
GLOBAL INITIATIVE
AGAINST TRANSNATIONAL ORGANIZED CRIME
HIDDEN IN PLAIN SIGHT
Counting the cost of environmental crime
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GLOBAL INITIATIVE
AGAINST TRANSNATIONAL ORGANIZED CRIME

FROM VISION TO ACTION: A DECADE OF ANALYSIS, DISRUPTION AND RESILIENCE

The Global Initiative Against Transnational Organized Crime was founded in 2013. Its vision was to mobilize a global strategic approach to tackling organized crime by strengthening political commitment to address the challenge, building the analytical evidence base on organized crime, disrupting criminal economies and developing networks of resilience in affected communities. Ten years on, the threat of organized crime is greater than ever before and it is critical that we continue to take action by building a coordinated global response to meet the challenge.

KEY POINTS

Illicit financial flows (IFFs) are the lifeblood of crime and corruption. They facilitate corrupt elites and may even be the most significant obstacle to equality and opportunity in transitioning economies. IFFs are financial resources that could have been utilized for public services or investment in health, education and public security. All of society therefore suffers from this exfiltrated economic value, including business, consumers, governments and civil society.

This brief looks at IFFs related to three specific illicit environmental flows: timber trafficking from Myanmar to China; gemstone trafficking from Mozambique to Thailand; and abalone trafficking from South Africa to Hong Kong Special Administrative Region (SAR). Through a mixed methods approach based on data from July 2021 to July 2022, it seeks to quantify the overall scale of IFF flows by analyzing informal flows, trade flows and financial systems – the three main channels by which IFFs are enabled, held and moved. The key findings are:

- IFFs related to environmental crime are not abstract or hidden but are clearly recorded for those willing to look. Significant discrepancies in open-access data on trade and production allows for tentative estimates of the overall size of IFFs.
- Informality, trade and the financial system all play a key role in facilitating and moving the value derived from illicit environmental commodities across borders. Informality is most prevalent at the source, where cash is the predominant form of payment. Trade figures systematically under-record illicit flows.
- There appear to be no proper mechanisms to investigate whether the three environmental commodities under study are of legal or illegal origin. This, and the subjective nature of their value, facilitates mis-invoicing, trade-based money laundering and evasion of customs duties. Illicitly sourced timber, gemstones and abalone often appear 'formalized' in the destination countries, co-mingled with legally sourced products and sold on the open market.
- There appears to be little political appetite to prioritize environmental crime in destination countries, where the financial system is widely used to process the illicit proceeds from the trafficking of these three commodities.

This brief shows that the IFFs related to these environmental flows have a major negative impact. It proposes policy recommendations to strengthen the response to IFFs, including improving training and capacity at borders; closing legal loopholes; and making environmental crime a predicate offence for money laundering, thereby raising awareness of the true cost of environmental crime. ■

INTRODUCTION

Environmental crimes – so-called illicit threats to nature – have a devastating impact on the natural environment and livelihoods. Wide-ranging, they include numerous cross-cutting issues such as the illegal wildlife trade; logging and trafficking in rare timber species; the illegal trade in extractive mineral resources, such as precious metals, gemstones and other minerals; illegal, unreported and unregulated fishing; and the illicit management of and trade in waste products and prohibited or regulated chemicals. Many of these activities have escalated over the past 20 years, the result of a combination of instability and conflict in source countries, urbanization and growing consumer demand.[1]

Environmental crimes occur globally, often driven by transnational organized criminal networks with many composite parts carrying out operations: they commission and organize poaching, harvest endangered species, and transport and sell the environmental commodities to the destination markets. Networks can be highly organized and violent, and often rely on corruption and bribery to function.[2] Meanwhile, demand for environmental products is international and diverse. There are established producer and consumer markets that feed demand for, for example, exotic wildlife, rare, protected woods and precious stones, as well as traditional medicinal and food products coveted in parts of Asia.[3]

The internet and smart devices have transformed how environmental commodities are retailed. In many cases, virtual markets have replaced physical ones, partly owing to increased scrutiny of physical marketplaces since COVID-19 pandemic.[4] This has enabled traders to market to a much wider audience, over long distances and at little cost. New roles have also emerged in the retail-side supply chains where licit businesses perform crucial roles to enable the marketing, selling and delivery of environmental products. Among these are money-transfer platforms that are used to facilitate exchanges.[5]

Previous studies estimate the annual value of environmental crime at between US$110 billion and US$281 billion,[6] making it one of the most lucrative criminal economies in the world. Climate change, which has brought about diminished supply, has reportedly inflated profits even further, leading to rising prices of many illicit environmental commodities along the value chain.[7] Although the bulk of the supply market of illegal environmental products is often found in the Global South,[8] few of the proceeds of this market benefit the development of communities in near the source markets but are instead transferred abroad and laundered into the global financial system.

Significant efforts are being made to better understand illicit environmental economies and the criminal supply chains perpetuating them. However, less is known about the 'money side' of it, namely the movement of associated illicit proceeds – be it in the form of cash, money invested in banks and time deposits or held in assets, such as property. Financial investigations and anti-money-laundering interventions have been scarce in the response to this form of organized crime.[9]

Purpose of the research

The purpose of this brief is twofold. First, it seeks to improve understanding of the cost of environmental crime. Using three case studies, it shows how open access data can be used not only to detect illicit flows, but also support estimates of resulting illicit proceeds and loss in revenue that would otherwise accrue to the state. This is important, as providing hard evidence of the financial losses that IFFs pose is a crucial step towards understanding the harmful impact environmental crime wreaks on communities around the world.

Secondly, this brief seeks to advance understanding of the processes through which illicit value related to environmental IFFs is held, moved and enabled. It analyzes the mechanisms by which money earned illicitly is transferred in and out of economies to criminal beneficiaries, looks at criminal activity through the lens of financial movements in the underlying (or predicate) crimes[10] and analyzes the actors involved as an interconnected network.

Definition and methodology

The term 'illicit financial flows' is commonly used as an umbrella concept for a wide range of activities that fall along the spectrum of illicit international trade and finance. Although there is still no commonly agreed definition of the term, this brief broadly follows that put forward by the UNODC in its 2020 conceptual framework for measuring IFFs: 'IFFs are illicit in origin, transfer, or use; represent an exchange of value, not only a financial transfer; cover a flow of value over time; and cross an international border.'[11] It indicates that IFFs emerge at two stages:

- illicit income generation, which means cross-border transactions generally made in the process of producing illicit goods or services; and
- illicit income management, which covers cross-border transactions that use illicitly derived money for investment, goods or services.

While the cross-border focus of IFFs is core to its definition, previous research has shown that this understanding of IFFs has limitations as it fails to account for flows generated and spent domestically. This is especially the case in countries where the informal economy is prominent and formal oversight challenging, and where proceeds of corruption or organized crime are generated and spent locally, without crossing international borders.[12] This brief therefore considers both local and cross-border IFFs.

This research uses a mixed methods approach of trade data analysis, expert interviews and third-party reporting that combines an analysis of 'flows' (i.e. the main mechanisms by which value is enabled, held and moved) and of predicate crimes (i.e. corruption, illegal markets and tax evasion). The three case studies – which are representative of environmental criminal markets, namely flora (timber), fauna (abalone) and non-renewable resources (gemstones) – were selected to test the methodology.

The research was undertaken between July 2021 and July 2022, and provides a bottom-up approach to analyzing IFFs by, firstly, looking at the flows through which IFFs are enabled, held and moved. Given that 'flows' data is largely inaccessible to the public, this analysis remains anecdotal. Secondly, this research provides tentative estimates of the overall size of IFFs by aggregating the key predicate crimes related to environmental commodities (tax-related, corruption-related and criminal activity-related) and analyzing what proportion of these crimes become IFFs. It uses production gap analyses and finds them more reliable than trade discrepancy analyses.

SELECTED CASE STUDIES

This brief acts as a companion piece to previous reports published by the GI-TOC on timber trafficking from Myanmar to China,[13] gemstone trafficking from Mozambique to Thailand[14] and abalone trafficking from South Africa to Hong Kong SAR.[15] Given the focus here on IFFs, details of the criminal networks and supply chains described in depth in these reports are not repeated in this brief.

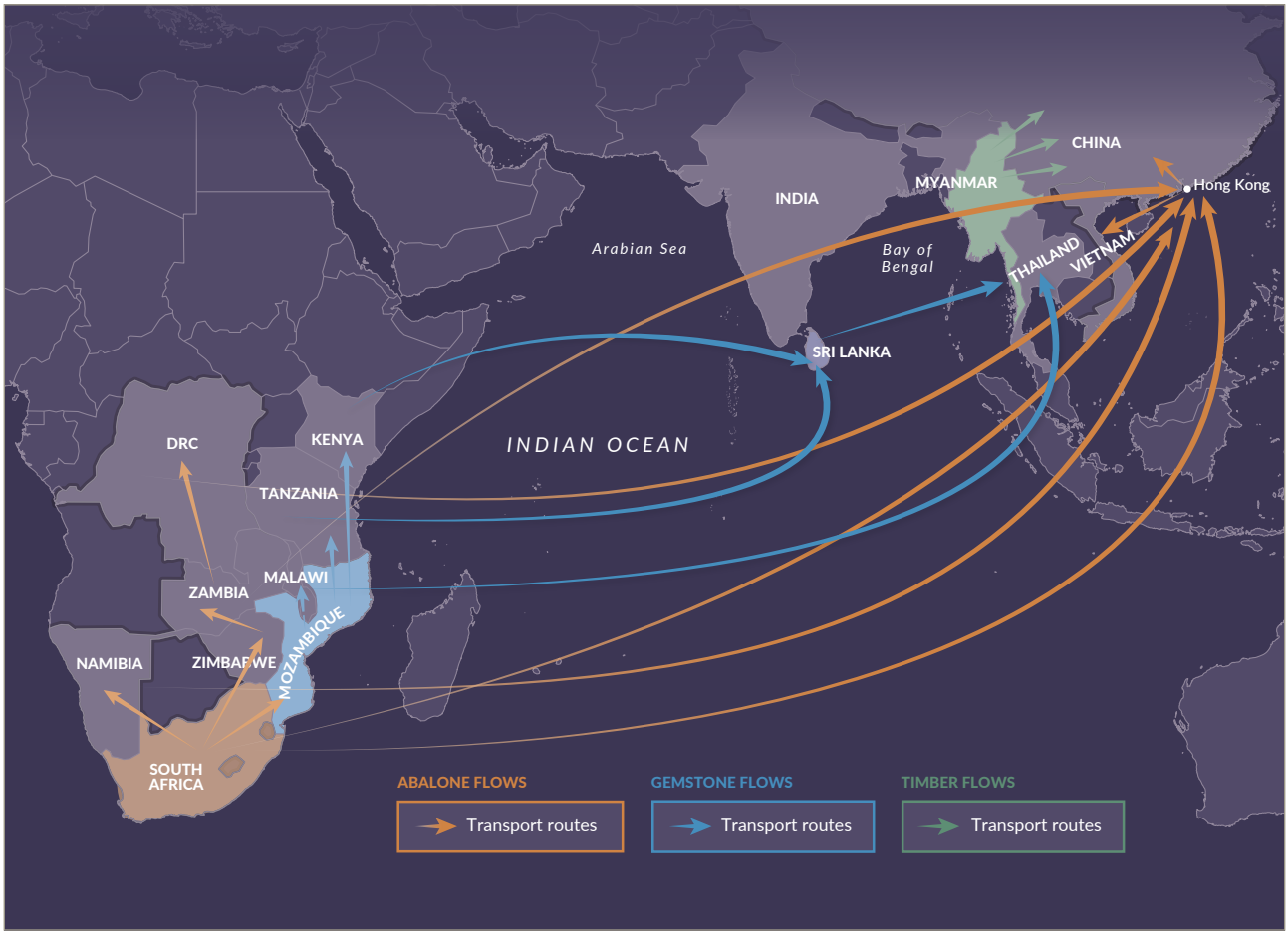


FIGURE 1 Environmental commodity flows.

The illegal trans-border timber trade between Kachin state and China's Yunnan province is estimated to be worth US$600 million a year. Shown here is a view of Pianma, China, where wood is the main business commodity.
© Roland Neveu/LightRocket via GettyImages

The illicit timber trade from Myanmar to China

Myanmar has a long history of trading illicit timber, an activity that saw a marked upswing in the 1990s when the political economy of Myanmar (and the once heavily forested state of Kachin specifically) changed and the military government entered into ceasefires with local militias.[16] Following the government's crackdown on deforestation and illegal logging in 2015, the official statistics showed a significant reduction in timber exports from Myanmar worldwide, and particularly to China. However, there continued to be significant evidence that logging carried on.[17]

Chinese actors operating through companies set up to satisfy demand in China are reported to enable the illicit trade.[18] Such has been the continued scale of illegal logging that Kachin has been largely denuded of hardwood, and loggers have had to move operations to the Saigang region and beyond.

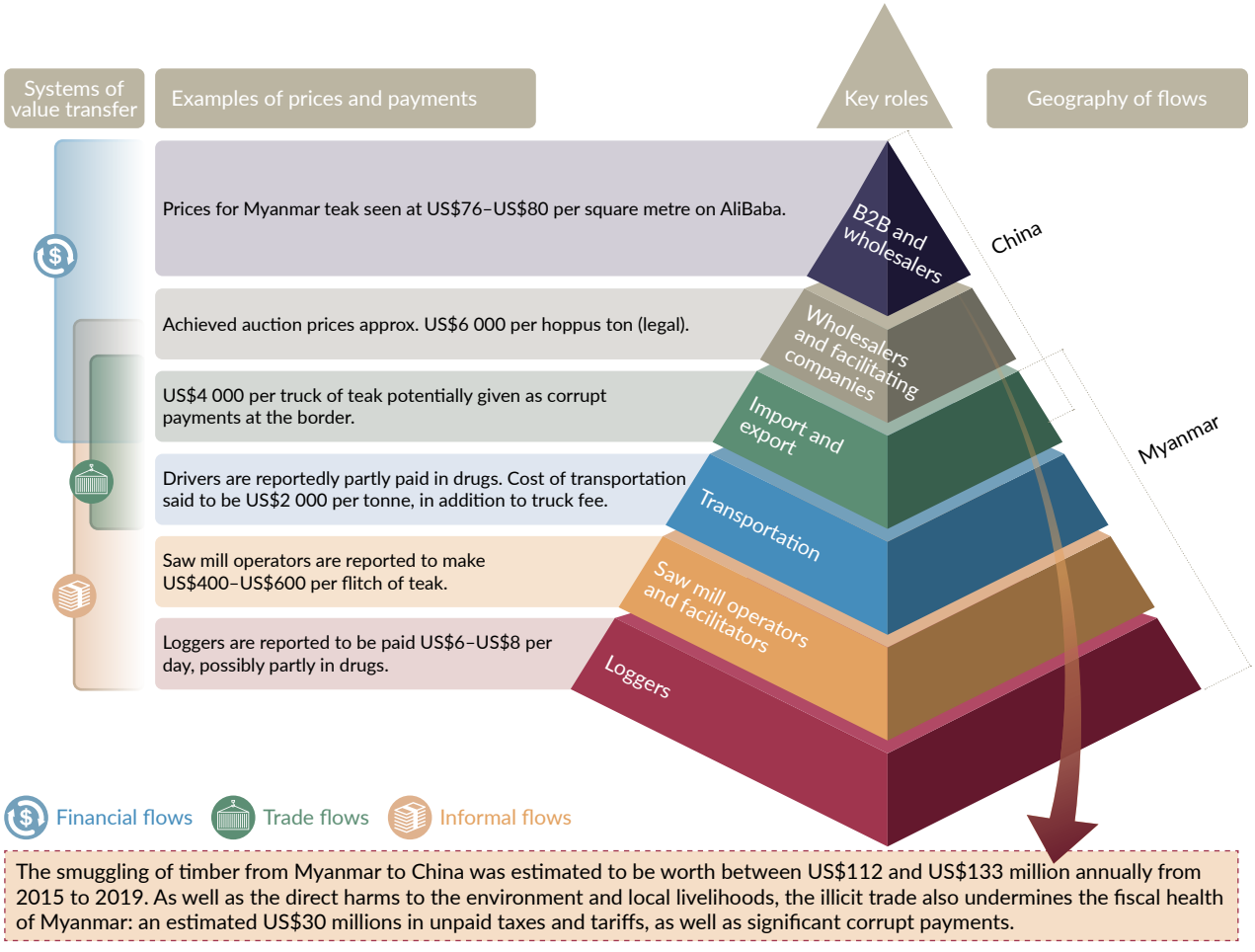


FIGURE 2 Supply chain of illicit timber from Myanmar to China and associated IFFs.

