2.

Criminal dynamics of rhino horn trafficking[22]

This chapter presents an indicative analysis of the criminal dynamics of rhino horn trafficking and major trends and changes that have occurred over the past 10 years. The analysis is based on a dataset consisting of 674 seizure incidents involving raw rhino horns, whole or in pieces, from any rhino species, occurring at any location globally, during the period from 1 January 2012 to 31 December 2021 (Table 2). (*Refer to section 1.2 of this report for a detailed description of the methodology used to collect the dataset*).

22. Sanitised intelligence and findings from seven years' worth of Wildlife Justice Commission investigations are interwoven throughout this threat assessment to provide context and insights into changes in the criminal dynamics of rhino horn trafficking. Where information is drawn from any other source, it is referenced with footnotes and acknowledged as such. Any non-referenced information, inferences or interpretation should be understood as being sourced from Wildlife Justice Commission intelligence analysis.

KEY FINDINGS

✓ Between 2012 and 2021, rhino horn seizures increased significantly in number and weight, despite a reduction in poaching.

✓ Six countries and territories have dominated rhino horn trafficking routes as source, transit, and destination locations: South Africa, Vietnam, Mozambique, China, Malaysia, and Hong Kong SAR.

✓ South Africa and Vietnam continue to be the two countries most consistently implicated in rhino horn trafficking.

✓ Malaysia is playing an increasingly important role as a transit point for shipments from Africa to Asia.

✓ Large amounts of harvested horns from legal stockpiles are diverted into illegal trade.

✓ Criminal groups are routinely exploiting weaknesses in stockpile systems to access harvested rhino horns for the illegal trade.

✓ One-third of rhino horns are smuggled unconcealed, suggesting a potential reliance on corruption to move shipments along the supply chain.

✓ Seizure data indicates that rhino horn smuggling is most frequently detected on commercial airlines, but the trend is shifting from small shipments in passenger luggage to larger shipments by air cargo.

✓ Law enforcement detection rates of illegal rhino horn shipments in key transit locations are generally low.

✓ There is a declining trend in the trafficking of Asian rhino horns, but Myanmar could pose a potential threat.

✓ Rhino horn is most frequently smuggled as a sole wildlife commodity.

✓ There are various types of crime convergence associated with rhino horn trafficking.

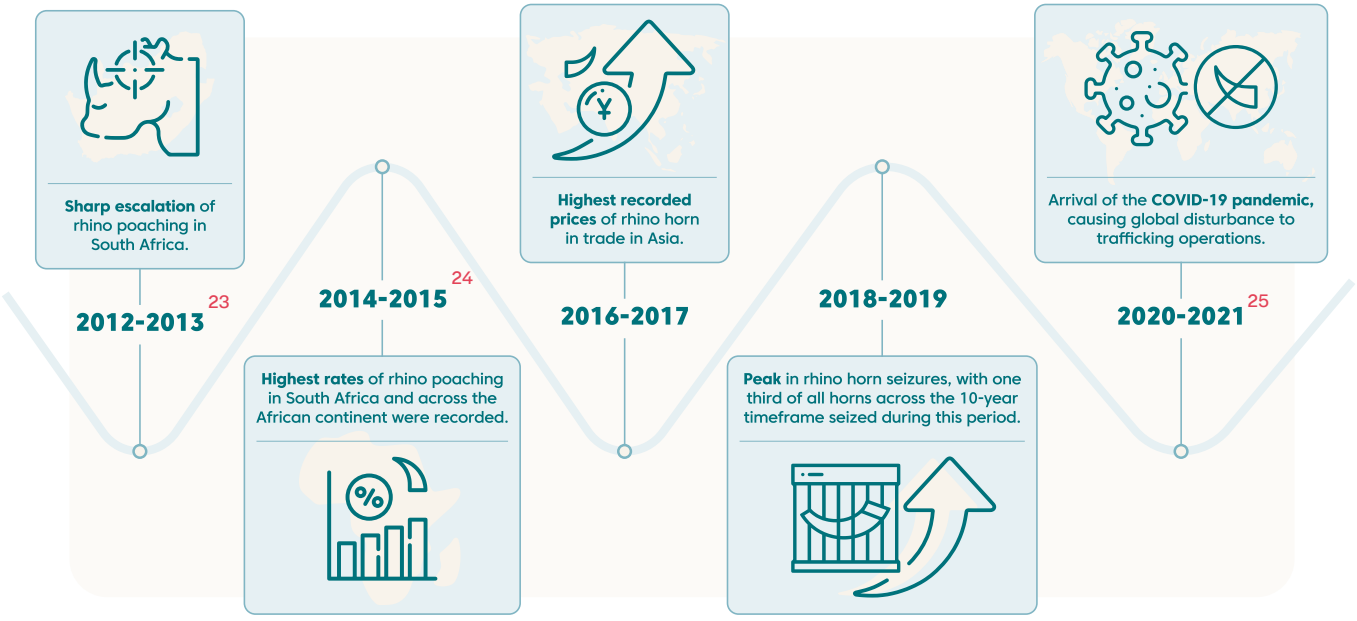
✓ Fake rhino horns are rarely detected by law enforcement authorities.

Table 2: Total number and weight of reported rhino horn seizures, 2012-2021.

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Overall total
No. of seizures	43	59	62	84	68	94	99	72	52	41	674
Total weight (kg)	426	524	494	655	843	926	969	1,467	464	818	7,586
Proportion of the overall weight (%)	5.6	6.9	6.5	8.6	11.1	12.2	12.8	19.3	6.1	10.8	100

Seizure data analysis

For the seizure analysis, the dataset was divided into five two-year periods to yield a broader view of the major trends over time. All subsequent tables and figures in this chapter of the report are thus based on the synthesis of the five two-year periods. Key observations around rhino poaching and illegal trade in rhino horn can also be associated with each period and may correlate with some of the changes in criminal dynamics occurring during that time:



23. As the country with the world's largest rhino population, including wild and farmed rhinos, the sharp escalation of poaching was significant as this population represents the largest potential supply of horn that could be exploited for illegal trade. Official rhino poaching figures for South Africa accessed at: https://www.dffe.gov.za/progressonimplementationofintegratedstrategicmanagementofrhinoceros

24. Refer to Figure 5 of this report.

25. Wildlife Justice Commission (2020), *Rapid Assessment of the Impact of COVID-19 on Wildlife Trafficking*.

Seizure data calculation notes

Where seizure incidents were reported with incomplete information, such as reports that specified the number of rhino horns seized without the corresponding weight of the contraband, the following guidelines were used to make the most accurate seizure weight estimate as possible:

- **For the calculation** of the weight of one African rhino horn, the method employed by Milliken (2014) was followed. Given that the mean weight of horn from white rhinos is 2.94 kg per horn and from black rhinos is 1.33 kg per horn, and based on the assumption that 90% of rhino horns in illegal trade are from white rhinos, an average of 2.78 kg was used to represent the weight of one unspecified African rhino horn.[26]

- **The weight** of one Asian rhino horn is reported to average between 0.27 to 0.72 kg,[27] so the mean of 0.495 kg was used for unspecified Asian rhino horn. It is noted that this is a more conservative weight than some other reports have used for Asian rhino horn.

- **If the report** did not include a reference to the origin of the contraband in the text, description of trade routes, or in seizure images, then no weight was assigned.

- **If horn pieces** were seized and the weight was not reported, then no weight was assigned.

The entirety of the dataset was analysed to discern findings relating to all aspects of the criminal dynamics described in this chapter, except for the calculation of the average shipment weight for African rhino horn seizures (Figure 8).

The average weight of African rhino horn shipments over time is a particularly important metric to assess changes in trafficking methods, as a higher degree of organisation, criminality, and resources are required to successfully move larger volumes of product across transnational trafficking

26. Milliken, T. (2014), *Illegal Trade in Ivory and Rhino Horn: An Assessment Report to Improve Law Enforcement Under the Wildlife TRAPS Project*. USAID and TRAFFIC.

27. Leader-Williams, N. (1992), *The World Trade in Rhino Horn: A Review*. TRAFFIC International, Cambridge, U.K.

routes. To calculate the average weight of African rhino horn shipments, only proven 'shipments' (i.e. African rhino horns identified as being in or having completed international transit at the time of seizure) were included in the analysis, so the following types of reports were excluded:

- **Seizures** with a reported detection location, but where no international routes were described. These mostly consisted of horns seized from poachers in or around conservation areas and horns seized from consolidation locations such as private residences or storage warehouses (and therefore not yet in transit).

- **Reports** of total weights seized during an operation when the description did not separate the weight details of multiple shipments.

- **Asian rhino horn** seizures (where known) were assessed separately given the significant weight difference between the two types of horn.

2.1. Key findings

I Rhino horn seizures increased significantly in weight over the past 10 years, despite a reduction in rhino poaching

During the 10 years from 2012-2021, more than 7.5 tonnes of rhino horns were seized globally from illegal trade in 674 incidents (Table 2).

Analysis of the amount of rhino horn seized showed an increasing trend until 2020 and the start of the COVID-19 pandemic when there was an abrupt decline in the number and volume of seizures, likely associated with a general reduction in smuggling due to border closures and travel restrictions[28] and an overall reduction in the illegal killing of rhinos[29] (Figure 7). However, 2020 was an abnormal year, and the volume of rhino horn seized increased sharply in 2021 as illegal trade began to return to pre-pandemic levels.

