

Vietnam, the big market and cross bridges of illegal wildlife trade in Asia: causes and solutions

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The results of this study provide data on the logistics, scope, routes, channels, seasons, and the economy of illegal wildlife trade in the country and across Vietnam. It investigates the main reasons for the continued illegal wildlife trade and highlights the key failures in Vietnam and other concerned countries undertaking efforts to prevent and control it. This study identifies the most important wildlife trade routes in, and through Vietnam. The study points out eight (8) causes of illegal wildlife trade, suggesting some economic regulation measures as well as ten (10) specific and actionable policy recommendations. The report recommends that the government strengthen the capacity of responsible institutions to combat illegal trade practices. It also emphasizes the need to use education to discourage the people of Vietnam from consuming illegal wildlife products. The report concludes that given the unprecedented scale of the problem, there is a need for strong institutional commitment and political will at all levels of government within Vietnam as well as effective international cooperation among Asian countries in order to have a significant impact on controlling illegal wildlife trade in and through Vietnam.

Key words: Illegal; Routes; Revenue; Profit; Wildlife Trade

1. INTRODUCTION

The economies of Vietnam, China, and Asian countries have grown rapidly over the recent years, leading to an increased demand for consumption of wildlife products. Wildlife products are often used in the production of traditional medicines, pets, foods, jewelry items, decorations, handicrafts, displays, and gifts or considered as luxury products (Van Song, 2008). Vietnam has transformed from a country mostly illegally exporting and transshipping wildlife commodities into a final destination that satisfies the demands of the emerging rich. Outdated cuisine culture, "special dish" enjoyment and blind faith in "esoteric" remedies without scientific evidence, have put many rare wildlife species in jeopardy (Reconciliation, 2018). Vietnam has become an important center of trading, captive breeding, and consuming wildlife in Asia (Government, 2004). Wildlife trading is developing with 40 species of coleopteran and 90 species of butterfly. Besides 3,500 species of fauna and flora and about 20,000 tons of other flora have been used as medicine (Government, 2004; Ha & Truong, 2003).

In summing up, Vietnam is one of the 10 most biodiverse countries in the world, accounting for 10% of known species, while its territorial area is just less than 1% of the Earth's (Nguyen, 2008). Vietnam has been a rich source of wildlife in past years, but as it is, it has become an

effervescent wildlife market that unfortunately serves as an important cross-bridge for illegal wildlife trade from the world to neighboring countries. Although the Vietnamese Government and international conservation organizations have made rigorous efforts to combat illegal wildlife trade in the past, the problem endures and continues to cause adverse and negative impacts on the wildlife and biodiversity of Vietnam.

In general, this study tracks the illegal wildlife trade supply chains in, and through Vietnam; and proposes effective solutions to limit illegal wildlife trade in Vietnam. To estimate illegal wildlife trade, and to track the illegal wildlife trade supply chains in, and through Vietnam; To identify limitations for effective implementation and enforcement of wildlife protection policies; To provide recommendations for effective implementation, enforcement, and management of wildlife in Vietnam.

2. LITERATURE REVIEWS

Drury (2011) concludes that "wild meat is the product most commonly reported to be consumed, predominantly by successful, high-income, high-status males of all ages and educational levels and is used as a medium to communicate prestige and obtain social leverage". The harvest of wildlife through hunting, trapping and snaring is illegal in Vietnam but nevertheless, remains widespread and is understood to be a major threat to many species

(MacMillan & Nguyen, 2014). Study results of Sandalj, Treydte, and Ziegler (2016) conclude that increasing urban wild meat consumption in Vietnam poses a major threat to faunal biodiversity, especially in light of the fact that Southeast Asia is a geographical region that supports more threatened species than any other comparable continental area (Gray et al., 2018). The several studies uses mixed social science approaches to understand the motivations driving consumers of bear products for medicine in Vietnam, and of traditional medicine practitioners who may be influencing consumers. They provide current information about the ways bear products are used in the two largest cities of Vietnam: Hanoi and Ho Chi Minh City. Trade of turtles, for both food and pet, represents a substantial business in Vietnam, especially because this country is a cross-bridge for wildlife trade from Indochina to China (Van et al., 2019). In Hanoi, it is generally purchased by the individual for self-use, while in Ho Chi Minh City it is generally purchased as a gift. They suggest that conservation organizations should focus on behavior change campaigns that are informed by the results”.

It is clear that the demand for endangered wildlife species is increasing rapidly in East Asia (Hanley, Sheremet, Bozzola, Kasterine, & MacMillan, 2016). Among the wildlife species illegally traded, more than half of them are mammals and reptiles. Wildlife trade products can be leather, pharmaceuticals, and meat via air routes (Petrossian, Pires, & van Uhm, 2016). According to (Hanley et al., 2016), rhino horn consumption in Vietnam showed that wild rhino horns are preferred and paid the highest price by the richest people. Besides, tigers are also one of the most endangered wildlife species in the world (Abbott & Van Kooten, 2011; Begum & Gill, 2014), with the number of wild tigers decreasing from 100,000 in the turn of 20th century to about 3,000-5,0000 tigers today (Worden & Rees, 2011).

ADB (2014) emphasized that wildlife trafficking is a transnational and organized crime. Therefore, countries need to seek comprehensive measures including policy and market tools to protect their own wildlife resources as well as the biodiversity of local ecosystems (Agarwal, 2015; Azam, Jayasuriya, Musthafa, & Marikar, 2016). The solution to reduce consumer demand in countries that are major importers of wildlife products is one such initiative (Hanley et al., 2016; Lyons & Natusch, 2013; Wyatt, 2017). Besides, for tigers, the establishment of tiger farms in China to meet the needs of the market (Abbott & Van Kooten, 2011) or the protection of wild tigers in India can be conducted by local communities (Begum & Gill, 2014). Similarly, hunting tourism in Namibia (Schmitt & Rempel, 2019) is also another solution proposed by researchers to limit hunting and illegal trading of wildlife products.

3. METHODOLOGY

3.1 Data Collection

Collecting and surveying primary data for this study is a potentially dangerous and controversial process.