Rubies sold in Chanthaburi, Thailand. The country is one of the world's largest coloured gemstone trading hubs.
© Thitiphan Promprayong/EyeEm via Getty Images

The illicit trade in rubies from Mozambique to Thailand

Rubies were first discovered in Mozambique in 2009 and have since been sourced primarily from two regions – Montepuez, in the Cabo Delgado province and the M'Sawize site in the Niassa Special Reserve. Montepuez has been described as possibly the most significant single ruby deposit in the world, holding as much as 40% of global ruby reserves.[19] Together, the two deposits provide as much as 80% of the current global supply.[20]

Coloured gemstone mining and official exports in Mozambique are dominated by a large-scale mining operation, Montepuez Ruby Mining Limitada,[21] and a growing number of other companies that have obtained concessions since 2014.[22] But the discovery of the ruby deposits also attracted tens of thousands of informal miners from all over the country and beyond.[23] Of the estimated 100 000 to 150 000 people mining minerals in Mozambique, 10–20% were estimated to be mining for rubies in Montepuez alone,[24] allegedly most without the necessary licences and permits.[25]

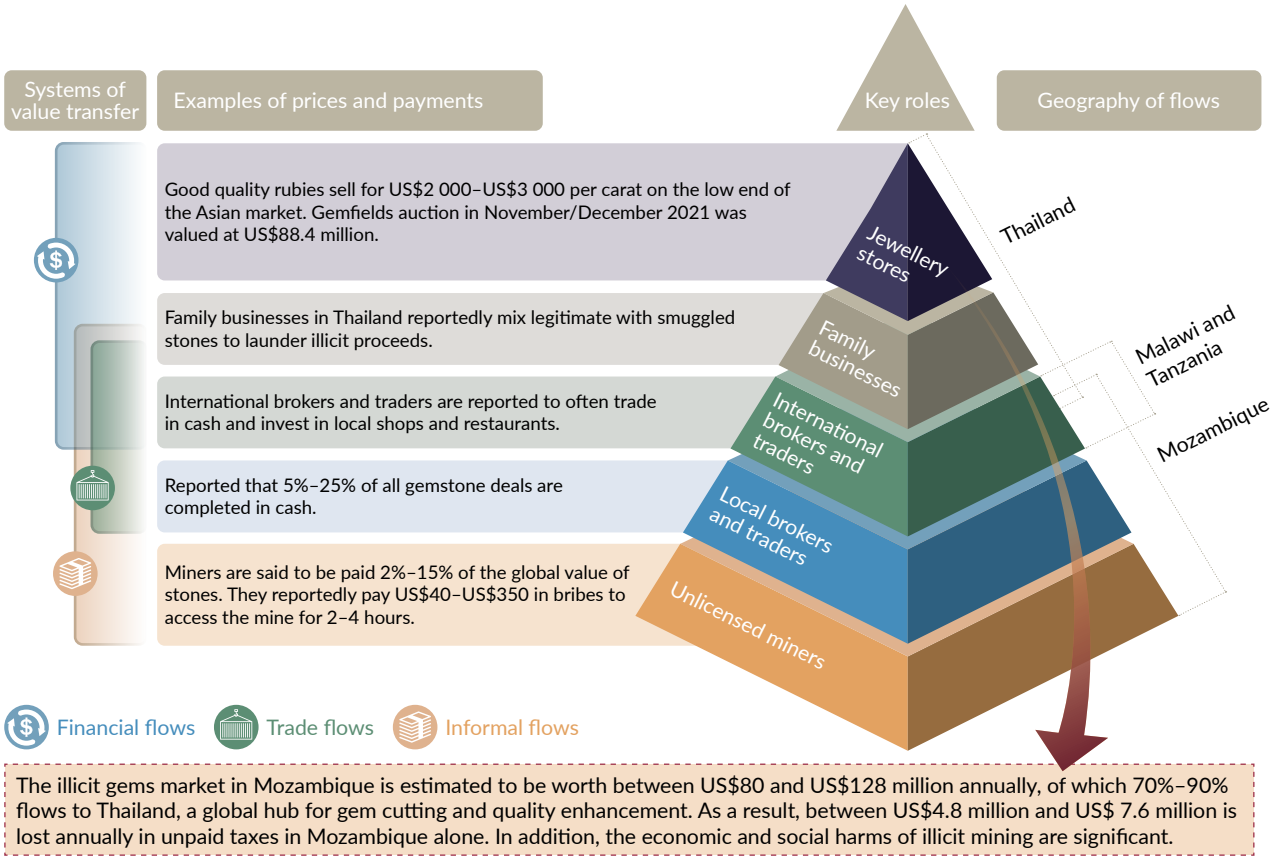


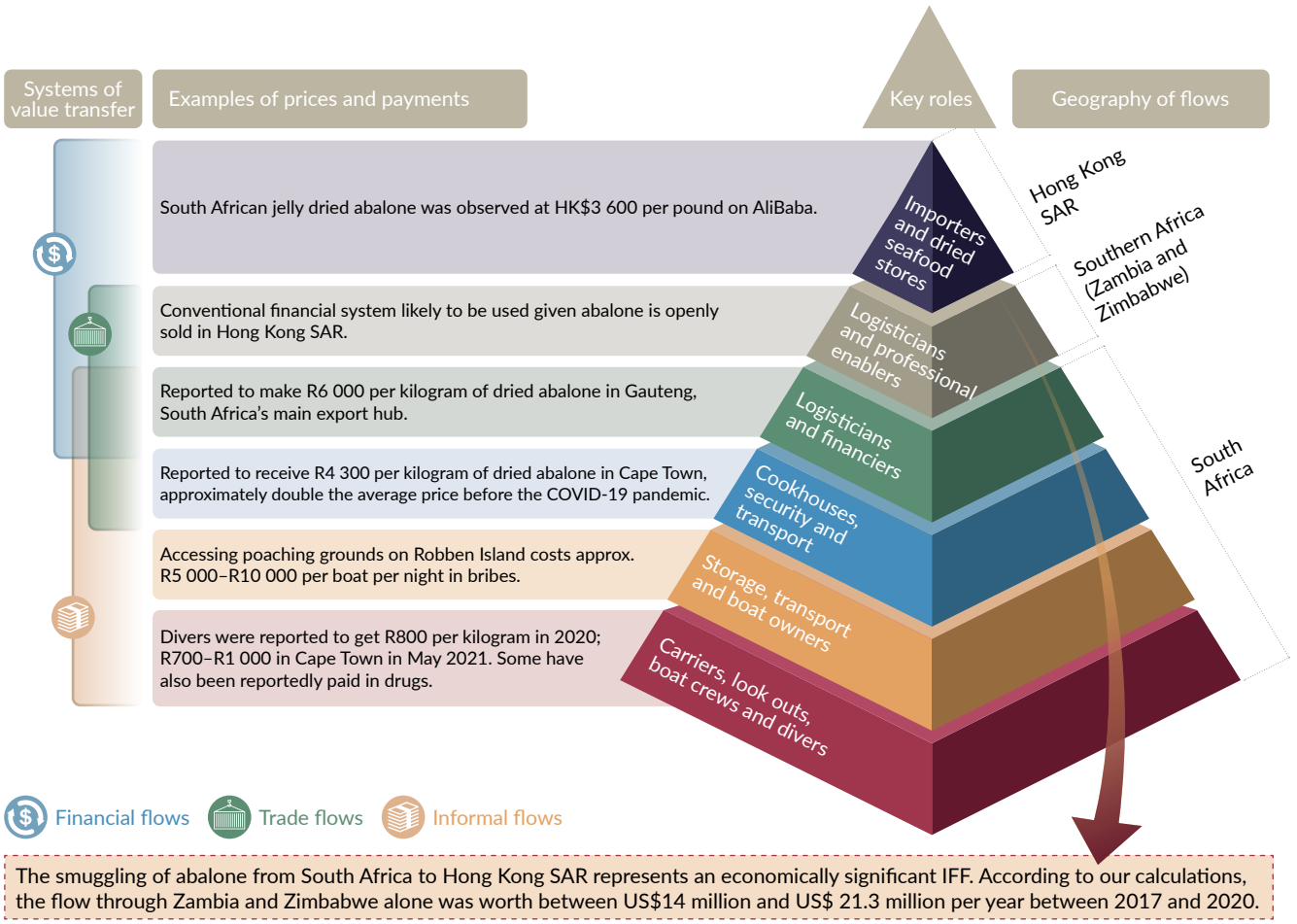
FIGURE 3 Supply chain of illicit rubies from Mozambique to Thailand and associated IFFs.

Coloured gemstone supply chains, from extraction to export, are organized mainly by informal and illicit networks that only occasionally and selectively intersect with formal supply chains within Africa. These illicit networks comprise various types of actors, of which the number of operators and the scale of flows may vary according to the type, quality and volume of gemstones being produced by miners.[26] Rampant corruption facilitates the illegal flows of Mozambique's rubies. Because informal miners are unable to obtain a certificate of origin, rubies mined by unlicensed miners and later sold abroad leave the country illegally.[27]

The illicit abalone trade from South Africa to Hong Kong SAR

Abalone is a variety of marine snail, occurring naturally in only a small number of colder coastal waters around the world. Some 95% of global abalone supplies come from aquaculture farms.[28] However, the consumer market – principally East Asia, where it is a highly sought after delicacy – still demonstrates a preference for supplies of this shellfish sourced in the wild.

In South Africa the endemic species *Haliotis midae* is found along certain parts of the coast, where it is known locally as *perlemoen*.[29] South Africa has been at the heart of the illicit abalone trade since the 1990s, largely driven by demand from East Asia.[30] Naturally occurring stocks have been decimated to the point where it is illegal to harvest, transport or trade wild abalone in South Africa – except



The smuggling of abalone from South Africa to Hong Kong SAR represents an economically significant IFF. According to our calculations, the flow through Zambia and Zimbabwe alone was worth between US$14 million and US$ 21.3 million per year between 2017 and 2020.

FIGURE 4 Supply chain of illicit abalone from South Africa to Hong Kong SAR and associated IFFs.

Fresh abalone in their shells offered at a seafood market.
© DigiPub via Getty Images

within clearly defined and strictly limited quotas, yet it reportedly supplies less than 3% of the global abalone market with stocks of farmed or legally harvested wild abalone.[31]

The deficit derives from massive levels of poaching – possibly to the point of no return for the marine species. Between 1 000 and 2 000 people are reported to be involved in the business as divers, carriers and lookouts, who then sell the abalone on to networks of buyers, dryers and exporters, who move the product across borders.[32] Hong Kong SAR is the global epicentre of the abalone trade, where most of the abalone is declared upon arrival and can be sold legally on the open market.[33] As long as it has been declared at import and the appropriate taxes paid, there is nothing unlawful about the import and subsequent trade in abalone.

ASSESSING IFFs RELATED TO ENVIRONMENTAL CRIME

This section provides examples of how value related to the three case studies is generated, transferred across borders and laundered into the formal economy. Specifically, it looks at the role of informality, the trade system and the financial system to provide an overview of how IFFs are enabled, held and moved.

Informal flows

Mozambique, Myanmar and South Africa, the countries under study, all have sizeable informal sectors. The International Labour Organization estimates the share of informal employment at 42.2% in South Africa (2022), 95.7% in Mozambique (2015) and 81% in Myanmar (2020).[34] They also have a high share of unbanked people: 80% of the total adult population (i.e. 16 years and older) in Mozambique are estimated not to have a bank account.[35]

Cash

Given both the illegal nature of environmental crime and the large informal sectors associated with it, cash is the main form of payment at the source in all three case studies. As one interviewee from Myanmar explained: 'Everything is paid in cash – wages to truck drivers and loggers are paid in local Myanmar Kyat; bribes to the border forces are paid in Chinese Renminbi. People who carry around huge stacks of cash also carry a pistol (for fear of being robbed).'[36]

Prices paid to loggers in Myanmar vary from US$6 reported in 2020, to a high of around US$48 per day (these figures were given in a 2015 study).[37] A percentage of these takings are then paid in bribes, which come with the territory and are part of the cost of doing business. According to the same source, 'Ethnic armed groups charge "taxes" to local logging operators, legal or illegal.' These include security costs, as well a general 'operation tax' to operate in their area.[38]

Similar experiences were recounted in Mozambique: 'You can only use *meticais* [the currency of Mozambique] when close to the [gemstone] mine,' explained an expert who had spent time at some of the mines.[39] The stones are typically extracted by unlicensed miners, who try to get access to the concessions at night, often by bribing police officers. 'They pay between US$40 and US$350, and are given a two-to-four-hour period.[40] Stones are then sold to buyers or brokers, who report that they

are paid to buy stones on behalf of others or offer financing themselves. Experts estimated that, on average, brokers in Montepuez receive a 5%–25% commission of the gemstone deals.[41]

Thai dealers, who are reportedly among the largest buyers of rubies, also pay cash, making them reliable trading partners for local miners. The buyers from Thailand usually travel to Mozambique several times a year with cash, and are in charge of buying the stones as well as arranging transportation back home.[42] Brokers who operate under pre-financing arrangements say they are never trusted with sums of cash greater than US$5 000 at any given time.[43]

Others have indicated that it is easier, and safer, for brokers to receive the cash in Tanzania, a key transit and transportation hub. 'They leave the stone in Mozambique and travel to Tanzania to collect the money. When they receive the payment, the stone is released. Most of this cash stays in Tanzania. They only return with the cash needed for future operations.'[44] Many Thai traders have also reportedly relocated to Tanzania ever since the Mozambican authorities targeted foreign unlicensed buyers in Montepuez and many people, including Thai nationals, were deported.[45] In 2013, a Tanzanian citizen was arrested in Cabo Delgado, which borders Tanzania, with more than a million US dollars in cash stemming from the illegal sale of rubies to Thai citizens.[46]

Abalone is not only a valuable but also a highly liquid asset: according to a recent report, participants can walk away with over R200 000 (US$14 000) in cash hours after a single-boat poaching operation.[47] In South Africa, most participants in the illicit abalone trade, from poaching to export, are reported to receive cash in return for abalone. For example, wholesalers meet buyers in shopping malls, where they hand over cash in return for abalone. Designated couriers then transport the goods by road.[48]

Barter

Other forms of informal payment observed in connection to the three case studies include the barter trade, where one illicit commodity is paid for or financed by another. For example, working capital for the buyers of abalone (and their diving operations) is often provided by Chinese middlemen,[49] also in the form of revenue from drug imports.[50] Some poachers have claimed that they are paid directly in drugs for their catch.[51] While the bulk of profits from abalone trafficking is said to be made in Hong Kong SAR, the illicit cash generated by poaching, drying and selling the product to Asian buyers has been substantial enough to generate a large and highly competitive criminal market in South Africa.[52]

According to previous research, drug and abalone trafficking most likely converge only at the upper levels, among Hong Kong SAR-based organizations when they balance their payments, with the two commodities flowing separately until Asian drugs are bought by the same gangs that sell abalone to African traffickers, thereby minimizing or even eliminating the need for traditional international financial transactions.[53] There are also claims that abalone is exchanged for real estate or targeted assassinations (when Cape Town gangs are involved).[54]

Evidence for barter was also found in Myanmar, where drivers are reported to be paid directly in drugs. Said one expert: 'Truck drivers and couriers are also provided with meth. They have to drive all night, so the only way to stay awake is by taking drugs. Many of the drivers have become addicted to meth.'[55]

In Mozambique there are reports that illegal mining of gemstones has been used to finance the insurgent group that controls territory in the north of the country, known locally as al-Shabaab.[56] This, it is alleged, is facilitated by businesspeople based in Montepuez and Pemba who smuggle gold and gemstones and move the money, including by laundering it through their legitimate businesses. They are also reported to deposit payments on behalf of the insurgents.[57]

Informal value transfer mechanisms

Hundi and hawala systems,[58] as well as other informal value transfer mechanisms, also play a key role in financing environmental crime to offset the value against trade-based money laundering systems. These mechanisms are reported to play a particularly important role in Myanmar, which the Financial Action Task Force (FATF), the global money laundering and terrorism financing watchdog, blacklisted in October 2022.[59] Indeed, the blacklisting of the country has likely fuelled the use of the hundi system, which has become the dominant means for remittances in Myanmar.[60] Hundi is reported to allow Chinese operators 'to transfer huge amounts of money on a daily basis'.[61]

Trade flows

In the context of IFFs, trade flows refer to the falsification of the value of goods on invoices submitted to customs officials when shipping or receiving commodities across borders. Trade mis-invoicing is either done by over- or under-pricing the value of commodities as a means to illicitly transfer money across borders, evade taxes and customs duties or to launder the proceeds of crime through the use of trade transactions.[62] The illicit trade in timber, gemstones and abalone are all common and well-known vehicles for trade flows and there is widespread evidence of mis-invoicing as well as evasion of taxes and customs duties occurring at borders in all three cases.

Mis-invoicing

Mis-invoicing of environmental commodities is pervasive, partly because the value of many products remains subjective and difficult to ascertain. It is most evident, however, in the case of gemstones. The value of rubies, for example, is highly sensitive to subtle changes in colour and quality, and it can increase by up to 25 million times between the mine and the sale.[63] Experts have put the case that there is no objective 'market value' for rubies, but rather that value depends on the buyer's willingness to pay for a specific stone. Even at expert-run auctions, professionals have been willing to pay sums that were many hundred times higher than what competitors offered for the same stone.[64]

In the case of Mozambican rubies, a substantial knowledge gap can be observed between the miner and the dealer, with most miners not being able to accurately estimate the value of a specific stone. As a result, most rubies that are extracted in Mozambique without a licence leave the country for a fraction of their value. In one case, it was reported that a Mozambican sold 2.7 grams[65] of rubies for around US$2 000. However, even at the low end of the Asian market, good quality rubies sell for US$2 000–US$3 000 per carat, making 2.7 grams of high-quality rubies worth at least US$27 000.[66] On average, experts estimate that Mozambican miners are paid just 2%–15% of the market value of the stones.[67]

Furthermore, it is challenging – and sometimes even impossible – to determine the illegal origin of an environmental product. It is currently impossible to distinguish between illicitly mined rubies and those mined and exported with a valid permit. Although analysis of gemmological data provides a good indicator of the region of origin, it is not possible to establish whether an individual ruby has been mined informally.[68] The same holds true for timber, as once a tree has been logged and transported, it is difficult to determine whether it is part of the official quota or not.

Gemstones from Mozambique are often smuggled to Malawi, where traders are able to obtain certificates of local origin for export. They are also often mis-valued to save export taxes, while high-value and low-value stones are mingled to disguise smuggling operations.[69] One interviewee suggested that up to 40% of the stones that are exported from Malawi originate in Mozambique.[70]

Illicitly poached and dried abalone from South Africa can be recognized by its uneven colour,[71] but there are no proper mechanisms to investigate the provenance, and law enforcement agents are often not trained to intercept abalone.[72] Therefore, the abalone is usually mis-declared or accompanied by fraudulent abalone permits when leaving South Africa for Hong Kong SAR or smuggled over the border to neighbouring countries where it can easily be laundered into licit trade flows.[73] The use of countries as intermediaries to launder abalone imposes additional costs on smugglers but appears to have facilitated the rise of a network of intermediaries from Somalia and the Democratic Republic of Congo specializing in moving illicit products across borders; 98% is then smuggled by air to East Asia.[74] By the time poached abalone arrives in East Asian ports, it is openly and officially declared.[75] As such, illicitly sourced commodities can be easily mixed with legally sourced product and become 'formalized' in the destination market.

This formalization process happens not only across borders but also at key hubs. For example, gemstone traders are reported to buy rough gemstones in bulk, process the material and then sell the processed stones to commercial buyers (such as family businesses, jewellers or investors) for a profit Thailand. There, illegally traded stones are also mixed with formally traded stones bought at auctions or online, making them impossible to distinguish.[76] Businesses in Thailand cut and heat-treat coloured gemstones before selling them on to bigger corporations that work them into jewellery for re-export.[77] 'One of the big advantages [for criminal interests] of the Thai gem trade is that all gems are "formalized" there, which means they receive an invoice and "certificate of origin",'[78] explained a gemstone expert.

Tax evasion

Widespread mis-invoicing enables evasion of taxes and customs duties. For example, Mozambique levies taxes on the extraction of gemstones, in addition to the fees charged for mining, export and mineral treatment licences – none of which are assumed to be paid in full in the context of the illegal ruby trade. Similarly, tax evasion has also been reported upon import to Thailand. Although Thailand has a liberal policy on the import of rough coloured gemstones,[79] interviews conducted for previous GI-TOC research revealed how traders openly discussed how they were able to skirt the law and avoid paying duties and other taxes, in order to maximize profits.[80]

In Myanmar, the Environmental Investigation Agency reported that export taxes are paid as the timber trucks cross the Myanmar–Chinese border. However, these monies (US$4 000 per truck in 2015[81]) are potentially partly corrupt payments. Interviews conducted for this research have confirmed this: 'Taxes are paid to ethnic armed groups (both for legal and illegal timber activities).'[82] In contrast, on the Chinese side of the border, interviewees reported that import taxes are paid in full, at US$1 120 per tonne of teak.[83] Yet this money does not appear in officially declared Chinese customs import taxes.

South Africa is zero rated for export tariffs on most abalone products, and Hong Kong SAR is a free port with a zero-tax policy on almost all imported goods, meaning that no import and export tariffs are evaded by the illicit trade.[84] However, large quantities of abalone do not stay in Hong Kong SAR but are smuggled onwards to China, and to a lesser degree Vietnam (also for later re-export to China), and it is likely that taxes are evaded when abalone is smuggled onwards.[85]

Financial flows

Sometimes policies designed specifically to create loopholes for wealthy, politically-connected elites facilitate the formalization process of illegally sourced environmental commodities and enable the laundering of illicit proceeds into the formal economy. Indeed, there appears to be little political appetite to prioritize environmental crime in all three case studies and money laundering investigations connected to environmental crime are rare.

