



POLITICAL ECONOMY ANALYSIS (PEA) AND MARKET ANALYSIS OF ILLICIT WILDLIFE TRAFFICKING (A CASE STUDY ON PANGOLIN ILLICIT TRAFFICKING: INDONESIA- CHINA)

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Abstract

This paper aims to formulate and examine the best intervention model in countering pangolin trafficking. This involves the political economy analysis (PEA) and the market analysis, prioritising through harm identification, and the response by intervention formulation. The preferred intervention is then examined by the theory of change to determine its process in pursuing the impact. It utilises qualitative approach by using document reviews as data collection method. This paper finds that pangolin market is led by the “push” factors in Indonesia influenced by the geographical condition, which has a wide range of tropical forests as pangolin habitat. Moreover, the low level of GDP and education rates is the main factor behind pangolin trading. While, the “pull” factors in China are influenced by the high demand rates that cannot be covered by its local pangolins population. Finally, the author suggests that the general deterrence approach is regarded as the best model to intervene in the market. This approach could reduce the supply and demand to cut the market chain.

Keywords: political economy analysis, market analysis, general deterrence, wildlife trafficking, pangolin.

Abstrak

Makalah ini bertujuan untuk merumuskan dan mengkaji model penanggulangan terbaik dalam menanggulangi perdagangan trenggiling. Yaitu meliputi analisa politik dan ekonomi, dan analisa pasar, melalui pengidentifikasian bahaya atau ancaman, dan teknik penanganan yang tepat. Kemudian teknik penanggulangan yang digunakan akan dilakukan pengajian dengan menggunakan teori perubahan untuk menentukan proses pelaksanaannya dalam mencapai tujuan. Makalah ini menggunakan pendekatan kualitatif, yaitu melalui studi dokumen sebagai metode pengumpulan data. Makalah ini menemukan, bahwasanya perdagangan trenggiling disebabkan oleh adanya faktor pendorong, yaitu faktor yang

berasal dari negara asal trenggiling (Indonesia), antara lain kondisi geografis Indonesia yang memiliki hutan tropis yang luas sebagai habitat dari trenggiling. Ditambah lagi, minimnya pendapatan dan tingkat pendidikan masyarakat menjadi faktor utama maraknya perdagangan trenggiling. Sementara itu, faktor penarik berasal dari negara tujuan (China) yang disebabkan oleh tingginya permintaan pasar terhadap trenggiling yang tidak dapat dipenuhi oleh populasi trenggiling lokal di China. Akhirnya, makalah ini merekomendasikan bahwa model pencegahan secara umum dianggap sebagai metode terbaik untuk mengintervensi pasar dan dapat menurunkan permintaan dan ketersediaan trenggiling di pasar dalam rangka memutus rantai pasar.

Kata Kunci: analisa politik ekonomi, analisa pasar, teori pencegahan umum, perdagangan satwa liar, trenggiling.

Introduction

Pangolin (*Manis spp.*) is the most trafficked mammals globally and contributes approximately 20% of all illicit wildlife trafficking (Sutter, 2014; Sartore, 2021). According to IUCN, Pangolin is in danger of extinction, and estimated with millions of them were killed for various purposes before 2014 (Magiera and Labanne, 2014). This has led to a significant drop in the Pangolin population globally. For instance, there has been a decrease of more than 50% in 27 years, hence listed in the red list of vulnerable and endangered species (Challender et al., 2015). The trafficking is motivated by various purposes of its body parts, such as scales and meat for luxury cuisines, fashion, and traditional medicine. Furthermore, Pangolin has a small number of habitat areas, such as Asia (East Asia, South East Asia, and South Asia) and Africa (West Africa and East Africa) (Heinrich et al., 2017).

With a wide rainforest, Indonesia (Sumatera, Java, and Kalimantan islands) is one of the most significant Sunda pangolin habitats in South East Asia, apart from Malaysia, Thailand, Vietnam, and the Philippines. This is in line with trafficked scale data and pangolin's whole body in Indonesia, as shown in Figure 1. It is then exported to China, a country regarded as the pangolins trade centre (Heinrich et al., 2017). Some countries involved in these activities have ratified the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). However, these efforts seem less effective in combatting this crime.

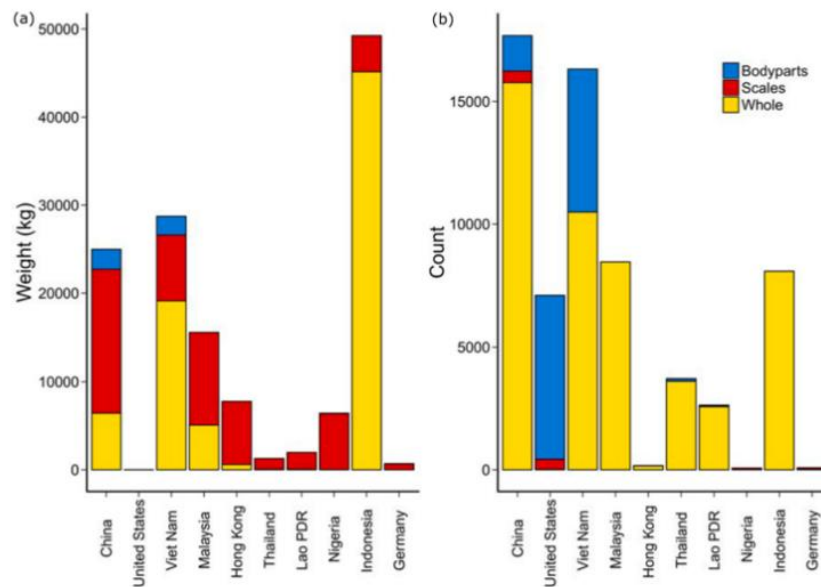


Figure 1 Number of trafficked pangolins and their products

Source: (Heinrich et al., 2017)

