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Illegal Wildlife Trade in Southern Africa A STATE OF KNOWLEDGE REPORT

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Acronyms

AEDAERSG	African Elephant Database
AfESG	African Elephant Specialist Group
ANAC	National Administration of Conservation Areas (Mozambique)
AWF	African Wildlife Foundation
BDF	Botswana Defence Force
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CAR	Central African Republic
CBNRM	Community Based Natural Resource Management
CITES	Convention on International Trade in Endangered Species
DCPI	Directorate of Priority Crime Investigations (SA)
DEA	Department of Environmental Affairs
DNPW	Department of National Parks and Wildlife (Malawi)
DNPWLM	Department of National Parks and Wildlife Management (Zimbabwe)
DRC	Democratic Republic of Congo
DWNP	Department of Wildlife and National Parks (Botswana)
EIA	Environmental Investigation Agency
EMI	Environmental Management Inspectors (South Africa)
ETIS	Elephant Trade Information System
EWT	Endangered Wildlife Trust
FATF	Financial Action Task Force of the OECD
GEF	Global Environment Facility
ICCWC	International Consortium on Combating Wildlife Crime
IFF	Illicit Financial Flows
IUCN	International Union for the Conservation of Nature
IUCN/SSC	IUCN/Species Survival Commission
IWT	Illegal Wildlife Trade
KNP	Kruger National Park
LEAP	SADC Law Enforcement and Anti-Poaching Strategy
MATT	Multi-Agency Task Team (Tanzania)
MEFT	Ministry of Environment, Forestry and Tourism (Namibia)

MIKE	Monitoring the Illegal Killing of Elephant
NAMPOL	Namibian Police Force
NDF	Namibian Defence Force
NGO	Non-Governmental Organization
NIAP	National Ivory Action Plan (Tanzania)
NTSCIU	National and Transnational Serious Crimes Investigation Unit (Tanzania)
NWCRU	National Wildlife Crime Reaction Unit
OECD	Organization for Economic Cooperation and Development
PIKE	Proportion of Illegal Killing of Elephants
PWA	Parks and Wildlife Act (Zimbabwe)
RESG	Rhino and Elephant Security Group (INTERPOL)
SADC	Southern African Development Community
SANBI	South African National Biodiversity Institute
SANParks	South Africa National Parks
SAPS	South African Police Service
SRT	Save the Rhino Trust
TAWA	Tanzania Wildlife Association
TOPS	Threatened or Protected Species regulations
UNODC	United Nations Office on Drugs and Crime
UNWTO	United Nations World Trade Organisations
USAID	US International Aid Agency
WCO	World Customs Organization
WCP	Wildlife Crime Prevention program (Zambia)
WCPU	Wildlife Crime Prevention and Coordination Unit
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund
ZSL	Zoological Society of London

Executive Summary

This State of Knowledge review was undertaken with the aim of understanding what data and information is available on illegal wildlife trade (IWT) that would allow for analyses of economic impacts of IWT at national and regional levels in southern Africa. It also aims to increase the accessibility to existing knowledge on IWT in southern Africa and constitutes the base for future country studies and regional assessments of the costs and benefits of IWT in the region.

Causes and drivers of IWT

Our review of existing literature and knowledge on IWT in southern Africa suggests that extensive knowledge has been accumulated on the drivers, causes and motivations of poaching and IWT in southern Africa. There is a consensus in the literature that IWT is largely driven by consumer demand in Asia (Lawson & Vines 2014; Miliken 2014; Moneron et al. 2017; Nellemann et al. 2013; Outhwaite & Brown 2018; UNODC 2020; UNODC 2013a; Price 2017; WWF 2012). Poverty and lack of employment are also assessed as major drivers of IWT, with strong correlation between poverty levels and poaching found by Hauenstein (2019), and the poacher's profile usually being from the lower-income bracket with no or unstable employment (Moneron et al. 2020). However, literature also warns against overlooking the components of identity and protests against what is considered unjust regulations as another driver of poaching in certain areas (Duffy et al. 2015, Harrison et al. 2015). The intricacies of corruption, weak governance, and armed conflict are also well understood although further studies and investigations would be required to understand these dynamics better at national and local levels.