Corruption and bribery play a key role in facilitating and enabling IFFs in all three case studies analyzed here. In South Africa, the state response to abalone smuggling has even been described as 'captured'.[86] Previous reports suggest that there is evidence that every government agency tasked with combating abalone poaching has been compromised to some degree by corruption linked to the trade, ranging from bribes paid to low-level inspectors to serious allegations against senior officials.[87]

The formal financial system

The 'formalization' of illegal timber, gems and abalone in consumer countries (the fact that they are sold on the open market, as discussed above) allows for widespread use of the formal financial system to move funds. For example, brokers and traders in Mozambique, as well as international brokers, family businesses and jewellery stores based in Thailand are reported to commonly use the financial system. One participant explained that money is regularly sent from Thailand to Mozambique and neighbouring countries and then withdrawn through local business accounts. It is said that some banks are 'aware of what the money will be used for, but are happy to receive foreign currency'.[88]

Transactions related to the illegal timber trade are reported to enter the conventional financial systems on the Chinese side of the border.[89] For example, AliBaba, which advertises 'Burma teak', offers a range of conventional payment mechanisms, such as MoneyGram, HSBC, Paypal and Western Union.[90] An open Chinese language search on AliBaba for South African abalone also produced thousands of results showing dried and fresh South African abalone for sale, including many citing that the product is 'wild' rather than 'farmed'.

Poaching syndicates in Hong Kong SAR are also reported to collaborate with professional money movers who provide everything from manipulated paper trails to using loopholes in the formal financial system (e.g. through tax havens) to move and secrete money. The use of front companies is assumed to be common.[91] No known criminal investigation has been able to trace or describe the mechanisms of money flows between South Africa and Hong Kong SAR, although it is believed that the hawala system pays a pivotal role. Therefore, it is unclear how consumers and retail businesses pay for abalone in Hong Kong SAR (whether using cash, card, mobile banking services or others), as this depends on the profile of the buyer as well as the final destination of the product. An expert explained that abalone stores try to keep their activities low-profile: instead of openly displaying the product in shops, they prefer to conceal it behind the counter or in warehouses. 'If they hide the abalone and resulting financial income, then they do not need to explain where it comes from,' he said.[92]

Common to the three case studies is the fact most profits are made in the countries of destination. Indeed, most profits from the illicit timber trade are assumed to be made by Chinese actors. A researcher in Myanmar explained how locals reap very few benefits from this trade: 'A handful of local businessmen got rich – but they were also involved in other shady businesses previously (especially jade) and in addition jumped on the timber train when they got the chance. They shift quickly between different activities and are involved in many different types of trade.'[93]

Money laundering

Money made from illicit logging is reported to be laundered through construction, real estate businesses, as well as casinos and gambling. The latter category, however, tends to be favoured more for illegal drugs than timber.[94] Smaller players in the logging industry are reported to build modest houses (such as bamboo buildings in the Saigang region), while wealthier illegal loggers build grander, opulent houses constructed using concrete and hardwood.[95] Given the sizable profits made from illicit logging, it is likely that significant proportions of the proceeds are transferred abroad, including to offshore investment hubs.[96]

Similarly, interviewees recounted how most of the profits from coloured gemstones are made overseas, notably in Thailand.[97] Money laundering in Mozambique is considered to be fairly common, although it is mostly linked to corruption and drug trafficking, and only some of the proceeds stemming from the smuggling of gemstones are expected to be laundered back into Mozambique.[98]

In Thailand, known money laundering methods include gambling, and investing in cars, real estate and other luxury items. Coloured gemstones themselves may also be used in money-laundering schemes in Thailand, given that it is easy to hide wealth in this sector, and value, as mentioned, is subjective.[99]

There is currently no concrete information available about Hong Kong SAR importers money laundering activities stemming from the illicit abalone trade. Generally, investigations into the financial transactions involved in the illegal wildlife trade are limited.[100] Expert interviews suggested, however, that the key criminal actors involved in the abalone trade in Hong Kong SAR use the conventional financial system, presenting exchanges as legal business transactions. 'Given that they are not under pressure to hide their activities, there is no need for more creative ways of transferring money,' said one expert from a credit provider.[101] That the financial system can be easily (mis)used is supported by the fact that there appears to be a certain reluctance among financial institutions to communicate with one another. 'If one account gets closed, then they just go next door and open another one,' he added.[102]

QUANTIFYING ILLICIT FINANCIAL FLOWS

The GI-TOC reports on timber trafficking from Myanmar to China, gemstone trafficking from Mozambique to Thailand and abalone trafficking from South Africa to Hong Kong SAR (referred to earlier) provide significant evidence of the existence of illicit environmental markets. The anecdotal analysis of the main financial flows provided additional insights into the 'money side' of the crime: it showed how a large number of criminal actors, as well as licit ones, are involved in not only sourcing and transporting the commodities, but also providing services to launder illicit funds. In addition, the environmental commodities themselves are sometimes used to launder funds for other types of crime. Actors are often interconnected by a complex web of relationships and use various means to transfer, hold and divert funds.

The analysis also showed that illegal environmental economies and associated illicit flows can be dynamic, and able adapt to disruptions. This makes quantifying IFFs especially challenging. Existing estimates that attempt to quantify and monetize IFFs from environmental crime have therefore either been descriptive only or are highly aggregated macro-level assessments that use broad frameworks, sometimes leading to significant over- or under-estimates.[103] However, there is significant benefit to 'putting a number on environmental crime', as quantifying this criminal economy can raise awareness about the harms inflicted on communities and the true cost diverted out of economies. By comparing these costs with state financial resources available for infrastructure, healthcare or education, for example, one can add a sense of urgency and help attract political will to tackle the phenomenon.

Following previous attempts to quantify IFFs related to environmental crime,[104] the calculations below are drawn from multiple – and subjective – data sources and remain tentative. They serve as illustrative scenarios rather than definitive estimates. There are limitations: each estimate is based on incomplete information; they are significantly restricted in terms of the quality of statistical data available. Nevertheless, the calculations offer an attempt to go beyond the anecdotal flow analysis provided in the previous section, which looked at where the value is made and how it is moved rather than its numerical extent. For more detail on how the calculations were produced, please see the annex.

Production gap analysis

The so-called 'production gap method' was used to estimate IFFs from the illicit timber trade from Myanmar to China. Comparing hardwood production in Myanmar to domestic demand and exports, the hypothesis was: total production of a product minus domestic consumption minus product in stock and storage should equal exports. Large differences would point to an unexplained production gap, which could be attributable to undeclared product. So, although this is not definitive proof of illegality, it is a significant gap between official export figures and the domestic demand and exports totals.

Data used for this analysis was accessed, among others, from Global Forest Watch, UN FAO STAT, official import and export statistics published by UN COMTRADE and information on auctions by Myanmar's Timber Enterprise, the state-owned enterprise that manages forestry for the Union Government of Myanmar. Significant data limitations, however, remain. For example, the UN FAO methodology for estimating production is not completely clear, and the domestic consumption figures are older numbers. The stock figures are also unknown at this stage.

Production estimate method	2015	2016	2017	2018	2019
Industrial roundwood price average (US$)[105]	80	80	90	95	85
Industrial roundwood production less export[106] (million m^3)	4 (=US$320m)	4 (= US$320m)	4 (= US$320m)	4 (= US$320m)	4 (= US$320m)
Less domestic consumption (million m^3)[107]	2.6 (= US$208m)	2.6 (= US$208m)	2.6 (= US$208m)	2.6 (= US$208m)	2.6 (= US$208m)
Net = production gap estimate (million m^3)	1.4 (= US$112m)	1.4 (= US$112m)	1.4 (= US$112m)	1.4 (= US$112m)	1.4 (= US$112m)
Production gap estimate (US$ million)	**112**	**112**	**126**	**133**	**119**

FIGURE 5 Production estimate of illicit timber, Myanmar–China.[108]

Nevertheless, the production gap analysis uncovered significant illicit flows from Myanmar to China, estimated to be worth between US$112 million and US$133 million annually from 2015 to 2019. As well as the direct harm of the illicit trade on the environment and local livelihoods, this also undermines the fiscal health of Myanmar. As previously mentioned, there is evidence that the special goods tax for hardwood and the customs tariffs are not paid at all or not paid in full, resulting in US$30 million of unpaid taxes and tariffs, as well as significant corrupt payments. More details and calculations on possible taxes evaded are provided in the annex.

Third party estimate

The illicit ruby flow value was derived from a rough estimate made by a third party of the illicit production. This included a correlation of official import and export statistics provided by UN COMTRADE as well estimates provided by the Thai gemstone authorities, according to which much as 70%–80% of rubies entering Thailand are from Mozambique.[109] In addition, two separate experts estimated the value of the illegal ruby trade to be 'around the same value as what is sold legally in auctions'.[110]

	2014	2015	2016	2017	2018	2019	2020
Official exports MOZ-Thai[111]	0	0	0	0	0	US$18.3 million	0
Official imports to Thailand from MOZ[112]	US$1 million	US$3 million	US$3 000	US$114 286	US$223 717	US$4.9 million	US$5.5 million
1. Estimate 70%–80% of rubies in Thailand come from Mozambique – the vast majority do not show up in the official trade statistics.[113]	US$240.9–275.3 million (official number US$1 million)	US$246.9–282.1 million (official number US$3 million)	US$128.9–147.3 million (official number US$3 000)	US$129.2–147.7 million (official number US$114 286)	US$143.1–173.5 million (official number US$ 223 717)	US$271.1–309.8 million (official number 4.9 million)	US$132.9–151.9 million (official number US$ 5.5 million)
2. Estimate Mirror statistics (Thai gem imports minus Mozambique exports)[114]	US$1 million	US$3 million	US$3 000	US$114 286	US$223 717	US$13 million	US$5.5 million
3. 'Gemfields estimate'[115]	2009–2021: total of US$650 million.						
4. Expert estimate suggesting the illegal market is as big as official exports from Mozambique[116]	Approx. US$81 million	Approx. US$89 million	Approx. US$100 million	Approx. US$96 million	Approx. US$128 million	Approx. US$121 million	

FIGURE 6 Official trade data and historic estimates of the illicit ruby trade.

The illicit gems market in Mozambique was therefore estimated to be worth between US$80 million and US128 million annually, of which between 70% and 90% flows to Thailand. In addition, it is likely that between US$4.8 million and US$7.6 million is lost annually from the tax on mining production in Mozambique alone, in addition to lost tariffs from stones that are either smuggled across the border or mis-declared as well as significant corrupt payments. More details and calculations on possible taxes evaded are provided in the annex.

Missing import figure calculation

The estimate for illicit abalone flows from South Africa to Hong Kong SAR was derived from 'missing' import figures from southern African countries. While UN COMTRADE statistics on trade between Hong Kong SAR and South Africa revealed relatively little of the illicit trade between the two countries, Hong Kong SAR shows significant imports of abalone from other southern African countries, such as Namibia, Zimbabwe, Zambia and the Democratic Republic of Congo.[117] UN COMTRADE statistics show that these transit countries do not report exports of dried abalone[118] – besides a small volume from Namibia to Hong Kong SAR – but the mirror statistics (declared imports by Hong Kong SAR) demonstrate significant volumes from land-locked Zambia and Zimbabwe from 2017 to 2020. The data also appears to be inversely correlated, with the volumes going up in Zimbabwe while going down in Zambia, and vice versa, which could suggest that the two countries are used as twin alternative transit points. Seizure data and previous research by TRAFFIC and the GI-TOC support this estimate.

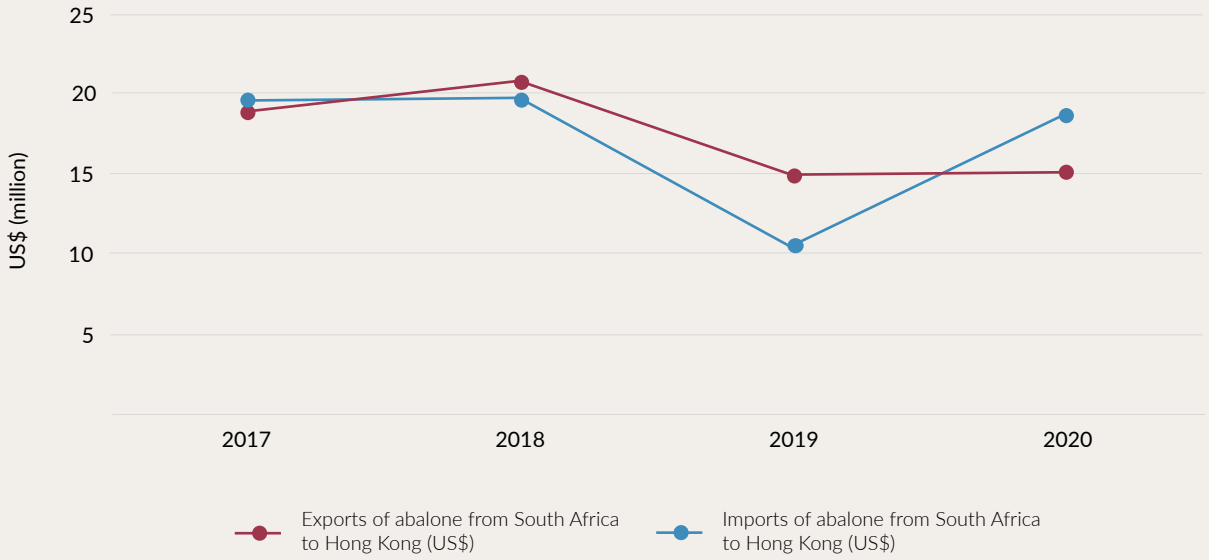


FIGURE 7 Import and export 'mirror' trade statistics of dried abalone, Hong Kong SAR to South Africa and South Africa to Hong Kong SAR.

SOURCE: UN Comtrade

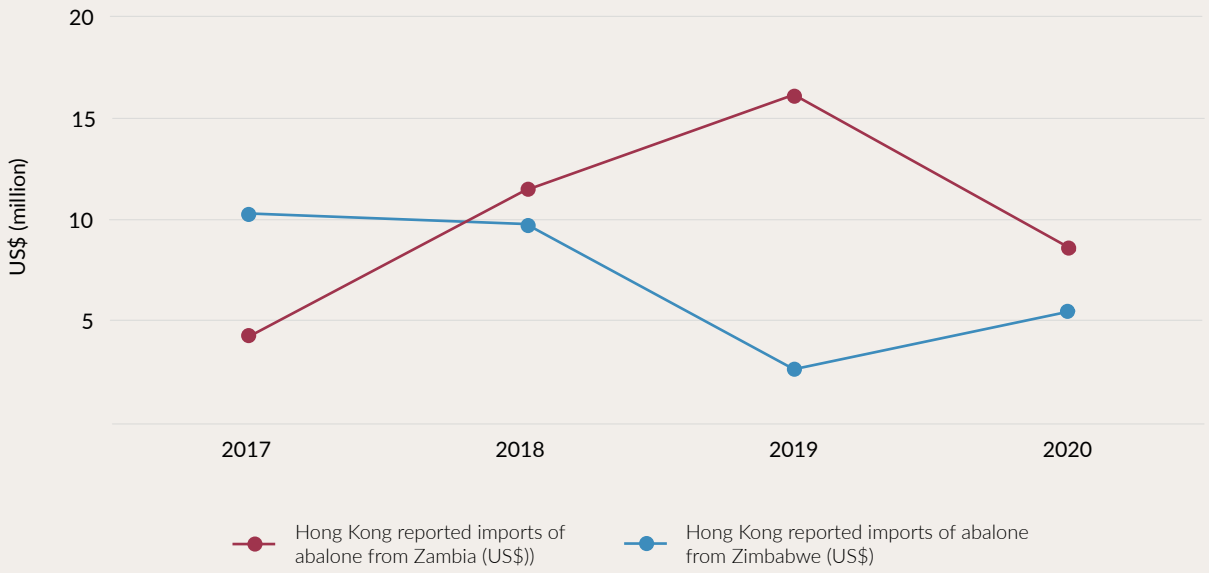


FIGURE 8 Hong Kong SAR reported imports of dried abalone from Zimbabwe and Zambia.

SOURCE: UN Comtrade

The calculation led to an estimate of around between US$14 million and US$21.3 million of illegal abalone being trafficked through Zambia and Zimbabwe per year between 2017 and 2020. Given the lack of official export declarations by these countries, it is believed that up to 100% of the flow is illegal. While both South Africa and Hong Kong SAR do not levy import or export taxes on abalone, the entire illegal supply chain in South Africa, via Zimbabwe and Zambia, is a non-tax-paying enterprise, with both personal and corporate taxes being evaded by poachers, dryers, transporters, middlemen and traders.[119]

OBSERVATIONS AND POLICY IMPLICATIONS

By looking at these three case studies involving IFFs from environmental crime, and counting the costs of each, we can establish that while the most of the illicit profits are generated and laundered in the countries of destination, IFFs have a damaging impact not only on the environment, but also on economies, societies and livelihoods of communities around the world.

The network approach followed here provides insight into the complexity of relationships of the criminal actors involved, their interlinkages, and the multiple services providers operating at different points along the supply chains. Rather than adding up the profits made by actors along the criminal supply chain, with a clear order and direction in which the environmental commodities are trafficking and money is returned, it showed that value related to environmental crime is held and moved by various means – such as cash, barter and hawala; trade mis-invoicing; and the banking system – with many actors using various systems.

Any impactful response to IFFs will therefore need to focus on all three channels and go beyond the current approach of suspicious transaction reporting by banks and improving the mechanisms within the formal economy to follow the money, including through FATF. While this applies to countering IFFs generally, there are a number of specific steps needed when it comes to combating IFFs related to environmental crime.

Among these is the need to place more attention on capacity building of law enforcement and border officials in order to detect illegally sourced environmental commodities, and better understand and estimate their value. It will also require closing the legal loopholes that allow related illicit proceeds to enter the financial system, secure a 'predicate crime' status for environmental crime, and to improve the transaction profiling undertaken by financial institutions.

Quantifying IFFs is challenging, and the analysis provided in this brief is limited to data that can be observed publicly, rather than from looking inside a financial system. In addition, given the diversity of the case studies and limited data available, it is clear that there is no one-size-fits-all approach to researching environmental crime. This was recently reconfirmed by UNCTAD and UNODC, which published the first-ever national estimates on selected IFFs in June 2023.[120] The evidence gathered through a combination of trade flow data, observable production, seizure statistics and estimates, however, shows that the three flows are hiding in plain sight and represent multi-million-dollar outflows

of wealth and resources from the source countries. Therefore, more data-driven research, including creative models and approaches on how to quantify illicit flows and associated illicit proceeds need to be encouraged to raise awareness of the true cost of environmental crime.

It is important to keep in mind that the harms of illegally exported timber, gems or abalone run far beyond the profits generated in the criminal economies themselves. The long-term environmental and social impacts of environmental crime are significant – yet even more difficult to quantify. The effects, both of the criminal activities and the incipient corruption that facilitates the trade, bear a huge cost to society.