Researchers and interviewers have to play the role of consumers in the interview (real bargaining, buying, eating, and so on). Hot spots on illegal wildlife trade in Vietnam have been surveyed. The provinces with borders with Cambodia, Laos, and China such as Can Tho, Ha Tinh, Nghe An, Quang Nam, Lang Son, Lao Cai, and Quang Ninh are also investigated and consumed channels.

In addition, the Customs of the two border gates of two large airports from abroad to Vietnam and from Vietnam to foreign countries are also explored and investigated, namely Tan Son Nhat and Noi Bai airports. To investigate the channels, where living wildlife and wildlife products are traded through the sea, Hai Phong and Vung Tau harbors have been investigated.

For the domestic markets and domestic wildlife trade channels, most of the main data are collected from wildlife wholesalers and retailers, hunters, consumers, Forest Protection Department staff, police officers, customs officers, and market management, and in research areas through individual interviews using a structured interview schedule. Data is also collected from Vietnamese traditional medicine stores, tourist souvenir shops, traditional medicine manufacturers, hotels, restaurants serving wildlife dishes, and middlemen. The two major markets for wildlife consumption and wildlife products are Hanoi and Ho Chi Minh cities.

In addition, scientists, drivers, biologists, heads of CITES, World Wildlife Fund, TRAFFIC, International Animals and Plants, United Nations Development Program Staff, and authorities, etc. are also interviewed for necessary information.

The volume of product “*j*” is obtained by multiplying the number of traders of live wildlife/number of restaurants in local areas/number of stuffed wildlife shop in the street with the average amount of product “*j*” sold per period of time (daily, monthly). The total amount of respondents is 171 interviewees of 20 wildlife hot-spot provinces or cities.

3.2 Estimated approaches

a) *Estimated total supply of illegal live and wildlife products*

$$TS_j = \sum_{i=1}^n T_{ij}$$

Where:

$i = 1 \dots n$ (number of traders on the market)

$j = 1 \dots m$ (number of wildlife species on the market)

TS_j is the total existing supply of illegal live wildlife or dry products (*j*) in the markets (in unit, head, or kg)

T_{ij} is a wildlife product or a live wildlife “*j*” sold by trader “*i*” (live wildlife trader, souvenir shops, and medicine

shops).

Note: Total supply of illegal live and wildlife products are estimated daily, and then converted to yearly.

b) Estimated total supply of wildlife meat in the markets

$$TMS = \sum_{i=1}^n (NR_i * SM_i)$$

Where:

$i = 3$ (small, medium, and large restaurants);

TMS refers to the total wildlife meat supply per day of the market (kg);

NR_i is number of restaurants with scale (i);

AM_i is average amount of wildlife meat sold per day (kg).

c) Estimated total revenue from live wildlife, wildlife meat, dry, and stuffed products in the markets

$$TR = \sum_j^n TS_j * AP_j$$

Where:

TR is the total revenue from live species or wildlife meat restaurant, dry product, or stuffed product(s) in the market in a period of time;

TS_j is the total existing supply of illegal live wildlife or meat wildlife or dry products (j) in the markets (in unit, head, or kg);

AP_j is the average price of live species, wildlife meat, or dry product (j).

Note: Total revenue from live wildlife, wildlife meat, dry, and stuffed products are estimated daily, and then converted to yearly.

d) Estimated total profit from live, wildlife meat, souvenir, and stuffed wildlife markets

Due to the nature of illegal wildlife trade and the limited data available, the method used to estimate the profit of live, wildlife meat restaurant, souvenir, and stuffed wildlife markets is as follows:

$$PR = TR * ARP$$

Where:

PR is the profit of live wildlife/wildlife meat restaurant/wildlife souvenir/and stuffed wildlife markets;

TR is the total revenue of live species/wildlife meat restaurant/wildlife souvenir/and stuffed wildlife markets in a period of time (per day and per month for souvenir and stuffed markets);

ARP is the average rate of profit (in percent) of the product at the market obtained from key informants. Note: Details on costs could not be obtained from the traders.

Note: Total profit from live wildlife, wildlife meat, dry, and stuffed products is estimated daily, and then converted to yearly.

4. RESULTS AND DISCUSSIONS

4.1 Violation and confiscated cases, amount of illegal wildlife trade in Vietnam from 2013 to 2017

According to the collected and synthesized results, for the years 2013 to 2017, competent authorities have detected and seized 1,504 offenses with 1,461 offenders to wildlife protection laws. Many wildlife species have been illegally transported and traded during this period. Total revenue of fine for wildlife violations is 16,000 million VND (about 700,000 USD) (Table 1).

Table 1. Wildlife Crime in Vietnam in the period of 2013 - 2017

Discription	Unit	Amount
Violation cases	Case	1,504
Amount wildlife and products from wildlife were confiscated	kg and Head	41,328
Offenders of wildlife regulations	Violated Person	1,461
Monetary fine for wildlife violations	Million VND	16,000

Source: Wildlife Conservation Society Vietnam (WCS) (2018)
Exchange rate: 23,200 VND = 1 USD

A large proportion of endangered species has been identified, including pangolins, snakes, birds of all kinds, and turtles. Offenses particularly related to exotic animal species brought to Vietnam such as rhinos, elephants,

pangolins account for 13.5% (203/1,504) of the total offenses; 7.43% (1,949/26,221) of the total number of wildlife individuals are seized and 44.64% (18,450/41,328 kg) of the total wildlife volume has been confiscated

(Figure 1 and Figure 2).

Data on the types of crimes related to illegal wildlife trading, illegal wildlife capturing, illegal wildlife poaching, and illegal wildlife transporting are shown in Figure 3. This study finds that most of the violations are

involved in transportation and illegal trade in wildlife species. Illegal trading (25.6%) and transportation (59.27%) account for 85% of violations (Figure 3).