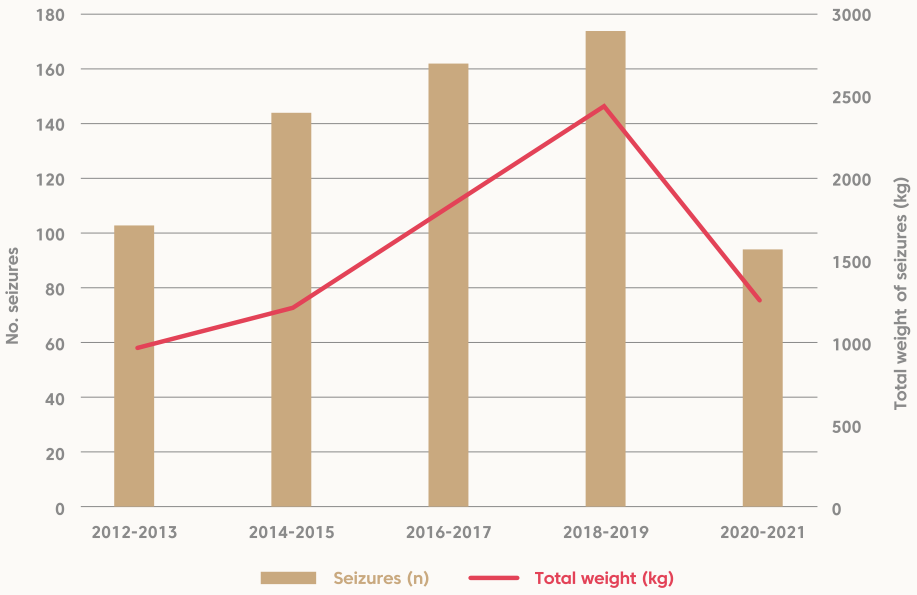


Figure 7: Total number and weight of reported rhino horn seizures, 2012-2021.

28. Wildlife Justice Commission (2020), *Rapid Assessment of the Impact of COVID-19 on Wildlife Trafficking*.

29. As shown in Figure 5 of this report, based on data published in CITES CoP19 Doc.75 (Annex 4), *'African and Asian Rhinoceros - Status, Conservation and Trade'*, prepared by IUCN Species Survival Commission's African and Asian Rhino Specialist Groups and TRAFFIC, pp.30-31.

Specific analysis of the seizures of African rhino horn shipments indicates that the average shipment weight increased markedly after 2017, reaching their highest weights yet during the COVID-19 pandemic (Figure 8). The average shipment weight increased by 52% between the 2016-2017 and 2018-2019 periods, and then by another 55% in 2020-2021.

The expanding size of rhino horn shipments could indicate a larger involvement of transnational organised crime groups as the trade is monopolised by a smaller number of key networks rather than many disparate actors and higher volumes of product are moved to increase the profit margins per shipment. Also, the fact that this trend persisted during the pandemic despite an overall reduction in smuggling due to global transportation challenges could further support this hypothesis.

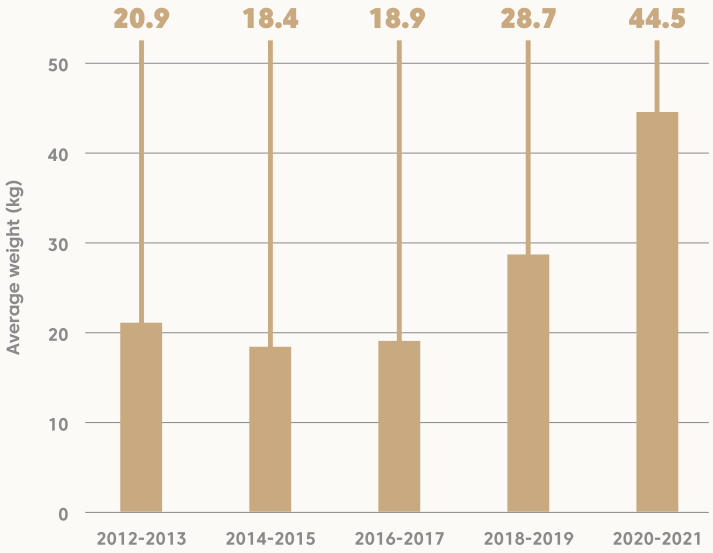


Figure 8: Average weight of smuggled shipments of African rhino horns, 2012-2021.

The rising number of rhino horn seizures over the past 10 years against the backdrop of an overall reduction of rhino poaching rates across the African continent could indicate increased law enforcement effort or improved effectiveness of efforts to target rhino horn smuggling, resulting in a higher proportion of the illicit trade being detected. Alternatively, another explanation for the increase in seizures could be a corresponding increase in the supply of horns from other sources entering illegal trade, such as harvested horns (discussed further in Key Finding (v) of this chapter).

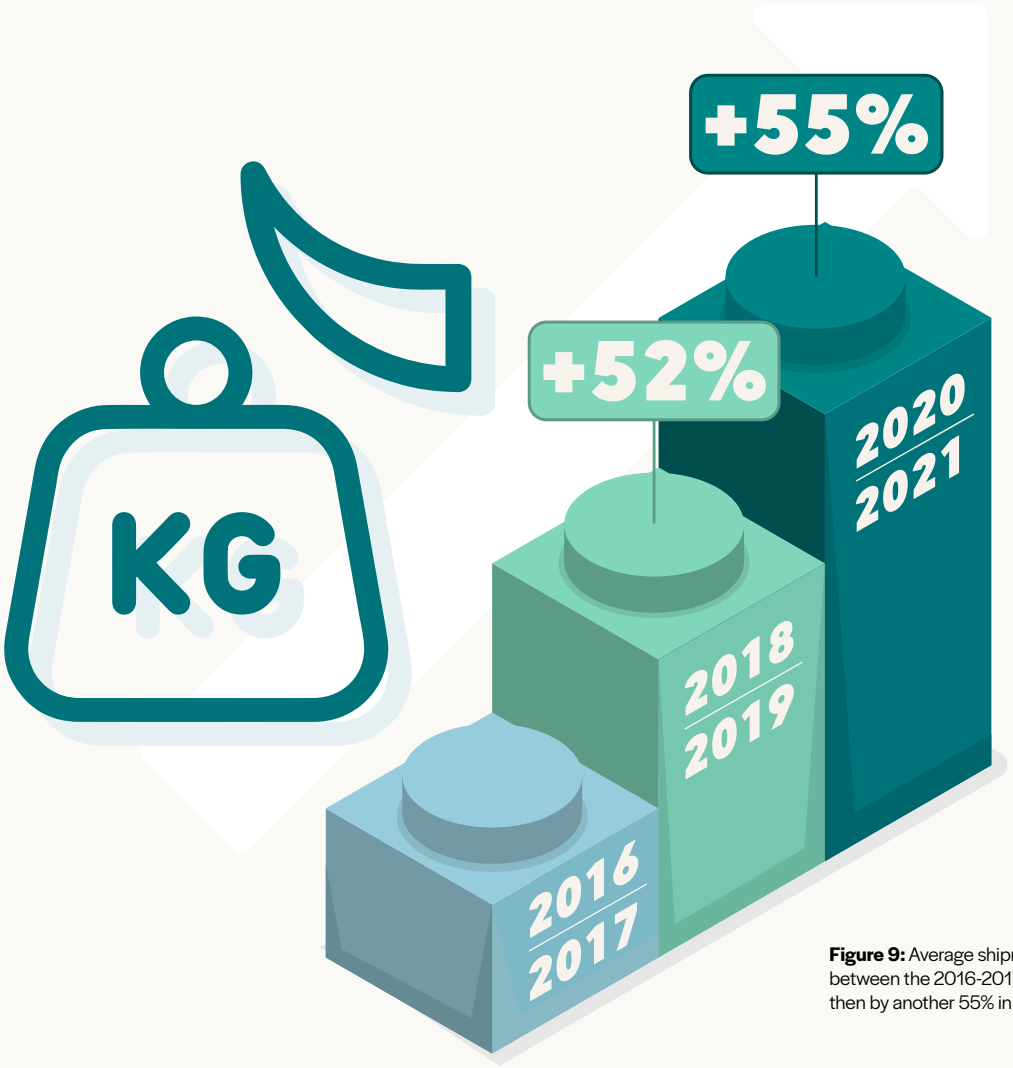


Figure 9: Average shipment weight increased by 52% between the 2016-2017 and 2018-2019 periods, and then by another 55% in 2020-2021.

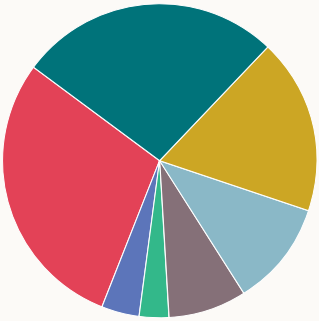
II Six countries and territories have dominated rhino horn trafficking routes

The analysis identified 54 countries and territories linked to rhino horn trafficking routes over the last decade, with six locations in particular dominating the supply chain throughout these years: South Africa and Mozambique at the entry point, Malaysia and Hong Kong SAR as transit locations, and Vietnam and China as destination locations.

Table 3: Countries and territories implicated in 100 kg or more of rhino horn seizures as origin, transit, or destination locations, 2012-2021.