This paper formulates and examines the best intervention model in countering pangolin trafficking. It is based on Shaw, Reitano and Hunter (2016) framework, specifically analysing, prioritising, and responding to a transnational crime. This involves the political economy analysis (PEA) and the market analysis, prioritising through harm identification, and the response by intervention formulation. The preferred intervention is then examined by the theory of change to determine its process in pursuing the impact. This paper determines the method of general deterrence through a campaign that could cut the market chain of pangolin trafficking.

Literature Review

Political Economy Analysis (PEA)

Political economy analysis deals with the interplay of political and economic processes in society. The distribution of power and wealth among various groups and individuals, and the process of creating, maintaining, and changing these relationships over time (Shaw, et al., 2016). From country-level macro-level analysis to sector-level analysis to problem-oriented analysis, there are many existing tools and tools for conducting political economy analysis. Base on which the framework applies (Shaw, et al., 2016) :

- Macro-level analysis: is designed to improve overall sensitivity to regional or national conditions and understanding of the broader political and economic environment. This can be used to target specific or related organized crime programs in specific markets.
- Sector-level analysis: to identify specific characteristics of supply chains or raw materials, their impacts and relationships.
- Problem Oriented Analysis: aims to understand and solve specific problems at the project level or in relation to specific policy issues. localized criminal violence.

Market Analysis

A market and power-based analysis of various illegal activities should resonate with development stakeholders as it seeks to draw a range of conclusions regarding market maturity, costs, intervention options, and development impacts (Shaw, et al., 2016). Analysis has five key areas:

1. Price
2. Ease of market entry
3. Levels of violence associated with the market
4. The extent of protection in the market
5. The legitimacy of the criminal market amongst different actors.

While each of these elements of analysis provides insight, only together do these five areas of information collection and analysis provide an effective set of overlapping data from that can draw a broader range of programming conclusions (Shaw, et al., 2016). Properly conducted, this approach will allow the analysis to determine the state of the market, as well as the activities and transactions carried out by the various actors and their relationship to the market and together. By identifying connections, this process can be used to identify security holes that can serve as entry points for interventions.

Harm Analysis

Harm development can be grouped into five main areas: physical; society; economic; related to the environment, structure or governance. Harm can occur on many

levels, from the individual to the society in which the person lives. In some cases, the security of large cities, regions or even entire states can be compromised. Harm can take different forms: some harms may be intentional or directly related to the activity in question; Other forms of harm may be completely unintentional. Some forms of harm (e.g. physical injury to a person) may be immediately apparent; other forms of damage can take years to manifest (such as environmental damage) (Shaw, et al., 2016). Using this multidimensional framework allows decision-makers to categorize forms of harm. It can then guide who, how and where interventions should be designed to respond, as part of an integrated set of overall responses.

Theory of Change

Theory of change is a set of beliefs about how change occurs and as such explains why and how certain actions will produce desired changes in a given context, at a certain point in time (Woodrow and Oatley, 2013). Developing a strong, clear, and evidence-based theory of change is a useful way to improve design. Change Reflection Theory is an approach that encourages critical thinking throughout the program cycle. The theory of change examines the intervention to assess its process by involving the targeted actor, including determining the quality and the aims of this program (Woodrow and Oatley, 2013; Stein and Valters, 2012). The following points expand on the above definition and help clarify how theory of change works (Woodrow and Oatley, 2013):

1. Most programs in fragile states and areas of conflict are essentially about processes of change, involving political dynamics and risk-taking to make progress in reducing state fragility and increasing citizen security (among others). Because such efforts involve change, we need to be aware of how we think change will happen and that our actions will encourage or make meaningful differences in our lives. how is the situation.
2. A theory of change can also be thought of as a testable hypothesis. There are few proven approaches to peace-building, justice and security; Most of what we do needs to be continuously monitored to see if we are achieving the results we expect. Evaluation can determine whether existing theories of change are appropriate for local conditions and constraints.

3. An important element of change theory is context. The manner in which a change can or will occur in one context cannot be automatically switched to another. The transition towards peace, justice and security will be different, for example, in a repressive one-party state and in a multi-party democracy. It also leads to the conclusion that theories of change need to be linked to a robust conflict analysis, to ensure that programming addresses the main drivers of conflict and fragility in the context. scene.
4. Programmatic effort (“some action” in the definition at the beginning of this section) can be understood at a number of different levels. These theories range from the strategic or policy level, through the broad sectoral or programmatic levels, to project-level theories and finally to micro-level theories involving limited activities specifically.