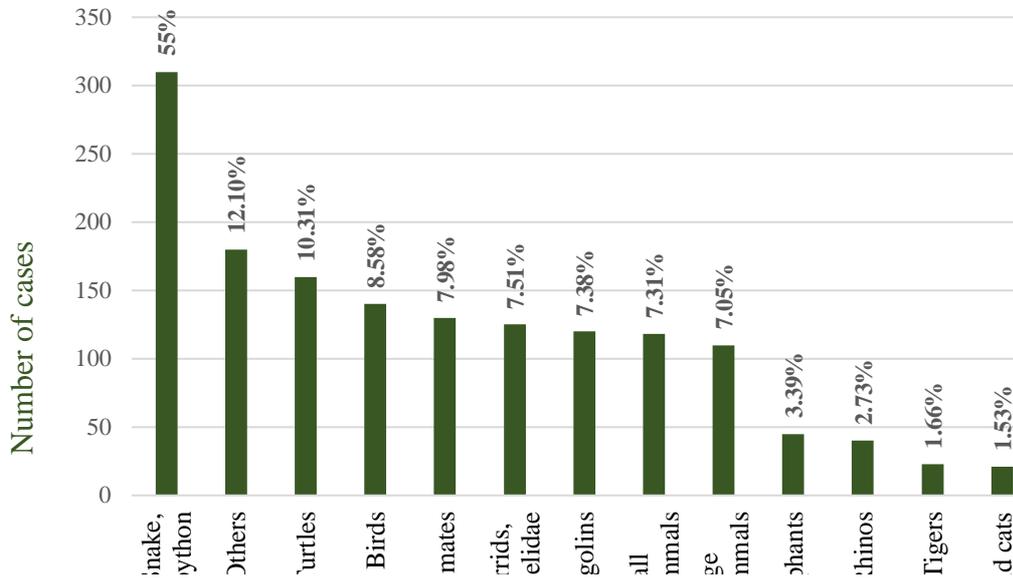


Figure 1. Amount and percentage of violation case, in terms of wildlife species
 Source: Wildlife Conservation Society Vietnam (WCS) (2018)

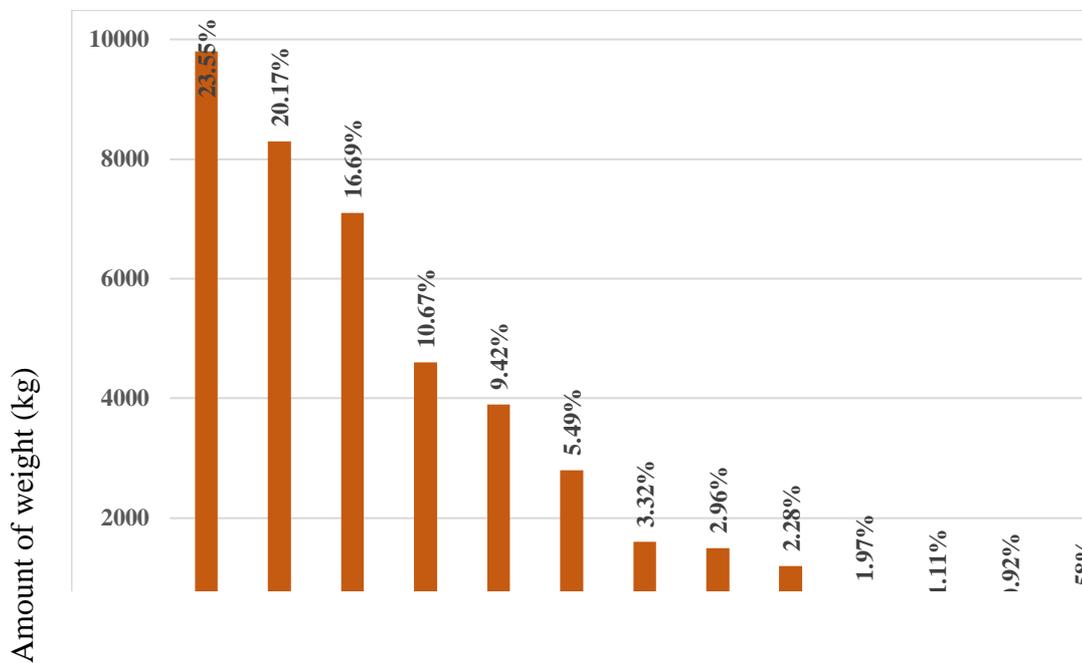


Figure 2. Total weight of seized species from 2013 to 2017 in Vietnam
 Source: Wildlife Conservation Society Vietnam (WCS) (2018)

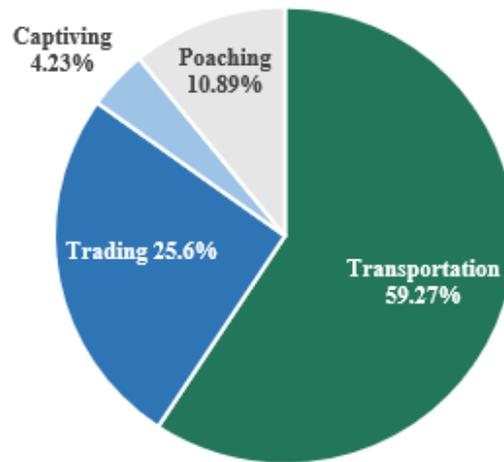


Figure 3. Wildlife crimes in first instance courts
 Source: Wildlife Conservation Society Vietnam (WCS) (2018)

The majority of the penalties are suspended sentences (57.41%) and imprisonment (37.50%), accounting for 95%

of crimes. 12-36 months' imprisonments made up 53.1% of all the imprisonments (Figure 4).