There is therefore an urgent need to prioritize environmental crime and raise awareness on the damage that this crime and the IFFs associated with it has on societal development as they are drained out of the economy. The response should include dialogue opportunities between law enforcement officials and forestry, mining and fishery departments, trade associations, the private sector and civil society. Information and experience sharing should be encouraged across all relevant stakeholders.

ANNEX

This annex provides further details on the numbers presented in the research, and explains how the values of flows were calculated.

Illicit flow of timber: Myanmar to China

Official statistics of Myanmar's total wood exports in US dollars from 2011 to 2020 show a significant reduction since 2015, when the government lowered the annual allowable felling quota. Since 2014, the export of raw logs, except through the Port of Yangon, had been banned and the government introduced a one-year moratorium in 2016 on logging (extended to 10 years in the Bago Yoma region). Non-competitive sales of timber were also banned from 2016,[121] which required all timber from Myanmar to be auctioned by the Myanmar Timber Enterprise.

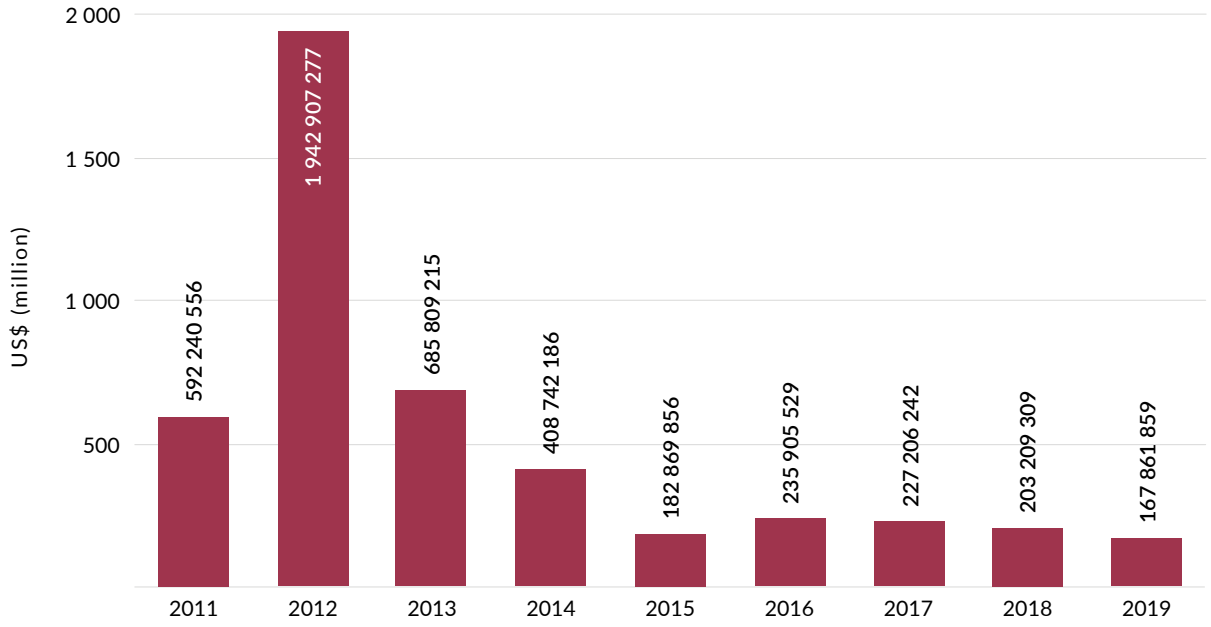


FIGURE 1 Myanmar's total wood exports, 2011–2020 (US$).

SOURCE: UN Comtrade

The timber export figures from Myanmar to China also show a dramatic reduction, despite China's continued demand and overall increase of hardwood imports by 11% per year (by value) from 2010 to 2018.[122] Both Myanmar's export declarations and China's corresponding declared imports show a marked decline in 2015 after most of the Myanmar government measures were introduced.

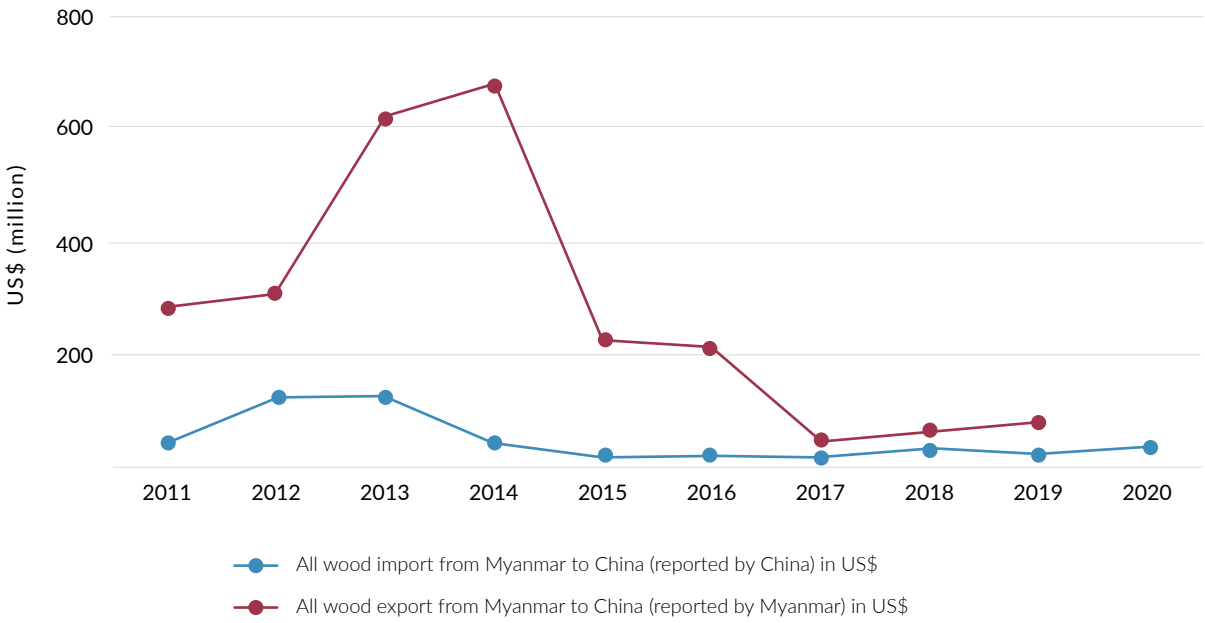


FIGURE 2 Import and export 'mirror' trade statistics of wood products, Myanmar–China.
SOURCE: UN Comtrade

However, key data points show that the illicit activity has continued at pace (even since the coup in February 2021) and has in fact replaced a good deal of the legal flows from 2015.

First, deforestation and timber production appear to be continuing at a high rate. Commercial logging in Myanmar, legal and illegal, has long been cited as the key driver of deforestation in the country – at a rate of 27% since 1990[123] – and the expectation therefore was that the rate of deforestation would decline with the introduction of the government measures. Yet this has stubbornly failed to materialize. Global Forest Watch, an online platform that provides data and tools for monitoring forests, reports a consistent level of deforestation in Myanmar at around 300 000 hectares per year. They attribute roughly one-third of deforestation to over-logging.[124] Consistent with the reported rates of deforestation, the UN Food and Agriculture Organization (UN FAO) estimates annual production of timber products in Myanmar at a continued significant (albeit reduced) level of production after 2015, of more than 4 million m^3 per year.

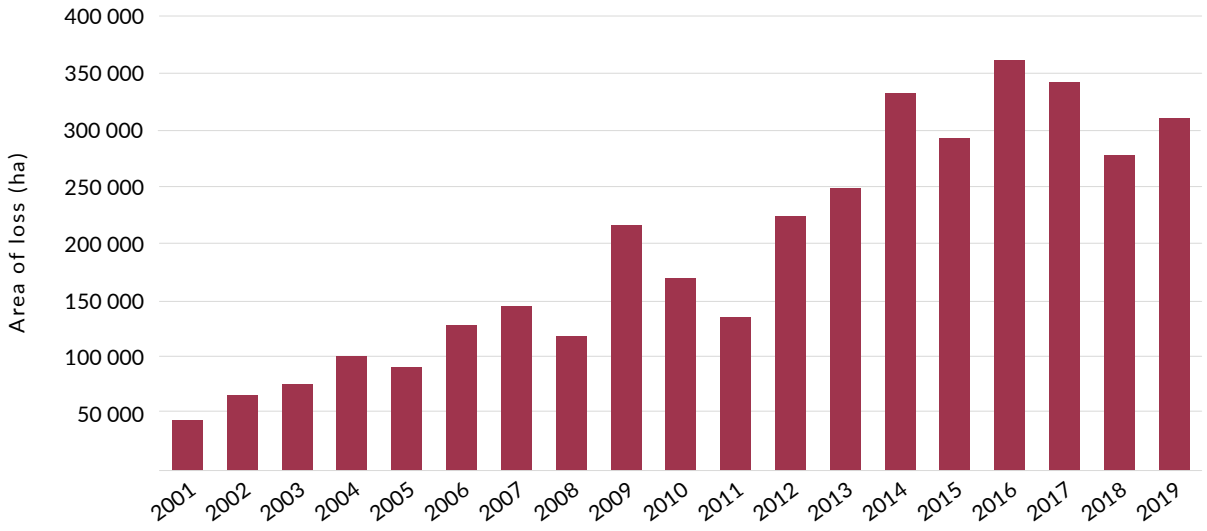


FIGURE 3 Annual loss of forests in Myanmar.

SOURCE: Global Forest Watch, 2020 (from Forest Trends)

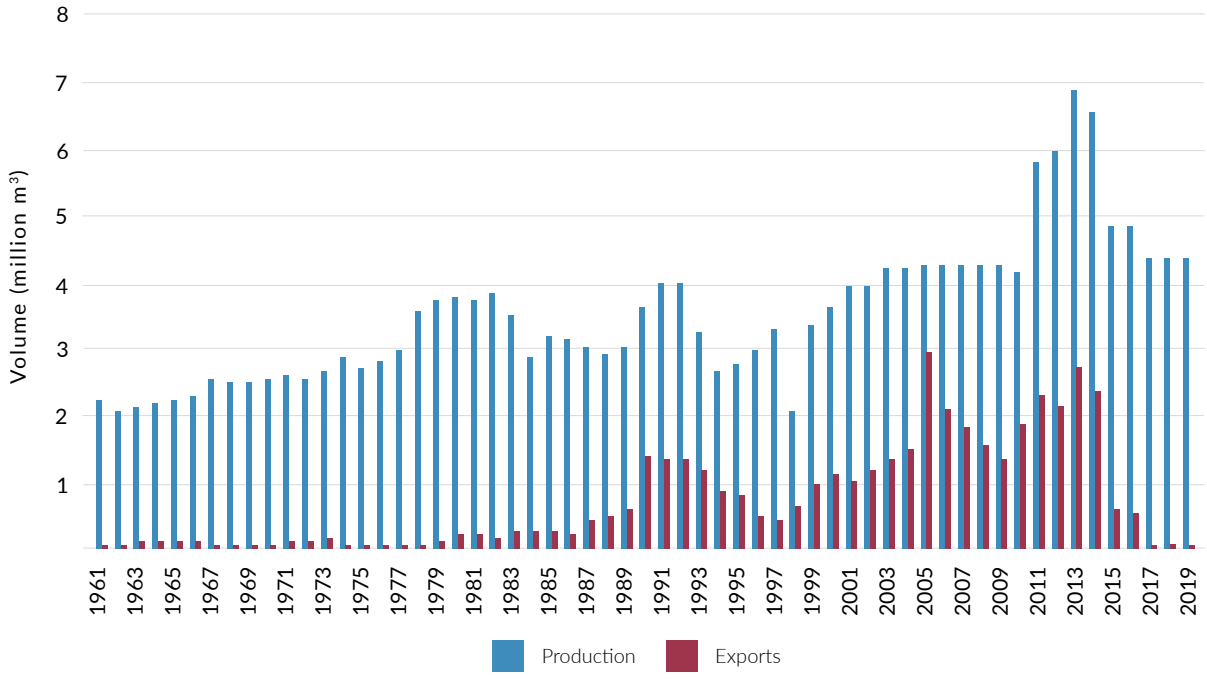


FIGURE 4 Production and exports of industrial roundwood in Myanmar.

SOURCE: Forest Trends quoting FAOSTAT: 'Industrial roundwood' is an umbrella term for a range of hardwood products

Second, China often reports much higher imports of timber products from Myanmar than Myanmar's reports on corresponding exports to China. As can be seen in Figure 4, UN FAO (relying on data from Chinese customs until 2017) reported higher values of timber exports than Myanmar government sources. This adds to the suspicion that the export figures are materially understated.[125] Similarly, the 'mirror' statistics from UN Comtrade (see Figure 2) show a dramatic difference between the exports of timber *to* China that Myanmar reports, and the imports of wood China reports *from* Myanmar. Differences in mirror statistics can often be explained by different pricing conventions recorded on each side of the border (one side might record the value without including transportation and insurance costs, while the other might include both in the data).[126] However, in this case, the magnitude of the difference – China often reporting imports that are up to five times the value of Myanmar's exports – does lead to a suspicion that exports are being under-reported, and significant volumes are being left out of the official figures.

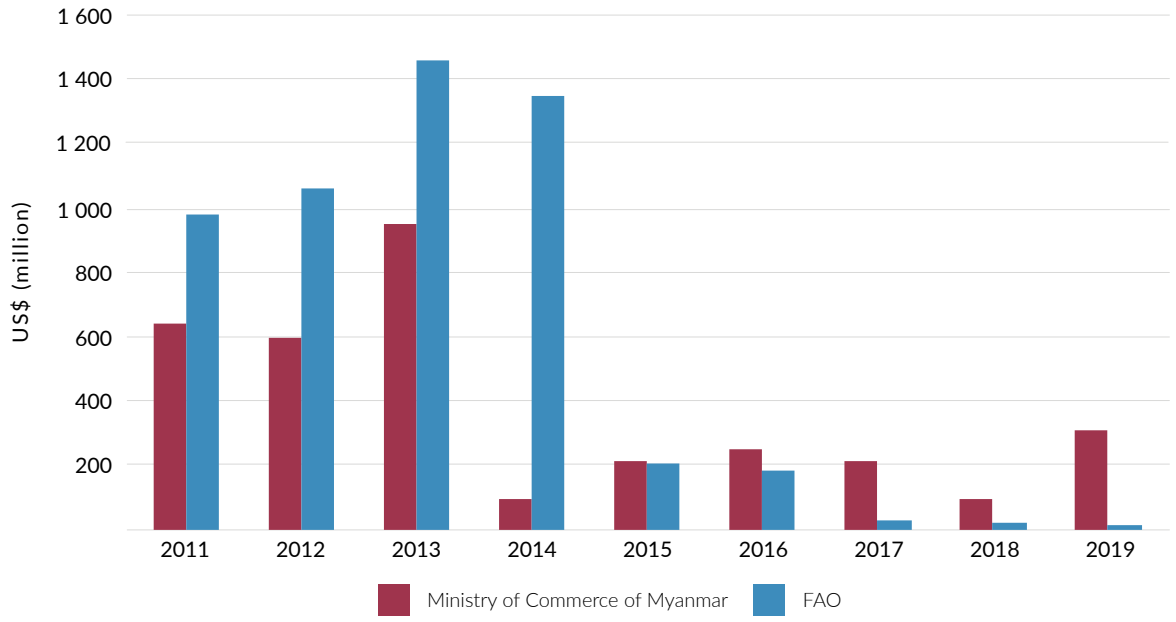


FIGURE 5 Exports of forest products reported by the Ministry of Commerce, Myanmar and UN FAO.

SOURCE: Forest Trends analysis and as stated

Third, following economic principles, if the supply becomes scarce, prices should have gone up, but they have not. Prices of wood in auctions by Myanmar Timber Enterprise do not follow a pattern that would normally be associated with dramatically increasing scarcity, which is what the export statistics show. According to the analysis of auctions below, prices have remained relatively stable from 2013 to 2020. It is also important to note that the direct sales (i.e. non-auction) made by Myanmar Timber Enterprise in the same period appear to be at an uncompetitively low rate.

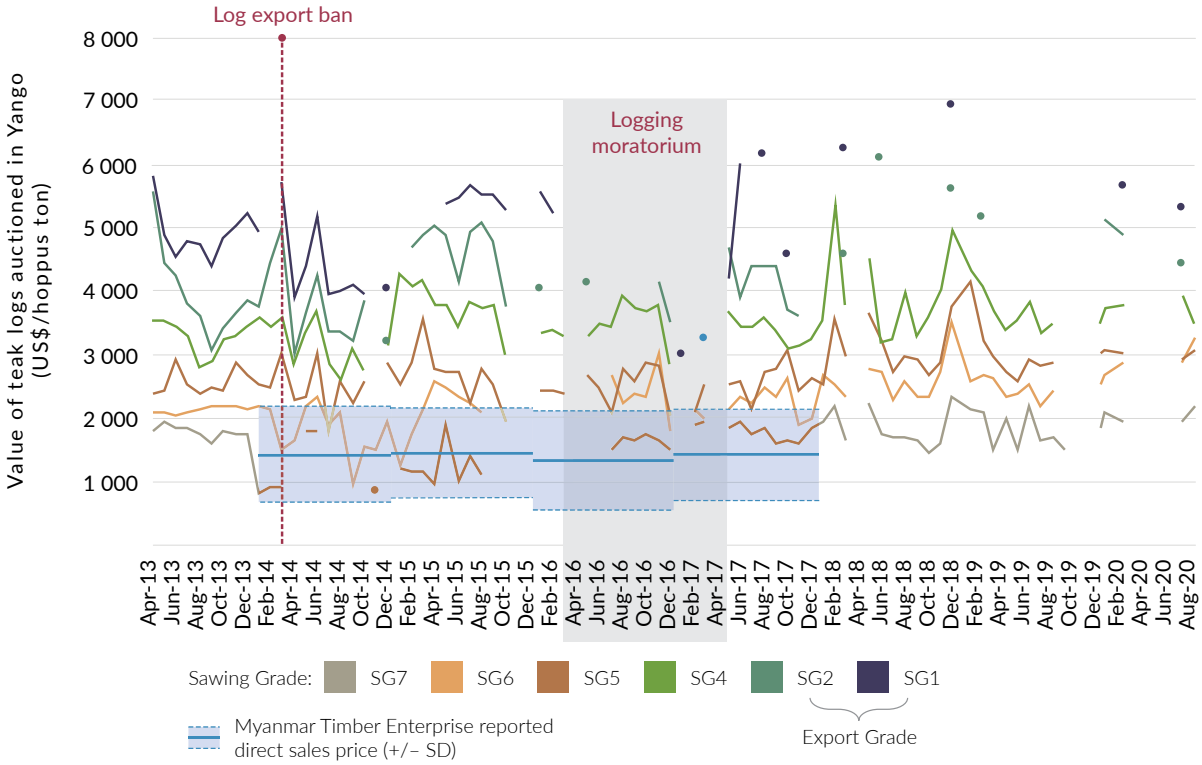


FIGURE 6 Auction prices recorded for teak by Myanmar Timber Enterprise.