Method

This research uses the qualitative approach. Qualitative research emphasises words in the data collection rather than numbers (Bryman, 2012). Moreover, a qualitative approach is inductive, which implies that it begins with information collection, then fames a hypothesis or creates clarifications and exploration regularly to set up another comprehension of a formerly under-investigated topic, build up a primer theory or model and additionally find the process in human connections (Jensen, 2016). On the other side, it is often argued that the qualitative method has some weaknesses, such as being time consuming and lacking generalisation (Smith, 2018; Queirós, et al., 2017). However, this research aims to explore the pangolin illicit trafficking, which means to analyse the process in human connection. Moreover, the data sources are in the form of words, rather than quantification. Therefore, the qualitative method is a fit for this research. In order to explore a single case deeply and in detail, the case study is regarded as the best model to apply (Bryman, 2012). Besides, the usage of literature review technique would be able to help the researcher in studying an international case efficiently within the restriction of Covid-19 pandemic. Hence, this paper adopts the literature reviews method for collection data process.

Results and Discussions

Global Context, Transnational Flow and the Market of Pangolin Illicit Trafficking

This market's illicit trade has been a concern to CITES, a body that formulates the wildlife trade regulation and has put the pangolin market for restriction since 1975. This body added the eight pangolin species in CITES Appendix I protected species in 2016 (CITES, 2017; Carrington, 2016). The United Nations of Drugs and Crime (UNODC) also controls this issue and has created the Global Programme for Combating Wildlife and Forest Crime, as well as an analytical toolkit to increase the network within the regional and sub-regional level in combatting wildlife and forest crime (UNODC, 2021). Also, there was International Consortium on Combating Wildlife Crime (ICCWC) held in Vienna in November 2009. This included five international agencies, specifically UNODC, initiated CITES, International Criminal Police Organization (INTERPOL), World Bank, and World Customs Organization (WCO). The objective was to design a strategy for wildlife enforcement (UNODC, 2019). Therefore, this case has seriously concerned international agencies due to its profound effect on the environment, ecosystem, and global impact.

Furthermore, the consumption of pangolin-related products is absent in Indonesia, making it the origin of the pangolin trade. Moreover, Indonesia ratified the CITES in 1978, which means it is a violation to exploit pangolin for any purpose (CITES, 2017). China also joined CITES in 1981, though the exploitation is still high for meat consumption, fashion, and traditional medicines (Challender, Harrop and MacMillan, 2015; Ingram et al., 2020; CITES, 2017). The relationship between supply and demand sides constitutes the supply chain within them and has led to the increase in illegal pangolin trade over the decades.

The final destinations of this trade include Vietnam, Hongkong and China, as shown in Figure 2 (Heinrich et al., 2017; Challender, Harrop and MacMillan, 2015; Nijman, 2015). It is transported via air, sea, and land, as shown in Figure 3. The unknown transportation is caused by the seized evidence's lack of information (Heinrich et al., 2017). This transportation method is also influenced by Indonesia's geographical condition, which is an archipelago. It is mainly transited in Malaysia or Hongkong before reaching the final destination (China). Furthermore, there is also some evidence of its online market through the internet, such as Facebook and dark web marketplaces, and then it is sent by mail (Fahturrozak, 2020).

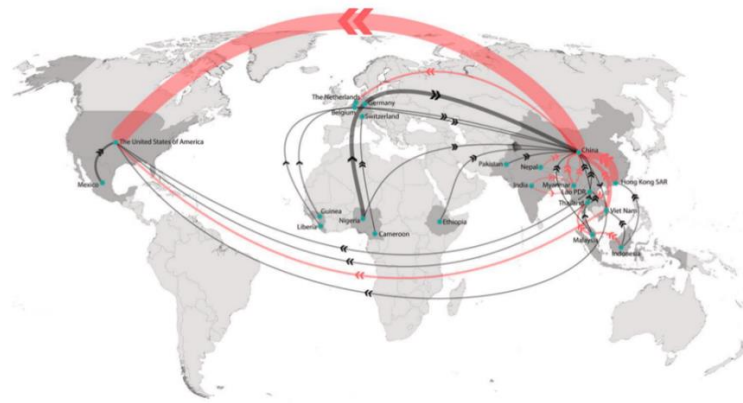


Figure 2 The global flow of pangolin trafficking

Source: (Heinrich et al., 2017)