Main supply chains and routes in southern Africa

It appears from the available literature that the main products illegally traded in southern Africa are rhino horn, ivory, and pangolins. Other products also traded to a lesser degree or impacting only a few countries include leopard skins, lion bones, and abalone, as well as plants such as cycads and succulents. Local trade in bushmeat is also highlighted as a major threat to wildlife in some countries in southern Africa such as Mozambique and Zambia. TRAFFIC has a number of reports on illicit ivory, pangolin, rhino horn, and abalone supply chains which are described in Miliken (2014); Miliken and Shaw (2012); Heinrich et al. (2017); Okes et al. (2018); and Moneron et al. (2017). UNODC's 2020 World Wildlife Crime Report also highlights trade routes for IWT of endangered species. All literature indicates that the trade pattern for both legal and illegal wildlife from different African countries to Asia is quite distinct. In Africa, Nigeria has emerged as a key source/transit country for many of the shipments. Similarly, Vietnam has emerged as a key destination country for shipments of ivory and pangolin scales (UNODC 2020). The majority of ivory seizures are traced back to Tanzania and northern Mozambique (including Selous and Ruaha), and Central and West Africa (north-east Gabon, north-west Congo, and south-east Cameroon). The majority of rhino horn shipments originate in southern Africa, particularly Mozambique, Namibia, South Africa, and Zimbabwe (Moneron et al., 2017).

Environmental impacts of IWT

The main environmental impact of IWT studied is evidently the decrease in wildlife populations related to increased poaching of certain species. Available data from CITES' MIKE database for elephants, the African Elephant Database, and data collected by IUCN's African Rhino Specialist Group (AfRSG) and Pangolin Specialist Group, are the main sources of up to date and accessible information on population trends and poaching events in southern Africa. At national and even local levels, NGOs, governments, and national parks also try to monitor population trends, but this information can be harder to access. Evidence on the impact of IWT on rhino and elephants in southern Africa is well documented, while it is more difficult to find information for other species including pangolins.

The loss of certain species to IWT also triggers losses in the ecosystem services these species provide, potentially leading to a degradation of some ecosystem functioning in southern Africa. Although it is well known that wildlife provides key ecosystem services such as biological control of pests and disease, food web functions, and landscape management, there is only little research available that highlights the potential threats to ecosystems functioning and degradation of ecosystem services related to increased poaching in specific landscapes of southern Africa.

Economic impacts of IWT

Comprehensive assessments of the full economic costs of IWT are not available for southern African countries but some studies do provide qualitative and some quantitative evidence of what the source and scale of economic losses are due to IWT.

Although there is little discussion on the negative impact of poaching on tourism and legal hunting, there is only a very limited number of studies quantifying the costs associated with these impacts in southern Africa. This research only

found two major studies that provide clear quantitative evidence at regional level. Smit and Porsch (2015) estimate that a 1% reduction in rhino population would incur a loss of up to €1 billion per year in South Africa, up to €56 million in Namibia, and up to €68 million in Zimbabwe. Naidoo et al. (2016) estimated that southern African protected areas lose on average US\$13 million per year due to elephant poaching. In Tanzania, the average total tourism benefits lost due to elephant poaching are estimated between 4% and 11% of the total revenue from all visitors to protected areas (estimated at \$5–\$15 million per year) (Naidoo et al. 2016). At local level, a study from Lindsey et al. (2011) provides estimates of lost income from legal hunting in the conservancy of Savé Valley in Zimbabwe. They estimate that illegal killing of wildlife for trade incurred financial losses of about US\$25,000 per year in potential meat sales and US\$43,000 per year of lost potential income from trophy hunts of high value species.

There are also no integrated assessments of the costs incurred by IWT through the public and private expenditures in security, protection and other activities meant to curb IWT. Integrated data and information on expenditures to fight IWT from different sources is rarely compiled at national or regional level. Local estimates of spending on security and protection can be collected at national level among NGOs, government agencies, and private game reserve owners. Some aggregation of expenditures can be found for specific institutions or groups of institutions. For instance, a World Bank database from 2018 shows project-level funding information over the period 2010-2018 for recipient countries in Africa and Asia, including a full coverage of SADC countries. They estimate donor funding in IWT at US\$392 million for countries in southern Africa over that period. This review found very limited evidence and scientific studies on the real costs of protecting wildlife. A study from Leader-Williams and Albon (1988); Leader-Williams et al. (1990); and Leader-Williams (1993), is still used as the main reference for an estimate of the cost of anti-poaching to achieve a zero decline of elephants, with optimal spending levels between US\$350 and US\$700 per km² (adjusted to 2020 prices).

