In 2006, southern Africa saw the beginning of a new wave of rhino poaching that would sweep across the continent. By 2012, the rhino poaching crisis was unfolding in South Africa at an unprecedented scale and with new criminal dimensions that had not been previously observed. Unscrupulous wildlife professionals, complicit government officials, and Asian criminal networks were identified as the main players behind the escalation of sophisticated poaching and smuggling crimes. The poached horns were believed to be predominantly destined for Vietnam, where rising affluence was driving a new demand for rhino horn as a luxury product that represented wealth and status.¹

At that time, South Africa and Vietnam were identified as the two countries forming the nexus of the rhino poaching crisis, and insight into the role of other countries was hazy. Maputo in Mozambique was beginning to emerge as a new base to consolidate horns and move shipments out of Africa, but there appeared to be limited evidence that rhino horns were moving through Vietnam into China or other markets. Although the impact on rhino populations was clearly evident from the number of rhinos killed in South Africa and elsewhere, there was little data available on the rhino horn market in Vietnam or understanding of how the criminal supply chain operated to smuggle the horn across continents. Rhino horn usage was reported to range from traditional medicinal use to reduce fever and detoxify the body, to new applications as a hangover cure, cancer treatment, aphrodisiac, or high-value gift.\(^2\)

Ten years on and the intelligence picture is now considerably richer, changing much of what was known about the illegal trade in rhino horn. Although South Africa and Vietnam remain principal source and destination countries, Mozambique, Hong Kong SAR, Malaysia, and China have joined their ranks to become the six countries and territories currently dominating the criminal supply chain. Intelligence has uncovered a previously hidden demand in China for rhino horn carved into jewellery, ornaments, tea sets, libation cups, and various other items. There is also a growing body of evidence showing that the role of Vietnam has evolved since 2012, becoming a crucial gateway for rhino horn trade into China as well as the distribution channel for rhino horn products to retail markets in other Southeast Asian countries.

Yet, several misconceptions about the illegal trade in rhino horn persist and are regularly cited in the public sphere, particularly stating that the black-market value of rhino horn is “more valuable than gold”, that demand for rhino horn is chiefly related to consumption for medicinal or recreational purposes, and that Vietnam is the primary end point. These prevailing narratives do not fully reflect the real state of play and may be unwittingly contributing to a misdirection of effort and resources to address the issue.

Organised criminal groups target rhino horn specifically for its high value and profitability to service consumer demand in enduring and shifting international markets. Inadequate law enforcement focus on the elements of transnational organised crime and the underlying corruption that facilitates criminal operations has allowed these groups to become entrenched and operate with impunity. As a result, poaching continues to threaten key rhino populations across African range States. Despite extensive interventions to tackle this issue over the years, none have led to a sustained decline in the extent of illicit trade or value of the horn.

\(^2\) Ibid.
The vast majority of African rhinos (97% of white rhinos and 93% of black rhinos) occur in four range States: South Africa, Namibia, Kenya, and Zimbabwe. Other countries with smaller populations of white and/or black rhinos include Botswana, DRC, Eswatini, Malawi, Mozambique, Rwanda, Tanzania, Uganda, and Zambia. The reported data shows that rhino poaching in Africa escalated rapidly after 2009, peaking across the continent in 2015, then declining sharply until 2020 and remaining steady in 2021 (Figure 5). South Africa and Zimbabwe have consistently reported rhino poaching losses every year throughout the period, although South Africa has experienced far higher losses than any other country. Poaching in Kenya peaked in 2013 then declined, but it has increased in Namibia (since 2014) and Botswana (since 2017).

Figure 5: Reported African rhino poaching, 2006-2021.