SOURCE: Forest Trends and as stated

Fourth, while seizure statistics are always challenging to interpret, as they can be the result of increased logging activity and/or increased law enforcement attention, among others, it is striking to note the proportion of seizures mentioning hardwoods, especially rosewood and teak. This confirms the value attributed to these products by final consumers. The number of cases reported in the Wildlife Trade Portal, an interactive tool that displays TRAFFIC's open-source wildlife seizure and incident data, is still high throughout the period from the regulatory crackdown in 2015 up to 2021, and suggests that nearly all environmental crime associated with Myanmar consists of trafficking in timber.[127]

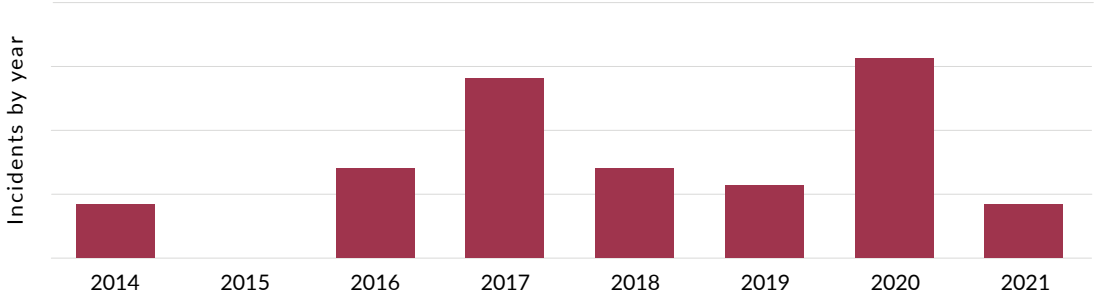


FIGURE 7 TRAFFIC Wildlife trade portal.

SOURCE: World Wildlife Trade Portal, TRAFFIC database

Third-party estimates of the value of illegal timber trade to China are summarized in Figure 8. As can be seen from the range, estimates vary wildly – from billions to a few million dollars annually – and their derivation is often unclear. Therefore, we developed an alternative approach in our 'production gap' method (Figure 9).

	Sources/ notes	2014	2015	2016	2017	2018	2019
Official export MYA-CHI (reported by Myanmar)[128]		US$40.5m	US$16.6m	US$20.5m	US$18.1m	US$34.0m	US$24.9m
Illegal estimates (percentage)	US$600m[129]	72% based on trade dis-crepancy[130]		75% – no derivation[131]			
Illegal estimates	**US$180m**[132]	**US$200m annually**[133]					**US$10bn** [134]

FIGURE 8 Historic estimates of illegal trade.

SOURCES: various as shown; GI-TOC analysis

Production estimate method	2015	2016	2017	2018	2019
Industrial roundwood price average (US$)[135]	US$80	US$80	US$90	US$95	US$85
Industrial roundwood production less export[136] (million m^3)	4 (=US$320m)	4 (=US$320m)	4 (=US$320m)	4 (=US$320m)	4 (=US$320m)
Less domestic consumption (million m^3) [137]	2.6 (= US$208m)	2.6 (= US$208m)	2.6 (= US$208m)	2.6 (= US$208m)	2.6 (= US$208m)
Net = production gap estimate (million m^3)	1.4 (= US$112m)	1.4 (= US$112m)	1.4 (= US$112m)	1.4 (= US$112m)	1.4 (= US$112m)
Production gap estimate (US$ million)	**US$112**	**US$112**	**US$126**	**US$133**	**US$119**

FIGURE 9 Authors' production estimation of illicit timber Myanmar–China.

METHODOLOGICAL NOTE: For timber we have first put a value on the UNFAO's industrial roundwood production estimates by taking the volume and using average prices from UNFAO statistics. We have also taken account of domestic consumption of these woods. We have found one study that offers a 65% figure for domestic demand. Another source attributed the entire difference in production and exports to domestic consumption, referencing International Tropical Timber Organization (ITTO) as a source. However, ITTO does not report consumption data. This, and the fact that the amount appears to be a 'balancing figure' of domestic consumption, casts doubt. Comparing these production figures, of over around 4 million m^3, less domestic demand, with the negligible official exports of this product shows a stark gap of over US$100 million per annum from 2015 to 2019. We have not been able to calculate how much logged wood, net, is put into storage or stock (which would also increase domestic consumption) but our understanding is this is a small figure, as loggers need to get a relatively quick return for their efforts.

Tax evasion

The calculation below presents an illustrative estimate of the Myanmar export and product taxes that would be evaded if the production gap estimate is accurate. The estimates only cover two areas of taxation – the special goods tax for hardwood and the customs tariff. It is reasonable to assume that other areas of corporate taxation (for example, the tax normally paid on the profits of corporations) and personal taxation (employment taxes) are likely to be similarly evaded, but it is not possible to estimate their value on the basis of the information that is available. On the Chinese side, a tax evasion figure has not been estimated, due to the conflicting evidence of payment of taxation.

Total illicit trade	Rate	2015	2016	2017	2018	2019
Production gap estimate (US$ million)[138]		112.00	112.00	126.00	133.00	119.00
Special goods tax for hardwood[139]	10%	11.20	11.20	12.60	13.30	11.90
Customs tariff[140]	15%	16.80	16.80	18.90	19.95	17.85
Total estimation evaded US$ million		**28.00**	**28.00**	**31.50**	**33.25**	**29.75**

FIGURE 10 Potentially evaded taxes.

NOTE: Other taxes potentially evaded in Myanmar include corporate income tax (25%),[141] personal income tax (25%)[142] and commercial tax (5%).[143] In China potentially evaded taxes include customs duty (different rates)[144] and value added tax (13%).[145]

Illicit flow of rubies: Mozambique to Thailand

Thailand exported around US$5.4 billion worth of gemstones and jewellery items in the first four months of 2022.[146] It is the world's leading exporter of rubies, accounting for over a third of the country's precious-stone exports by value,[147] and it is estimated that between 80%[148] and 90%[149] of coloured gemstones worldwide pass through Thailand for cutting and quality enhancement. More than 15 000 businesses are involved in the Thai gems and jewellery industry, employing 1.3 million people.[150]

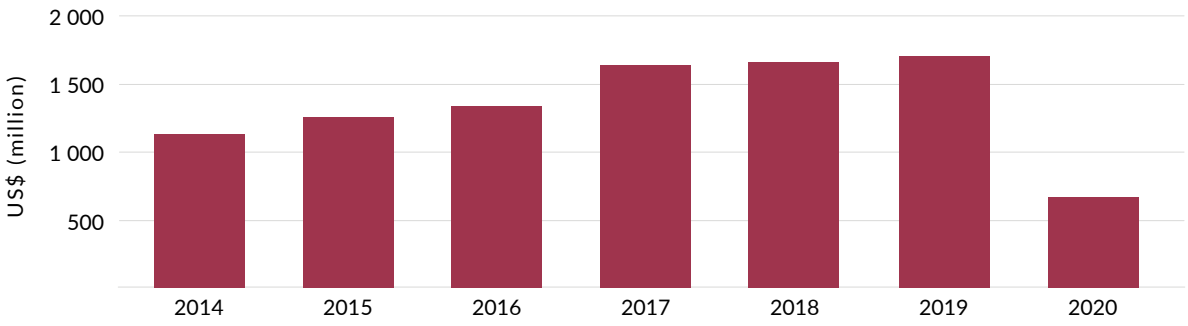


FIGURE 11 Thai exports of stones, rubies, sapphires and emeralds, worked, not strung, mounted or set, US$ million.

SOURCE: UN Comtrade, HS 710391

The first official exports of rubies, sapphires and emeralds from Mozambique were recorded in 2014, cumulatively worth US$689.1 million from 2014 to October 2021.[151] Since the beginning of its operations (until January 2022), MRM alone has sold over US$731.5 million worth of rubies.[152] MRM stopped mining operations for one year in 2020 but returned with a series of seven small and sequential ruby auctions in March and April 2021, which were valued at US$58.9 million.[153] Another series of ruby auctions was successfully completed in November–December 2021, with total auction revenues of US$88.4 million.[154] In light of MRM's de facto monopoly of the ruby industry in Mozambique, it is also important to point to their position as the source of mining data.

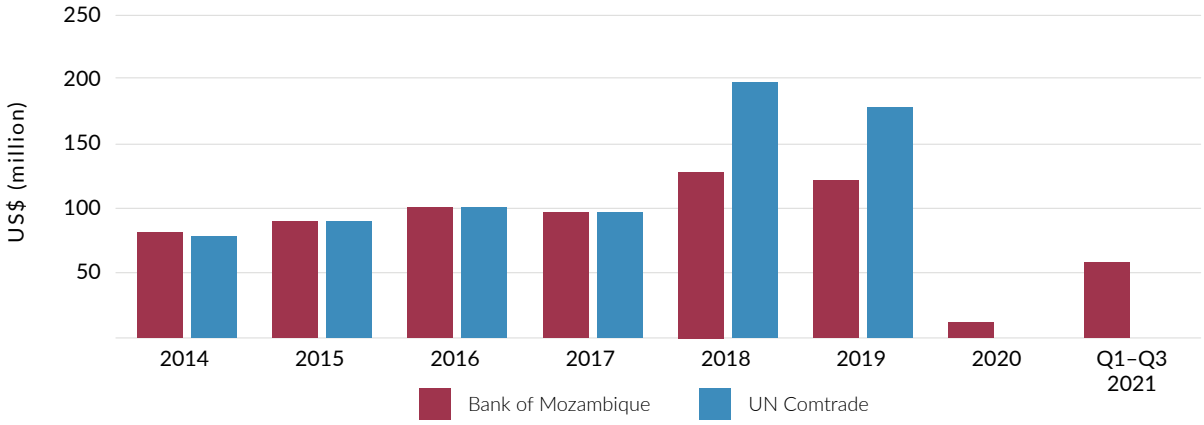


FIGURE 12 Export of rubies, sapphires and emeralds from Mozambique, in US$ million.

NOTE: Data of the Bank of Mozambique reflects MRM company statistics. The differences compared to UN Comtrade statistics could be due to differences in timing or to the categories used to record the trade.

SOURCE: Bank of Mozambique and UN Comtrade. UN Comtrade does not provide any data from 2020 or 2021 at the moment.

Several key data points lead us to believe that in addition to the official exports, there is a significant quantity of rubies being smuggled from Mozambique to Thailand (see Figure 13).

	2014 (US$ million)	2015 (US$ million)	2016 (US$ million)	2017 (US$ million)	2018 (US$ million)	2019 (US$ million)	2020 (US$ million)
Official exports MOZ-Thai[155]	0	0	0	0	0	18.3	0
Official imports to Thailand from MOZ[156]	1	3	3 000	114 286	223 717	4.9	5.5
1. Estimate 70%–80% of rubies in Thailand come from Mozambique – the vast majority do not show up in the official trade statistics.[157]	240.9–275.3 (official number: 1)	246.9–282.1 (official number: 3)	128.9–147.3 (official number: 3 000)	129.2–147.7 (official number: 114 286)	143.1–173.5 (official number: 223 717)	271.1–309.8 (official number: 4.9)	132.9–151.9 (official number: 5.5)
2. Estimate mirror statistics (Thai gem imports minus MOZ exports)[158]	1	3	3 000	114 286	223 717	13	5.5
3. Gemfields estimate[159]	2009–2021 total: US$650 million						
4. Expert estimate suggesting the illegal market is as big as official exports from Mozambique[160]	Approx. 81	Approx. 89	Approx. 100	Approx. 96	Approx. 128	Approx. 121	

FIGURE 13 Official trade data and historic estimates of the illicit trade.

First, Thai gemstone authorities estimate that as much as 70–80% of rubies entering Thailand are from Mozambique.[161] From 2014 to 2020, Thailand reported importing between US$184 million and US$387 million annually of rubies, sapphires and emeralds.[162] If 70% were from Mozambique, then his would mean Thailand could actually be importing between US$128.80 million and US$270 million in rubies, sapphires and emeralds per year. This is more than the total official exports of rubies, sapphires and emeralds from Mozambique. In addition, official imports by Thailand from Mozambique, are as low as between US$3 000[163] and US$5 million annually – meaning the vast majority of rubies entering Thailand are probably undeclared.

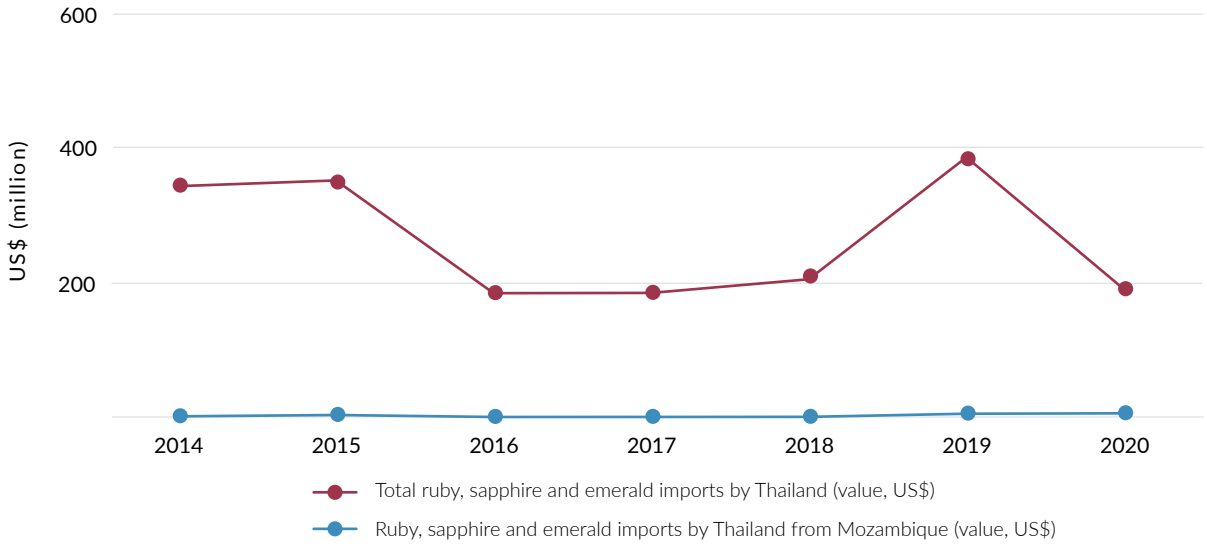


FIGURE 14 HS code 710391 total value of imports to Thailand and imports by Thailand from Mozambique.
SOURCE: UN Comtrade

Second, experts in coloured gemstones have estimated the value of the illegal ruby trade to be 'around the same value as what is sold legally in auctions'.[164] This also corresponds to calculations made by Gemfields, the majority shareholder of MRM. In a report published in 2021, the company estimated the illegal trade between 2009 and April 2021 to be worth US$650 million.[165] 'Currently our exports make up 94% of the statistic,' explained a Gemfields representative. He added: 'Were the illegal trade in rubies to be included, it would decrease to 50%.'[166]

Third, similar conclusions can be drawn by 'mirroring' data from the UN Comtrade database. Although official ruby exports from Mozambique commenced as recently as 2014, experts reported that the Mozambican ruby had already started to become widely available on the Asian market in 2009/2010 with the first stones likely to have come from the Niassa reserve via Tanzania. Thai buyers and traders previously based in Tanzania also moved to the reserves near Montepuez.[167] Given that many stones required enhanced treatment, they were sent to Thailand to be treated, cut and sold in the trading centres of Bangkok and Chanthaburi.

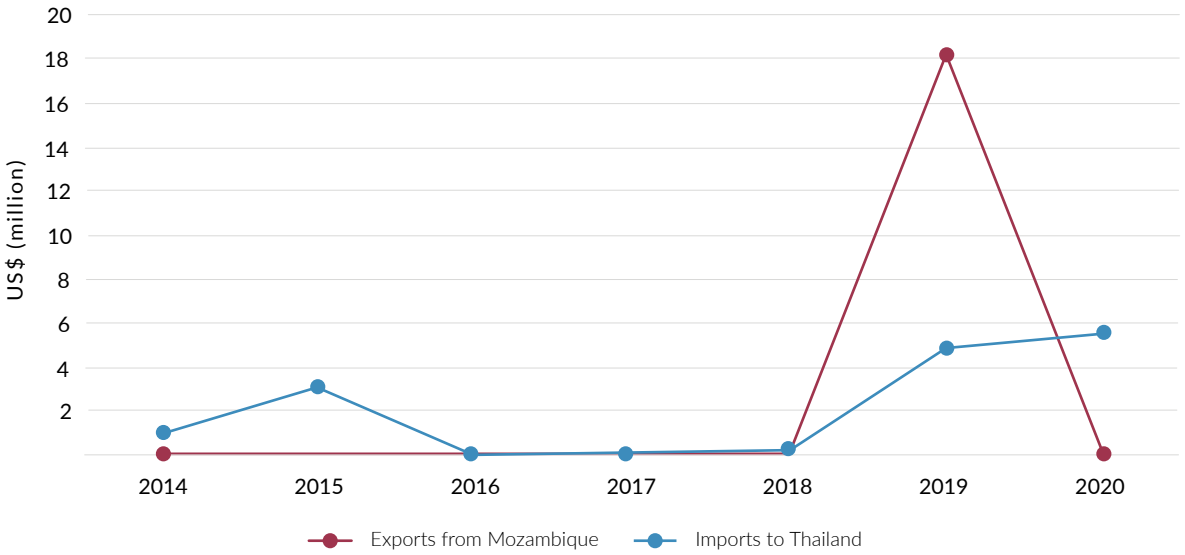


FIGURE 15 HS code 710391 Mozambique ruby exports to Thailand vs Thai ruby imports from Mozambique, US$.

NOTE: The differences as compared to UN Comtrade statistics could be due to timing or the categories used to record the trade. For example, Mozambique exports from 2019 may be recorded as Thai imports only in 2020.

SOURCE: UN Comtrade

Tax evasion

The calculation given below on taxes evaded is an illustrative example based on the above estimates according to which the illicit market is worth around the same as official export statistics – between US$80 million and US$128 million annually.

	Rate	2014	2015	2016	2017	2018	2019
Estimate of the illicit flow from Mozambique[168]		Approx. US$81 million	Approx. US$89 million	Approx. US$100 million	Approx. US$96 million	Approx. US$128 million	Approx. US$121 million
Tax on mining production[169]	6%	US$4.86 million	US$5.34 million	US$6 million	US$5.76 million	US$7.68 million	US$7.26 million

FIGURE 16 Illustrative calculation of taxes potentially avoided in Mozambique.

NOTE: Other taxes that are potentially evaded in Mozambique include income tax (income tax bands range from 0% to 32%), social security contributions, mining licences and mineral treatment licences.

Illicit flow of abalone: South Africa to Hong Kong SAR

Hong Kong SAR imports more than 6 000 tonnes of abalone (*H. midea*) per year, with the total annual value declared at over US$250 million.[170] In 2020, Hong Kong SAR imported abalone from more than 20 countries around the world. Abalone is traded in live, fresh, frozen, canned and dried form, and while at sale no distinction is made between different abalone species, there is a clear differentiation between country of origin.[171] Dried abalone, when converted into whole mass, makes up just under a third of all imports of abalone into Hong Kong SAR, with 52% of dried abalone reportedly sourced from South Africa.[172] Given that *H. midae* is endemic to South Africa and legally produced at a single aquaculture facility in Namibia,[173] and given that dried abalone is also easier to smuggle,[174] we focus here on dried abalone along smuggling routes through other southern African states.