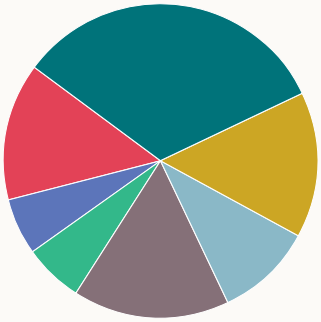
	Weight (kg) and proportion of horns seized (%) per period[30]											
Country/territory	2012-2013		2014-2015		2016-2017		2018-2019		2020-2021		Total	
South Africa	424	(45%)	303	(26%)	975	(55%)	1,357	(56%)	695	(54%)	3,754	(49%)
Vietnam	284	(30%)	395	(34%)	307	(17%)	598	(25%)	431	(34%)	2,015	(27%)
Mozambique	169	(18%)	435	(38%)	240	(14%)	411	(17%)	39	(3%)	1,294	(17%)
China	122	(13%)	236	(21%)	167	(9%)	657	(27%)	42	(3%)	1,224	(16%)
Malaysia	42	(4%)	142	(12%)	51	(3%)	239	(10%)	414	(32%)	888	(12%)
Hong Kong SAR	70	(7%)	56	(5%)	270	(15%)	255	(10%)	3	(1%)	654	(9%)
Kenya	62	(7%)	33	(3%)	282	(16%)	3	(1%)	6	(1%)	386	(5%)
Qatar	70	(7%)	89	(8%)	90	(5%)	103	(4%)	15	(1%)	367	(5%)
United Arab Emirates	6	(1%)	22	(2%)	24	(1%)	273	(11%)	0		325	(4%)
Namibia	0		12	(1%)	107	(6%)	25	(1%)	83	(7%)	228	(3%)
Thailand	89	(9%)	42	(4%)	75	(4%)	2	(1%)	0		207	(3%)
Uganda	52	(5%)	122	(11%)	23	(1%)	0		0		197	(3%)
Malawi	0		15	(1%)	164	(9%)	0		0		179	(2%)
Nigeria	85	(9%)	62	(5%)	3	(1%)	0		5	(1%)	155	(2%)
Turkey	0		0		25	(1%)	117	(5%)	6	(1%)	148	(2%)
Angola	0		5	(1%)	15	(1%)	29	(1%)	87	(7%)	136	(2%)
Philippines	13	(1%)	0		0		0		113	(9%)	126	(2%)
Singapore	8	(1%)	22	(2%)	49	(3%)	15	(1%)	24	(2%)	117	(2%)
Czech Republic	101	(11%)	0		0		0		0		101	(1%)

30. Note: In this table, rhino horn seizures were attributed to all the jurisdictions that were reported to be along the trafficking route, not only the jurisdiction that made the seizure. The % in this table represents the weight of rhino horn seizures each jurisdiction was implicated in as a proportion of the total weight of rhino horn seized globally during each period. Because a seizure can be counted more than once if it is attributed to multiple jurisdictions as source, transit, or destination locations, the % do not add up to 100%.



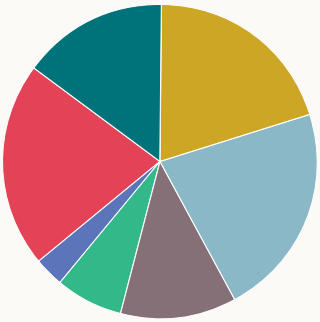
2012-2013

South Africa	27%
Vietnam	18%
Mozambique	11%
China	8%
Malaysia	3%
Hong Kong SAR	4%
Other countries	29%



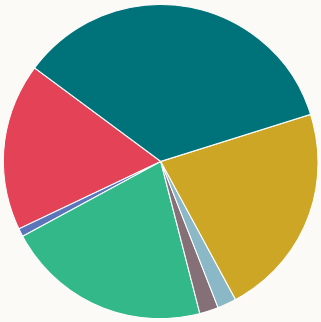
2018-2019

South Africa	33%
Vietnam	15%
Mozambique	10%
China	16%
Malaysia	6%
Hong Kong SAR	6%
Other countries	14%



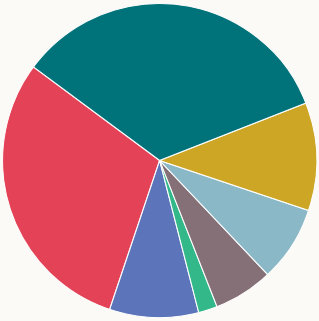
2014-2015

South Africa	15%
Vietnam	20%
Mozambique	22%
China	12%
Malaysia	7%
Hong Kong SAR	3%
Other countries	21%



2020-2021

South Africa	35%
Vietnam	22%
Mozambique	2%
China	2%
Malaysia	21%
Hong Kong SAR	1%
Other countries	17%



2016-2017

South Africa	34%
Vietnam	11%
Mozambique	8%
China	6%
Malaysia	2%
Hong Kong SAR	9%
Other countries	30%

Figure 10: Shifts in the rate of implication of countries and territories in rhino horn trafficking routes, 2012-2021.

The shifts in routes chosen for shipments indicate that diversification and dynamic decision-making play an important role in the trafficking process. While the major origin and destination locations of the horns have remained constant, the transit points in between have frequently changed throughout the 10-year timeframe. The diversification recorded a peak in the 2016-2017 period when 46 trafficking routes were described, while the 2020-2021 period saw the highest level of consistency and simplification with only 15 trafficking route variations and few transit points, presumably due to the limited availability of transportation options during the COVID-19 pandemic.

Crime is highly connected, and syndicates facilitating the transnational trafficking of large-scale shipments are often shown to be utilising the same nodes to move their products along the supply chain.[31] Crime series analysis on the reported rhino horn trafficking routes allows their grouping based on commonalities in the locations that could potentially be attributed to a single set of traffickers, as identified in Figure 11.

31. Wildlife Justice Commission (2021), *Convergence of Wildlife Crime with Other Forms of Organised Crime*.

2012-2013

The most prominent routes during this period saw Vietnam as a destination country.

Shipments originating from South Africa used European transit points.

Those originating from Mozambique transited most frequently through Thailand.

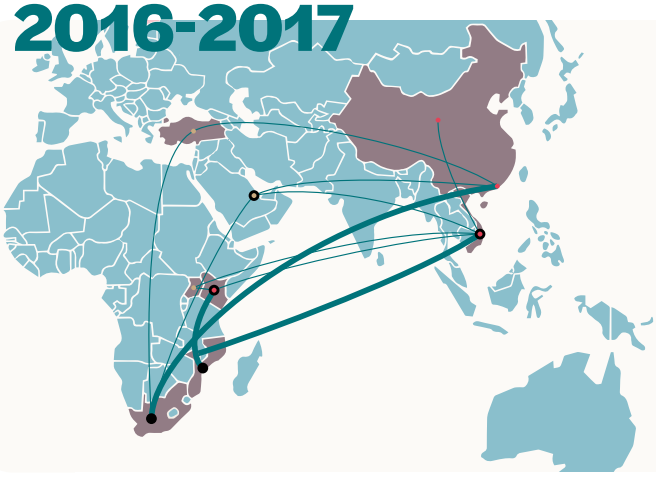
2014-2015

Vietnam continued to be the main destination for the largest seizures recorded during this period, with all routes originating in Mozambique and transiting the Middle East and/or Southeast Asia. Qatar established itself as a key transit location for air transportation of rhino horns and has continued to play a critical role to the present day.

The routes originating in South Africa shifted and were often sent direct to China during this period.

Western Africa – most notably Nigeria – was recorded as a key exit point or transit location for horns en route to China, which was not observed in any other period.

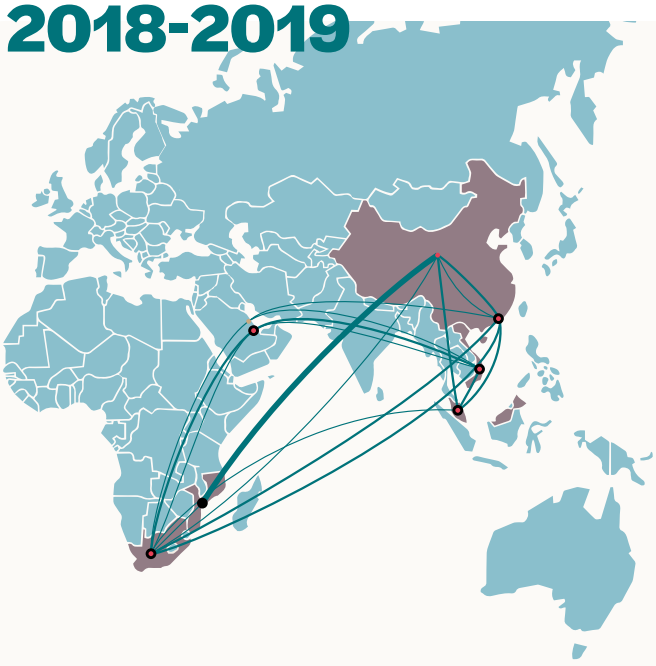
2016-2017



While the South African routes for large shipments continued to be sent to China (via Hong Kong SAR), they were no longer direct.

An important trafficking route during this period originated in Mozambique, exiting Africa through Kenya with the destination of Vietnam.

2018-2019

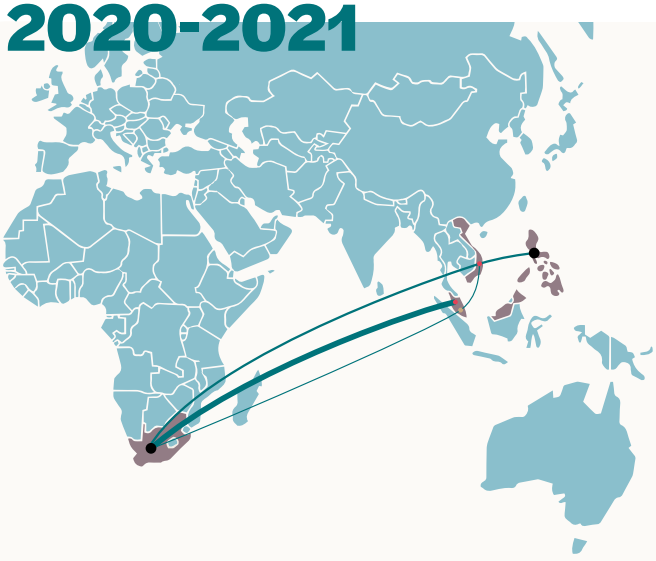


Origin countries remained constant during this period, while destinations switched: the South African routes were destined for Vietnam and the Mozambican routes for China.

Interestingly, one shipment originating in Mozambique transited South Africa on its way to China.

Malaysia emerged as the most critical transit point for horns from South Africa. Although the final destination of the Malaysian routes is unclear, one recorded seizure points to Vietnam.

2020-2021



South Africa became the most significant African exit point for large shipments and Vietnam remained the major destination country.

In an apparent exception, the Philippines was used to smuggle 113 kg of African rhino horns to Vietnam. The role of the Philippines in international trafficking routes for African rhino horns remains an intelligence gap.

Malaysia consolidated its role as a key transit country.

Figure 11: Variations of the most significant rhino horn smuggling routes by total weight, 2012-2021.

Between 2012 and 2017, it appears that routes included multiple transit points, likely to conceal the original departure location which in the majority of cases was South Africa or Mozambique. From 2018 onwards, more direct routes to Vietnam and China were observed with fewer transit points.