The value of IWT flows is also hard to assess and only a few quantification attempts have been made. Martin and Stiles (2017) estimate the average value of illicit financial flows from IWT in southern Africa is about US\$165 million per year. Abalone meat was the highest-valued commodity with an illegal trade value of US\$94 million. The illegal trade in rhino horn was estimated at US\$43 million, and illegal ivory trade at US\$38 million. The prices of different products vary widely between countries and stages within the supply chains, usually the income raised by foot soldiers and poachers is a small fraction of the end market price but still significant relatively to rural income levels (US\$150 to US\$200 per kilogram of ivory in Zimbabwe, US\$100 per hunt in Zambia) (Brown 2007 in Lindsey et al. 2015, FCN 2020). Local-level economic impacts of IWT are not well understood and would require further research.

Social impacts of IWT

The social impacts of IWT appear to have received only limited attention in the accessible literature. There is only limited understanding of the impact on individuals, communities, and societies as a whole. IWT causes significant human and social capital losses at local level for both poachers and law enforcement officers. Nature reserves in southern Africa are being militarized at a fast rate due to increasing rhino poaching, and occurrence of heavily armed poachers supported by organized crime syndicates. These impacts are disproportionately affecting the poorest and most marginalized groups in society, who are at the frontline of poaching on both sides (OECD, 2012). Interviews and national newspapers report casualties in many countries among both rangers and poachers.

Actions to curb IWT

A wide array of efforts is carried out across southern Africa by governments, NGOs, and private stakeholders to curb IWT. We have identified five main categories of actions (i) legislations and regulations, (ii) law enforcement and protection on the ground, (iii) coordination and intelligence at national and international levels, (iv) community-based development and benefit sharing from wildlife, and (v) awareness-raising among different target groups.

In the SADC region, many countries have robust legislation in place that is theoretically capable of combating wildlife crime, however, implementation of these legislations is often poor (Price 2017a). Substantial differences exist across SADC countries in terms of the severity of penalties for violating local wildlife law. Countries with particularly stringent fines and/or lengthy jail sentences for a wide variety of wildlife offences include Namibia, South Africa, Zambia, and Zimbabwe. Some countries have recently amended or updated their principal legislations. Price (2017a) provides a detailed overview of different legal frameworks in place at regional and national level in sub-Saharan Africa.

Law enforcement and prevention efforts are key to short and medium-term actions against IWT at national and regional levels. In the SADC region, governments, NGOs, and private actors get involved in local, national, and regional actions through the establishment of anti-poaching units, intelligence enhancement, and cooperation around investigations, as well as prevention measures. Most countries in SADC have established systems of protections in and

around conservation areas through the creation of anti-poaching units (APU), which come in addition to traditional park rangers and game guards already patrolling in specific areas. APUs usually patrol and de-snare in dedicated areas on foot, by vehicle, or sometimes by air with helicopters. Some are also now supported by sniffer dogs. These units can be directly linked to government forces and have prosecution powers, but they can also be the result of private initiatives from volunteers and NGOs or private security companies, supporting public services on the ground. Some of these units involve members of nearby communities, or former poachers and have proven to be an empowering structure for some community groups, especially all- women units.

Anti-poaching and anti-trafficking activities require an extensive amount of communication and cooperation to ensure effective actions. Some countries in southern Africa have taken this step by establishing information sharing systems and multi-agency task forces coordinating actions and centralizing information. This is the case in Malawi, Namibia, South Africa, and Tanzania, which all have multi-agency teams ensuring cooperation between police forces, relevant ministries, and the judiciary among others. Cooperation between countries in SADC and beyond is also a key step to curtailing cross-border networks carrying IWT. Platforms such as SADC and the Kavango-Zambezi (KAZA) TFCA are promoting multilateral coordination, while bilateral agreements are also developing in the region. SADC has developed a Law Enforcement and Anti-Poaching (LEAP) strategy signed by most of its members. The KAZA TFCA has also established protocols for coordination and joint actions between members countries. Some countries have also established bilateral agreements of cooperation such as Mozambique and South Africa among others.