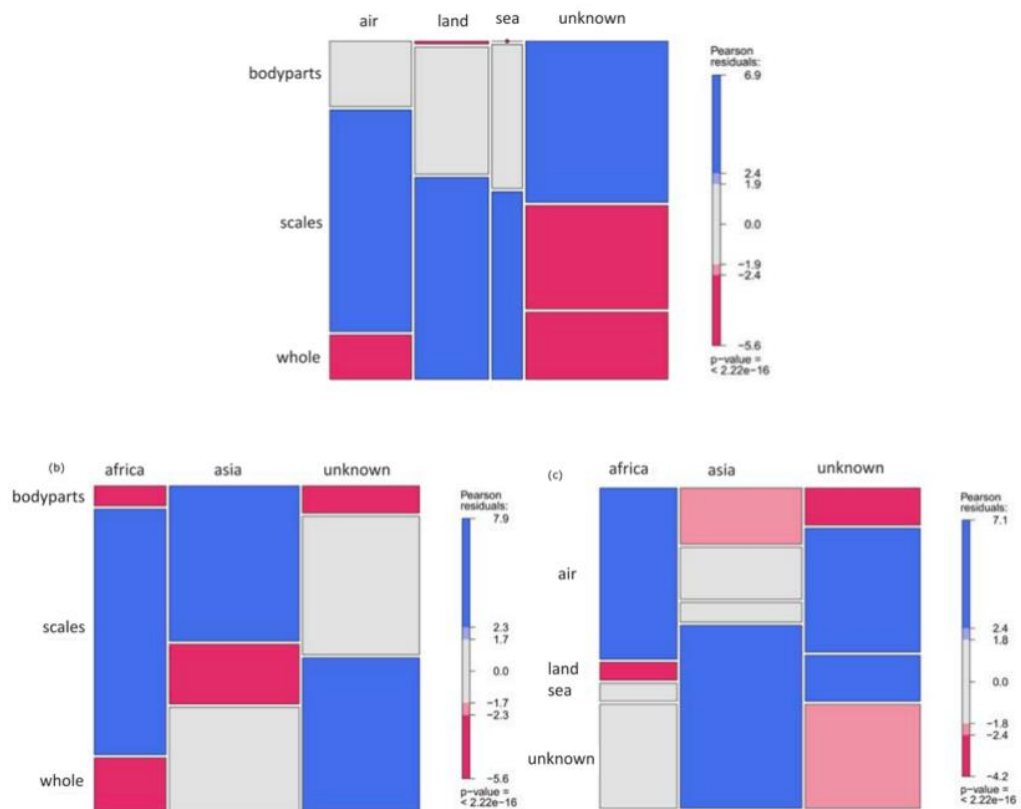


Figure 3. Model of transport of illicit pangolin trade

Source: (Heinrich et al., 2017)

Political Economy Analysis (PEA) of Pangolin Illicit Trafficking

Indonesia's geographical condition as supply side, is characterised by wide ranges of tropical forest in Sumatra, Kalimantan, and part of Java islands, making it suitable for Sunda pangolin (*Manis javanica*) habitat (Sartore, 2021; Harrison et al., 2020). Moreover, the low rates of per capita gross domestic product (GDP) in Indonesia are compared to other countries, this contravenes Indonesia's natural resources as shown in Figure 4 (OECD, 2013). The social economy characteristic of Indonesian people living near the tropical forest (rural area) has a low-income salary and works as a farmer or gardener. This influences the income inequality within the urban and rural areas, as shown in Figure 5 (Bou Dib, Alamsyah and Qaim, 2018). Furthermore, Indonesia's educational attainment rates in the rural area are low, explaining their law knowledge as shown in Figure 6. This means that offenders' motivation in trafficking pangolin could be motivated by the economic reason of their low income and educational level, combined with the Indonesia natural wealth, such as a tropical forest, and encourages them to exploit this source.

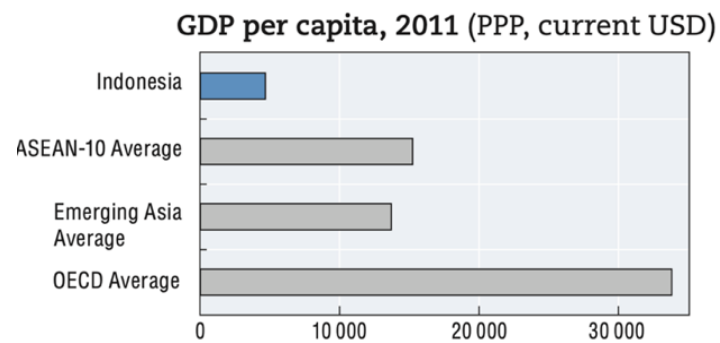


Figure 4 Data GDP per capita of Indonesia and compared with other countries, 2011

Source: IMF and national sources (OECD, 2013)

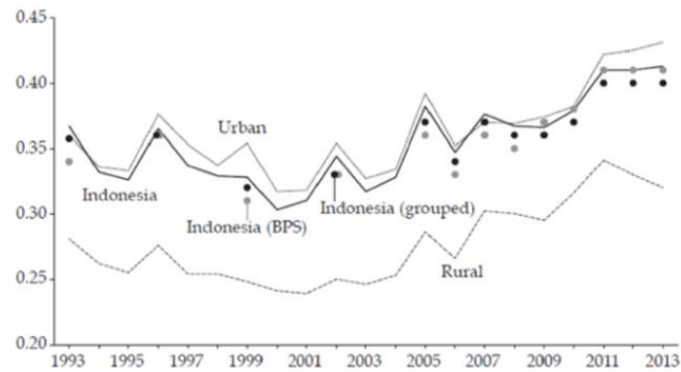


Figure 5 Gini Coefficient in Urban and Rural Area of Indonesia, 1993-2013

Source: National Socio-Economic Survey (Susenas) (Yusuf, Sumner and Rum, 2014)

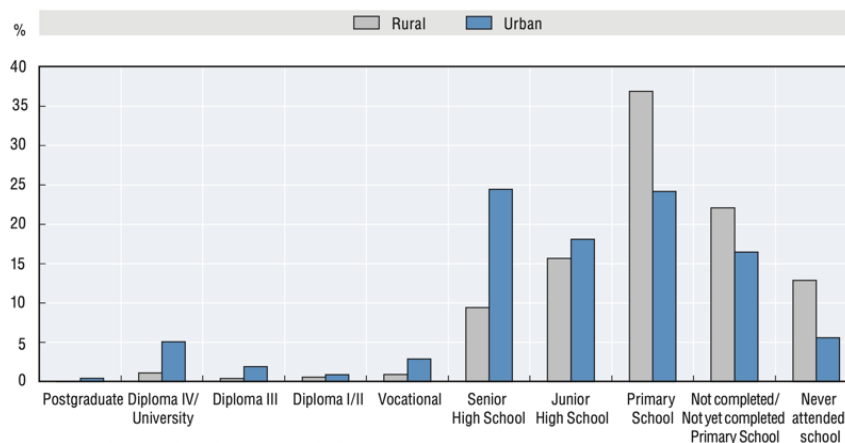


Figure 6 Educational attainment for the urban and rural population in Indonesia, 2010