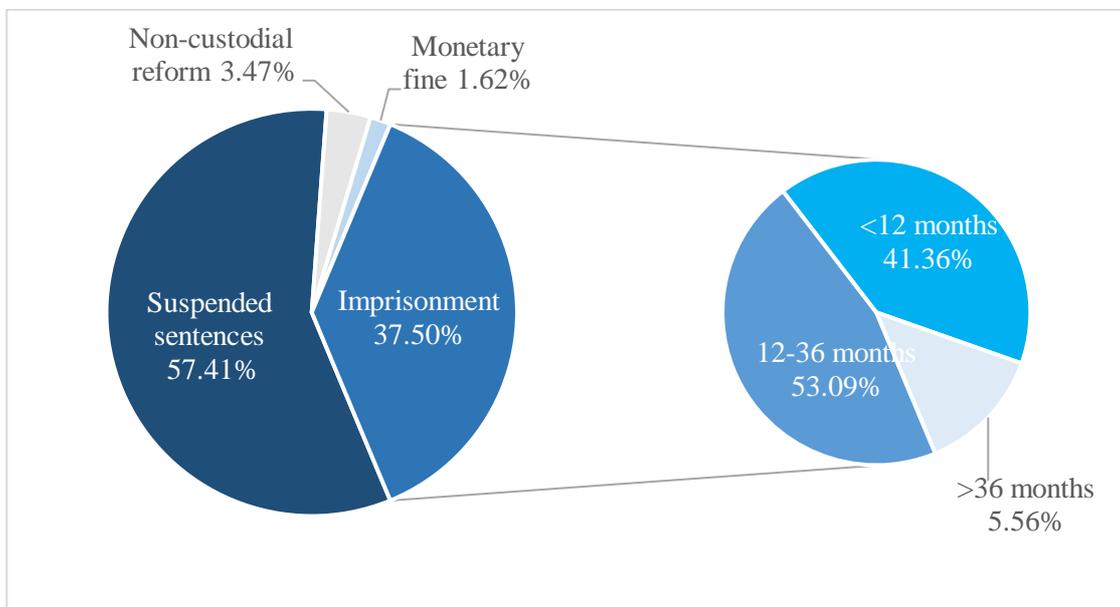


Figure 4. Penalties
 Source: Wildlife Conservation Society Vietnam (WCS) (2018)

The hot spots of wildlife crimes in Vietnam are concentrated mainly in big cities like Hanoi and Ho Chi Minh City, or border areas such as Mong Cai City in Quang Ninh province (adjacent to China), Que Phong

district in Nghe an province and Da Krong district in Quang Tri province (adjacent to Laos), An Giang province and Tay Ninh province (adjacent to Cambodia). Analyses by species shows that pangolin-related crimes are common

in northern coastal provinces. Meanwhile, rhino horns and ivory are illegally traded in large cities via aircraft or along major border gates adjacent to China. In terms of origin, trafficked wildlife species originating from Africa account for more than 50% (19/38) of the total offenses recorded, of which Angola accounts for the largest 26.32% (5/19).

4.2 Estimated total amount and revenue of wildlife trade in domestic markets

4.3 The Illegal Live Wildlife Trade

There are about 90 live wildlife traders in the three subsites. The total estimated revenue and profit of live

wildlife markets in the three subsites are VND 200.1 billion (US\$8.6 million) and VND 30 billion (US\$1.3 million) per year, respectively. Of these, Hanoi and Ho Chi Minh cities have the biggest value of live wildlife trade (Table 2). The best-selling species in Hanoi markets are birds and snakes. An endangered and expensive species in Vietnam is the Golden Turtle, which has a price per kg of VND 140 million to VND 150 million (US\$6,000 - US\$7,000). However, since this species is also considered critically threatened, this is a higher risk of getting caught.

Table 2. The estimated results of illegal live wildlife trade in the three subsites and Vietnam

Subsites & Vietnam	Number of traders	Live wildlife trade			
		Total revenue		Total profit	
		Per day (VND million)	Per year (VND million)	Per day (VND million)	Per year (VND million)
North	36	205.2	74,898.0	30.8	11,234.7
Central	22	129.0	47,085.0	19.4	7,062.8
South	33	214.2	78,183.0	32.1	11,727.5
Total in Vietnam	91	548.4	200,166.0	82.3	30,024.9



Picture 1. Giant bird market in Hanoi city
(Source: Tam An, 2019)



Picture 2. Bird seller in Mekong River Delta
(Source: Ngoc Trinh, 2020)

4.4 Meat Wildlife Trade

Vietnamese, Chinese, Japanese, and other people in Asian countries are fond of eating. They believe that eating and drinking wildlife as well as taking medicines derived from wildlife products helps portray them as aristocratic people. There are about 950 wildlife meat restaurants in

Vietnam, which consume 2,240 tons of wildlife meat per year. The total revenue and profit are VND 1,142 billion (US\$ 49.2 million) and VND 314 billion (US\$ 13.5 million), respectively. The north and the south consume higher amounts of wildlife meat than the central. Wildlife meat is mostly brought in from Plateau, Laos, Central, South, Mekong River Delta, Quang Nam province, Cambodia, Myanmar, Malaysia, and Indonesia.

Table 3. The estimated results of illegal wildlife meat trade in the three subsites and Vietnam

Subsites and Vietnam	Number of restaurants	Average amount of wildlife meat consumed per year (tons)	Total revenue per year (VND billion)	Total profit per year (VND billion)	Sources of wildlife
North	306	803	530	136	Plateau; Laos; Central; South; Mekong River Delta; Quang Nam province; Protected areas, Cambodia; Myanmar; Malaysia; and Indonesia.
Central	297	647	291	85	
South	345	785	321	93	
Total in Vietnam	948	2,235	1,142	314	



Picture 3. Wildlife meat restaurant in Ha Noi city
(Source: My Hang, 2020)



Picture 4: Wildlife meat restaurant in Da Nang city
(Source: Chi Nhan, 2020)



Picture 5: Wildlife meat restaurant in Thanh Hoa province
(Source: Quach Du, 2021)

4.5 Dried Wildlife Trade

There are about 24 kinds of products made from wildlife parts on sale in Hang Gai and Hang Trong of Ha Noi. The popular “dry products” are tiger teeth, bear teeth, artistic goods, turtle shell artistic products, and sea turtle (Table 4). The estimated revenue and profit from wildlife dry products and artistic shops are VND 787.9 million (US\$

33,961) and VND 94.6 million (US\$ 4,078) per year, respectively. At Dong Khoi, which is located near Cau Mong wildlife market, there are about 12 shops that sell wildlife products. The estimated revenue and profit of wildlife products along Dong Khoi Street are about VND 4.457 million (US\$ 192,130) and VND 534.9 million (US\$ 23,055) per year, respectively.