4. Ibid.
Asian rhino poaching

The three Asian species of rhino were once distributed across much of South and Southeast Asia, but now occur in just three range States: the greater one-horned rhino is found in India and Nepal, while the Javan and Sumatran rhinos are both found in Indonesia in a few very small, isolated groups. Reported data\(^5\) indicates a declining rate of poaching of greater one-horned rhinos that is well below poaching levels in Africa and is not deemed to be posing a significant threat to this species. Poaching data were not available for Javan or Sumatran rhinos but given the tiny population sizes of these two species, any amount of poaching will be a threat to their survival.

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1.1. Purpose of this threat assessment

Rhino horn trafficking remains a serious problem that needs to be addressed with a renewed sense of urgency. This report aims to sharpen the focus on the threat of illegal rhino horn trade and the need to manage this threat as a transnational organised crime problem rather than a purely conservation issue. It presents a comprehensive analysis of the criminal dynamics of rhino horn trafficking during the 10 years from 2012 to 2021, based on seizure data, criminal intelligence and investigation findings from the Wildlife Justice Commission, and open-source research. It looks back to 2012 as the point when global attention was brought to bear on the escalating illegal rhino horn trade, and examines the driving forces behind this trade, the role of transnational organised crime, and changes in the criminal landscape over the ensuing decade.

As a threat assessment, the purpose of this report is to share strategic intelligence that identifies and provides insights on present and emerging transnational organised crime threats relating to rhino horn trafficking. It interprets and analyses intelligence holdings and information from open sources to build the global intelligence picture, propose hypotheses about the immediate or imminent threats, identify where intelligence gaps exist, and highlight vulnerabilities that could become potential threats in the future.

The report is set out in 10 chapters covering key criminal elements of the illegal rhino horn trade. Recognising the density of detail in the report, each chapter is written to be able to be read as a standalone topic with the aim of making the report
more accessible and useful for practitioners or researchers who may be interested in a specific aspect of criminality.

The report also provides an assessment of the current threat to rhinos in 2022 posed by transnational organised crime, with a view to inform law enforcement, conservation, and policy makers’ interventions to tackle the illegal rhino horn trade and ensure the global response to this crime is commensurate and appropriately targeted to current and future needs. This assessment and recommendations are set out in the ‘Policy Implications and Pending Threats’ section of the report.

All law enforcement agencies deal with multiple crime types and face considerable public and political pressure on a range of issues. In practice, they must prioritise their interventions to meet the extensive demands on their services in the best way possible, given the limited resources at their disposal. Recognising this, intelligence analysis is a valuable tool to identify where the greatest level of risk lies. It allows law enforcement to work smarter by allocating and prioritising resources in the most efficient way to manage the highest crime threats.

It is hoped that this assessment will go some way towards assisting law enforcement agencies in the six countries and territories currently dominating the illegal rhino horn supply chain to maximise their response and impact in addressing this issue by adopting a similar practice.

Image 10: Carcass of a poached rhino in Kruger National Park, South Africa.
Source: Foto24/Getty Images
1.2. Methodology

What is intelligence?

Intelligence is a value-added product that is formed from the collection and analysis of relevant information from various sources, and which is immediately or potentially significant to decision-making in investigations.

Intelligence is also a process, encompassing a continuous cycle of tasking, data collection, collation, analysis, dissemination, and feedback. This continuous process is responsible for the generation of an intelligence product, the purpose of which is to interpret the criminal environment and inform the thinking of decision-makers.

Investigations and intelligence

Sanitised intelligence and findings from the Wildlife Justice Commission’s investigations are interwoven throughout this threat assessment to provide context and insights into changes in the criminal dynamics of rhino horn trafficking. The Wildlife Justice Commission’s investigation approach is modelled on recognised and proven law enforcement methodology, and its team of analysts and investigators are former law enforcement professionals. It uses a combination of undercover operatives, covert surveillance, and networks of trusted informants to collect intelligence and evidence across the supply chain, from source to destination.

The Intelligence Development Unit (IDU) is the in-house team of intelligence analysts that is the driving force of this work. The IDU analyses data and information to understand and identify transnational trends, map the criminal networks along the supply chains, and identify targets and new investigative leads. This intelligence guides the work of the undercover investigators to infiltrate trafficking networks and gather evidence, and the information they unearth feeds back into the intelligence cycle.