Source: BPS Statistics Indonesia, 2010 Population Census (as cited in OECD, 2013)

Furthermore, Sunda pangolin is classified as a protected species under the Indonesia Government Regulation No. 7/1999, which governs animals and plants' protection. According to Conservation Law No. 5/1990, which regulates the conservation of biological resources and their ecosystems, protected species cannot be captured, injured, killed, stored, owned, maintained, transported, or trafficked while alive or dead (Apriando, 2019). However, exceptions to these prohibitions are allowed by the government for research, science, and/or species rescue activities (Ministry of Forestry of The Republic of Indonesia, 2006; Apriando, 2019). Violating the law will lead to a

maximum sentence of 5 years in prison and a fine of 100 million rupiahs (US\$ 7,500) (Apriando, 2019). Therefore, it is illegal to hunt and commerce wild pangolins, whether alive or dead, including their body parts such as scales. However, this penalty seems a minor deterrent in practice due to the maximum sentence of five years. Realistically, the court usually punishes them for about two years in jail and also less fine depending on the economic condition of the offender and victimless crime (Syukur, 2005). Therefore, the minor deterrent law in Indonesia about wildlife trafficking also contributes to its high pangolin trade rates.

China is regarded as the centre of pangolin trafficking in the world due to its high demand for it, specifically around 80% of total pangolin trafficking (Heinrich et al., 2017). The pangolin is used for many purposes in China, such as for luxury food, scales (which contains keratin, used for traditional medicines), and leather-product fashion, and also its blood which is believed as a healing tonic by the local (Kline et al., 2020; Ingram et al., 2019; Heinrich et al., 2017). Moreover, the population of local species of pangolin in China (*Manis pentadactyla*) has fallen by 90% over 27 years and its status is critically endangered (Challender et al., 2015). In case China's high demand for pangolins commodity surpasses the internal supply of local pangolins, the deficit is imported.

China ratified the CITES in 1981 for banning illicit wildlife trade. Moreover, the "Wild Animal Protection Law", which came into force in 1988, placed pangolins as a Class II endangered species. Chinese law forbids hunting, selling, and buying pangolins except for scientific research, species regulation, disease surveillance, or other permitted uses, cooking and purchasing them for food consumption are illegal (Jiaming, 2019). An amendment to the statute, passed in 2016 and 2020 barred pangolins' trading on the internet and placed it in Class I with Panda (Ling, 2020; Jiaming, 2019). Under Chinese criminal law, violators of the wildlife conservation laws could face five to ten years of prison time and smuggling at least eight pangolins are considered a "serious" crime that could result in 5-10 years imprisonment and smuggling sixteen pangolins could result in at least ten years of jail time (Jiaming, 2019). Hence, China has officially banned the pangolin illegal trafficking and will punish the offender with the prison.

Realistically, there is evidence of banning pangolin trafficking since 2010-2018 as shown in Figure 7 below. However, the use of its scales for medicinal purposes is allowed and regarded as an exception for disease surveillance (Watts, 2020). Moreover, scientific

purposes are also permitted for individuals or companies, but specifically for breeding pangolin¹ (Jiaming, 2019). This seems less relevant in protecting wildlife trafficking because it is difficult to distinguish the breeding and wild pangolin in practice. Therefore, the China law is less meaningful in pangolin trade enforcement due to some exceptional points in its law, a gap that could give opportunity for criminals to exploit it, and pretend to be using it for medicine or scientific, or breeding purposes.

In this supply chain, several actors are involved. In the first stage, the local villager living in forest area is coordinated by local collectors in Indonesia. In 2016, pangolin collectors in Curup, Bengkulu province, reportedly got one to two pangolins from local hunters and sold the animals through intermediaries in Medan (Apriando, 2019)(Apriando, 2019). In Riau province, collectors in Muara Bahan sold live pangolins collected from local villages to intermediaries in Medan and Padang (Apriando, 2019). The intermediaries then sold their products globally through the online market place, such as social media (Facebook) or the black market on the dark web (Fahturrozak, 2020). Furthermore, there are various routes and transportation of pangolin. However, it mostly transits in Malaysia before shipment to China as shown in Figure 8 (Gomez et al., 2015). In this case, the Indonesian intermediaries connect with the Malaysian trader. However, there is less identified transnational organised crime involvement in this activity due to the lack of information and evidence. The connection uses a loose network rather than a hierarchical approach, where their interaction in the form of buyer and seller.