Another common action to prevent or mitigate poaching risks is the dehorning of rhinos. Dehorning is currently used in many game reserves across South Africa and conservation areas in Namibia. These actions are, however, costly and prove to have mixed results depending on poachers' behaviors and communication about dehorning activities deterring poaching motivations.

Many experts argue that a key component of reducing wildlife crime also lies in creating an environment where a live animal can generate benefits and is therefore valued by local people. It is also essential to try and reduce the need to resort to poaching for income generation, by creating alternative opportunities. Some countries in southern Africa have engaged in such programs with success, for example Namibia and Zimbabwe, where community-based conservation entities have a utilization right over wildlife under specific conditions. In Mozambique, some trials have also been undertaken for community-based conservation at Marromeu National Reserve, where wildlife tourism has created a significant number of jobs and generated revenue directly to communities.

The last set of actions identified focuses on awareness raising activities, which are undertaken by most actors of the fight against IWT. Campaigns can target local communities living with wildlife to increase their understanding of the detrimental impact of poaching on their livelihoods, but also to raise awareness on regulations in place and penalty levels. Awareness can also be raised among tourists at airports and key tourism hotspots. Finally, many programs include raising awareness on wildlife crime and its impacts among the judiciary to ensure effective prosecutions after arrests.

COVID-19 and IWT

As a result of the COVID-19 pandemic in 2020, most countries in southern Africa closed their borders for an extended period of time, and established country-wide lockdowns and curfews, leading to a drastic decrease in economic activity. Tourism has been one of the most affected sectors by these measures, and the global halt in international travel worldwide.

The impacts of these events on wildlife crime and IWT are yet to be clearly established, however two main factors of disturbance and change can be identified: the closing of borders, which increases difficulty for any kind of illegal trade, and the sudden drop in tourism and trophy hunting income to local communities. The impacts across SADC countries appear to be diverse. A survey conducted by the IUCN among protected area managers reports that 70% of surveyed protected areas in eastern and southern Africa stated that COVID-19 had an impact on their capacity to monitor IWT as well as conduct regular field patrols. Eighty percent stated that the crisis had an impact on their capacity to carry out investigations and intelligence gathering (Waithaka, 2020).

Identified gaps

Although the issue of IWT raises a lot of attention and funding across southern Africa, a great deal of information and data remains missing to understand the dynamics of IWT as well as the cost effectiveness of actions undertaken to curb it at regional and national levels. This report highlights six main areas where information and data are limited and therefore limit the capacity to assess and better understand the costs and benefits of curbing IWT in southern Africa:

- Expenditures and cost-effectiveness of measures to curb IWT: transparent and integrated records of expenditures of all actors involved in the fight against IWT over time would be invaluable to better understand the costs associated with IWT at national and regional levels. At this stage, no cost-benefit analysis of different measures to curb IWT could be found for activities in African countries. Such analysis at national and regional level could shed light on the real costs of combating wildlife crime and the potential benefits from behavior change that supports the reduction in wildlife crime.
- Identification and quantification of ecosystem services impacted by IWT: It appears from this review that there is only limited research available that highlights the potential threats to ecosystems functioning and degradation of ecosystem services related to increased poaching in specific landscapes of southern Africa. The identification of ecosystem services affected by IWT and its impact on the environment is usually limited to wildlife tourism and legal hunting, with little assessment of the impact of IWT on other key ecosystem services such as biological control of pests and disease, waste and nutrient cycling, food web functions, and landscape management. Moreover, the quantification of these impacts on ecosystem services appears under-researched.
- Impacts of IWT on population for non-iconic species: The population trends in rhino and elephants and the impacts of poaching events on these trends are well understood in southern Africa. However, it is not the case for many illegally traded species.
- Local economic impact of IWT: The knowledge and understanding of economic impacts of poaching and IWT at local level remains limited. Further research should be conducted to assess and compile knowledge on the income generated from IWT by local poachers across southern Africa. It would also be key to quantify the long-term local economic impacts that IWT can have for the communities living in areas with high level of poaching.
- Social and cultural impact of IWT: Very limited academic research is available on the social and cultural impacts of IWT on local and national communities in southern Africa, although many records show highly detrimental effects among rangers and poachers, as well as among local communities living in high-risk areas.
- Records of trade values in southern Africa: The value of different illegal wildlife products along the supply chain in southern Africa is particularly hard to access, with limited information on prices and volumes traded. Some organizations and institutions do try and keep records of poachers' statements on product prices; such knowledge should be compiled to allow for mapping price variations within and between countries, and better understand economic incentives along the supply chains.