All intelligence is verified and corroborated to ensure it is as robust and accurate as possible, and it is documented to an evidentiary standard. This rigorous approach means the Wildlife Justice Commission can support law enforcement agencies to build solid cases for prosecution and it is willing and able to testify in court on the strength of the evidence it collects.

Since its formation in 2015, the Wildlife Justice Commission has worked on 16 different multi-year investigations involving rhino-related crimes in the following countries: Vietnam, China, Malaysia, Lao PDR, Namibia, South Africa, Mozambique, DRC, Thailand, Angola, and Cambodia. This work has generated almost 1,400 case notes concerning the criminal activity of over 1,200 persons of interest.
Following the dissemination of intelligence to law enforcement agencies in those countries, the Wildlife Justice Commission has supported the arrests of 36 high-level targets involved in rhino-related crimes in South Africa, Vietnam, DRC, Lao PDR, Mozambique, and Malaysia.

### Subject rating and targeting

The Wildlife Justice Commission has developed an internal risk rating system to assess a subject’s level of criminality according to factors such as their role in the network, modus operandi, geographical range across which they operate, estimated conservation impact, among others. The system classifies subjects from Level 1 as the lowest level to Level 5 as the highest, as defined in Table 1.

<table>
<thead>
<tr>
<th>Level of criminality</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low level of criminality is conducted. Subject is not assessed to pose a great threat.</td>
</tr>
<tr>
<td>2</td>
<td>Low- to mid-level trafficker who may play an enabling role to higher level subjects.</td>
</tr>
<tr>
<td>3</td>
<td>Mid-level trafficker who is likely operating at the international level and involved in some decision-making.</td>
</tr>
<tr>
<td>4</td>
<td>Mid- to high-level trafficker who may have access to corrupt contacts and legitimate businesses to facilitate their crimes.</td>
</tr>
<tr>
<td>5</td>
<td>A significant threat who orchestrates and finances the international movement of wildlife trade at a commercial scale.</td>
</tr>
</tbody>
</table>
**Seizure dataset collection**

Chapter 2 of this report on ‘Criminal dynamics of rhino horn trafficking’ is based on analysis of a dataset of rhino horn seizures over the past decade collected from open-source reports, primarily media articles, law enforcement press releases, court records, and other published reports, which were identified through keyword searches. The dataset consisted 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.

Although the dataset is substantial and as comprehensive as possible, it is limited by the fact that not all countries publicly report all rhino horn seizures, nor are there standard procedures in reporting seizures resulting in varying levels of detail available. The search methodology may not have detected all open-source reports and some records may only be available on request. This means there are gaps in the dataset, and as such, Chapter 2 is an indicative analysis of the major trends in rhino horn trafficking over the past 10 years. Furthermore, seizure data does not represent the complete picture as it only reveals detected illegal trade where there has been law enforcement effort. As such, intelligence and findings from Wildlife Justice Commission investigations have been integrated throughout this report where relevant as another source of information to assist with making inferences between seizure data and the realities of illegal trade.

**Price data analysis**

There are several reasons why it is good practice for authorities to publicly report information on seizures at the appropriate time and in a way that will not compromise ongoing investigations. Public reporting increases transparency and accountability for the confiscated contraband, reducing opportunities for it to be re-sold back into the trade and it is crucial for sharing important information with other countries implicated in the trafficking route to support linked investigations. Timeous reporting also facilitates more accurate studies and research, such as this report, in identifying and communicating trends and threats.