Table 4. The revenue and profit of wildlife dry products on sale in souvenir shops in Hanoi and Ho Chi Minh cities

HANOI CITY				HO CHI MINH CITY			
ITEM	Price (VND 1,000)	TR per year (VND 1,000)	TPr per year (VND 1,000)	ITEM	Price (VND 1,000)	TR per year (VND 1,000)	TPr per year (VND 1,000)
Tiger small teeth	500	31,500	3,780	Tiger teeth	2,000	57,600	6,900
Tiger big teeth	1,000	36,000	4,320	Tiger claws	625	36,000	4,320
Tiger claws	425	31,860	3,825	Tiger skin	18,750	-	-
Bear claws	225	23,610	2,850	Bear claws	300	15,120	1,800
Bear teeth	500	48,000	5,760	Sorrow horn	18,750	540,000	64,800
Ivory small Buddha statue	1,575	217,350	26,070	Elephant ivory Buddha statue	1,875	697,500	83,700
Ivory medium Buddha statue	1,800	81,000	9,720	Elephant ivory cigarette holder	2,500	24,000	2,880
Ivory small boat	893	13,380	1,620	Elephant ivory bangle	12,500	150,000	18,000
Ivory necklace	4,875	58,500	7,020	Elephant ivory chopsticks (pairs)	3,000	72,000	8,640
Ivory small chimney of lamp	16,875	-	-	Lizard skin purse	3,750	81,000	9,720
Ivory medium chimney of lamp	29,250	-	-	Civet skin	8,750	84,000	10,080
Ivory big chimney of lamp	51,750	-	-	Rhino skin (per kg)	5,250	315,000	37,800

Turtle big bangle	225	27,000	3,240	Leopard skin	21,250	102,000	12,240
Turtle small bangle				Suitcase, part in leopard skin	8,750	252,000	30,240
Turtle women comb	175	18,390	2,220	Turtle bangle	938	315,000	37,800
Turtle men comb	175	7,890	960	Turtle Spectacle frames	9,000	475,200	57,030
Turtle knife	250	15,000	1,800	Turtle cigarette hold box	1125	121,500	14,580
Turtle earring	88	11,010	1,320	Turtle comb	350	142,800	17,130
Turtle mouse tail long necklace	500	22,500	2,700	Turtle knife			
Turtle mouse tail short necklace	425	25,500	3,060	Turtle fan with shell ribs	375	27,000	3,240
Turtle big hair-pin	113	4,050	486	Turtle cigarette lighter	9,375	810,000	97,200
Turtle small hair-pin	63	2,820	330	Turtle glasses frame	825	23,760	2,850
Whole dry small sea turtle	2,500	15,000	1,800		863	115,920	13,920
Whole dry medium sea turtle	5,000	75,000	9,000		0	-	-
Total		787,860	94,581		0	-	-
					4,457,400	534,870	

The results in Table 5 show that the estimated total revenue and profit of illegal dry wildlife products trade are about VND 1,093 billion (US\$ 47.1 million) and VND 273 billion (US\$ 11.8 million). Most of these products are

brought in from Plateau, Laos, Mekong River Delta, Quang Nam province, Cambodia, Myanmar, Malaysia, Indonesia, European countries, African countries, and Russia.

Table 5. The estimated results of dry wildlife products trade

Market	Kind of product and place	TR per year (VND billion)	TPr per year (VND billion)	Source of products
Hanoi souvenir	24	7.88	1.97	
HCMCT souvenir	21	44.57	11.14	
Tiger bone balm	Hanoi	22.05	5.51	Plateau; Laos; Central; South;
	Vinh	10.25	2.56	Mekong River Delta; Quang
	HCMCT	36.00	9.00	Nam; Protected areas,
Bear bile	Hanoi	468.75	117.19	Cambodia; Myanmar; Malaysia;
	Vinh	400.00	100.00	Indonesia; European countries;
	HCMCT	103.13	25.78	African countries; Russia.
Total		1,092.63	273.16	

Table 6 shows that the estimated total revenue and profit of illegal stuffed wildlife trade are about VND 15.2 billion (US\$655,170) and VND 3.68 billion (US\$158,620), respectively.



Picture 6. Tiger skin trade in Nghe An province (Source: Duc Ngoc, 2017)



Picture 7. Dry and Stuffed wildlife trade in Dak Nong province (Source: Thu Hanh, 2013)

The total profit from live, meat, dry, and stuffed markets in Vietnam is estimated at VND 621 billion (US \$ 27 million) (Table 7). Of which, the meat wildlife market and dry wildlife market account for 95% (587/621). Compared with the fine for five (5) years from 2013-2017, VND16 billion (US\$ 690,000) (Table 1), the profit from the

domestic wildlife trade is 188 times that of the fine. This is evidence of why the phenomenon of illegal wildlife trade remains widespread and popular despite the efforts undertaken by the Vietnamese government to prevent and control the practice.

4.6 Stuffed wildlife trade

Table 6. The estimated results of stuffed wildlife in Hanoi, Hai Phong, and HCMCT

Market	Quantity (Pecies)	TR per year (VND billion)	TPr per year (VND billion)	Source of products
Hanoi	420	5.77	1.44	Plateau; Laos; Central; South; Mekong River Delta; Quang Nam; Protected areas, Cambodia; Myanmar; Malaysia; Indonesia; European countries; African countries; Russia.
Hai Phong	396	4.28	1.07	
Ho Chi Minh City	516	5.17	1.29	
Total	1,332	15.22	3.68	

Table 7. Summed up estimated profit of live, meat, dry, stuffed markets in Vietnam

Market	Profit per year	
	VND million	US\$
Live wildlife market	30,100	1,297,414
Meat wildlife market	314,000	13,534,483
Dry wildlife market	273,160	11,774,138
Stuffed wildlife market	3,680	158,621
Total	620,940	26,764,656

4.7 Routes of Illegal Wildlife Trade in, out Vietnam

By roads, the targets of the wildlifes transport directions are Hanoi City and Ho Chi Minh City. The transportation routes from Laos and Cambodia all cross the northwestern borders of Vietnam, follow the trails Highway 1 and then transport goods to major cities such as Hanoi, Ho Chi Minh City, Hai Phong, Da Nang for domestic consumption, or onward shipping to East Asian countries such as Korea, Japan, Taiwan and China.