Overall, although a lot of knowledge has been accumulated on IWT in southern Africa, much effort is needed in generating further quantitative knowledge necessary to understand to carry out economic assessments of IWT in different countries in the region. Some countries and institutions however do appear to hold valuable information and data which would need to be compiled and integrated at national and regional level. Further research and understanding of the quantitative impacts of IWT on ecosystem services is also key to understand the costs of IWT to local, regional, and international communities. Finally, efforts to assess the cost-effectiveness of different measures to curb IWT, although underway in many institutions, should be supported by a systematic compilation and integration of expenditure data from different actors in the fight against IWT.

This state of knowledge report provides a basis for a national cost-benefit analysis of IWT and highlights the potential limitations such as the quantification of ecosystem services impacts of IWT as well as the quantification of benefits associated with non-iconic species where little information is available.



Southern Africa is home to the species most traded and most at threat from IWT: the African elephant, the black and the white African rhinos, and the African pangolins.

Introduction

The illegal trade in wildlife from and between countries in southern Africa has become a major business, potentially generating billions of US dollars every year. This globally connected trade has implications at local, national, and regional levels, causing the drastic decrease in some species populations, and an increase in violence and corruption, all detrimental to people and economies in southern Africa. Illegal wildlife trade (IWT) in southern Africa is a subject widely studied as the region is home to the species most traded and most at threat from IWT: the African elephant, the black and white African rhinos, and the African pangolins. However, this knowledge is often scattered between institutions and countries.

This State of Knowledge review was conducted with the aim to increase accessibility to existing knowledge on IWT in southern Africa but also to understand what data and information is available on IWT that would allow for analyses of economic impacts of IWT at national and regional levels in southern Africa. Knowledge on the economic impact of IWT remains scarce. This State of Knowledge report aims at providing a clear overview of the current state of knowledge of IWT routes, products, and impacts in SADC countries. This report was conducted by an extensive desk review of existing literature on the causes and impacts of IWT in southern Africa. It also looks into existing initiatives and actions promoted to curb IWT.

This report and its attached literature database constitute a base for future research highlighting and prioritizing gaps to be filled to increase the understanding of IWT economics in the region.



The illegal wildlife trade goes beyond iconic mammals but also impacts reptiles, amphibians, invertebrates and plants.

Background on IWT in Southern Africa

The surge of IWT is devastating wildlife populations, causing significant biodiversity losses, and threatening peace, security, and livelihoods. IWT remains a serious transnational crime that continues to threaten some of Africa's most iconic species: elephants, rhinos and pangolins, as well as lesser-known species such as abalone.

Substantial qualitative research has been carried out on IWT in SADC countries as well as the main destination markets in Asia. Institutions such as International Union for Conservation of Nature (IUCN), Institute of Development Studies (IDS), World Wildlife Fund (WWF), Organization for Economic Co-operation and Development (OECD), International Institute for Environment and Development (IIED), and Chatham House¹ have produced a wide range of publications covering the IWT of endangered species. The World Customs Organization (WCO) publishes a yearly Illicit Trade Report² which includes trends in trafficking of environmental products based on the voluntary submissions of seizure data and case studies by Member Customs administrations world-wide. The Oxford Martin Programme³ focuses on understanding and addressing the consumer demand aspect of the illegal and unsustainable wildlife trade.