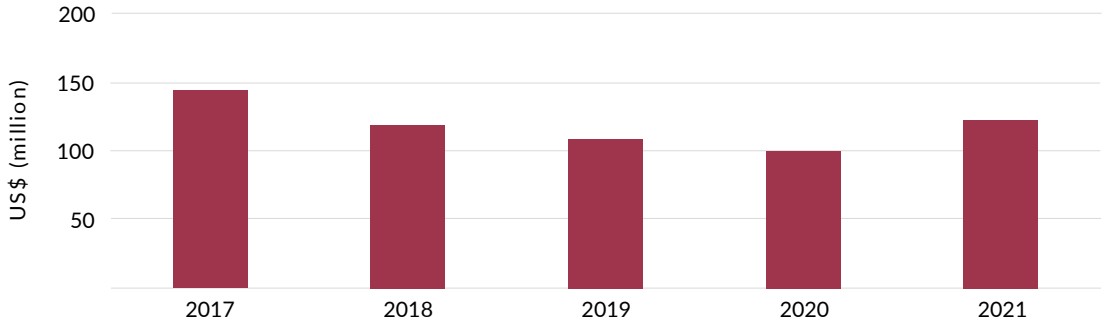


FIGURE 17 Value of Hong Kong imports of abalone (fresh, dried, frozen or other) from other countries, 2017–2021, US$

SOURCE: UN Comtrade

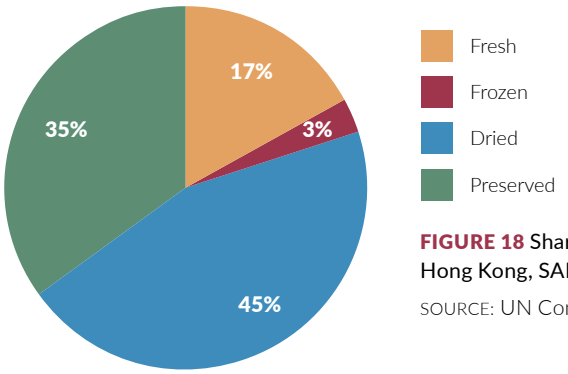


FIGURE 18 Share of abalone exports from South Africa to Hong Kong, SAR reported by South Africa, by type, 2020.

SOURCE: UN Comtrade

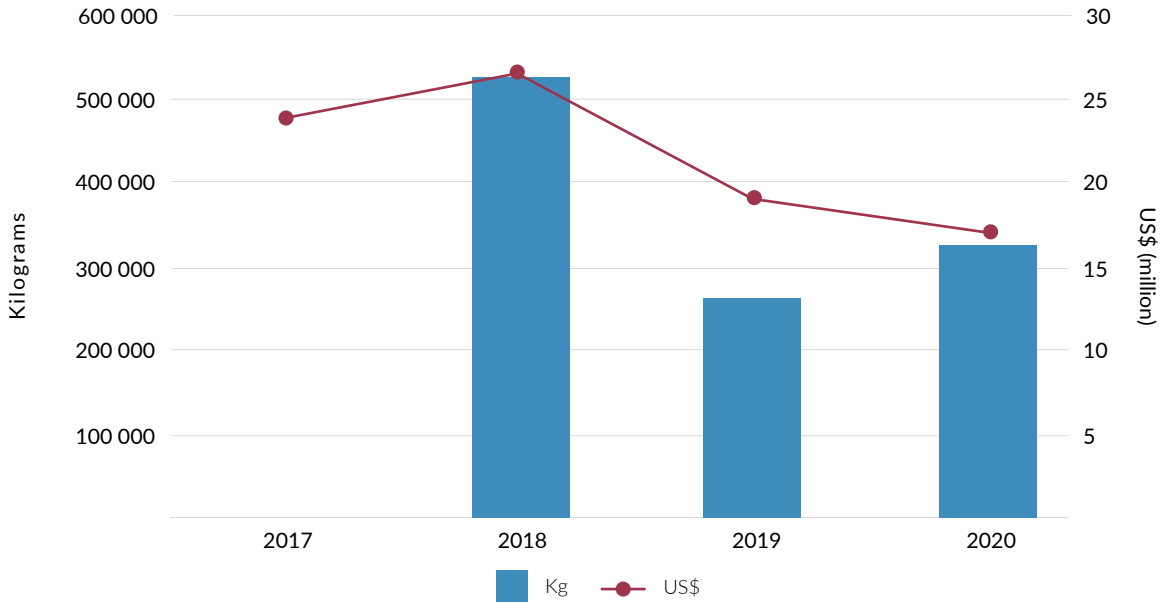


FIGURE 19 Dried abalone exports from South Africa to the world, 2017–2020.

SOURCE: UN Comtrade

The South African abalone aquaculture sector is growing rapidly, producing close to 2 000 tones of abalone annually.[175] The allowed harvest quota for wild abalone, on the other hand, has been significantly reduced and currently is less than 100 tonnes per year.[176] Several key data points lead us to believe that in addition to official exports, there are significant quantities of abalone being poached and smuggled from South Africa to Hong Kong SAR, Macao and China (see Figure 20).

	2017	2018	2019	2020
Official export SA–HK dried abalone[177]	US$18.7m	US$20.5m	US$14.7m	US$14.8m
Illegal estimates overall	US$50–90 million annually from all southern African exporters to world.			
TRAFFIC[178]	US$891 million from 2000 to 2016			
Presumed illegal South African abalone from Zambia and Zimbabwe to Hong Kong SAR[179]	US$14.8m	US$21.3m	US$18.8m	US$13.9m

FIGURE 20 Historical estimates of illegal trade and production-based estimates.

First, Asian demand for dried abalone remains high, as this is the largest category by value and weight (even though the drying process is thought to remove 90% of the weight of fresh abalone)[180] and there is evidence that dried *H. midae* is smuggled not only from South Africa to Hong Kong SAR, but also across the border to neighbouring countries (particularly Lesotho, Namibia, Mozambique, Zambia, DRC and Zimbabwe), where it can easily be laundered into licit trade flows.[181]

Second, current UN Comtrade statistics on trade between Hong Kong SAR and South Africa reveal relatively little of the illicit trade between the two countries. The 'mirror statistics' (the imports reported by Hong Kong SAR of this product) of the South African flow of dried abalone, show little difference, and record South Africa as only a moderate provider of abalone. These statistics reflect the official drop in South African exports in the late 2000s, which led to South Africa accounting, in 2008, for only 29% of Hong Kong SAR's imported abalone, from a previous high of over 90%.[182] Since 2008, this 'share' has, according to the official statistics, declined further. Hong Kong SAR is still importing a consistently high level of abalone from global suppliers – about US$120 million per annum, and yet the official trade statistics report only US$15–20 million annually coming from South Africa.

However, Hong Kong SAR shows imports of abalone from other southern African countries, which include flows from South Africa to Namibia, then Zimbabwe, Zambia and the DRC.[183] Meanwhile, UN Comtrade statistics show that these transit countries do not report exports of dried abalone (apart from a small volume from Namibia to Hong Kong SAR). But the mirror statistics (i.e. the declared imports by Hong Kong SAR) show significant volumes from landlocked Zambia and Zimbabwe from 2017 to 2020. We recognize that poached abalone is likely to be trafficked through various southern African countries but have focused our analysis for this report on the role of Zambia and Zimbabwe.

These high volumes of abalone, totalling between US$14 and US$21 million over the previous four years, are often greater than the total South African figure to Hong Kong SAR. This is particularly surprising, since the countries are landlocked and do not produce abalone.[184] The data also appears to be inversely correlated with the volumes going up in Zimbabwe when going down in Zambia, and vice versa. This could suggest that the two countries are used as twin alternative 'transit' points. Hong Kong SAR also reports importing dried abalone from a number of other countries, including Namibia, Mozambique, the DRC or Angola, but at much lower volumes (below US$1 million to US$1.5 million), which underlines the wide reach of poaching syndicates and the flexibility with which they can potentially shift supply routes.[185]

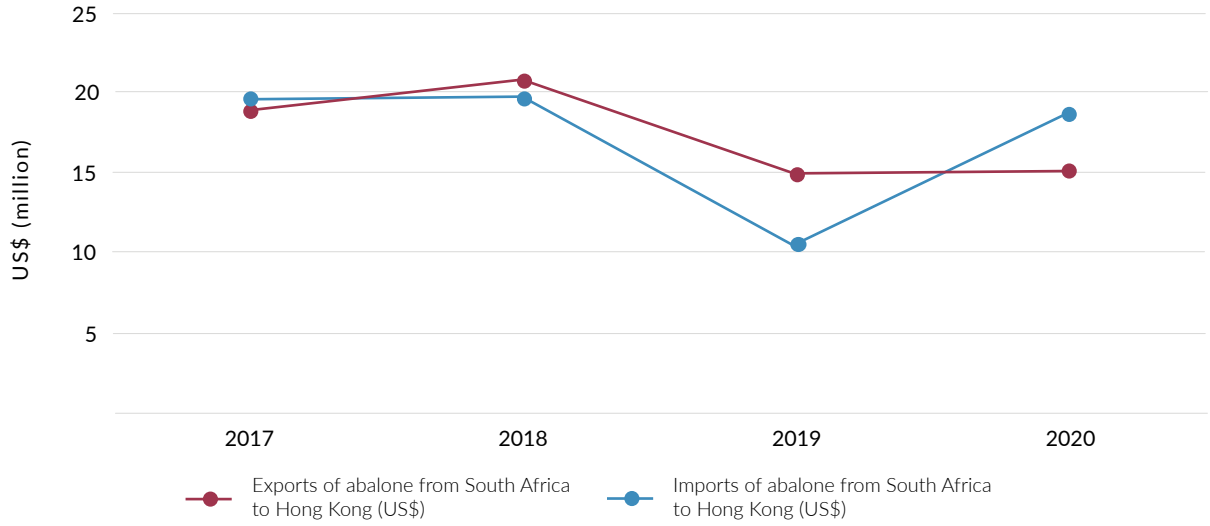


FIGURE 21 Import and export 'mirror' trade statistics of dried abalone, Hong Kong SAR–South Africa and South Africa–Hong Kong SAR.

SOURCE: UN Comtrade

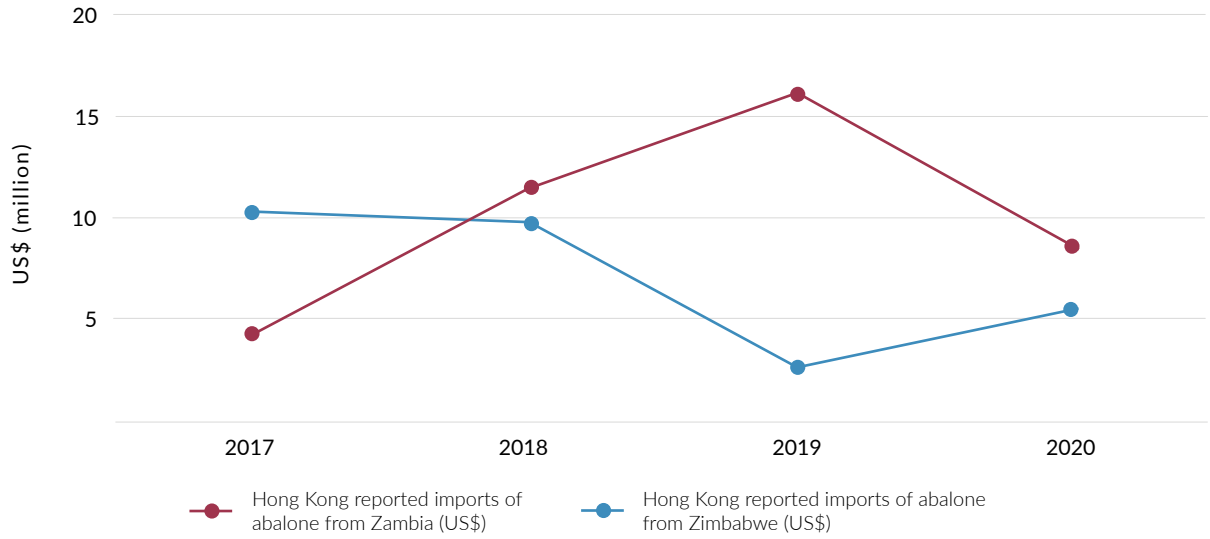


FIGURE 22 Hong Kong SAR reported imports of dried abalone from Zimbabwe and Zambia.

SOURCE: UN Comtrade

Third, in 2018, TRAFFIC also estimated the total legitimate production of abalone from South Africa (from aquaculture and wild capture fisheries) from 2000 to 2016. Comparing the total exports and imports of abalone (of all types) with these production numbers allowed a calculation of the production gap. This led to an estimate of US$891 million of illegal abalone, or around US$60 million annually.[186]

That said, although these numbers refer to numerous southern African countries, South Africa is the sole producer of *H. midae*, except for the small Namibian aquaculture production mentioned above. Put together with previous research findings that found that 52% of all dried abalone imports to Hong Kong SAR were *H. midae* and two-thirds of all *H. midae* imported from South Africa passes through the illicit market, this means that around a third of the dried abalone available in Hong Kong SAR was harvested by poachers in South Africa.[187]

Fourth, seizure statistics also provide significant, albeit circumstantial, evidence of illicit trade. TRAFFIC's wildlife trade portal has reported a growing number of cases in its database but noted that only a few of these seizures are actually made public. These include major volumes of dried product, seized in transit, as well as incidents of raids on illegal drying facilities. Similarly, the South African Revenue Service has previously claimed that it seized 20 or 30 times more abalone than the volumes reported in the media.[188] While there is a track record of seizures in South Africa, the record for seizures in neighbouring countries through which abalone is smuggled remains low, also because they can act only when abalone is misdeclared.[189] Besides Namibian production, abalone is neither a locally produced species nor a priority for enforcement. Although the sale of abalone is not illegal in Hong Kong SAR, there have also been some seizures of suspected smuggled abalone – albeit very limited. For example, in 2019 customs seized various kinds of dried seafood and endangered species, including 12.4 kg of dried abalone.[190] Abalone was also seized in September 2021.[191]

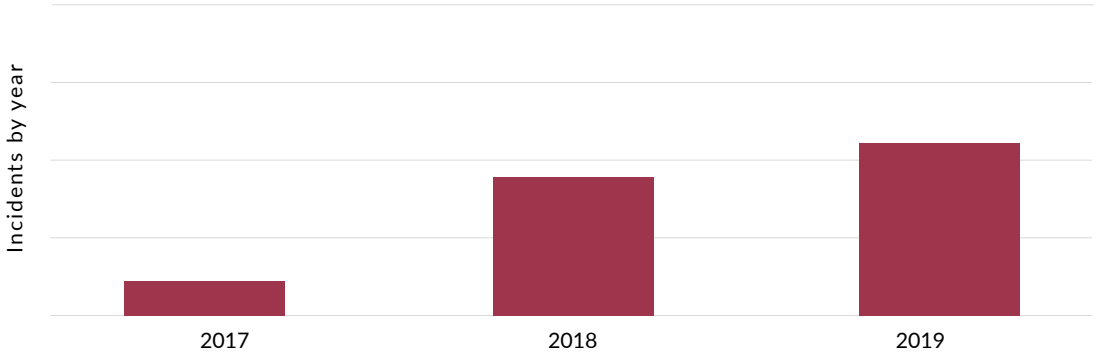


FIGURE 23 TRAFFIC wildlife trade portal seizures by South African authorities.

SOURCE: World wildlife trade portal, TRAFFIC database

Tax evasion

South Africa is zero rated for export tariffs in most abalone products, and this flow is in any case 100% illegal, so we cannot attribute a figure to South Africa. Similarly, Hong Kong SAR is a free port and has a zero-tax policy on almost all imported goods.[192] Thus, export and import tariffs are unlikely to be major categories of tax evasion in this case. However, the entire illegal supply chain in South Africa, and via Zimbabwe and Zambia, is assumed to be a non-tax-paying enterprise. Both personal and corporate taxes are evaded by poachers, dryers, transporters, middlemen and traders. See Figure 24 for an illustrative calculation based on the profits estimated in the previous section.

Total illicit trade	Rate	2017	2018	2019	2020
Zimbabwe and Zambia 'gap' estimate (US$ million)[193]		14.8	21.3	18.8	14.0
Tax: exports zero-rated	%	n/a	n/a	n/a	n/a
Other South African taxes potentially evaded					
Corporate income tax (a 30% profit margin was assumed, which is common for specialized goods)	28%	1.24	1.79	1.58	1.18
Total		**1.24**	**1.79**	**1.58**	**1.18**

FIGURE 24 Potential taxes evaded.

NOTE: The corporate income tax refers to the tax levied on the profits of a company. Other taxes potentially evaded in South Africa are commercial taxes and personal income tax.

SOURCE: SARS, www.sars.gov.za

NOTES

1 The global illicit economy: Trajectories of organized crime, Global Initiative Against Transnational Organized Crime (GI-TOC), March 2021, https://globalinitiative.net/analysis/global-organized-crime.

2 Alastair Macbeath, Disruptive endeavours, Ethical guidance for civil society organizations monitoring and responding to online trafficking in endangered species, GI-TOC, February 2022, https://globalinitiative.net/analysis/ethical-guide-cso-iwt.

3 Summer Walker, Expanding the toolkit to tackle organized environmental crime: Recommendations for the G7 ministers, GI-TOC, June 2021, https://globalinitiative.net/analysis/g7-2021-uk-environmental-crime.

4 Simone Haysom and Mark Shaw, An analytic review of past responses to environmental crime and programming recommendations, GI-TOC, September 2022, https://globalinitiative.net/analysis/responses-environmental-crime.

5 Ibid.

6 RHIPTO, INTERPOL and GI-TOC, *World Atlas of Illicit Flows*, 2018, https://globalinitiative.net/analysis/world-atlas-of-illicit-flows. This figure includes proceeds for forestry crime, illegal mining, waste trafficking, IWT, illegal extraction and theft of oil and crimes associated with illegal fishing.

7 The global illicit economy: Trajectories of organized crime, GI-TOC, March 2021, https://globalinitiative.net/analysis/global-organized-crime.

8 Principally because of its diversity of natural resources, including flora and fauna, minerals and precious stones. See The global illicit economy: Trajectories of organized crime, GI-TOC, March 2021, https://globalinitiative.net/analysis/global-organized-crime.

9 Owing to increased recognition that a 'follow the money' approach needs to be an integral part of any response to organized crime, there have been increased efforts to identify and follow the illicit proceeds of environmental crime. Several research reports have attempted to provide insights into money flows, including, for example, World wildlife crime report: Trafficking in protected species, UNODC, 2020, https://www.unodc.org/documents/data-and-analysis/wildlife/2020/World_Wildlife_Report_2020_9July.pdf; Davyth Stewart et al, Wildlife money trails: Building financial investigations from wildlife and timber trafficking cases in the European Union, TRAFFIC, June 2023, https://www.traffic.org/site/assets/files/21914/wildlifemoneytrails_final.pdf.

