the weight of ivory traded over a five-year period of time. Whilst the best estimate in the Weight Index in this analysis no longer shows decline, such a trajectory would nonetheless be possible within the limits of the confidence intervals. Regardless, the bottom line is that, given the

sensitivity of these trends, there is no evidence to suggest that the first one-off ivory sale under CITES resulted in any significant increase in either illicit ivory trade activity or the weight of ivory traded.

40. The most recent one-off sale under CITES took place in October/November 2008 and involved China and Japan purchasing 107,770 kg of raw ivory valued at nearly USD15.5 million from Botswana, Namibia, South Africa and Zimbabwe under highly conditional circumstances originally agreed at CoP12 in 2002 and then modified in the context of an “African compromise” to include Zimbabwe at CoP14 in 2007. The auctions transpired in late 2008 and the ivory from these shipments did not arrive at their Asian destinations until January 2009. Both the Transaction Index (Figure 4) and the Weight Index (Figure 6) demonstrate a progressively sharper and statistically significant increase in illicit ivory trade from 2008 onwards. This result is contrary to what is observed in the period following the first one-off sale. With conflicting trade patterns, it is not possible to present an unambiguous result in terms of establishing a correlation between one-off sale events under CITES and increasing illicit trade in ivory, much less establishing causality.
41. As previously concluded in the report to CoP15, whether the increase in illicit ivory trafficking from 2008 onwards is a result of the one-off ivory sale under CITES, the imposition of a nine-year moratorium or some other cause, or group of causes, remains to be conclusively established through a full causal analysis. To do so competently would require a detailed understanding of all factors which drive illegal trade in ivory along the entire trade chain (Burn *et al.*, 2011). This requires modelling a wide range of inter-related legal, economic, development, cultural and attitudinal factors that may potentially drive various aspects of the trade. Either data on these factors, or proxy measures for them, will be required for such an analysis. Statistical methods for causal modelling will need to be invoked to identify the relative impact of the most important drivers. It also needs to be appreciated that this type of modelling exercise is a major undertaking and much of the data that would be required is currently not available.
42. Still it is possible to look at the ETIS data in other ways to illuminate this issue. Using the Transaction Index introduced in this analysis and isolating the respective roles of China and Japan against the aggregated backdrop of all illegal ivory trade transactions in all years, the relative involvement of these two countries in illicit ivory activity can be seen in Figure 8. Over the 16-year period examined, an uninterrupted progression of Chinese involvement in illegal ivory trade is demonstrated, commencing at about 3% in 1996 and rising each and every year without exception to reach 40% in 2011. Looked at another way, China’s involvement in illicit ivory trade transactions is 46 times greater in 2011 than it was in 1996. The increasing pattern of growth in illicit trade in ivory for China is well established long before the one-off sale under CITES commenced and certainly, for the period 1996-2008, was clearly driven by other factors – for example, economic liberalization, affluence and more disposable income, cultural significance and status, or an increasing Chinese presence in Africa – independently of the CITES ivory sale event. Comparatively, Japan’s involvement in illicit ivory trade shows a completely different pattern whereby illicit ivory trade has progressively diminished from 2% in 1996 and 1997, to about 1% over the next nine years, to finally become almost completely negligible in a global context from 2007 onwards. Japan’s involvement in illicit trade in ivory today is a quarter of what it was in 1996. In fact, Japan’s illegal ivory trade activity has dropped in every single year since 1996, regardless of importing some 50 tonnes of CITES-approved ivory on two separate occasions in 1999 and 2008. If one-off sales of ivory under CITES were the most important factor driving illicit trade, one would expect Japan to also be showing increased involvement in illicit ivory trade transactions, but that is not the case. Thus, other factors – for example, better law enforcement, changing cultural practices and fashion, more public awareness or economic stagnation – are simultaneously occurring that serve to mitigate, hide or totally dominate the impact, if any, of the one-off sales.

**Figure 8:** Comparing relative ivory trade activity in China and Japan based on Transaction Index for all countries/territories in all weight classes (ETIS 26 June 2012)



43. In conclusion, the fact that the trade patterns for China and Japan are essentially poles apart again strongly suggests that other factors beyond or in combination with the one-off sales under CITES are responsible for exacerbating or mitigating ivory consumption in these two widely different end-use markets. What is required is a full causal analysis considering all potential drivers together. Both the ETIS and MIKE analyses are fully capable of producing “correlations” with a range of proxy measures related to governance, human development, consumer spending in end-use markets and other key factors and these provide clear direction in terms of the key background variables to consider. But these associations in and of themselves fall short of clearly establishing the drivers of illegal killing and illegal trade in ivory. Again, rather than drawing piecemeal conclusions about one driver or another, a comprehensive model of causal relationships and other confounding variables needs to be developed and assessed. This last point is key and needs to be stressed: looking at individual drivers – for example, the role CITES decisions play in the broader context of illegal trade in ivory – in isolation from other factors will not produce accurate and meaningful results.