During 2012-2013, five routes originating in South Africa and with Vietnam as the destination involved European transit points in the Czech Republic, Germany, and/or Slovakia. This trend did not continue in subsequent periods and may have been linked to pseudo-hunting schemes in South Africa during those years involving "hunters" recruited from central European countries.[32] From 2013 on, European countries have featured sporadically as originating or transit points for small quantities of contraband smuggled to Asia, mostly sent by airmail parcels. Countries associated with this modality have included Belgium, France, Germany, Italy, and Spain, and it is plausible that some of these shipments could be small amounts of antique rhino horn, either carved or from hunting trophies. None of the 95 rhino horns stolen from a spate of organised robberies at museums, zoos, and auction houses across Europe between 2010-2013 were ever recovered and all are believed to have been smuggled to Asia.[33] Furthermore, intelligence collected during Wildlife Justice Commission investigations in Vietnam in 2016 indicated that rhino horn products occasionally came into the market from Europe, but traders stated they were less favourable than products from Africa as "they are a lot drier", potentially supporting the inference that some antique horns from Europe may be entering illegal trade.

During 2018-2019, direct trafficking routes to China began to appear, specifically Mozambique to China and South Africa to China. The route from South Africa to Malaysia also began occurring in this period and went on to become the most significant route during 2020-2021 in terms of the total weight of rhino horns attributed to it. The use of more direct routes coincides with the higher volumes of product being shipped at this time, which could further suggest the growing involvement of transnational organised crime groups in rhino horn trafficking with better access and connections to facilitate the movement of their shipments and less need to devise elaborate smuggling routes or concealment methods.

Perhaps influenced by the quality of Chinese law enforcement during 2020-2021,[34] direct routes from southern Africa to China were not recorded in the seizure data during this period. Only one route with the destination China was found – South Africa to China via Vietnam – which was used to smuggle barely 3 kg of rhino horn.

32. Further details of the pseudo-hunting schemes and hunting permit irregularities are described in Chapter 8 of this report.

33. https://www.independent.ie/irish-news/europol-probe-into-crime-gang-linked-to-500k-rhino-horn-heist-29211791.html; Wildlife Justice Commission (2021), *Convergence of Wildlife Crime with Other Forms of Organised Crime*.

34. Refer to Chapter 7 of this report for more details on China's law enforcement efforts to address rhino horn trafficking.

Notable intelligence gaps in trafficking locations

Analysis of trafficking routes based on the seizure data also identifies several intelligence gaps relating to the Philippines, Indonesia, and Japan, with very little known about the role of these three countries in rhino horn trafficking but some potential concerns that should be further investigated.

Firstly, although the Philippines is rarely seen in routings of Africa-Asia wildlife trafficking, there have been three reported rhino horn seizures in the last 10 years that used the Philippines as a transit point: the first instance occurred in 2012 when 13 kg of rhino horn originating from Mozambique was seized en route to China;[35] and then in the past two years, Vietnam seized 93 kg of rhino horn in December 2020[36] and 20 kg of rhino horn in December 2021[37] that had been sent from the Philippines. It is not clear whether the two recent seizures could potentially implicate the Philippines as an emerging transit point of choice for traffickers, or whether the eight years between the first and second seizures linked to the Philippines suggests a low rate of detection and that many more shipments could be passing through the country undetected.

Secondly, neither Indonesia nor Japan are commonly linked to rhino horn trafficking routes identified through the seizure data, yet intelligence collected through Wildlife Justice Commission investigations points to both countries being used for the consolidation and transhipment of rhino horn products. In 2019, members of a Chinese criminal network operating in Nigeria told investigators they prefer to ship mixed rhino horn and ivory cargoes to Indonesia for transhipment to China. In 2020, a Nigerian trafficker named Japan and Malaysia as his preferred locations to change containers for transhipment of rhino horns, ivory, or pangolin scales to Vietnam. The fact that so few seizures have been connected to Indonesia[38] or Japan[39] could indicate their success in concealing shipments, that there is inadequate law enforcement effort to detect wildlife trafficking at these ports, or that traffickers have secured effective protection to enable uninterrupted passage of their products through these ports.

35. https://www.voanews.com/a/first-philippines-rhino-horn-seizure-highlights-smugglers-resilience/1557747.html

36. https://e.vnexpress.net/news/news/93-kilos-of-suspected-rhino-horns-found-in-saigon-warehouse-4210405.html

37. https://tuoitrenews.vn/news/society/20211202/vietnam-customs-seize-almost-20kg-of-rhino-horns-from-philippines/64496.html

38. Indonesia was linked to nine rhino horn seizures between 2012-2021, of which three seizures (in 2013, 2016 and 2017) involved a total of 27.18 kg of African rhino horns, and six seizures between 2016-2018 involved Sumatran rhino horn (less than 2 kg in total).

39. Japan was linked to only one seizure in 2015 involving 11.3 kg of rhino horn, along with ivory and bear paws. The seizure occurred in China, with the shipment originating from Japan.

III South Africa and Vietnam are the two countries most consistently implicated in rhino horn trafficking over the past 10 years

As Table 3 shows, South Africa and Vietnam are the two countries most frequently implicated in rhino horn seizures over the past 10 years, with South Africa linked to half of all rhino horns seized globally and Vietnam linked to just over one-quarter. While these results may be expected for the primary source location of rhino horn and one of the major destination locations, it is significant that the volume of horns seized in connection to both countries has remained consistently high throughout the entire 10-year span. This is unlike other source locations such as Namibia, Kenya, and Zimbabwe, or other major destination locations such as China, which show more variable linkages to rhino horn seizures over the years.[40] The consistency of the level of trafficking through South Africa and Vietnam could indicate the extent to which criminality is embedded in both countries, enabled by favourable operating conditions and law enforcement that has so far insufficiently dealt with the problem.

That is not to say that South African and Vietnamese authorities are not responding to the issue, but that law enforcement efforts to date have not sufficiently targeted the root cause of the problem: transnational organised crime. In South Africa, significant resources are focused on detecting and preventing rhino poaching in parks and protected areas, or on private property, and arresting poachers who are often lower-level actors in the criminal network. However, there are other significant issues outside of the parks that are driving the poaching and not being adequately addressed, such as broader socio-economic issues as well as the organised recruitment and equipping of poaching gangs, the presence of transnational organised crime networks operating in the country, and corrupt facilitators allowing large volumes of rhino horn to leave the country. While harsh prison sentences are often dealt to poachers,[41] the high-level organisers in the criminal networks are left untouched. Similarly in Vietnam, rhino horn seizures are made and low-level couriers sometimes arrested, but further investigations to identify and arrest the criminal bosses and ultimate owners of the contraband are rarely conducted. This scenario has enabled criminal networks to continue their operations with minimal disruption. (See Chapter 7 of this report for further discussion on these points and other law enforcement efforts.)

40. This is also demonstrated in the rhino poaching and rhino horn seizure data reported to the CITES Secretariat. Refer to: CITES CoP19 Doc.75 (Annex 4), *'African and Asian Rhinoceroses – Status, Conservation and Trade'*, prepared by IUCN Species Survival Commission's African and Asian Rhino Specialist Groups and TRAFFIC, p.21 and 31.

41. For example: https://www.timeslive.co.za/news/south-africa/2022-03-20-kruger-national-park-rhino-poacher-gets-25-years-in-jail-after-being-bust-twice/

Both South Africa and Vietnam are among the main countries associated with smuggling routes for unconcealed shipments (see Key Finding (vii)), suggesting that traffickers can rely on corrupt facilitators at airports and seaports to provide safe passage for their shipments so that disguising or hiding horns is not necessary. Linked to these smuggling routes, the most frequently recorded airports associated with unconcealed shipments were OR Tambo International Airport in Johannesburg, South Africa, Hong Kong International Airport, and Noi Bai International Airport in Hanoi, Vietnam (Table 4). When shipments linked to Tan Son Nhat International Airport in Ho Chi Minh City are also considered, Vietnam is the country whose airports are most frequently connected to the seizure of unconcealed shipments.

Table 4: International airports associated with reported seizures containing unconcealed rhino horn shipments, 2012-2021.

International Airports	2012-2013		2014-2015		2016-2017		2018-2019		2020-2021		Total weight (kg)	
	Weight (kg)	No. cases	Weight (kg)	No. cases	Weight (kg)	No. cases	Weight (kg)	No. cases	Weight (kg)	No. cases		
OR Tambo (South Africa)	0	0	61	3	187	11	90	5	22	1	360	(5%)
Hong Kong SAR	34	2	42	4	110	10	147	5	0	0	333	(4%)
Noi Bai (Vietnam)	50	3	58	4	204	4	0	0	0	0	312	(4%)
Hamad (Qatar)	67	4	72	2	82	3	61	4	6	1	288	(4%)
Maputo (Mozambique)	40	2	41	1	117	4	28	3	4	1	230	(3%)
Jomo Kenyatta (Kenya)	20	1	22	1	177	3	0	0	0	0	219	(3%)
Suvarnabhumi (Thailand)	46	3	28	2	75	5	0	0	0	0	148	(2%)
Tan Son Nhat (Vietnam)	27	3	0	0	0	0	40	1	57	3	123	(2%)
Istanbul Ataturk (Turkey)	0	0	0	0	25	1	83	2	0	0	108	(1%)

Further analysis of the seizure data was conducted to understand the significance of OR Tambo International Airport as a key exit point to move rhino horns from Africa to Asia (Table 5). In addition to 46 confirmed reports of shipments that moved through this airport, an assessment was made to identify other seizures that could potentially have moved through the airport, due to references to:

- **"Johannesburg Airport",** which likely means OR Tambo International Airport, although Lanseria International Airport is a secondary airport also serving the city.

- **Locations** where contraband was seized in the proximity of OR Tambo International Airport, a triangular area roughly formed by Johannesburg City, Springs, and Midrand (36 cases, including those seized at "Johannesburg Airport" or an unnamed South African airport).

- **Seizures detected** at other locations where South Africa was identified as the origin without naming the exit point explicitly (22 cases). Since OR Tambo International Airport is the most frequently reported exit port in South Africa, it is likely that at least part of the contraband exited through it.