10 A predicate offence (or predicate crime) usually refers to an offence that is a necessary element (component) of another offence. For example, when money laundering is defined as the laundering of the proceeds of drug trafficking, it is drug trafficking that is the predicate offence.

11 UNODC, Conceptual framework for the statistical measurement of illicit financial flows, October 2020, https://www.unodc.org/documents/data-and-analysis/ statistics/IFF/IFF_Conceptual_Framework_for_ publication_15Oct.pdf.

12 Tuesday Reitano, Political won't? Understanding the challenges of countering IFFs: A global evidence review, SOC ACE Research Paper No 14, University of Birmingham, https://www.birmingham.ac.uk/documents/college-social-sciences/government-society/publications/political-wont-paper.pdf.

13 Prem Mahadevan, Myanmar's illicit timber: Flows, drivers and actors, GI-TOC, October 2021, https://globalinitiative.net/analysis/myanmar-illicit-timber-flows.

14 Marcena Hunter, Chikomeni Manda and Gabriel Moberg, Scratching the surface: Tracing coloured gemstone flows from Mozambique and Malawi to Asia, November 2021, GI-TOC, https://globalinitiative.net/analysis/gemstone-flows-mozambique-malawi-asia.

15 Kimon de Greef and Simone Haysom, Disrupting abalone harms: illicit flows of *H.midae* from South Africa to East Asia, GI-TOC, February 2022, https://globalinitiative.net/analysis/abalone-south-africa-east-asia.

16 Online interview with Myanmar research expert, September 2021.

17 Prem Mahadevan, Myanmar's illicit timber: Flows, drivers and actors, GI-TOC, October 2021, https://globalinitiative.net/analysis/myanmar-illicit-timber-flows.

18 Ibid.

19 Summer Walker and Mariana Botero Restrepo, Illicit economies and armed conflict: Ten dynamics that drive

instability, January 2022, GI-TOC, https://globalinitiative.net/analysis/illicit-economies-armed-conflict; Estacio Valoi, The blood rubies of Montepuez, *Foreign Policy*, 3 May 2016, https://foreignpolicy.com/2016/05/03/the-blood-rubies-of-montepuez-mozambique-gemfields-illegal-mining; Moz villagers digging for rubies 'shot and left to die', *Mail & Guardian*, 11 March 2016, https://mg.co.za/article/2016-03-11-00-moz-villagers-digging-for-rubies-shot-and-left-to-die-1.

20 Jason Boswell, Mozambique's lucrative ruby mines, BBC, 10 February 2017, https://www.bbc.com/news/av/business-38934307.

21 See Montepuez Ruby Mining Limitada (Ruby), Gemfields Group Limited, https://www.gemfieldsgroup.com/assets/staging-montepuez.

22 Wim Vertriest and Sudarat Saeseaaw, A decade of ruby from Mozambique: A review, *Gems & Gemology*, Summer 2019, https://www.gia.edu/doc/GG-SU19-Vertriest.pdf.

23 Marcena Hunter, Chikomeni Manda and Gabriel Moberg, Scratching the surface: Tracing coloured gemstone flows from Mozambique and Malawi to Asia, GI-TOC, November 2021, https://globalinitiative.net/analysis/gemstone-flows-mozambique-malawi-asia.

24 In contrast, Montepuez Ruby Mining employs around 1 100 workers. See Joseph Hanlon, Rubies are the red heart of the Cabo Delgado confrontation – Hanlon, Club of Mozambique, 2 July 2018, https://clubofmozambique.com/news/rubies-are-the-red-heart-of-the-cabo-delgado-confrontation-hanlon; Vincent Pardieu, Thailand: The undisputed ruby trading kingdom – a brief history, Gemstone.org, Spring 2019, https://www.gia.edu/doc/GG-SU19-Vertriest.pdf; Hands that dig, hands that feed: Lives shaped by coloured gemstone mining, The Gemstone and Jewellery Community Platform, https://gemstones-and-jewellery.com/white_papers/hands-that-dig-hands-that-feed-lives-shaped-by-coloured-gemstone-mining; Gavin Hilson et al, Formalizing artisanal and small-scale mining in Mozambique: Concerns, priorities and challenges, International Growth Center, June 2021, https://www.planetgold.org/sites/default/files/Hilson.%202021.%20Formalising%20ASM%20in%20Mozambique.pdf; online interview with a gems expert, September 2021.

25 Marcena Hunter, Chikomeni Manda and Gabriel Moberg, Scratching the surface: Tracing coloured gemstone flows from Mozambique and Malawi to Asia, GI-TOC, November 2021, https://globalinitiative.net/analysis/gemstone-flows-mozambique-malawi-asia.

26 Ibid.

27 Ibid.

28 United Nations Food and Agriculture Organization, Globefish – Information and analysis on world fish trade report: Abalone production continues to grow, coupled with continuing demand, prices high and stable, July 2017, http://www.fao.org/in-action/globefish/market-reports/ resource-detail/en/c/902597.

29 Ibid. See also Kimon de Greef and Simone Haysom, Disrupting abalone harms: Illicit flows of *H.midae* from South Africa to East Asia, GI-TOC, February 2022, https://globalinitiative.net/analysis/abalone-south-africa-east-asia.

30 Ibid.

31 Maximizing niche markets: South African abalone, TIPS, 4/2016, https://www.tips.org.za/policy-briefs/item/download/1178_9d0b64091c84d784aca12ce0e7a51320.

32 Ibid.

33 Kimon de Greef, The underworld of abalone, GI-TOC, October 2018, https://globalinitiative.net/analysis/abalone-poaching.

34 International Labour Organization, ILOSTAT explorer, SGD indicator 8.3.1 – Proportion of informal employment in total employment by sex and sector (%) – Annual, https://www.ilo.org/shinyapps/bulkexplorer0/?lang=en&id=SDG_0831_SEX_ECO_RT_A, accessed 11 September 2023.

35 Analysis of the unbanked Mozambicans, FSDMO, 22 July 2020, http://fsdmoc.com/wp-content/uploads/2016/12/Final_FSD_BRIEF_ANALYSIS_OF_THE_UNBANKED_MOZAMBICANS.pdf.

36 Online interview with Myanmar resources expert, September 2021.

37 Organised chaos: The illicit overland timber trade between Myanmar and China, EIA, September 2015, https://eia-international.org/wp-content/uploads/EIA-Organised-Chaos-FINAL-lr1.pdf.

38 Online interview with Myanmar research expert, September 2021.

39 Online interview with a gemstone expert, August 2021.

40 Marcena Hunter, Chikomeni Manda and Gabriel Moberg, Scratching the surface: Tracing coloured gemstone flows from Mozambique and Malawi to Asia, GI-TOC, November 2021, https://globalinitiative.net/analysis/gemstone-flows-mozambique-malawi-asia.

41 Ibid.

42 It was reported that Thai coloured-gemstone dealers previously also had a history of owning mines in Africa and dealing directly with African miners, but this practice has largely been replaced with a system whereby they buy stones from intermediary traders, most often African or Indian nationals. Online interviews with gemstone experts, August 2021 and September 2021.

43 Marcena Hunter and Lynda Lawson, A rough cut trade: Africa's coloured-gemstone flows to Asia, GI-TOC, July 2020, https://globalinitiative.net/analysis/africa-asia-gemstones-trade.

44 Online interview with a gems expert, September 2021.

45 Marcena Hunter and Lynda Lawson, A rough cut trade: Africa's coloured-gemstone flows to Asia, GI-TOC, July 2020, https://globalinitiative.net/analysis/africa-asia-gemstones-trade. See also Joseph Hanlon, Mozambique news reports and clippings, 2 July 2018, https://www.open.ac.uk/technology/mozambique/sites/www.open.

ac.uk.technology.mozambique/files/files/Mozambique_417-2July2018_Heroin_Rubies.pdf. There might have been other reasons for relocation: it appears that there was a trend to heat-treat the gemstones in Mozambique. Due to the heat treatment, the stone would change colour and appear more valuable, thereby tricking buyers into paying more. There is reportedly a 50% price margin between heat-treated and unheated stones. However, many Thais buyers did not know that the stones had been subjected to heat and lost a lot of money. Many of the buyers in Bangkok also lost confidence in the informal networks from Mozambique (online interview with a gemstone expert, August 2021. See also Stemming the insurrection in Mozambique's Cabo Delgado, Crisis Group, 11 June 2021, https://www.crisisgroup.org/africa/southern-africa/mozambique/303-stemming-insurrection-mozambiques-cabo-delgado).

46 Tanzanian national arrested by Mozambican police with more than million US dollars in cash, Mantangazo, 8 January 2013, https://matangazo1.rssing.com/chan-7663430/article40.html.

47 Kimon de Greef and Simone Haysom, Disrupting abalone harms: Illicit flows of *H.midae* from South Africa to East Asia, GI-TOC, February 2022, https://globalinitiative.net/analysis/abalone-south-africa-east-asia.

48 This is in line with the financing of illegal wildlife trade in South Africa generally. A 2021 SAMLIT report found the absence of illicit financial flows in the financial system was due to the extensive use of cash in the illegal wildlife trade. See SABRIC, SAMLIT, Illegal wildlife trade, 16 November 2021, https://www.sabric.co.za/industry-information/samlit.

49 In 2021, TRAFFIC reported a case where two Chinese nationals involved in the illegal abalone trade did not receive an income or salary while in South Africa but their families in China received payments on their behalf by unknown members of the syndicate in China or Hong Kong SAR. See Case digest: Initial analysis of the financial flows and payment mechanisms behind wildlife and forest crime, TRAFFIC, March 2021, https://www.traffic.org/site/assets/files/13685/case-digest-financial-flows-analysis-v2022.pdf.

50 It is reported that East Asian criminal groups have bartered precursor ingredients first for Mandrax and later methamphetamines for abalone. See Case digest: Initial analysis of the financial flows and payment mechanisms behind wildlife and forest crime, TRAFFIC, March 2021, https://www.traffic.org/site/assets/files/13685/case-digest-financial-flows-analysis-v2022.pdf.

51 Kimon de Greef and Simone Haysom, Disrupting abalone harms: illicit flows of *H.midae* from South Africa to East Asia, GI-TOC, February 2022, https://globalinitiative.net/analysis/abalone-south-africa-east-asia.

52 Ibid.

53 Ibid; see also Case digest: Initial Analysis of the financial flows and payment mechanisms behind wildlife and forest crime, TRAFFIC, March 2021, https://www.traffic.org/site/assets/files/13685/case-digest-financial-flows-analysis-v2022.pdf.

54 Kimon de Greef and Simone Haysom, Disrupting abalone harms: illicit flows of *H.midae* from South Africa to East Asia, GI-TOC, February 2022, https://globalinitiative.net/analysis/abalone-south-africa-east-asia.

55 Online interview with security expert, September 2021.

56 The group is unrelated to the al-Shabaab terrorist group in Somalia.

57 Julia Stanyard et al, Insurgency, illicit markets and corruption: The Cabo Delgado conflict and its regional implications, GI-TOC, February 2022, https://globalinitiative.net/analysis/mozambique-cabo-delgado-conflict.

58 Hawala or hundi systems can refer to many kinds of informal money-transfer systems that do not involve the physical transfer of cash. Commonly, customers use brokers based in their respective locations to send and receive money, with the senders paying a small commission and the receivers sometimes using a password to release the funds. Traditional hawala networks are based on trust and the honour system, meaning they can function in areas that lack a functional banking system. See Jay Bahadur, Following the money: The use of hawala remittance system in the Yemen-Somalia arms trade, GI-TOC, September 2020, 8, https://globalinitiative.net/analysis/yemen-somalia-arms; and Walter Kemp, Kristina Amerhauser and Ruggero Scaturro, Spot prices. Analyzing flows of people, drugs and money in the Western Balkans, May 2021, https://globalinitiative.net/analysis/western-balkans-crime-hotspots-3.

59 By blacklisting a country, FATF urges other member states to apply enhanced due diligence and apply counter-measures to protect the international financial system, thereby placing the country's financial entities and banks outside the mainstream of the international financial system. See FATF, 'Black and grey' lists, https://www.fatf-gafi.org/en/countries/black-and-grey-lists.html.

60 Rhys Thompson, 'Underground banking' and Myanmar's changing hundi system, *Journal of Money Laundering Control*, 22, 4, 2019, https://www.researchgate.net/publication/332664645_Underground_banking_and_Myanmar%27s_changing_hundi_system.

61 Online interview with Myanmar resources expert, September 2021.

62 Tuesday Reitano, Political won't? Understanding the challenges of countering IFFs: A global evidence review, SOC ACE Research Paper No 14, University of Birmingham, https://www.birmingham.ac.uk/documents/college-social-sciences/government-society/publications/political-wont-paper.pdf.

63 Online interviews with two experts on the ruby market in Mozambique, August to October 2021.

64 Ibid.

65 One carat is around 200 milligrams.

66 Tanzanian national arrested by Mozambican police with more than million US dollars in cash, 8 January 2013, https://matangazo1.rssing.com/chan-7663430/article40.html.
67 Letter from MRM to the government of Mozambique, April 2021. Subject: Export of rubies mined in Mozambique.
68 Wim Vertriest and Sudarat Saeseaaw, A decade of ruby from Mozambique: A review, *Gems & Gemology*, Summer 2019, https://www.gia.edu/doc/GG-SU19-Vertriest.pdf.
69 Marcena Hunter, Chikomeni Manda and Gabriel Moberg, Scratching the surface: Tracing coloured gemstone flows from Mozambique and Malawi to Asia, GI-TOC, November 2021, https://globalinitiative.net/analysis/gemstone-flows-mozambique-malawi-asia.
70 Online interview with an expert in mining governance from Malawi, September 2021.
71 Input received from an abalone expert, August 2022.
72 Online interview with an abalone expert from Hong Kong SAR, September 2021.
73 Kimon de Greef and Simone Haysom, Disrupting abalone harms: Illicit flows of *H.midae* from South Africa to East Asia, GI-TOC, February 2022, https://globalinitiative.net/analysis/abalone-south-africa-east-asia.
74 Nicola Okes et al, Empty shells: An assessment of abalone poaching and trade from southern Africa, TRAFFIC, 2018, https://www.traffic.org/publications/reports/empty-shells/.
75 Kimon de Greef and Simone Haysom, Disrupting abalone harms: Illicit flows of *H.midae* from South Africa to East Asia, GI-TOC, February 2022, https://globalinitiative.net/analysis/abalone-south-africa-east-asia.
76 Online interview with a representative of Gemfields, October 2021. See also Marcena Hunter and Lynda Lawson, A rough cut trade: Africa's coloured-gemstone flows to Asia, GI-TOC, July 2020, https://globalinitiative.net/analysis/africa-asia-gemstones-trade.
77 Online interview with a gemstone expert, August 2021.
78 Ibid.
79 Asean Gem & Jewelry Review, GIT, Issue 1, 2018, https://www.git.or.th/thai/info_center/trade_review/2018/ASEAN_Gem_Review_issue1.pdf.
80 Marcena Hunter and Lynda Lawson, A rough cut trade: Africa's coloured-gemstone flows to Asia, GI-TOC, July 2020, https://globalinitiative.net/analysis/africa-asia-gemstones-trade.
81 Organised chaos: The illicit overland timber trade between Myanmar and China, EIA, September 2015, https://eia-international.org/wp-content/uploads/EIA-Organised-Chaos-FINAL-lr1.pdf.
82 Online interview with Myanmar research expert, September 2021.
83 Organised chaos: The illicit overland timber trade between Myanmar and China, EIA, September 2015, https://eia-international.org/wp-content/uploads/EIA-Organised-Chaos-FINAL-lr1.pdf.
84 See All you need to know about Hong Kong import custom tariff and duty tax, DHL, 22 November 2022, https://www.dhl.com/discover/en-my/business/getting-to-market/All-You-Need-To-Know-About-Hong-Kong-Import-Custom-Tariff-and-Duty-Tax.
85 Input received from an abalone expert, August 2022.
86 Kimon de Greef and Simone Haysome, Disrupting abalone harms: Illicit flows of *H.midae* from South Africa to East Asia, GI-TOC, February 2022, https://globalinitiative.net/analysis/abalone-south-africa-east-asia.
87 Ibid.
88 Online interview with a gemstone expert, August 2021.
89 Online interview with representatives of the Environmental Investigation Agency, August 2021.
90 See Alibaba, Burma teak, https://www.alibaba.com/showroom/burma-teak.html.
91 SABRIC, SAMLIT report, Illegal wildlife trade, 16 November 2021, https://www.sabric.co.za/industry-information/samlit.
92 Online interview with an abalone expert from Hong Kong, September 2021.
93 Online interview with a Myanmar research expert, September 2021.
94 Ibid.
95 Online interview with a Myanmar resources expert, September 2021.
96 However, more research is needed to confirm this assumption and the role of international tax havens in the trade.
97 Online interview with a gemstone expert, August 2021.
98 Roberto Martinez B Kukutschka, Illicit financial flows in Mozambique, U4 Anti-Corruption Resource Centre, 6 April 2018, https://www.u4.no/publications/illicit-financial-flows-in-mozambique.pdf.
99 Anti-money laundering and counter-terrorist financing measures. Thailand – Mutual Evaluation Report, APG, December 2017, https://www.fatf-gafi.org/media/fatf/documents/reports/mer-fsrb/APG-MER-Thailand-2017.pdf; Marcena Hunter and Lynda Lawson, A rough cut trade: Africa's coloured-gemstone flows to Asia, GI-TOC, July 2020, https://globalinitiative.net/analysis/africa-asia-gemstones-trade.
100 Online interview with an international illicit finance expert, July 2021.
101 Online interview with an expert from ADM Capital, September 2021.
102 Ibid.
103 UNODC, World Wildlife Crime Report: Trafficking in protected species, 2020, https://www.unodc.org/documents/data-and-analysis/wildlife/2020/World_Wildlife_Report_2020_9July.pdf.
104 For example, see Davyth Stewart et al, Wildlife money trails: Building financial investigations from wildlife and timber trafficking cases in the European Union, TRAFFIC,

June 2023, https://www.traffic.org/site/assets/files/21914/wildlifemoneytrails_final.pdf; and UNODC, World Wildlife Crime Report: Trafficking in protected species, 2020, https://www.unodc.org/documents/data-and-analysis/wildlife/2020/World_Wildlife_Report_2020_9July.pdf.

105 Global Forest Resources Assessment 2020, Main report, Food and Agriculture Organization of the UN, 2020 https://www.fao.org/3/ca9825en/ca9825en.pdf.

106 Illegal logging and associated trade in Myanmar: Impacts of government measures to address illegal logging, Forest Trends, January 2021, https://www.forest-trends.org/wp-content/uploads/2021/01/ILLAT-Myanmar-Report-Jan-2021.pdf.

107 Myanmar Forestry Outlook Study, Asia-Pacific Forestry Sector Outlook Study, Working Paper Series, ASIA- II/WP/2009/07, Food and Agriculture Organization of the UN, 2009, http://gms-eoc.org/uploads/resources/44/attachment/Myanmar%20Forestry%20Outlook%20Study.pdf.