## PART V: CONCLUSIONS

### Conclusions of the trend analysis

44. This analysis presents the trend in illicit trade in ivory through 2011 using refined analytical methods which improve bias adjustment estimates for seizure and reporting rates for each country in each year. As a result, examination of the data is now possible in terms of tracking illegal ivory trade activity through a Transaction Index, and the weight values that underpin that activity through a Weight Index. By assessing the seizure data in three weight classes by two ivory types, a far more nuanced view of the trade with respect to supply (raw ivory transactions) and demand (worked ivory transactions) is possible. Looking at the trend analysis, the following conclusions can be made:

- Bias adjusted and smoothed data indicate that illicit trade in ivory has continued to escalate since CITES CoP15 and is currently at its highest level in the 16-year period of time examined (Figure 6). A pronounced upward trend in illicit trade is particularly evident from 2007 onwards. Illicit ivory trade activity and the weight of ivory behind this trade is now roughly three times greater than it was in 1998 (Figures 4 and 6). When these findings from ETIS are viewed together with the results of the CITES

MIKE programme, it can be argued that elephants are facing the most serious conservation crisis since the 1989 trade ban was imposed under the Convention.

- The sharp upward trend is being driven by a major increase in the weight of ivory being moved in the >100 kg weight class. Looking at seizures of 800 kg or more that were made in 2009, 2010 and 2011, there were eight, nine and 17 such seizures, respectively, in those years, totaling nearly 61 tonnes of ivory. The increasing pattern of large movements of ivory in Figure 5 represents the involvement of international criminal syndicates in the trade operating through sophisticated networks that link Africa with Asia. To address this growing issue, scaled-up law enforcement and international cooperation is a prerequisite. For this reason, investigation of large-scale ivory seizures should be recognized by the Parties as the single most important ivory trade infraction for follow-up attention. Currently, the lack of forensic examination to source ivory, the absence of itemized inventory lists concerning the contents of such seizures, and the failure to conduct dedicated, long-term investigations along the entire trade chain results in very few, if any, arrests and convictions for most large-scale ivory seizure cases.
- Looking at the trend, there is no evidence that implementation of Decision 13.26 and its annex, the *'action plan for the control of trade in African elephant ivory'* adopted in 2005, has had any measurable impact in curtailing illicit trade in ivory. It is worth noting that, pursuant to Decision 13.26, the only occasion in which sanctions have been invoked was in 2008 against 13 elephant range States<sup>2</sup> for an administrative infraction, i.e. failure to submit responses to a questionnaire agreed at CITES CoP14 (see Notification to the Parties No. 2008/011). It is worth considering that the CITES Parties have never imposed sanctions for failure to implement the longstanding requirements for internal trade in ivory as articulated in Resolution Conf. 10.10 (Rev. CoP15) or other actions called for in the annex to Decision 13.26. On the other hand, ETIS has continually provided detailed information on the characteristics of illicit ivory trade in a range of countries, including some which have persistently failed to comply with CITES requirements in each and every analysis to date.

#### Conclusions of the cluster analysis

45. With respect to the cluster analysis focused upon assessment of illicit ivory trade data from 2009-2011, the following conclusions can be made:

- Taking a trade chain perspective and moving backwards from end-use markets to elephant ivory source countries, the two countries most heavily implicated as destinations for illicit trade in ivory are **China** and **Thailand**. Both of these countries have featured in previous ETIS analyses and reports to the Standing Committee as countries of major concern. In terms of trade routes and transit countries or territories through which large quantities of ivory are flowing from Africa to Asian consumers, **Hong Kong SAR, Malaysia, Philippines** and **Viet Nam** are the paramount countries and territories of concern. Moving to source countries and exit points for large amounts of ivory leaving the African continent, **Kenya, Tanzania** and **South Africa** are presently the countries of greatest concern. More ivory is moving through and out of these countries at the present time than any other countries in Africa. All along the trade chains represented by these countries and territories, organised criminal syndicates are an active force undermining international and national regulations that prevent trade in ivory. In sum, these nine countries and territories are the players most heavily implicated in illegal trade in ivory at the present time according to this analysis.
- Another ten countries and territories - **Cameroon, Congo, Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Mozambique, Nigeria, Taiwan**, province of China, and **Uganda** – represent a secondary level of concern as they repeatedly play important supporting roles in the illicit ivory trade. These players represent a mix of source, entrepôt/transit and exit countries and territories for illicit consignments of ivory from Africa or, in the case of Taiwan, province of China, a potential transit point for ivory moving through Asia. And finally, Egypt, the Democratic Republic of Congo, Mozambique and Nigeria all have important domestic ivory markets in their major cities that remain unregulated. These countries and territories typically exhibit poor values for law enforcement effort and are occasionally involved in large-scale movements of ivory, especially Nigeria, Mozambique, Uganda and Cameroon, which indicates the involvement of organised crime syndicates. In these countries and territories, ivory trade issues deserve greater focus in terms of national agendas and attention at the international level through CITES.