Date	Place	Amount	Type	Method	Penalty
July, 2018	Guangzhou	7.262 tonnes	Scales	Hidden in container, claimed as rock from Africa	/
Apr, 2018	Hunan	50000	Bodies	Criminal network	/
July, 2017	Shenzhen	11.9 tonnes	Scales	Hidden in container, claimed as empty from Africa	/
Dec, 2016	Shanghai	3.1 tonnes	Scales	Hidden in container, claimed as wood from Africa	13 years imprisonment
Dec, 2012	Shantou	2032(9 tons) /0.325 tons	Frozen bodies /scales	Received by a ship from Huizhou in international waters near Malaysia	/
2010	Jiangmen	2090(7.85tons) /1.8tons	Frozen bodies/Scales	Received by a ship from Zhuhai in international waters near Malaysia	Lifetime imprisonment

Figure 7 Major seizure cases by the Chinese authorities from 2010-2018

Source: (Jiaming, 2019)

Due to the restriction, the traffickers may choose Malaysia as their primary route in some international airports in Indonesia. Additionally, these two countries are included in a multilateral relationship agreement, AFTA (ASEAN Free Trade Area), since 1992. This facilitates the local trade and manufacturing in all ASEAN countries (ASEAN, 2016). Furthermore, there was an ASEAN Agreement on The Movement of Natural Persons in 2012 to facilitate the cross borders movement within ASEAN members, including trading and investment purposes (Riccardi et al., 2020). These conveniences are regarded as an

alternative for the criminals to continue their illegal activities by eluding air transportation via international airports.

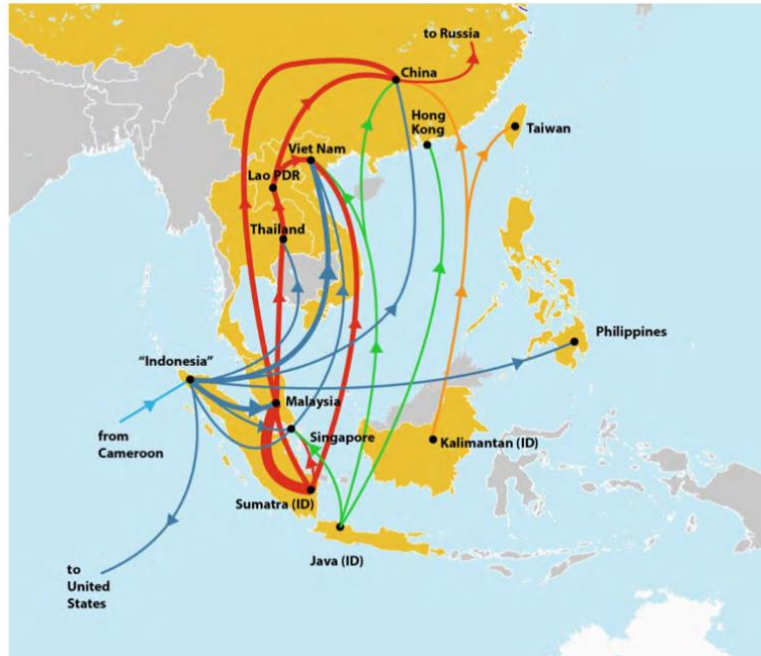


Figure 8. Pangolin trafficking routes from Indonesia

Source: (Gomez et al., 2015)

Market Analysis of Pangolin Illicit Trafficking

To understand the market of illegal trafficking on pangolins, it is necessary to analyse each actor's profit involved in these activities (Shaw, Reitano and Hunter, 2016). The price varies with the villagers in Bengkulu earning around 350,000 rupiahs (US\$ 24.00) for a whole pangolin that sold to the collector. In comparison, the collector in Riau pays 200,000 rupiahs (US\$ 14.00) for a kilogram of pangolin (Apriando, 2019). Furthermore, Nijman (2015) established the price from the collectors to intermediaries is about RM 80 (US\$ 24.00) for a kilogram. In the transit point (Malaysia), the intermediaries earn around RM 100 (US\$ 30.00) per kilogram from Malaysian sellers, then sell it to the Chinese market at RM750 (US\$ 227.00) per kilogram (Takandjandji and Sawitri, 2016).

In China, a kilogram of the pangolin is sold up to US\$ 1000.00 (Aisher, 2016). According to Zhou et al. (2014), this price has risen significantly in two decades. In the

1990s, from US\$13.00 in 1990s to S\$550.00 per kilogram in 2014. This is attributed to the banning of the pangolin trade in the 1990s in China and the decline of its local population (as cited in Aisher, 2016). In case each of the actors gains a profit from the trade, is the economic incentives that encourage them to do illicit market and the relationship within them as a seller and a buyer rather than hierarchical connection. Moreover, the price growth indicates that the government's intervention has succeeded in reducing the stock in the market, though pangolin population scarcity also contributes to these changes.

The pangolin hunters are mostly the villagers living near the forest. Being a farmer or gardener is influenced by the natural habit and skill for living in the forest environment. This means that they have enough knowledge about hunting. It is not easy to hunt a pangolin due to its nocturnal characteristics, living underground, and defence mechanisms, such as stinky fluid and powerful claws (Sartore, 2021). The hunter is expected to have hunting skills and be familiar with the habitat. Therefore, entering this market is complex with the supply actor can be grouped on the forest villager.