Chapter 5 of this report on ‘Value of rhino horn’ is based on analysis of a dataset of wholesale black market prices per kilogram for raw rhino horns from January 2016 to February 2022. The data were gathered by Wildlife Justice Commission operatives during undercover dealings with traffickers and brokers in eight African and Asian countries corresponding to various points of origin, transit, and destination in the illegal rhino horn supply chain: South Africa, Mozambique, DRC, Malaysia, Thailand, Lao PDR, Vietnam, and China. Some price data for China was also collected from an assessment of published court judgements of rhino horn trade and trafficking cases in China. All prices were converted to USD to make them comparable across the supply chain.
When interpreting price data, it is important to note that wholesale prices can fluctuate depending on who is selling the horn (i.e. their role in the criminal network and how close they are to the source of the product) and the quantity of horns being negotiated. Other factors that contribute to wholesale prices include transportation costs, facilitation payments, law enforcement risk, and supply and demand dynamics. The Wildlife Justice Commission targets its investigations at subjects who are assessed as being mid- to high-level criminals (Level 3-5), and investigators always negotiate prices to ensure as far as possible that the final price offered reflects current street values.

In retail markets, traders usually quote prices for processed rhino horn products by the gram or by unit and prices can vary significantly according to a range of subjective factors such as horn colour, size, carving quality, artistic value, and product type. For this reason, extrapolating retail prices to obtain a price per kilogram for comparison across different markets or to the wholesale raw rhino horn prices will produce misleading results. The Wildlife Justice Commission does not consider retail price data to be relevant for the analysis of criminal dynamics and understanding threats at the higher criminal level, and as such it has not been included in this assessment.

**Note on terminology:**
**price and value**

In this report, the term “price” is used when referring to specific price data and offers for rhino horn products that were collected during dealings with traffickers and brokers. When those price data are aggregated for analysis, such as determining annual average values collected at different points of the supply chain, the term “value” is used.

**Note on referencing**

A substantial portion of the information and analysis provided in this report is based on seven years’ worth of intelligence and findings from Wildlife Justice Commission investigations. 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.
1.3. Other background and context

Transnational organised crime

Rhino horn trafficking meets the internationally recognised definition of organised crime, as there is clear evidence of:

- **a structured** group,
- **of three** or more persons,
- **that exists** for a period of time,
- **acting** in concert,
- **with the aim** of committing at least one serious crime,
- **to obtain**, directly or indirectly, a financial or other material benefit.

Furthermore, rhino horn trafficking is an offence that is transnational in nature, as:

- **it is committed** in more than one State,
- **a substantial part** of its preparation, planning, direction, or control often takes place in another State, and
- **it often involves** an organised criminal group that engages in criminal activities in more than one State.

CITES identification of Parties most affected by illegal rhino horn trade

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement that aims to ensure that international trade in wild animals and plants does not threaten the survival of the species. The CITES Secretariat’s most recent report on rhinoceroses in 2022 identified the following seven Parties as being most affected by illegal rhino horn trade during the period 2018 to 2020 in terms of illegal trade volumes: South Africa, China (including Hong Kong SAR), Vietnam, Malaysia, Mozambique, United Arab Emirates, and Qatar. In addition, the CITES Secretariat

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9. https://cites.org/eng
includes Botswana due to a significant decline in the country’s rhino population.\footnote{CITES CoP19 Doc. 75, paragraph 35.}

Although this threat assessment analysed data and trends over a 10-year period from 2012 to 2021, it found similar results for the jurisdictions that feature most consistently in the seizure data: South Africa, Vietnam, Mozambique, China, Malaysia, and Hong Kong SAR. In total, more than 50 countries and territories have been implicated in the illegal trade since 2012 as source, transit, and destination locations, but this assessment is concentrated on these top six jurisdictions as representing the highest level of crime threat.

\section*{Harvested horns and legal stockpiles}

This report refers to “harvested horns” as rhino horns that are obtained by legal means, namely through dehorning live rhinos or collecting horns from rhinos that have died from natural causes. Dehorning involves anaesthetising the rhino and sawing off the horn at the base, carried out as a security measure to reduce the risk of poaching. The horns grow back over time, so dehorning needs to occur every 1-2 years for it be an effective deterrent measure.\footnote{https://www.savetherhino.org/thorny-issues/de-horning/} As a result, parks or properties conducting regular dehorning procedures will rapidly accumulate horn stockpiles.