A total of 947 kg of seized rhino horns were confirmed to have moved through OR Tambo International Airport, representing 25% of all rhino horn seizures linked to South Africa and 12% of all rhino horns seized globally. An additional 978 kg of seized rhino horns were suspected to have moved through the airport based on the assumptions described above. This analysis suggests that up to

Table 5: Confirmed and suspected rhino horn seizures connected to OR Tambo International Airport, 2012-2021.

	2012-2013		2014-2015		2016-2017		2018-2019		2020-2021		Total weight (kg)	
	Weight (kg)	No. cases	Weight (kg)	No. cases	Weight (kg)	No. cases	Weight (kg)	No. cases	Weight (kg)	No. cases		
Confirmed OR Tambo International Airport	20	3	82	7	272	17	276	13	297	6	947	(12%)
Unnamed airport or close proximity to OR Tambo	71	6	23	4	48	7	172	15	78	4	393	(5%)
South Africa (unspecified exit port)	135	5	52	3	41	4	219	8	138	2	585	(8%)
Total	226	14	157	14	361	28	667	36	513	12	1,925	(25%)

50% of all rhino horn seizures linked to South Africa, and up to 25% of all rhino horns seized globally, were or would likely have been smuggled through OR Tambo International Airport. Customs officers of the South African Revenue Service are focused on intercepting rhino horn shipments at the airport before they depart the country, and recent figures underscore the importance of their efforts – seizing 452 kg of rhino horn in seven incidents between July 2020 and December 2021.[42] However, many other shipments still pass through undetected that are seized later on in the supply chain. This finding highlights the singular importance of this one airport in the global rhino horn supply chain and exposes a potential chokepoint that law enforcement resources could more heavily target to stem the trafficking flow.

IV Malaysia is playing an increasingly important role as a transit point for shipments from Africa to Asia

Analysis of the seizure data shows that Malaysia has emerged as a key transit country for rhino horn trafficking from Africa to Asia, being the fifth most prominent country or territory implicated in the

Table 6: Trafficking routes linked to Malaysia and total attributed weight of rhino horns, 2012-2021.

Smuggling routes	2012-2013	2014-2015	2016-2017	2018-2019	2020-2021
Uganda – Nigeria – Malaysia	42 kg				
Mozambique – Malaysia – Vietnam		142 kg			
Mozambique – Qatar – Malaysia			51 kg		
Namibia – South Africa – Malaysia			Unreported		
Malaysia – Vietnam				116 kg	
South Africa – Hong Kong SAR – Malaysia				83 kg	
South Africa – Malaysia				40 kg	275 kg
South Africa – Qatar – Malaysia					Unreported
Malaysia (route undescribed)					139 kg

42. https://www.sars.gov.za/media-release/rhino-horn-found-in-luggage-at-or-tambo-international-airport/

illegal trade across the decade. It has been linked to seizures originating from Uganda, Mozambique, Namibia, and South Africa, and while the routing has changed regularly over the years (Table 6), the volume of seized horns linked to Malaysia has grown substantially since 2018. During the last two years in particular, the country has emerged as the dominant transit point linked to 32% of all rhino horns seized globally. This finding is significant given the diversity of transit points that had been prevalent in smuggling routes during the preceding years, indicating that criminal networks are now essentially funnelling a larger amount of product through fewer channels.

The seizure data indicates Malaysia's dominance during 2020-2021 displaced Hong Kong SAR as the major Asian transit point for rhino horn shipments. To compare, seizures linked to Hong Kong SAR rose sharply in 2016-2017 and peaked with an attributed weight of 270 kg of rhino horns, followed by a slight reduction in 2018-2019 to 255 kg. However, in 2020-2021 there was only one minor seizure of 3 kg of rhino horn linked to the territory. Supporting this data, an analysis conducted by South African authorities of court cases resulting from rhino horn seizures at OR Tambo International Airport in Johannesburg between August 2016 and October 2018 found that Hong Kong SAR was implicated in 71% of the cases during this period.[43]

Image 11: Seizure of 18 rhino horns at Kuala Lumpur International Airport, Malaysia in April 2017. **Source:** TRAFFIC.

Crime displacement can occur when organised crime groups adapt to strengthening law enforcement efforts and key ports become too "hot" to use, shifting their operations to locations with weaker law enforcement capacity. It can also occur in response to changes in the reliability of the facilitators and corrupt officials who ensure

43. CITES CoP18 Doc.83.1 (Annex 2) *'African and Asian Rhinoceroses – Status, Conservation and Trade',* prepared by IUCN Species Survival Commission's African and Asian Rhino Specialist Groups and TRAFFIC, p.11.

the safe smuggling of shipments through strategic ports and transport hubs, such as big increases in the handling fees or when access to key contacts is lost in staff rotations. The seizure data indicates that law enforcement detection rates of illegal shipments in both Malaysia and Hong Kong SAR have remained fairly consistent over the 10-year span (see Key Finding (ix)), so the more likely explanation for displacement in this instance may reside with the perceived reliability of corrupt elements in Malaysian air and seaports to guarantee the protection of shipments.

(v) Significant amounts of harvested horns from legal stockpiles are diverted into illegal trade

The seizure data and Wildlife Justice Commission intelligence records show that since 2016, at least 974 kg of horns originating from legal stocks were seized in 11 incidents of illegal trade (Table 7). This means 18% of all rhino horns seized between 2016-2021 were either stolen from stockpiles or illegally sold and smuggled out of Africa. This diversion includes high-profile cases such as the 2019 seizure of 181 horns in South Africa from John Hume's stocks, who is one of the largest private rhino breeders in the world;[44] 19 horns seized in South Africa in 2021 linked to game farmer Dawie Groenewald but originating from a government stockpile;[45] and a seizure of 250 kg of rhino horn in China in 2019, which included 70 microchipped horns from South Africa.[46]

Image 12: Harvested horns seized in Victoria Falls, Zimbabwe in December 2018. **Source:** Wildlife Justice Commission intelligence.

44. https://www.iol.co.za/pretoria-news/news/breeder-fails-to-get-back-181-confiscated-rhino-horns-worth-r10-million-1fbdcfce-e764-4f55-937c-a63e4338393f

45. https://www.iol.co.za/pretoria-news/news/game-farmer-businessman-caught-with-rhino-horns-get-bail-f82fb080-f018-4949-92d0-649f7efdbae6
According to intelligence, the horns originated from a government stockpile at a North West reserve and were supplied to Dawie Groenewald by a corrupt conservation official.

46. https://www.chinanews.com.cn/sh/2021/07-19/9523130.shtml

Table 7: Confirmed seizures involving harvested horns diverted into illegal trade compared to total amount of rhino horn seized, 2016-2021.

		2016-2017	2018-2019	2020-2021	Total
All seized rhino horns	Total weight (kg)	1,768	2,436	1,282	5,486
	No. seizures	2	8	1	11
Seizures of harvested rhino horns	Weight (kg)	359	563	52	974
	Proportion of all seizures	20%	23%	4%	18%

Image 13: In April 2019, 181 harvested rhino horns from John Hume's stocks were seized from a vehicle in Skeerpoort, North West province, South Africa. **Source:** Simon Bloch.

Further analysis of the reported seizures indicated that an additional 1,546 kg of rhino horns seized during the 10-year period could also potentially represent diversion from legal stockpiles (Figure 12). This assessment was based on the detailed examination of contraband in images to identify flat bases, registration codes and other signs of cutting or trimming, overlaid with analysis of narrative links to game farms and legal domestic trade in rhino horn in South Africa. For seizures that appeared to represent a mixed shipment of poached and harvested horns (such as Image 14 below), only the components that were identified as potentially originating from legal sources were counted in the estimation.

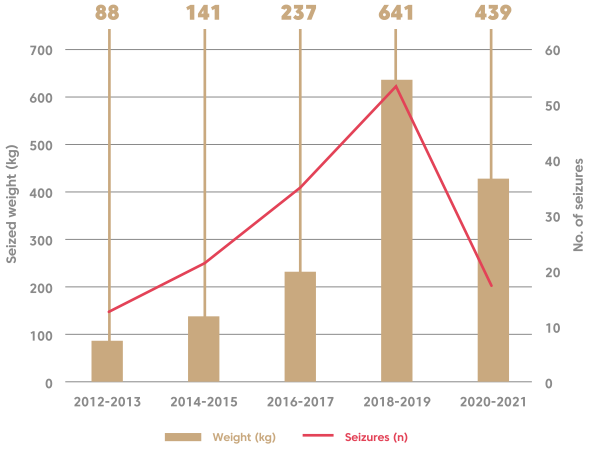


Figure 12: Seizures suspected to involve harvested rhino horns diverted into illegal trade, 2012-2021.

The trend of seizures suspected to contain horns diverted from legal stocks follows a similar trajectory to the total number and weight of rhino horn seizures illustrated in Figure 7, increasing over time to reach a peak in the 2018-2019 period, then declining in 2020-2021.

Image 14: A rhino horn shipment weighing 82.5 kg confiscated in Hong Kong SAR in April 2019 contains several horns displaying a smooth, flat top and a flat base (commonly referred to as "bread loaves" in illegal trade), indicating they could have resulted from a second or subsequent dehorning procedure. **Source:** Hong Kong Customs.

Considering the confirmed instances (974 kg) together with the additional suspected instances (1,546 kg), means up to 2,520 kg of rhino horns seized during the 10-year period could potentially have been diverted into illegal trade from legal stockpiles. This represents up to one third of all rhino horns seized during that time.

VI Criminal groups are routinely exploiting weaknesses in stockpile systems to access harvested rhino horns for the illegal trade

Although diversion of harvested horns into illegal trade could occur from legal stockpiles held in any country, the likelihood is highest in South Africa simply due to the number of rhinos, quantity of stockpiled horns and the large number of stockpiles. The South African government's regulatory system includes requirements for all harvested horns to be registered, tagged with microchips, and DNA tested, and all activities including possession, transport and domestic trade in horns require a permit issued by the national Minister of Forestry, Fisheries and the Environment.[47]3

Image 15: Two harvested horns and five "bread loaves" were seized in South Africa in October 2019 from two men attempting to illegally sell them. **Source:** South African Police Service.