There is less evidence of the violent case reported due to the evolvement of organised crime in this market. This means there is a need for the local authorities' involvement to protect the market (Shaw, Reitano and Hunter, 2016). For example, in Riau province, a local police officer was arrested in 2018 for involvement in pangolin illegal trafficking (Syukur, 2005) Moreover, the same case was reported in Indragiri Hilir, where a local police officer was sentenced by a local court for bribery and pangolin trafficking involvement (Romadhoni, 2018). In this case, there is evidence of corrupt police that aims to protect the illicit pangolin market and enable the flow, leading to the less violent case in the market. Furthermore, the apparatus of this case involvement also is a gap between the law and the practice, a barrier in the enforcement.

Also, there is not any legitimacy of doing this crime from the villagers for the traffickers. This is because the government has provided security and livelihoods for every village in Indonesia by "Dana Desa" or village funds mechanism to guarantee the development of every village development in Indonesia (Kemenkeu, 2017). It means that the government has played the important role and has conducted their responsibility in providing the public provision in those areas and to ensure the evolvement of organised crime in filling the provision gap. Therefore, it can be determined that the legitimacy factor is absent in this case.

Harm Analysis of Pangolin Illicit Trafficking

There are two kinds of harm due to illegal pangolin trafficking, specifically environmental and physical harm. The environmental harm is influenced by the significant decline of the pangolin population. Around 50% of the pangolin population has decreased in 27 years, making this species critically endangered of extinction (Challender et al., 2015). This causes the ecological problem in the habitat due to their essential role in the forest, such as controlling the pest and improving soil quality (Pappin, 2011; United Nations Office on Drugs and Crime, 2012). Therefore, the pangolin population's decline can lead to ecosystem disorder in the forest and impact other species, plants, and biodiversity. In the long term of its impact, it could affect infertile soil and contributes to global warming due to the forest degradation.

Furthermore, pangolin might cause physical harm to human health as a virus transmitter. It is suspected to be the main factor in spreading the Covid-19 virus (SARS-CoV-2) in Wuhan, China (Bale, 2020). Although some research found that this virus initially came from bats, it was also transmitted to humans via pangolins (Angela Me et al., 2020). Moreover, there was a research in China identified the virus related to pangolins, named Dongyang pangolin virus (DYPV) and Lishui pangolin virus (LSPV), which spread epizootic pathogens (Gao et al., 2020). Moreover, consuming wildlife products is free from any hygiene and sanitary control (Angela Me et al., 2020). This danger is facilitated by the illegal trafficking of pangolin and could influence the transmission of the virus from animals to humans.

The effect of pangolins illegal trafficking includes harming the environment and physical condition. Its effect on the environment might affect the pangolin species and the whole forest ecosystem. On the other hand, consuming pangolins could lead to fatal diseases in humans because it opens up virus transmission opportunities. Focusing on these harms, it is necessary to prioritise the effective intervention in responding to the identified harms.

Appropriate Intervention in the Origin (Indonesia) and Host Country (China)

Regarding the supply (Indonesia), the environmental harm caused by the declining pangolin population is mainly influenced by the villagers living near the forest as pangolin hunters. The general deterrence approach seems more appropriate to reduce this harm due

to the characteristic of offenders with low education levels (OECD, 2013). The general deterrence aims to build intuitive sense within them to avoid any kind of crime (Paternoster and Bachman, 2012; Braga, Weisburd and Turchan, 2019). Respecting the villagers' limitations, this approach would be more effective in preventing wildlife crime because it would prevent a specific crime (pangolin exploitation) and other issues, such as tiger trafficking and illegal logging.

This method involves educating the villagers through the national campaign on wildlife conservation programs. It should include social community elements in the particular village (a village near the forest), such as local community police, local ethnic leaders, local civil servants, and Non-Governmental Organisations (NGOs). They have a mission to educate the villagers on the danger of breaking the forest ecosystem and the law that controls it. The education delivery method could be conducted by door-to-door (direct) counseling mechanism, hence the need to interpret and understand the issue well.

On the demand side (China), to avoid physical harm due to virus transmission from wildlife commodities, a similar approach would be expected to counter this harm. It is under consideration of the virus's characteristics that cannot be transmitted to specific species (pangolins) and other wildlife products, such as bats. The focused actor is the buyers of wildlife commodity in the market place in China. Conducting the general deterrence approach would build their sense about the fear in the fatal diseases caused by a virus and the fear of law consequences for committing wildlife trade.

This intervention could help avoid wildlife-related products for many purposes, including fashion, culinary, and traditional medicine. Local authorities could coordinate this activity through education media, such as social media, posters, or mass media. The contents are about kinds of fatal diseases based on credible research and the example of punished or sentenced offenders. Based on exceptional points in China regulation about the pangolin, it is essential to put more attention to breeding pangolin for traditional medicine purposes. This may include certificating the breeding pangolins to distinguish them from the wild pangolins. Moreover, the breeding pangolins seem more hygienic and sterile from the virus. Furthermore, the certification mechanism on breeding pangolins would help the local authorities to monitor and control the market.

Indonesia has followed the CITES since 1978, which means that Indonesia has joined an international campaign about wildlife crime prevention. However, the

government is just focusing on the repressive approach than targeted-group deterrence for this campaign to be less meaningful in practice (Wildaid, 2018). On the other hand, China campaigns to persuade mothers not to use pangolin-related medicines to increase lactation for nursing mothers (Wildaid, 2018). Nevertheless, this campaign focuses on a specific group and specific purposes to prevent the case, regardless of the other pangolin-product users and purposes. Therefore, by concerning the two points of suggested intervention, all groups of users and purposes are vital to cut both “push” and “pull” factors to effectively stop the market chain.