108 Methodological note: For timber, we first put a value on the UN FAO's industrial roundwood production estimates by taking the volume and using average prices from UN FAO statistics. We have also taken account of domestic consumption of these woods. We found one study that offers a 65% figure for domestic demand. Another source attributed the entire difference in production and exports to domestic consumption, referencing ITTO as a source. However, ITTO does not report consumption data. This, and the fact that the amount appears to be a 'balancing figure' of domestic consumption casts doubt. Comparing these production figures, of over around 4 million cubic metres, less domestic demand, with the negligible official exports of this product shows a stark gap of over US$100m per annum over the last five years. We have not been able to calculate how much logged wood, net, is put into storage or stock (which would also increase domestic consumption) but our understanding is this is a small figure, as loggers look for a quick return for their efforts.

109 While Mozambique also produces sapphires and emeralds, rubies make up most of the exports that are recorded under this category – to the degree that the data provided by the Bank of Mozambique, reflects export data provided by the Montepuez Ruby Mining Limitada, which dominates the official exports. See Marcena Hunter and Lynda Lawson, A rough cut trade: Africa's coloured-gemstone flows to Asia, GI-TOC, July 2020, https://globalinitiative.net/analysis/africa-asia-gemstones-trade.

110 Online interview with a gemstone expert, August 2021.

111 Accessed from UN COMTRADE, https://comtradeplus.un.org.

112 Ibid.

113 Marcena Hunter and Lynda Lawson, A rough cut trade: Africa's coloured-gemstone flows to Asia, GI-TOC, July 2020, https://globalinitiative.net/analysis/africa-asia-gemstones-trade.

114 Accessed from UN COMTRADE, https://comtradeplus.un.org/.

115 Online interview with a Gemfields representative, October 2021, and official documents shared by Gemfields.

116 Online interview with a gemstone expert, August 2021.

117 Nicola Okes et al, Empty shells: An assessment of abalone poaching and trade from southern Africa, TRAFFIC, 2018, https://www.traffic.org/publications/reports/empty-shells.

118 Dried abalone, when converted into whole mass, makes up just under a third of all imports of abalone into Hong Kong SAR, with 52% of dried *H. midea* reportedly coming from South Africa. Given that *H. midea* is endemic in South Africa and only legally produced at a single aquaculture facility in Namibia and given that dried abalone is also easier to smuggle (because it does not need refrigeration), we have focused our further research on dried abalone and smuggling routes through other southern African states. See Wilson Lau, An assessment of South African dried abalone Haliotis midae consumption and trade in Hong Kong, TRAFFIC, 2018, https://www.traffic.org/site/ assets/files/2235/traffic-hk-abalone-report.pdf; Case digest: Initial analysis of the financial flows and payment mechanisms behind wildlife and forest crime, TRAFFIC, March 2021, https://www.traffic.org/site/assets/files/13685/case-digest-financial-flows-analysis-v2022.pdf.

119 Kimon de Greef and Simone Haysom, Disrupting abalone harms: Illicit flows of *H.midae* from South Africa to East Asia, GI-TOC, February 2022, https://globalinitiative.net/analysis/abalone-south-africa-east-asia.

120 UNCTAD and UNODC, First-ever official data on illicit financial flows now available, 8 June 2023, https://unctad.org/news/first-ever-official-data-illicit-financial-flows-now-available.

121 Illegal logging and associated trade in Myanmar: Impacts of government measures to address illegal logging, Forest Trends, January 2021, https://www.forest-trends.org/wp-content/uploads/2021/01/ILLAT-Myanmar-Report-Jan-2021.pdf.

122 Xiudong Wang, Zhonghua Yin and Ruohan Wang, Price volatility transmissions in china's hardwood lumber imports, *Forests*, 2021, 12, 1147, https://doi.org/10.3390/f12091147.

123 Illegal logging and associated trade in Myanmar: Impacts of government measures to address illegal logging, Forest Trends, January 2021, https://www.forest-trends.org/wp-content/uploads/2021/01/ILLAT-Myanmar-Report-Jan-2021.pdf.

124 Global Forest Watch, Myanmar 2022, https://www.global-forestwatch.org/dashboards/country/MMR/?category=-fires&map=eyJkYXRhc2V0cyI6W10sImNhbkJvdW5kIjp0cnVlfQ%3D%3D.

125 Illegal logging and associated trade in Myanmar: Impacts of government measures to address illegal logging, Forest Trends, January 2021, https://www.forest-trends.org/wp-content/uploads/2021/01/ILLAT-Myanmar-Report-Jan-2021.pdf.

126 Maya Forstater, Illicit financial flows, trade misinvoicing, and multinational tax avoidance: The same or different? CGD Policy Paper, Washington, DC, March 2018, https://www.cgdev.org/publication/illicit-financial-flows-trade-misinvoicing-and-multinational-tax-avoidance; Methodological guidelines to measure tax and commercial illicit financial flows, Methods for pilot testing, UNCTAD, 2019, https://unctad.org/system/files/non-official-document/20210917_IFFsGuidelinesForPilots_en_0.pdf; Marcena Hunter, Measures that miss the mark, GI-TOC, June 2018, https://globalinitiative.net/wp-content/uploads/2018/06/TGIATOC-Illicit-Financial-Flows-report-1941-hi-res-2-1.pdf; Conceptual framework for the statistical measurement of illicit financial flows, UNODC, October 2020, https://www.unodc.org/documents/data-and-analysis/statistics/IFF/IFF_Conceptual_Framework_for_publication_15Oct.pdf.

127 Wildlife Trade Portal, TRAFFIC, 2022, https://www.wildlifetradeportal.org/#/dashboard.

128 UN Comtrade.

129 Transnational organized crime in East Asia and the Pacific: A threat assessment, UNODC, April 2013, https://www.unodc.org/documents/southeastasiaandpacific//Publications/2013/TOCTA_EAP_web.pdf.

130 A blog published in 2015 quotes a figure of US$600 million per year for the illegal timber flow from Myanmar to China. This is attributed to a 2013 UNODC report, which gave a lower figure of US$180 million, which UNODC attributes to 'UNODC estimates' only. The source for the '72% illegal' estimate is a 2013 report that attributes illegality to the total discrepancy between the mirror statistics. This method has subsequently been questioned when used elsewhere in IFF analysis, as the discrepancy can be caused by a variety of factors. See Jago Wadley, The only win/win for Myanmar & China is to end timber theft, EIA, 18 September 2015, https://eia-international.org/blog/the-only-winwin-for-myanmar-china-is-to-end-timber-theft/; Data Corruption, Exposing the true scale of logging in Myanmar, EIA, March 2014, https://eia-international.org/wp-content/uploads/eia-data-corruption-exposing-the-true-scale-of-logging-in-myanmar.pdf.

131 Jennifer Rigby, Myanmar's forests face myriad problems as logging ban continues, Mongabay, 29 September 2016, https://news.mongabay.com/2016/09/myanmars-forests-face-myriad-problems-as-logging-ban-continues/.

132 Ibid

133 Illegal logging and associated trade in Myanmar: Impacts of government measures to address illegal logging, Forest Trends, January 2021, https://www.forest-trends.org/wp-content/uploads/2021/01/ILLAT-Myanmar-Report-Jan-2021.pdf.

134 Timber smuggling continues in Sagaing despite ban, virus, *Myanmar Times*, 10 July 2020. We can find no source for the *Myanmar Times's* extreme claim, attributed to the Myanmar Government, that it 'loses $10bn p.a. to illegal logging'.

135 Global Forest Resources Assessment 2020, Main report, Food and Agricultural Organization of the UN, 2020 https://www.fao.org/3/ca9825en/ca9825en.pdf.

136 Illegal logging and associated trade in Myanmar: Impacts of government measures to address illegal logging, Forest Trends, January 2021, https://www.forest-trends.org/wp-content/uploads/2021/01/ILLAT-Myanmar-Report-Jan-2021.pdf.

137 Myanmar Forestry Outlook study, Asia-Pacific forestry sector outlook study, Working Paper Series, No ASIA- II/WP/2009/07, Food and Agricultural Organization of the UN, 2009, http://gms-eoc.org/uploads/resources/44/attachment/Myanmar%20Forestry%20Outlook%20Study.pdf.

138 See the calculation in Figure 9.

139 Forests. Taxing Questions. Evidence of tax evasion in teak exports from Myanmar, EIA, March 2021, https://eia-international.org/wp-content/uploads/2021-Taxing-Questions-spreads.pdf.

140 Ibid

141 Myanmar, Overview, PWC, 26 July 2022, https://taxsummaries.pwc.com/myanmar.

142 Ibid.

143 Ibid.

144 TransCustoms, China tariffs query & landed cost calculation, China Import Customs Duty: Tax overview, http://www.transcustoms.com/TARIFF.

145 Ibid.

146 Gem and Jewellery Information Center, Gem and Jewellery Institute of Thailand, https://www.git.or.th/infocenter-stat/?Lang=EN.

147 David Brough, Thailand hosts world ruby forum, Rapaport Diamonds.net, 5 November 2017, https://www.diamonds.net/News/NewsItem.aspx?ArticleID=59524&ArticleTitle=Thailand-+Hosts+World+Ruby+Forum.

148 Julius Zheng, The gems of Chanthaburi, Jewellery.net, 7 October 2019, https://news.jewellerynet.com/tk/jnanews/features/23404.

149 Global Witness, Conflict rubies: How luxury jewellers risk funding military abuses in Myanmar, 15 December 2015, https://www.globalwitness.org/en/campaigns/natural-resource-governance/conflict-rubies-how-luxury-jewellers-risk-funding-military-abuses-myanmar/ based on Russell Shor and Robert Weldon, Ruby and sapphire production and distribution: A quarter century of change, *Gems & Gemology*, Winter 2009, https://www.gia.edu/doc/Ruby-and-Sapphire-Production-and-Distribution.pdf.

150 Cynthia Unninayar, The ruby capital of the world, Gem Scene, https://www.gemscene.com/bangkok-feb-2016.html.

151 Data provided by the Bank of Mozambique at https://www.bancomoc.mz/fm_pgLink.aspx?id=222.

152 Montepuez Ruby Mining Limitada (Ruby), Gemfields Group Limited, https://www.gemfieldsgroup.com/assets/montepuez-%20ruby-mining-limitada/.

153 Gemfields Group Limited, Ruby auction results, 8 April 2021, https://gemfields.s3.us-east-1.amazonaws.com/News%20and%20Announcements/2021/April/20210408%20GGL%20announcement%20-%20ruby%20auction%20results.pdf.

154 Gemfields Group Limited, Record ruby auction results, 10 December 2021, https://gemfields.s3.amazonaws.com/News%20and%20Announcements/2021/December/20211210%20GGL%20announcement%20-%20ruby%20auction%20results.pdf.

155 UN Comtrade data.

156 Ibid.

157 Marcena Hunter and Lynda Lawson, A rough cut trade: Africa's coloured-gemstone flows to Asia, GI-TOC, July 2020, https://globalinitiative.net/wp-content/uploads/2020/07/A-Rough-Cut-Trade-Africa%E2%80%99s-Coloured-Gemstone-Flows-to-Asia-GITOC.pdf.

158 UN Comtrade data.

159 Online interview with a high-level Gemfields representative and official documents shared by Gemfields, October 2021 and documents received by Gemfields.

160 Online interview with a gemstone expert, August 2021.

161 While Mozambique also produces sapphires and emeralds, rubies make up most of the exports that are recorded under this category – to the degree that the data provided by the Bank of Mozambique reflects MRM export data. See Marcena Hunter and Lynda Lawson, A rough cut trade: Africa's coloured-gemstone flows to Asia, GI-TOC, July 2020, https://globalinitiative.net/wp-content/uploads/2020/07/A-Rough-Cut-Trade-Africa%E2%80%99s-Coloured-Gemstone-Flows-to-Asia-GITOC.pdf.

162 HS Code 710391.

163 While we acknowledge that this value is remarkably low (one single ruby could be valued at US$3 000), it is not possible to determine the reason behind this.

164 Online interview with a gemstone expert, August 2021.

165 Lauriane Pinsault, Global emerald & ruby supply: Analysing market data. Market Research, October 2021, Gemfields. Letter by MRM to the government of Mozambique, April 2021. Subject: Export of rubies mined in Mozambique.

166 Many miners active in Montepuez are driven by poverty and desperation to informal ruby mining. Years of government failure to provide basic services, corruption and lack of political will to formalize artisanal mining have resulted in high levels of insecurity and violence. For example, in February 2020, an MRM mine was overrun by an estimated 800 informal miners, which led to the death of 11 of the miners when pit walls caved in. In total, almost 90 informal miners have died on the MRM concession since the start of their operations. Given the high levels of corruption and alleged claims of human rights abuses, some experts have argued for classifying MRM's sales as IFFs – but the authors have concluded that this would not meet the applied definition of IFFs. In addition, On April 2018, over 200 Mozambicans brought a claim in the UK against Gemfields over human rights abuses in the MRM mine in northern Mozambique. On 29 January 2019, Gemfields announced that it will pay £5.8m to settle the claim and will establish an operational grievance mechanism. The company denies liability for the allegations. See: *Gemfields settles UK claim over alleged human rights abuses at ruby mine in Mozambique for £5.8 million; Co. denies liability*, Business & Human Rights Resource Center, 27 January 2019 https://www.business-humanrights.org/en/latest-news/gemfields-settles-uk-claim-over-alleged-human-rights-abuses-at-ruby-mine-in-mozambique-for-58-million-co-denies-liability/ Other sources: Gavin Hilson et al, Formalizing artisanal and small-scale mining in Mozambique. Concerns, priorities and challenges, International Growth Center, June 2021, https://www.planetgold.org/sites/default/files/Hilson.%202021.%20Formalising%20ASM%20in%20Mozambique.pdf; Marcena Hunter, Chikomeni Manda and Gabriel Moberg, Scratching the surface. Tracing coloured gemstone flows from Mozambique and Malawi to Asia, November 2021, GI-TOC, https://globalinitiative.net/wp-content/uploads/2021/11/Gemstones-Report-Web.pdf; letter from MRM to the government of Mozambique, April 2021. Subject: Export of rubies mined in Mozambique; online interview with a representative of Gemfields, October 2021.

167 Vincent Pardieu and Jitlapit Thanachakaphad, Rubies reportedly from the Niassa region of Mozambique: A preliminary examination, 22 March 2009, https://www.gia.edu/doc/Rubies-Reportedly-from-the-Niassa-Region-of-Mozambique.pdf.

168 As calculated by experts in Figure 13 (specifically data point 4).

169 Mozambique: Corporate taxes on corporate income, PWC, 20 April 2022, https://taxsummaries.pwc.com/mozambique/corporate/taxes-on-corporate-income.

170 Kimon de Greef and Simone Haysom, Disrupting abalone harms: illicit flows of *H.midae* from South Africa to East Asia, GI-TOC, February 2022, https://globalinitiative.net/analysis/abalone-south-africa-east-asia.

171 Nicola Okes et al, Empty shells: An assessment of abalone poaching and trade from southern Africa, TRAFFIC, 2018, https://www.traffic.org/publications/reports/empty-shells/.

172 Wilson Lau, An assessment of South African dried abalone *Haliotis midae* consumption and trade in Hong Kong, TRAFFIC, 2018, https://www.traffic.org/site/ assets/files/2235/traffic-hk-abalone-report.pdf.

173 Case Digest: Initial Analysis of the Financial Flows and Payment Mechanisms Behind Wildlife and Forest Crime, TRAFFIC, March 2021, https://www.traffic.org/site/assets/files/13685/case-digest-financial-flows-analysis-v2022.pdf.

174 This is because the product needs only to be kept dry, but not refrigerated.

175 Nicola Okes et al, Empty shells: An assessment of abalone poaching and trade from southern Africa, TRAFFIC, 2018, https://www.traffic.org/publications/reports/empty-shells/.

176 Ibid.

177 UN Comtrade, number UN 30787, reported by South Africa.

178 Nicola Okes et al, Empty shells: An assessment of abalone poaching and trade from southern Africa, TRAFFIC, 2018, https://www.traffic.org/publications/reports/empty-shells/.

179 Poached South African abalone is also reported to be smuggled via other southern African countries, including the DRC, Namibia and Mozambique, but given that flows are reported to be highest through Zambia and Zimbabwe we have focused our analysis on these two countries. Source: UN Comtrade statistics.

180 Wilson Lau, An assessment of South African dried abalone *Haliotis midae* consumption and trade in Hong Kong, TRAFFIC, p. 18, 2018, https://www.traffic.org/site/ assets/files/2235/traffic-hk-abalone-report.pdf.

181 Kimon de Greef and Simone Haysome, Disrupting abalone harms: Illicit flows of *H. midae* from South Africa to East Asia, GI-TOC, February 2022, https://globalinitiative.net/wp-content/uploads/2022/02/Abalone-Report_31-Jan-Final.pdf.

182 Ibid.

183 Nicola Okes et al, Empty shells: An assessment of abalone poaching and trade from southern Africa, TRAFFIC, 2018, https://www.traffic.org/publications/reports/empty-shells/.

184 A 2021 TRAFFIC study also found that in 2016, non-abalone producing countries accounted for 18% of the source locations for global *H. midae* imports by Hong Kong SAR and Macau. See: Case digest: Initial analysis of the financial flows and payment mechanisms behind wildlife and forest crime, TRAFFIC, March 2021, https://www.traffic.org/site/assets/files/13685/case-digest-financial-flows-analysis-v2022.pdf.

185 Nicola Okes et al, Empty shells: An assessment of abalone poaching and trade from southern Africa, TRAFFIC, 2018, https://www.traffic.org/publications/reports/empty-shells/.

186 Wilson Lau, An assessment of South African dried abalone *Haliotis midae* consumption and trade in Hong Kong, TRAFFIC, 2018, https://www.traffic.org/site/ assets/files/2235/traffic-hk-abalone-report.pdf.

187 Kimon de Greef and Simone Haysome, Disrupting abalone harms: Illicit flows of *H.midae* from South Africa to East Asia, GI-TOC, February 2022, https://globalinitiative.net/wp-content/uploads/2022/02/Abalone-Report_31-Jan-Final.pdf; and Wilson Lau, An assessment of South African dried abalone *Haliotis midae* consumption and trade in Hong Kong, TRAFFIC, 2018, https://www.traffic.org/site/assets/files/2235/traffic-hk-abalone-report.pdf.

188 See Wildlife trade portal, Traffic, 2022, https://www.wildlifetradeportal.org/#/dashboard; Kimon de Greef and Simone Haysome, Disrupting abalone harms: Illicit flows of *H.midae* from South Africa to East Asia, GI-TOC, February 2022, https://globalinitiative.net/wp-content/uploads/2022/02/Abalone-Report_31-Jan-Final.pdf. This is also supported by interviews with participants in the illicit trade.

189 Information provided by TRAFFIC, August 2022.

190 See Hong Kong SAR Customs seizes suspected smuggled dried seafood and endangered species (with photo), Customs and Exise Department, February 2019, https://www.customs.gov.hk/en/publication_press/press/index_id_2467.html.

191 Document received from Hong Kong SAR customs, Seizure reference CSF/3/17/21.

192 See All you need to know about Hong Kong import custom tariff and duty tax, DHL, 22 November 2022, https://www.dhl.com/discover/en-my/business/getting-to-market/All-You-Need-To-Know-About-Hong-Kong-Import-Custom-Tariff-and-Duty-Tax.

193 See calculation in Figure 20.

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