By air, wildlifes are transported mainly with processed products or dried products; these products are brought in from abroad through Noi Bai airports in Hanoi, and Tan Son Nhat airport in Ho Chi Minh City, and then consumed domestically or shipped to China or East Asian countries such as Taiwan, Japan, and Korea.

By the sea, wildlifes transported by the sea can be live wildlifes or their products. These wildlifes' products are shipped to Hai Phong, Da Nang, Cam Ranh, and Vung Tau ports; and then, they are shipped to the North or to China or to East Asian countries. (Figure 5)

4.8 Causes for the Intensification of Illegal Wildlife trade

First, high benefit from wildlife trade: Consumption demand for wildlife and wildlife products has increased due to the economic development of Asian countries, which leads to an increase in the prices and profits associated with wildlife trade.

Second, many issued policies but the enforcement process was ineffective: Vietnam as well as international

organizations have issued many policies to limit illegal wildlife trade; however, the enforcement process remains ineffective due to many reasons including overlapping policies.

Third, lack of resources for enforcement: although many policies have been enacted, only limited resources are available for implementation of these laws and policies. For example, lack of rangers outdated monitoring tools.

Fourth, inefficiency of cooperation between neighboring countries and international organizations

It is important to note that there is not only inefficient cooperation among inspection forces and local government with FPD staff but also a lack of international cooperation on reducing illegal wildlife trade between Vietnam, Laos, Cambodia, Thailand, Singapore, Myanmar, Malaysia, Indonesia, Philippines, and China. Some national and international organizations in Vietnam share an objective to combat trade in endangered wildlife; however, there is a glaring lack of integral and well-coordinated efforts in this regard. In particular, there is no close connection between policymakers and policy performers regarding wildlife protection.

Fifth, government bureaucracy, and corruption: It is not clear who is responsible for managing a particular area. For example, the Ministry of Agriculture and Rural Development usually manages protected areas but local government units (commune, district, and provincial, military) also carry the mandate to manage the land falling under their jurisdiction. There are also a number of different government departments that can influence them (e.g., for tourism, road construction, army).

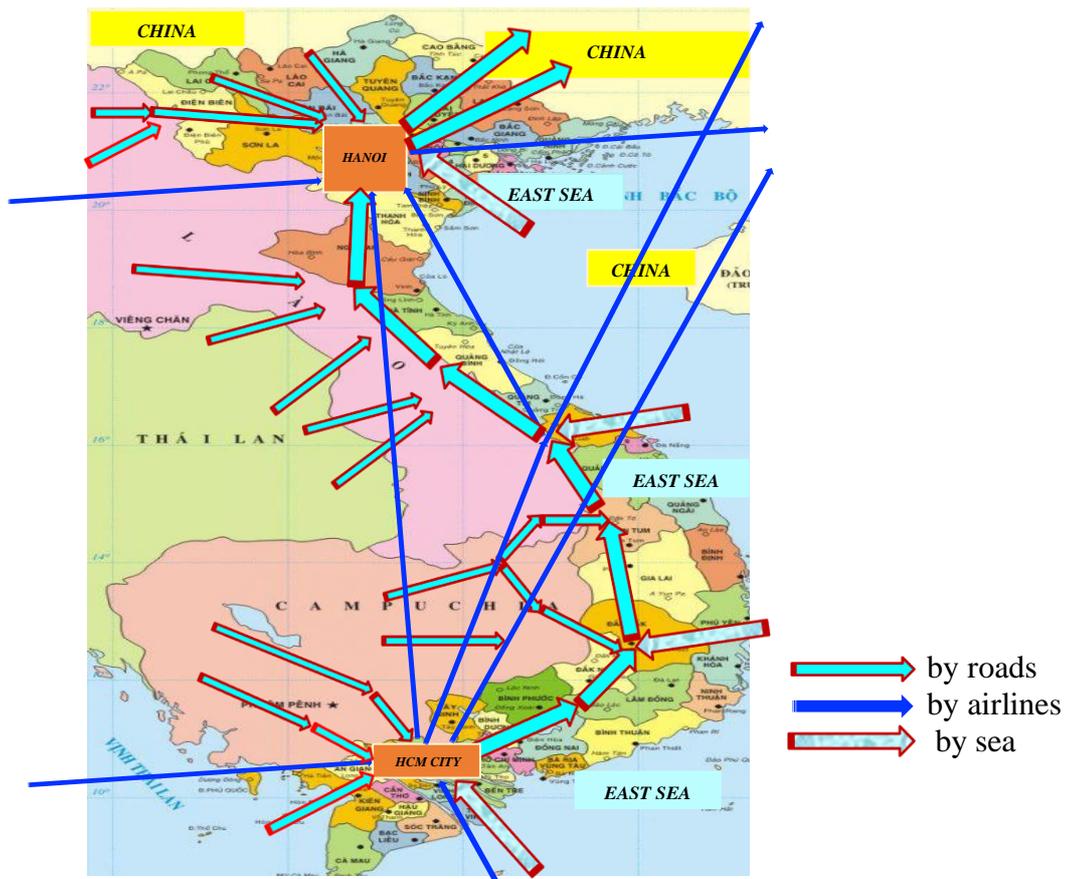


Figure 5. Routes of Illegal Wildlife Trade in, into, out Vietnam

Therefore, many different institutions and offices have different, sometimes overlapping, powers over a particular area (e.g., protected areas). Thus, there are many government departments with vague responsibilities. This creates opportunities for corruption and may lead to a wastage natural resources such as common property rights or public goods.

The large illegal wildlife trade networks are helped by influential people. These individuals are involved in the legal procedure for the confiscated goods and can acquit or interfere with the illegal cases. In early July 2014, the Police Department of Kbang district – Gia Lai province caught the ranger illegal transporting timber for loggers (Dac, 2014).