Most rhino range States have government-owned stockpiles of horns acquired through dehorning procedures and horns collected from natural mortalities, as well as horns confiscated from illegal trade incidents. In South Africa and Namibia, rhinos and subsequently their horns can be legally owned, so there are private stockpiles as well as government stockpiles in these countries. Horns can also be legally exported as hunting trophies from South Africa, Eswatini, and Namibia.\footnote{White rhinos (\textit{Ceratotherium simum simum}) are classified as CITES Appendix II species in South Africa and Eswatini and are allowed to be traded as live animals and hunting trophies (refer to https://cites.org/eng/app/appendices.php). Black rhino (\textit{Diceros bicornis}) hunting trophies are allowed to be exported from South Africa and Namibia with an established annual quota, according to CITES Resolution Conf. 13.5 (Rev CoP18).} Any other countries that have made seizures from illegal trade will also have stockpiles unless those horns have been destroyed or returned to the country of origin. Guidelines for best practice in managing rhino horn stockpiles have been developed, including marking and registration of horns, storage, security, and auditing.\footnote{Milledge, S. (2005). \textit{Rhino Horn Stockpile Management: Minimum Standards and Best Practices from East and Southern Africa}. TRAFFIC East/Southern Africa.}

It is difficult to quantify how much rhino horn is held in legal stockpiles as few countries publicly report their stockpile inventory. The most recent
figures indicate that more than 87 tonnes of rhino horns and pieces are held in 10 African range States,\textsuperscript{14} up from an estimated 52 tonnes at the end of 2017.\textsuperscript{15} As of August 2019, South Africa reported holding 27.7 tonnes of rhino horn in government stockpiles and 22.5 tonnes of rhino horn in private stockpiles.\textsuperscript{16} Zimbabwe indicated it has 6-7 tonnes of rhino horn stockpiled,\textsuperscript{17} while other countries with national rhino dehorning programmes including Botswana\textsuperscript{18} and Namibia\textsuperscript{19} also have significant stockpiles. In addition, 16 non-range States reported holding a combined total of 2 tonnes of rhino horns and pieces, the majority of which are likely to be African rhino horns seized from illegal trade.\textsuperscript{20}

Legally harvested horns can enter the black market as a result of thefts from government or private stockpiles, thefts from other sources (such as from museums or zoos), or horns being illegally sold from private or government stocks.

After they have been integrated into the illegal supply chain, identification of harvested horns is extremely challenging due to the limited physical characteristics that distinguish harvested horn from poached horns. Horn tips with perfectly flat bases can be recognised as the result of dehorning and plastic tags and codes written with indelible ink can clarify their registration, but once the horns are cut into pieces, these clues are obscured or lost. The second or subsequent rounds of dehorning results in pieces of horn with two flat ends, but these can appear similar to cut pieces. Likewise, horns recovered from natural mortalities or legally hunted animals do not necessarily present with a flat base and may appear similar to poached horns. DNA analysis can assist with identifying the origin of horns and is a CITES requirement for all rhino horn seizures.\textsuperscript{21} However, it is expensive and due to various challenges is not routinely applied by law enforcement authorities.


\textsuperscript{16} South Africa Department of Environmental Affairs, Response to Promotion of Access to Information Act (PAIA) 183968 dated 29 July 2019.

\textsuperscript{17} https://africa.cgtn.com/2022/05/18/zimbabwe-urges-sale-of-stockpile-of-seized-elephant-ivory/

\textsuperscript{18} Official announcement on the Botswana Department of Wildlife and National Parks Facebook page on 15 June 2020, also reported in the media: https://www.voanews.com/a/africa_poaching-forces-botswana-dehorn-translocate-rhinos/6191347.html