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<sup>2</sup> The 13 countries were Chad, the Democratic Republic of the Congo, Ethiopia, Gabon, Guinea, Mozambique, Nepal, Nigeria, Rwanda, Somalia, Sri Lanka, Sudan and Swaziland. These sanctions have all been revoked.

Conclusions of assessment of factors giving rise to illicit trade in elephant ivory:

46. With respect to assessing the relationship of CITES events with illicit trade in elephant ivory, the following conclusions can be made:

- This analysis fails to establish a correlation between the first conditional one-off ivory sale under CITES in June 1999 and subsequent illicit trade in ivory. Looking at the best estimated weight values in the period from 2000 through 2006, some incremental growth in illicit trade in ivory is noted, but nothing that is statistically significant; indeed, the general bias adjusted and smooth trend during this period is remarkably flat and stable (Figure 6). This result provides no evidence that the first one-off ivory sale under CITES appreciably stimulated illicit trade in ivory globally.
- With respect to the second conditional one-off ivory sale under CITES in October/November 2008, the pattern in the trend subsequently shows a very clear upward surge from 2008 onwards (Figure 6). It is an objective finding that the estimated illicit ivory trade trend greatly increased following the second one-off sale, and that the illicit trade has risen to the highest levels in at least 16 years. However, the correlation between the sale event in 2008 and the increase in illegal ivory trade in subsequent years does not establish causality.
- The periods immediately following the two one-off seizure events under CITES reveal conflicting trade patterns. This confounds interpretation and the establishment of any kind of unambiguous association. Whether the increase in illicit ivory trading following the 2008 one-off sale is a direct result of events under CITES or some other cause or group of causes remains to be conclusively established through a full causal analysis that examines all factors that drive illegal trade in ivory along the entire trade chain. Such analysis constitutes a major undertaking that is beyond the scope of ETIS analysis alone.
- Similarly, evidence of ivory trade trends in China and Japan – the apparent countries of import for recent shipments – indicates that generalization about impacts of one-off sales is misguided. Figure 8 shows that Chinese involvement in illicit ivory trade has steadily grown throughout the entire period, 1996 through 2011, irrespective of the one-off sale. On the other hand, Japan has essentially dropped out of the equation and demonstrates a diminished pattern in terms of illegal ivory trade activity following each occasion that it was the recipient of ivory from a CITES-approved one-off sale. The fact that China and Japan exhibit completely different patterns in Figure 8 strongly suggests that other factors are operative that either exacerbate or mitigate ivory consumption beyond the impact of CITES events. Some of these factors are evident from the correlations that have been established through MIKE and ETIS research – for example, law enforcement, consumer spending in end-use countries and so on – but an exhaustive assessment and modeling of all drivers of illegal killing of elephants and trade in ivory still remains to be undertaken.

#### SUMMARY CONCLUSIONS

47. This ETIS analysis should be interpreted as serious cause for concern. Illicit trade in ivory has greatly increased since CITES CoP15, reaching the highest level in at least the last 16 years. This increase is reflected not only in the relative weight of illicit ivory in trade (Figure 6), but also when measured in terms of the relative number of illicit ivory trade transactions that are occurring each year globally (Figure 4). Overall, the nine priority and ten secondary countries and territories of concern collectively account for two-thirds of all illicit ivory trade activity captured in the ETIS data since CoP15. The presence of organised crime syndicates is an increasingly entrenched feature behind the illicit trade, and governance shortcomings seriously undermine effective law enforcement along the trade chain. At the national level, almost no large-scale ivory seizures are being properly investigated, forensic evidence is rarely, if ever, taken and analysed, and accountable and transparent ivory stockpile management remain elusive in most countries. As presently implemented, CITES mechanisms and strategies, for example compliance with the requirements for internal trade in ivory articulated in Resolution Conf. 10.10 (Rev. CoP14) and the *action plan for the control of trade in African elephant ivory* of Decision 13.26, are failing to produce positive results.