Theory of Change Application

Based on the previous section, the general deterrence intervention (by promoting a campaign) would be effective in countering the pangolin trafficking on both sides (supply and demand) to cut the market chain. The theory of change examines this intervention to assess its process by involving the targeted actor, including determining the quality and the aims of this program (Woodrow and Oatley, 2013; Stein and Valters, 2012). The objected actors in this intervention include the villagers on the supply side (Indonesia) and the buyers on the demand side (China). The campaigns in both countries could reduce the number of pangolin hunters in Indonesia and users in China to stop the market chain.

This program would build the intuitive sense and create a moral defence within them to not doing a crime (Paternoster and Bachman, 2012; Braga, Weisburd and Turchan, 2019). It means that this program could prevent various crimes rather than a specific one (pangolin trafficking). However, there are several challenges in its practice, such as the extra cost needed, additional staff’s skill in delivering the intervention (by education) to the particular actors, and extra time in the process. By resolving such challenges, this program may foster efficiency (save cost and time) for the following program because it affects the reduction of other wildlife crime acts.

The intervention mechanism in Indonesia as shown in Figure 9 involves intervening with the villagers as the main actor. It is assumed to reduce the number of wildlife hunters in the forest. Finally, it would reduce the supply stock of wildlife commodities, including the pangolins product. While in China as shown in Figure 10, the target in this term is the buyers or the users of the wildlife goods could reduce the number of wildlife product consumers. The objective is to decline the demand in the wildlife market.



Figure 9 Deterrence mechanism in Indonesia (supply side)

Source: Processed by author



Figure 10 Deterrence mechanism in China (demand side)

Source: Processed by author

Finally, the reduction in both sides (supply and demand) could cut the market chain of wildlife trafficking, especially pangolin trades. It would also eliminate economic incentives of both sides to do wildlife crime due to the less profit earned because of demand reduction. This is following the principle of deterrence in preventing the crime to change their rational view which is associated with their motive in committing the crime (Paternoster and Bachman, 2012). Therefore, the wildlife trafficking, including the pangolin trade would be reduced.

Broader Application of Intervention

Implementing the general deterrence model through campaigns is meant to counter pangolins trafficking in other jurisdictions with the same supplier background as Indonesia. For example, in the African market, the main suppliers come from several areas, including

Nigeria, Cameroon, the Democratic Republic of Congo, and Ghana (Angela Me et al., 2020). These countries have similar characteristics with Indonesia, such as the wide range of pangolins habitat and the villagers living near the forest as the hunters, which is associated with the low rates of GDP and low educational level (Angela Me et al., 2020). The general deterrence model would adequately reduce the number of hunters because the campaigns that emphasise educating the offender would be relevant and suitable to deal with their limitations in this area. Finally, it could also reduce the number of pangolins hunters and decline the supply to cut the market chain.

This method could also be applied for other forest-related crime, such as illegal logging and illegal harvesting, which is committed by companies and villagers near the forest. For example, the local villagers practice illegal logging in the Gunung Palung National Park region using traditional tools (Hiller et al., 2004). This is attributed to the lack of villagers understanding their limitation in exploring the forest product and the information of restricted logging area (Hiller et al., 2004). Therefore, the general deterrence method fits in this case by educating the villagers on the danger of illegal logging to the forest ecosystem and the law consequences for committing such crimes.

This approach could support the international activities related to the environmental concern, such as CITES and UNODC in protecting endangered animals and The Paris Agreement about climate change (UNODC, 2021; CITES, 2020; UNFCCC, 2015). CITES and UNODC could adopt this model to counter forest-related crime due to their capacity and characteristics with a “soft approach” in transnational crime enforcement. The general deterrence model, through a campaign, would be adequate for the low-education level areas to reduce crime. This general characteristic (not specific) is necessary to combat another forest-related crime, such as illegal logging, which has the same background as offenders. This could support The Paris Agreement about climate change that one of the points is caused by deforestation and forest degradation (UNFCCC, 2015).

Conclusions and Recommendations

The illegal pangolin market has various routes and transportation methods. This trend has increased over the decades, though it is controlled by international and national law. Consequently, the pangolin population's significant decline is inevitable and has put some species in critically endangered status. It might affect the forest ecosystem and

impact further environmental problems. The existing interventions generated globally and nationally seem less meaningful in countering this problem.

To formulate the best intervention, three steps are essential, including analysing, prioritising, and responding. To analyse the crime, the PEA and market analysis are used in this process. This market is led by the “push” factors in Indonesia influenced by the geographical condition, which has a wide range of tropical forests as pangolin habitat. Moreover, the low level of GDP and education rates is the main factor behind pangolin trading. In comparison, the “pull” factors in China are influenced by the high demand rates that cannot be covered by its local pangolins population. Furthermore, the market analysis shows that the price of pangolin has changed over the period. It has also identified the specific group as pangolin hunters, involvement of local apparatus, and the devolvement of trans organised crime in this market.

The general deterrence approach is regarded as the best model to intervene in the market. This approach could reduce the supply and demand to cut the market chain. Moreover, the model could also be applied in other countries with the same characteristics as Indonesia, such as in the Africa market. Furthermore, this intervention is also applicable for countering other forest-related crimes, including illegal logging, and would support the international program in protecting endangered animals and other environmental issues, such as global warming.

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