47. https://www.dffe.gov.za/mediarelease/deaclarifiesrhinohorntrade; https://www.dffe.gov.za/mediarelease/rhinohorn_internationalcommercialtrade_prohibited

Despite the strict regulations in South Africa,[48] intelligence collected during the Wildlife Justice Commission's investigations indicates that criminal groups are routinely exploiting weaknesses in the system to access harvested rhino horns for the illegal trade. Some Vietnamese traffickers operating in South Africa claim to buy their horns directly from private rhino breeders who arrange the shipments to go through OR Tambo International Airport in Johannesburg. They stated that contacting the farmers is "easy" and microchips can be destroyed by microwaving the horns for a few seconds. A major trafficker based in Malaysia who facilitates the transportation of rhino horn shipments from Africa to Asia, stated that his main supplier in South Africa is a "powerful white guy" who has a stockpile of around four tonnes of harvested horns. This supplier is also alleged to have access to poached horns and regularly sends mixed shipments of 20-40% poached horns with 60-80% harvested horns. Reported seizures such as Image 14 also demonstrate the presence of mixed shipments in the illegal trade. Joint shipments of illegally poached horn with legally harvested horns means diverting the latter into illegal trade is not a minor regulatory infringement but entrenched and organised criminality with connections to rhino poaching networks.

Furthermore, an estimation of the volume of harvested horns entering supply (based on the confirmed and estimated volume of harvested horns present in reported seizures) compared with the volume of horns from poached rhinos, suggests the possibility that this avenue of supply may have increased since the moratorium on the domestic trade of rhino horn in South Africa was lifted in 2017 (Figure 13).[49]

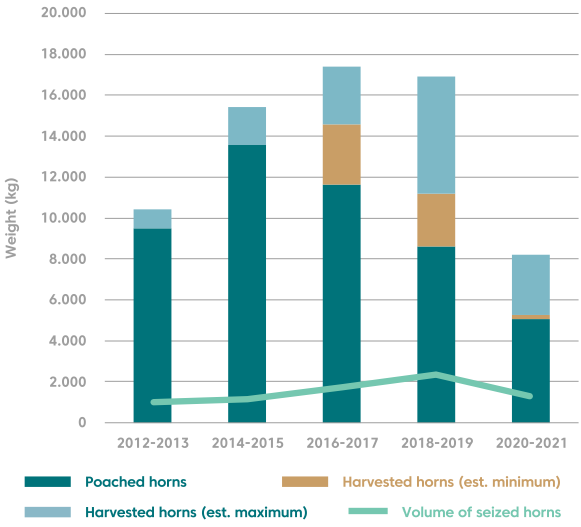


Figure 13: Estimated supply of African rhino horns entering illegal trade 2012-2021 from poached rhinos and diverted from legal stockpiles, compared to the volume of horns detected and seized globally by law enforcement authorities. (Based on the calculations in Tables 15-17 of this report.)

48. *Norms and Standards for the Marking of Rhinoceros and Rhinoceros Horn, and for the Hunting of Rhinoceros for Trophy Hunting Purposes,* issued by South Africa Department of Environment on 21 September 2018.

49. https://www.dffe.gov.za/mediarelease/molewa_notes_constitutionalcourtdecision

VII One-third of rhino horns are smuggled unconcealed, suggesting a potential reliance on corruption to move shipments along the supply chain

The analysis reveals that rhino horn is most often smuggled with no concealment at all, with one-third of all horns seized since 2012 showing no attempt to hide the presence of the contraband in the shipment. It is a notable point of difference from other wildlife products with similar supply chains from Africa to Asia, such as elephant ivory and pangolin scales, which are almost always hidden within a cover load of legal commodities such as timber, plastic waste, beans, nuts, frozen meat or fish.[50,51] It is also a departure from the broader norm, as organised crime groups of any type usually invest a lot of effort in concealing their illicit activities in order to maximise their operational potential. This finding indicates that instead of disguising or hiding rhino horns, traffickers could have confidence in corrupt elements to move their shipments through various control points along the supply chain, to the extent that it is not necessary

Table 8: Concealment methods of reported rhino horn seizures, with attributed contraband weight (kg) and proportion of seizures represented (%) per period, 2012-2021.

Concealment method	2012-2013		2014-2015		2016-2017		2018-2019		2020-2021		Total	
Not concealed	294	(31%)	445	(39%)	1,290	(73%)	419	(17%)	144	(11%)	2,591	(34%)
Modification of specimen appearance	29	(3%)	157	(14%)	97	(6%)	235	(10%)	4	(1%)	523	(7%)
Mislabelling	0		0		0		1	(1%)	482	(38%)	483	(6%)
Hidden amongst other goods	57	(6%)	7	(1%)	16	(1%)	162	(7%)	40	(3%)	282	(4%)
Irregular documentation	117	(12%)	11	(1%)	0		116	(5%)	2	(1%)	246	(3%)
Hidden under clothing	0		0		3	(1%)	0		0		3	(1%)
Other	28	(3%)	6	(1%)	8	(1%)	272	(11%)	0		314	(4%)
Unreported/ Unknown	426	(45%)	522	(45%)	354	(19%)	1,231	(50%)	610	(46%)	3,144	(41%)

50. Wildlife Justice Commission (2019), *Snapshot Analysis on Ivory Smuggling 2015-2019*.

51. Wildlife Justice Commission (2020), *Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales (2016-2019)*.

to conceal the products. In fact, Wildlife Justice Commission investigators have been approached by major trafficking networks looking to gain access to trusted insiders who could facilitate product movement within airports and seaports.

Image 16: Rhino horn pieces discovered at Leipzig/Halle Airport, Germany in December 2021, concealed inside a welding device.
Source: Nordsachsen24.de

The seizure data indicate that the movement of unconcealed shipments peaked in the 2016-2017 period when three-quarters of all rhino horns seized were unconcealed, also coinciding with the peak in seizures of rhino horns transported in hand luggage of air passengers (see Key Finding (viii)). The most significant smuggling routes associated with unconcealed shipments were found to be from South Africa to Hong Kong SAR and from Kenya to Vietnam as origin and destination locations (with varying transit locations) during 2016-2017, shifting to Malaysia and Vietnam as key destinations during 2018-2019, and from Mozambique to Vietnam during 2020-2021. This could indicate the favoured locations of criminal networks where they have the most reliable corrupt connections.

Other important concealment methods identified for rhino horn shipments included mislabelled shipments and shipments with irregular documentation, such as fraudulent bills of lading or ownership registrations to pass checkpoints. Together, these methods comprised 9% of the weight of seized rhino horns.

A variety of creative attempts to camouflage horns carried in air passenger luggage have been observed in seizures over the years, including disguising them as gifts or local edible products such as chocolates. Some cases discovered in air cargo or postal packages have involved elaborate efforts to conceal horns inside sculptures, toys, electrical devices, or industrial equipment. Rhino horns are often wrapped in aluminium foil in the false belief it will conceal them from x-ray scanners or packed with smelly substances or smell neutralisers to attempt to cover the odour of fresh horns from detection dogs.

Image 17: Rhino horns wrapped and packed in a wine shipment ready for export from South Africa to Malaysia in May 2019.
Source: South African Police Service.

Image 18: Rhino horns wrapped in aluminium foil and camouflaged in boxes of chocolates, seized at OR Tambo International Airport in South Africa in December 2021, destined for China.
Source: South African Police Service.

VIII Rhino horns are most frequently smuggled on commercial airlines, but the trend is shifting from small shipments in passenger luggage to larger shipments by air cargo

Rhino horn is typically transported by various methods from the time it is obtained from the source point, enters illegal trade, and moves through the supply chain to destination markets. Seizures occurred most frequently on air transportation via commercial flights throughout the decade, accounting for at least 198 seizures and 43% of the total contraband weight (Figure 14). According to intelligence, air transportation is often the preferred means of transportation for rhino horn shipments due to the significant upfront financial investment that product owners make, meaning they want to receive the horns quickly so they can start selling them in the market to recoup their investment and do not want to wait for months for a sea shipment to arrive.

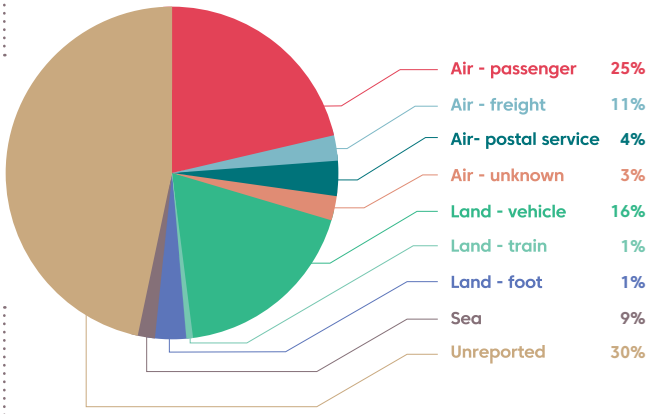


Figure 14: Breakdown of total weight of seizures for each transportation method, 2012-2021.