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## COMMENTS FROM THE SECRETARIAT

- A. The Secretariat is grateful to TRAFFIC for the present report, which presents a comprehensive and refined analysis of data collected through ETIS. The Secretariat notes the new approaches for elucidating trends in trade in ivory, grouping countries in clusters that exhibit similar patterns in the seizure data, and assessing possible correlations between CITES-approved one-off ivory sales and illegal trade in ivory. The Secretariat supports the overall conclusions presented in Part V of the ETIS report.
- B. The Secretariat is encouraged to note from the report that the rate of data submission to ETIS appears to have increased since the 15th meeting of the Conference of the Parties. It notes also, however, that participation by some Parties, including a number of African and Asian elephant range States, remains poor. The Secretariat takes this opportunity to stress the importance of submitting information on seizures of elephant specimens to ETIS. As far as reasonably possible, these submissions should include the actual measured weight of the ivory seized, to enable ETIS to generate information that is as complete and comprehensive as possible in support of enforcement efforts to combat illegal trade in ivory.
- C. The authors express concern regarding the implementation of compliance measures concerning controls of ivory trade and domestic ivory markets in Resolution Conf. 10.10 (Rev. CoP15) and Decision 13.26 (Rev. CoP15). Under agenda item 26, the Conference of the Parties is expected to discuss an extensive revision of Resolution Conf. 10.10 (Rev. CoP15), based on proposals from the Chair of the Standing Committee. This revision is intended *inter alia* to streamline and strengthen the sections dealing with national and international ivory trade controls, and incorporate all relevant parts of Decision 13.26 (Rev. CoP15) into this Resolution. It is hoped that these changes will result in more effective compliance mechanisms that can be applied from the present meeting onwards.
- D. The nine countries and territories along the ivory trade chain that were identified in the ETIS report as being of 'primary concern' [China (including Hong Kong SAR), Kenya, Malaysia, the Philippines, South Africa, Thailand, the United Republic of Tanzania and Viet Nam] are all referred to in draft decision 16. A a) in document CoP16 Doc. 53.2.1. On the basis of the information provided in the ETIS report, the Secretariat proposes that this draft decision be revised as follows (text to be deleted is ~~crossed out~~. Proposed new text is underlined):

### ***Directed to the Secretariat***

16.A The Secretariat shall, subject to external funding:

- a) ~~subject to external funding~~, convene a CITES Ivory Enforcement Task Force, consisting of representatives from China (including Hong Kong SAR), Kenya, Malaysia, the Philippines, South Africa, Thailand, Uganda, the United Republic of Tanzania and Viet Nam, in cooperation with ICCWC partner organizations and, as appropriate, other Parties and experts, to:
- i) review existing strategies and develop new strategies to combat illegal trade in ivory; and
  - ii) propose measures to African and Asian enforcement authorities to promote long-term collaboration between them, for example through exchange programmes or the secondment of law enforcement officers from destination or transit countries to source countries and vice versa;
- b) examine and advise about existing DNA-based and forensic identification techniques for sourcing and ageing ivory, identify relevant forensic facilities and research institutions, and consider the need for further research in these areas;
- ~~cb)~~ ~~subject to external funding~~, convene a workshop for Parties on the use of controlled deliveries, in collaboration with ICCWC partner organizations, with the aim of expanding to expand the application of this investigation technique, particularly in Africa and Asia; and
- ~~de)~~ ~~subject to external funding~~, develop, in cooperation with the World Bank and other ICCWC partners, an anti-money-laundering and asset recovery manual with a specific

focus on wildlife crime, that can be used for the training of investigators, prosecutors and judges.

The Secretariat shall report on progress on the implementation of the present Decision at the 65th and 66th meetings of the Standing Committee, with ~~and formulate~~ recommendations as necessary.

- E. The 10 countries and territories identified as being of 'secondary concern' in the ETIS report [Cameroon, China (specifically Taiwan Province of China), the Congo, the Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Mozambique, Nigeria and Uganda] should be monitored closely by the Standing Committee to ensure their full compliance with and implementation of provisions relating to trade in ivory and ivory markets in Resolution Conf. 10.10 (Rev. CoP15) or the revised version thereof. On the basis of the information provided in the ETIS report, the Secretariat proposes the following draft decision:

***Directed to the Secretariat***

16.XX The Secretariat shall contact each Party identified in document CoP16 Doc. 53.2.2 (*ETIS report of TRAFFIC*) as being of 'secondary concern' (Cameroon, China, the Congo, the Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Mozambique, Nigeria and Uganda) to seek clarification on their compliance with CITES provisions concerning control of trade in elephant ivory and ivory markets. The Secretariat shall report its findings and recommendations at the 65th and 66th meetings of the Standing Committee.

- F. The Secretariat supports the call for ongoing financial support for ETIS.