Sixth, habit and culture: The wildlife eating and drinking culture in Vietnam or South East Asian Countries, in terms of the wildlife eating and drinking and customary use of wildlife in disease treatment characteristic of the of Confucianistic culture of Asian countries such as Vietnam, China, Korea, Japan, Taiwan, and Singapore, are important factors that contribute to an increased demand for, and higher profitability from, wildlife trade in the region.

Seventh, poverty factors: The vice chief of Ha Tinh, Nghe

an FPD said that 30% of the local people depend on the forest for their livelihood. A local hunter in nature-protected areas in Ha Tinh, Quang Nam, Nghe an said that if he did not hunt wildlife, he would not be able to earn a living. The manager of Vu Quang protected area in Ha Tinh province said that hunters and traders' priority is to ensure that their children does not die of starvation as opposed to worrying about whether trees should be cut or wildlife should be killed.

4.9 Economic Regulatory Measures and Policy Recommendations

4.9.1 Economic Regulatory Measures

Economic regulations (e.g., penalty, taxation, and others) should be applied simultaneously.

Quota on illegal wildlife trade: Quota regulations should be applied only if there is a proper legal regime and monitoring system to regulating wildlife trade in Vietnam. In Vietnam's case, the quantity control regulations may not be efficient because of these reasons: sources of wildlife traded in Vietnam are from various regions and countries (Plateau; Laos; Central; South; Mekong River Delta; Quang Nam; Nature - protected areas, Cambodia; Myanmar; Malaysia; Indonesia; European countries; African countries; and Russia). The second reason is that

wildlife trade is not only focused on live wildlife but also on wildlife meat, dry wildlife products, and stuffed wildlife products. Therefore, defining the efficiency of the wildlife population in the region is particularly challenging.

Taxations: The estimated profit from domestic illegal wildlife trade (Table 7) is estimated at 188 times higher than the fine collection (Table 1). This means that even if the fine is doubled from its current rate, the illegal traders may still find it profitable. Therefore, high taxes will not discourage traders in the illegal wildlife trade.

The penalty regulation: In recent years, the government has imposed a strict fine (Figure 3 and Figure 4 of section 4.1). However, even with these strict penalties (Figure 4), there is little incentive to control illegal activities because only a small rate (3.1% of illegal trade can be captured-Nguyen, 2008). Therefore, there is a need to increase efforts to capture more illegal operations and to increase fines in order to deter offenders.

4.9.2 Policy Recommendations

First, completing and ensuring the consistency of the legal document systems, mechanisms, and policies in wildlife protection; and reviewing, amending and supplementing legal and policy frameworks to eliminate the inadequacies and inconsistencies between legal documents pertaining to wildlife protection.

Second, strengthening the implementation of penalties and enhanced monitoring and enforcement capacity can play a key role in the prevention and control of illegal wildlife trade. It has been shown in the current study that economic measures such as taxation, quota, legalization, and ownerships may not be appropriate to control illegal wildlife trading. The handling of material evidence of wildlife products remains inadequate. Law enforcement agencies are not equipped with the right facilities and specialized preservation equipment such as freezers to preserve the exhibit of meat, bone and horn. This issue may be addressed by increasing the level of training, manpower, funding, and equipment for checkpoints and patrol forces. This study shows that Mong Cai - Quang Ninh, Lang Son (exit points), Ninh Binh (bottleneck), Hanoi, and Ho Chi Minh City are critical nodes and markets for illegal wildlife trade in and out of Vietnam. Therefore, the patrol force should be given priority in terms of strengthening manpower, funding, and equipment.

Third, FPD, policemen should pay more attention to wildlife meat restaurants in domestic markets and the border between Vietnam and China: There are more than 3,500 tonnes of live wildlife traded in and out of Vietnam per year (Nguyen, 2008), of which about half is consumed domestically.

Fourth, using education and awareness campaigns to influence the wildlife eating and drinking culture of the Vietnamese people. In the long run, reducing the illegal wildlife trade depends on a combination of law

enforcement to reduce supply and public education campaigns to decrease demand. Information campaigns to discourage wildlife trade should be targeted at people who set bad examples by patronizing the trade. Chiefs of communes and border policemen also participate in illegal wildlife hunting and trading. The media should be used to reach out to citizens and communities with a view to reduce the demand for wildlife products.

Sixth, law enforcement agencies should work closely to develop an interdisciplinary cooperation mechanism, enhance the exchange of information and participatory roles, and coordinate to implement conservation laws and policies through law enforcement activities working against wildlife trade. This should also involve efforts to strengthen cross-border cooperation between Laos, Cambodia, Vietnam, and China on local, regional, and international levels to mitigate the problem. This study shows that most of the wildlife traded in or through Vietnam to China has actually been taken from countries such as Laos, Cambodia, and Myanmar. Dialogs on cooperation to limit smuggling along borders should be held between neighboring countries and followed up by concrete actions. Policies to support such actions should be formulated, duly signed, and approved by all countries concerned. This action can be done through CITES.

Seventh, mobilizing domestic and international resources to enforce international treaties and conventions seeking to regulate wildlife conservation through regional and global cooperation. This entails strengthening manpower, generating funding, and providing equipment to monitor and control illegal trading during the peak season: The peak season for wildlife trading is from August to March, when the volume of illegal wildlife increases 2 to 3 times.

Eighth, using wildlife farming/culture as one way to reduce prices of wildlife products: To reduce the demand for wildlife products, the authorities could encourage farming of more common species of wildlife (such as crocodile, soft-shell turtle, and common snakes) that can stay healthy and reproduce in man-made conditions. However, keeping and extracting wildlife that cannot reproduce in man-made conditions, including endangered turtle species, bears, and tigers, needs to be strictly prohibited.

Ninth, creating sustainable livelihood for local communities to reduce pressure from poaching, shooting, catching and trapping wildlife species, especially for those who live near forest areas, which is the initial step of illegal wildlife trade. Simultaneously, guiding and encouraging local communities living in buffer zones of national parks, nature reserves and protection forests to engage in wildlife protection, contributing to in-situ conservation of wildlife species.

Tenth, using incentives (both cash and non-cash) for regulators, patrol officers, and informants to intensify efforts against illegal wildlife trading: The average salary of FPD staff ranges from US\$200 to US\$450 per month.