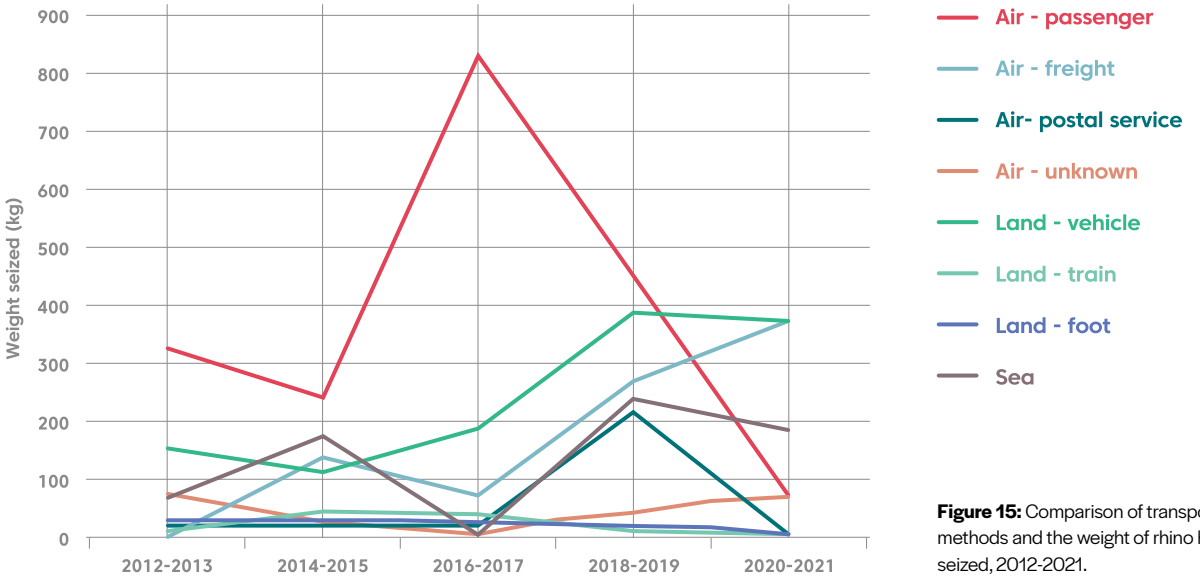


Figure 15: Comparison of transportation methods and the weight of rhino horns seized, 2012-2021.

The bulk of the air transportation seizures (143 cases) comprised horns smuggled in passenger luggage, which spiked dramatically in the 2016-2017 period with 48 seizures totalling 828 kg of rhino horn, then plunged to just six seizures totalling 70 kg of horns in the 2020-2021 period, likely due to COVID-19-related travel restrictions preventing the movement of people. While the number of air cargo seizures remained comparatively low across the 10-year span, the volume of horns seized in these shipments increased significantly since the 2018-2019 period, prior to the pandemic, as illustrated in Figure 15. The growth in the volumes of horn being shipped by air cargo coincides with other major changes such as the use of more direct smuggling routes for these shipments, which could potentially point to the greater involvement of transnational organised crime groups due to their ability to access other resources.

Land vehicle transportation was the second most frequently recorded mode of transportation with 127 seizures, although only 21 incidents described cross-border smuggling. The only land route persistently recorded in these cases was Vietnam to China, particularly at the Mong Cai border crossing in Vietnam. Several other seizures in vehicles occurred at the border between South Africa and Mozambique. The remaining land-based smuggling incidents by vehicle, train, and foot were reported only in relation to domestic transport. This suggests that land-based transportation is most likely to occur during the process of consolidating horns prior to shipment and distributing horns to marketplaces after shipment.

Only 12 rhino horn shipments by sea totalling 676 kg were seized during the entire period, and there were no notable trends or changes in the number of incidents or weight of horns seized via this method. Most of these cases involved rhino horns hidden in shipping containers combined with elephant ivory and/or pangolin scales. One remarkable maritime seizure occurred in China in June 2019, when 250 kg of rhino horns were found hidden in a special compartment of a fishing vessel.[52] The full details of this case are described in Chapter 3 of this report.

The larger volume of rhino horns that can be moved by sea compared to air transportation methods makes it attractive to organised crime, as does the fact that there are generally fewer security checks in maritime shipping compared to air transportation.[53] Intelligence also indicates that the use of maritime transportation for rhino horn shipments could be increasing, as security measures at airports increased during the COVID-19 pandemic,

52. https://www.chinanews.com.cn/sh/2021/07-19/9523130.shtml

53. An estimated 90% of global trade (by volume) is moved around the world by container ships. Due to the enormous volume of goods relying on maritime transportation and seaport facilities to move from source to destination, it is estimated that less than 2% of shipping containers are screened at ports worldwide. https://www.unodc.org/unodc/en/ccp/Overview.html

and some traffickers appear to be prioritising security over turnaround time to receive their products. However, the fact that few shipments have been intercepted by this method could suggest that law enforcement efforts have not been adequately targeted at this modus operandi.

IX Poor law enforcement detection rates of rhino horn smuggling in transit locations

Law enforcement authorities in the countries and territories associated with rhino horn trafficking routes have the opportunity to detect and seize contraband passing through their jurisdiction and to investigate the transnational organised crime behind the shipment. This assessment calculated basic detection rates for the countries and territories most frequently used in rhino horn smuggling routes (those with links to more than 10 seizures) based on the number of times a shipment was detected in their jurisdiction as opposed to passing through undetected and then being intercepted elsewhere further along the trafficking route (Table 9).

While detection rates for rhino horn source locations and ultimate end markets are steadily high, particularly in South Africa, Namibia, India, Nepal, and China, there are generally low detection rates for many key transit locations. This is particularly the case for Malaysia in relation to the largest seizures of illegal rhino horn during the last two years, as well as United Arab Emirates and Qatar.[54] The seizure data shows Qatar to be one of the most frequently used transit locations, yet it has only ever made one reported rhino horn seizure.[55] There may be less incentive for national authorities to profile or inspect transiting shipments that are destined for another jurisdiction, but this finding points to an opportunity where law enforcement efforts could be improved. A recent case in Singapore where the owner and director of a shipping and logistics company was convicted for knowingly facilitating the importation of 3,480 kg of ivory[56] presents a rare but compelling example of the impact that transit countries can have in targeting the enablers of illegal wildlife trade.

54. The CITES Secretariat also recognises United Arab Emirates and Qatar as among the main Parties most affected by illegal rhino horn trade during the 2018-2020 period: CITES CoP19 Doc.75 (paragraph 35).

55. However, the Wildlife Justice Commission is in receipt of intelligence of an additional rhino horn seizure made by Qatar in May 2022 that was not publicly reported, and it is possible there are other cases as well.

56. https://mothership.sg/2022/03/woman-illegally-import-tusks/

Table 9: Detection rates per period for jurisdictions most frequently linked to rhino horn smuggling, 2012-2021.

Country /territory	2012-2013		2014-2015		2016-2017		2018-2019		2020-2021		Total Links
	Links	Detection	Links	Detection	Links	Detection	Links	Detection	Links	Detection	
South Africa	43	79 %	47	74 %	80	71 %	79	61 %	27	81 %	276
China	25	60 %	41	80 %	21	57 %	50	82 %	18	67 %	155
Vietnam	26	54 %	34	41 %	29	59 %	37	35 %	20	45 %	146
India	11	64 %	26	81 %	27	74 %	18	61 %	13	77 %	95
Hong Kong SAR	6	50 %	7	43 %	28	43 %	26	54 %	1	0 %	68
Mozambique	12	58 %	18	56 %	16	38 %	18	44 %	3	33 %	67
Namibia	0	N/A	2	100 %	14	64 %	6	100 %	21	90 %	43
Qatar	7	0 %	4	25 %	6	0 %	8	0 %	3	0 %	28
Kenya	5	40 %	8	63 %	8	25 %	2	100 %	1	100 %	24
Nepal	0	N/A	7	86 %	3	67 %	3	100 %	10	90 %	23
Thailand	8	38 %	4	50 %	9	56 %	2	0 %	0	N/A	23
Indonesia	1	0 %	0	N/A	9	44 %	4	75 %	0	N/A	14
Malaysia	1	0 %	1	0 %	3	33 %	3	33 %	6	17 %	14
Singapore	1	0 %	4	50 %	4	25 %	1	0 %	4	50 %	14
Angola	0	N/A	1	0 %	4	0 %	4	50 %	4	25 %	13
Germany	6	33 %	1	100 %	3	67 %	1	100 %	2	50 %	13
United Arab Emirates	2	50 %	1	0 %	6	0 %	3	0 %	0	N/A	12

X There is a declining trend in the trafficking of Asian rhino horns, but Myanmar could pose a potential threat

Asian rhino horns (from greater one-horned, Javan or Sumatran rhino species) are less frequently seized in illegal trade compared to African rhino horns, accounting for 97 of the 674 seizure incidents (14.4%) but only 0.8% of the total weight of contraband seized during the 2012-2021 period (Table 10).

Analysis of the seizure data showed a spike in the number of incidents and weight of Asian rhino horns confiscated from illegal trade during the 2014-2015 period, which corresponds with the sharp increase in the overall number and weight of all rhino horn seizures seen at this time (Figure 7). Since this period, there has been a declining trend in Asian rhino horn seizures, with the weight of horns seized during 2020-2021 almost returning to the levels recorded 10 years ago. Asian rhino poaching rates have also showed a consistent declining trend over the decade (Figure 6).

The low seizure weights indicate that Asian rhino horns are seized in very small quantities, often as single horns, as opposed to African rhino horns which are seized in increasingly larger shipments. This could reflect the fact that their population numbers are lower than African rhinos, as well as the different modus operandi employed for trafficking this horn type, which can be moved overland from the primary source locations in India and Nepal (where the largest populations of Asian rhinos exist) to the destination markets in East Asia.

Very few international smuggling routes were described in the seizures, as the majority took place in the country where the rhino was poached, namely India or Nepal, although the data also included six seizures of Sumatran rhino horns that took place in Indonesia in 2016 and 2018. Only eight Asian rhino horn seizures involved cross-border smuggling, but from this scarce data it is possible to infer that the majority of Asian rhino horns likely move from India to Nepal, and perhaps also to Bhutan, for overland smuggling into China.

Table 10: Number and weight of reported Asian rhino horn seizures, 2012-2021.

Period	2012-2013	2014-2015	2016-2017	2018-2019	2020-2021	Total
No. of seizures	7	27	25	18	20	97
Total weight (kg)	8	18.3	13.8	11.9	9.9	61.9

However, another smuggling route from India into Myanmar appears to be increasing in relevance. There have been several public reports of Indian rhino horns seized at border points in Myanmar and India.[57] Rhino horns and products have been observed for sale in the Golden Triangle region of eastern Myanmar at notorious wildlife markets in Mong La (bordering China) and Tachileik (bordering Thailand).[58] The Wildlife Crime Control Bureau in India is reportedly investigating international organised smuggling of rhino horn taking place in Manipur state (bordering Myanmar), in a network that extends from India to Myanmar and onwards into Southeast Asia and China.[59]

Myanmar's geographic position nestled between India and China, and its access into Southeast Asia via borders with Thailand and Lao PDR, make it a convenient transit point along the smuggling route. Along with other factors that provide ideal conditions for criminal activity to flourish, including limited government control in the country's autonomous border territories, political instability, armed conflict, and sanctions since the 2021 military coup, there is concern that Myanmar could grow as a potential threat to Asian rhinos.

XI Rhino horn is most frequently smuggled as a sole wildlife commodity

Analysis of the reported seizures suggests that rhino horn is most frequently smuggled out of Africa as a sole wildlife commodity, rather than in mixed shipments with other species. Rhino horns were seized with one or more other types of wildlife products in 135 of the 674 seizures, representing 20% of the total cases over the 10-year timeframe. The majority of these cases were combined wildlife contraband seized while moving along the trafficking route, while 19% of cases were mixed items seized from consolidation or retail premises such as shops and market stalls either prior to or post trafficking.

Raw elephant ivory in the form of whole tusks or tusk pieces is the wildlife product most commonly associated with rhino horn seizures, representing 92% (124 cases) of the mixed shipments. Big cat parts including skeletons, claws, and teeth were present in 65 (48%) of the seizures, and pangolin scales and occasionally live pangolins or pangolin carcasses were present in 23 (17%) seizures, but overall, no consistent patterns were found. Other species combinations that occurred in just a few cases involved bovine horns, bear products, hippopotamus teeth, deer antlers, helmeted hornbill skulls, and abalone.

57. https://www.thesangaiexpress.com/Encyc/2019/9/3/IMPHAL-Sep-2-One-rhino-horn-was-seized-by-a-combined-team-of-Senapati-District-Police-and-Senapati-Divisional-Forest-Office-from-Mao-Gate-as-it-was-being-smuggled-towards-Moreh-.html

58. https://wwf.panda.org/?315491/Top-10-Most-Wanted-Endangered-Species-in-the-Markets-of-the-Golden-Triangle

59. https://scroll.in/article/971322/rhino-poachers-in-north-east-have-links-with-manipur-insurgents-police-say

This finding could reflect differences in the rhino horn supply chain compared to ivory or other wildlife products, with poaching networks operating in a more limited number of source locations and traffickers accessing suppliers of harvested horns in locations with stockpiles. Other possible explanations could include the high value of rhino horn that means it is still profitable for traffickers to ship in comparatively smaller quantities than other wildlife products, or that it needs to be moved quickly along the supply chain so shipping it as a sole commodity by air transportation is the preferred method.

However, it is crucial to highlight that despite these particularities in the modus operandi, rhino horn trafficking is not controlled by dedicated criminal networks. Intelligence and investigation findings indicate that transnational organised crime networks are profit-driven and will deal in whichever commodities are lucrative, accessible, and in demand, with the same networks often dealing in rhino horn alongside an array of other wildlife products and illicit commodities. For example, high-level members of a criminal network who were arrested in Nigeria in May 2022 in relation to pangolin scale and ivory trafficking were also known to be prolific traffickers of rhino horn and lion bones from Mozambique and South Africa.[60] Similarly, the criminal network behind China's largest ivory smuggling case was also known to have smuggled rhino horn and other wildlife products.[61]

XII There are various types of crime convergence associated with rhino horn trafficking

The Wildlife Justice Commission has previously documented examples of the convergence of wildlife crime with other forms of organised crime, where criminal networks are dealing in multiple types of illicit commodities or engaging in multiple crime types.[62] Criminal groups may have a range of motivations to diversify their criminal activities, but it is believed to be ultimately driven by the desire to generate higher profits.

Two high-profile examples of crime convergence involving rhino horn trafficking during the past decade include the Kromah network in East Africa, which was primarily engaged in the large-scale trafficking of rhino horn and ivory from 2012 to 2019 while also opportunistically trafficking heroin;[63] and the Rathkeale Rovers organised crime network who have devised various fraudulent schemes internationally and were the masterminds behind a spate of organised robberies at museums, zoos, and auction houses across Europe targeting the theft of rhino horns

60. https://wildlifejustice.org/nigerian-authorities-arrest-8-suspects-from-major-network-trafficking-pangolin-scales-and-ivory/
61. Wildlife Justice Commission (2022), *Bringing Down the Dragon: An Analysis of China's Largest Ivory Smuggling Case*.
62. Wildlife Justice Commission (2021), *Convergence of Wildlife Crime with Other Forms of Organised Crime*.
63. https://www.justice.gov/usao-sdny/pr/members-african-criminal-enterprise-charged-large-scale-trafficking-rhinoceros-horns

and mounted rhino heads worth millions of Euros between 2010 to 2013.[64,65]

The seizure data analysis indicated some instances of crime convergence where rhino horns were confiscated alongside other illicit commodities on 68 occasions (approximately 10% of all seizures). The majority of these cases involved the seizure of firearms in conjunction with horns from poachers on the poaching grounds, nine cases involved the seizure of illicit drugs with horns, and several others involved counterfeit money and stolen vehicles. However, crime convergence is more likely to be detected through intelligence analysis techniques such as organised crime group mapping that focus on the criminal networks as a whole, rather than seizure data analysis which is focused on a specific commodity.

Intelligence from Wildlife Justice Commission investigations also points to further examples of crime convergence:

- **A rhino poaching boss in Mozambique** is known to have a history in the stolen vehicle industry and outstanding arrest warrants against him in South Africa for murder charges.

- **A major wildlife trafficker based in Malaysia** is also known to engage in drug trafficking.

- **In Vietnam,** a broker with access to rhino horn and elephant ivory has had multiple previous convictions for robbery and extortion and is likely a career criminal who recently transitioned to wildlife crime due to the perceived high profits and lower risk involved.

- **In an Al Jazeera investigation,** a Chinese businessman and rhino horn trafficker in South Africa was also allegedly paying regular bribes to immigration officials to employ illegal workers at his beauty and massage parlour and had previous convictions related to illegal gambling activities. [66]

The data and case examples clearly show that crime convergence is occurring in relation to rhino horn trafficking, but further information and intelligence analysis are required to better understand the nature of this threat and infer trends.

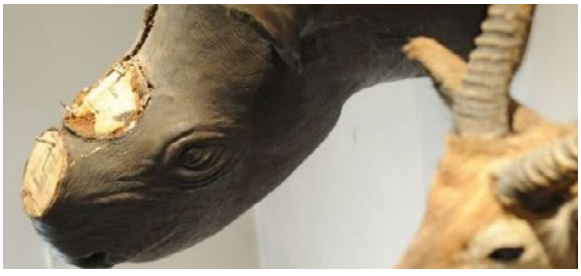


Image 19: The horn from a black rhino was stolen from the Museum in Ritterhaus in Offenburg, Germany. **Source:** AFP/Getty Images.

64. https://www.sundayworld.com/crime/world-crime/from-africa-to-iceland-norway-to-new-zealand-rathkeale-rovers-travellers-have-dealt-in-everything-from-tarmac-to-rhino-horn-40059841.html

65. https://www.theguardian.com/world/2021/sep/08/eight-men-convicted-in-french-court-for-trafficking-rhino-horn-and-ivory

66. Al Jazeera Investigations (2016), *The Poacher's Pipeline*, accessed at: https://www.youtube.com/watch?v=JMguWY99q6s

XIII Fake rhino horns are rarely detected by law enforcement authorities

The seizure analysis did not encounter many instances of fake rhino horns being smuggled or traded. Only three reports out of the total of 674 seizures indicated the potential involvement of fake horns. In these cases, authorities had questioned the authenticity of the seized horns and sought forensic tests to verify the products.

Table 11: Rhino horn seizure reports questioning the authenticity of the horns, 2012-2021.

Date	Location	Commodity seized
Nov 2015	West Bengal, India	One rhino horn[67]
Apr 2016	Guangzhou, China	Six rhino horns[68]
Oct 2018	Assam, India	One rhino horn[69]

That is not to say that the trade in fake horns is not a matter of concern, but that it appears to be relatively rare that law enforcement authorities detect it compared to genuine rhino horn, and there is very little data to indicate the extent to which fake products circulate in the black market.

For example, in Vietnam, it is widely reported that modified water buffalo horn is opportunistically sold as rhino horn to unsuspecting buyers in the retail market,[70] but it appears to be less commonly observed in wholesale trade. Fake horns made from cow horn have reportedly been discovered by police

Image 20: Counterfeit rhino horn seized in Ho Chi Minh City, Vietnam, in February 2021.
Source: Vietnam Environmental Police.

67. https://timesofindia.indiatimes.com/city/kolkata/5-held-with-jumbo-tusks/articleshow/49742402.cms
68. Content currently unavailable but was previously accessed at: http://news.163.com/16/0408/06/BK41IAIN00014AED.html
69. https://nenow.in/north-east-news/two-held-jorhat-suspected-rhino-horn-seized.html
70. For example, Ammann, K. (2011), *'The Vietnamese and Rhino Horn - a dealer speaks'*, accessed at: http://www.rhinoresourcecenter.com/pdf_files/132/1321179326.pdf

in South Africa.[71] This could indicate that fake horn is more of a domestic trade issue among small-scale retail traders rather than a transnational issue, likely linked to the fact that criminal networks involved in trafficking horns typically work within an established circle of suppliers, transporters, and buyers.

In February 2021 the Wildlife Justice Commission encountered one case in Vietnam that was ultimately determined to be high-quality counterfeit horns. Intelligence on the sale of three rhino horns had been disseminated to law enforcement authorities in Ho Chi Minh City via a local NGO partner, but it wasn't until several days after the seizure that the horns were identified as fake. It was the first time that the Wildlife Justice Commission had witnessed such high-quality counterfeit horns circulating on the wholesale black market in Vietnam.

71. Moneron, S., Okes, N., & Rademeyer, J. (2017), *Pendants, Powder and Pathways*, TRAFFIC East/Southern Africa.