On average, each FPD staff and direct FPD staff have to be responsible for 1,000 and 1,500 ha of forest, respectively. It is impossible to cover such a vast area effectively. This is an important factor that is encouraging not only illegal traders but also inspectors to violate wildlife protection policies and join hands with illegal traders.

5. SUMMARY AND CONCLUSION

Vietnam is not only a big market but also a cross-bridge of illegal trade. Illegal wildlife trade is continuing unabated and affects neighboring countries. The total revenue generated from fines imposed against wildlife violations is 16,000 million VND (about 700,000 USD). It merits to note that the largest volume of illegal wildlife trade is through the Vietnam-China border. Most of the wildlife live and wildlife products are passed through China via Mong Cai border, Quang Ninh province.

The total profit from live, meat, dry, stuffed markets in Vietnam is estimated at VND 621 billion (US \$ 27 million) per year. Of which, meat wildlife market and dry wildlife market account for 95%. Compared with the fine for five (5) years from 2013-2017, VND 16 billion (US \$ 690,000), the profit from the domestic wildlife trade is 188 times that of the fine.

The routes of illegal wildlife trade in and out Vietnam are by roads, by airlines and by sea. However, the most important route is by road, accounting for about 90% of illegal wildlife trade in, and out of Vietnam. Road 1A from Ho Chi Minh city to Hanoi and from Hanoi to Mong Cai and Lang Song customs gates is the most important route of illegal wildlife trade in Vietnam and to China. International routes of illegal wildlife trade from Myanmar, Malaysia, Indonesia, European countries, African countries, Russia into Vietnam are through air and sea. Most wildlife trade amounts by air or sea are dry wildlife products.

The main factors that facilitate illegal wildlife trading in Vietnam include high domestic and international demand for wildlife meat and products; illegal wildlife trade is highly profitable; the low priority placed on wildlife protection; lax implementation of wildlife protection laws and policies by authorities; and lack of FPD manpower, funding, and equipment.

Ten (10) actions and policies are recommended to obtain a significant reduction in illegal wildlife trade in Vietnam and the region.

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REFERENCES

Abbott, B., & Van Kooten, G. C. (2011). Can domestication of wildlife lead to conservation?

The economics of tiger farming in China. *Ecological Economics*, 70(4), 721-728.

ADB, A. D. B. (2014). Symposium on Combating Wildlife Crime: Securing Enforcement, Ensuring Justice, and Upholding the Rule of Law. The Proceedings. *ADB Reports RPT146586-3, Asian Development Bank (ADB)*.

Agarwal, P. (2015). A global challenge: the illegal wildlife trade chain. *Journal of Commerce and Trade*, 10(2), 7-14.

Azam, A. W. M., Jayasuriya, K. G., Musthafa, M. M., & Marikar, F. M. (2016). Sri Lanka is a hot spot for illegal transnational trading of biodiversity and wildlife materials from South Asian region. *Journal of transportation security*, 9(1-2), 71-85.

Begum, Z., & Gill, A. K. (2014). *Analyzing the Pathway to Improve Tiger Conservation in India*. Retrieved from

Drury, R. (2011). Hungry for success: urban consumer demand for wild animal products in Vietnam. *Conservation and Society*, 9(3), 247-257.

Government, V. (2004). The national action plan to strengthen the control of trade in wild fauna and flora to 2010. *Hanoi, Vietnam: Labor Publishing House*.

Gray, T. N., Hughes, A. C., Laurance, W. F., Long, B., Lynam, A. J., O'Kelly, H., . . . Wilkinson, N. M. (2018). The wildlife snaring crisis: an insidious and pervasive threat to biodiversity in Southeast Asia. *Biodiversity and conservation*, 27(4), 1031-1037.

Ha, N. M., & Truong, N. Q. (2003). *Assessment of the status of hunting and trade in wildlife in Drang Phok village, Krong Ana commune, Buon Don district, Dak Lak province*. Paper presented at the Proceedings of Scientific Workshop on Natural Resources and Environment.

Hanley, N., Sheremet, O., Bozzola, M., Kasterine, A., & MacMillan, D. C. (2016). *Consumer Demand for Rhino Horn in Vietnam: insights from a choice experiment*. Retrieved from

Lyons, J. A., & Natusch, D. J. (2013). Effects of consumer preferences for rarity on the harvest of wild populations within a species. *Ecological Economics*, 93, 278-283.

MacMillan, D. C., & Nguyen, Q. A. (2014). Factors influencing the illegal harvest of wildlife by trapping and snaring among the Katu ethnic group in Vietnam. *Oryx*, 48(2), 304-312.

Petrossian, G. A., Pires, S. F., & van Uhm, D. P. (2016). An overview of seized illegal wildlife entering the United States. *Global Crime*, 17(2), 181-201.

Reconciliation, V. P. a. N. (2018). Vietnam's wildlife: Drained and Unsustained. No 29-30. Retrieved

- from Retrieved on October, 2019 from <http://www.nature.org.vn>
- Sandalj, M., Treydte, A. C., & Ziegler, S. (2016). Is wild meat luxury? Quantifying wild meat demand and availability in Hue, Vietnam. *Biological Conservation*, 194, 105-112.
- Schmitt, L., & Rempel, D. (2019). The Role of well-regulated Hunting Tourism in Namibia—in effective Conservation Management. 98-117.
- Van Song, N. (2008). Wildlife trading in Vietnam: situation, causes, and solutions. *The Journal of Environment & Development*, 17(2), 145-165.
- Van, T. P., Luu, V. Q., Tien, T. V., Leprince, B., Khanh, L. T. T., & Luiselli, L. (2019). Longitudinal monitoring of turtle trade through Facebook in Vietnam. *Herpetological Journal*, 29(1).
- Worden, R. C., & Rees, C. (2011). *IEG review of 20 World Bank-funded projects in tiger landscapes*: Washington, DC: World Bank.
- Wyatt, T. (2017). How corruption enables wildlife trafficking. In *Corruption, Natural Resources and Development* (pp. 192): Edward Elgar Publishing.