TRAFFIC plays a leading role in carrying out research, investigations, and analysis of IWT and has produced a significant amount of documentation on threatened animal species, trends in IWT; and studies on countries with high risk for, and high prevalence of IWT (such as studies that focus on IWT in the Democratic Republic of Congo (DRC), South Africa, and Tanzania). The United Nations Office on Drugs and Crime's (UNODC) Transnational Organized Crime Threat Assessments in both East Asia and the Pacific (2013a), and East Africa (2013b); and their World Wildlife Crime Reports (2017 & 2020) are also key sources of information on IWT. This section presents information from key publications of IWT in the SADC region and main destination markets.

¹ Also known as the Royal Institute of International Affairs. <https://www.chathamhouse.org/about-us>

² World Customs Organization (WCO) Illicit Trade Report 2019. http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/enforcement-and-compliance/activities-and-programmes/illicit-trade-report/itr_2019_en.pdf?db=web

³ The Oxford Martin Programme on the Illegal Wildlife Trade. <https://www.illegalwildlifetrade.net/about/>



The illegal wildlife trade supplies teeth, claws, bones, fur and skins of big cats to markets principally in Asia.

Illegal wildlife products and their uses in southern Africa

Trade in illegal wildlife is diverse; and within each sub-region in Africa, there is a great deal of variation in trade. CITES-listed exports from West Africa are characterized by live reptiles and arachnids, whereas North African trade focuses on live European Eels and their meat, and southern Africa exports a vast array of live birds and plants. African animals and plants end up being sold in markets across the globe, from Asia, to Europe, and America. Between 2006 and 2015, 41 African countries exported CITES⁴-listed wildlife species and commodities to Asia, which included⁵:

- 32 tons of elephant tusks, raw and worked ivory;
- 330 rhino horns and 152 pieces of horn;
- 36 tons of pangolin scales; and
- 942kg of bones, 101 skins (leopards, zebra), and 79 claws from large cats (lions etc.).

In Asian countries, elephant ivory and rhino horn are used for medicinal products and consumer goods (jewelry, antiques, arts, crafts, and décor items, including traditional libation bowls etc.) (WWF, 2012). Although the medicinal properties of most traditional medicines using ingredients from endangered wildlife have been scientifically refuted, these medicines continue to be used (UNODC 2013 and UNODC, 2020). For SADC, the illegal wildlife trade in elephant ivory and rhino horn is a significant problem since the region holds the largest number of elephants and rhino in the world (IUCN, 2016). Elephant ivory and rhino horn together made up 42.4% of total wildlife seizures in 2014-2018 (UNODC, 2020). The African elephant (*Loxodonta africana*) is an endangered species listed under Appendix I⁶ in the CITES treaty since 1990, except for the populations in South Africa, Botswana, Namibia, and Zimbabwe where they are listed under Appendix II⁷. The black rhino (*Diceros bicornis*), only found in Africa, is critically endangered and has been under CITES Appendix I since 1977. The white rhino (*Ceratotherium simum*) is listed under Appendix I all over the world except for South Africa and Swaziland.

Another species at high risk of illegal trade is the pangolin. The demand for pangolins as 'luxury' wild meat and for traditional medicine is driven by increasing consumer affluence mainly in China, Hong Kong (China), Taiwan (Province of China) and Vietnam (UNODC, 2013). Pangolin meat is considered a delicacy, and a source of protein. Pangolins are also attributed to have a medicinal/tonic value, and their scales are used in traditional medicines. All parts of the pangolin's body, but particularly its scales, are used for a variety of purposes in traditional medicines or for ornamentation. Pangolin skins are processed into leather products. Between 2014 and 2018, seizures of pangolin scales increased tenfold (UNDC 2020).⁸ (Heinrich et al., 2017).

⁴ Convention on International Trade in Endangered Species

⁵ A TRAFFIC Programme Newsletter, "Reducing Trade Threats to Africa's wild species and ecosystems" (ReTTA)

⁶ Appendix I lists the most endangered animal and plant species and prohibits these species from any commercial trade

⁷ Appendix II lists species that are not necessarily now threatened with extinction, but that may become so unless trade is closely controlled. Trade is allowed for species listed on Appendix II, though it is closely controlled with conditions such as permits and quotas

⁸ The IUCN Red List of Threatened Species. <https://www.iucnredlist.org>



Abalone is an endemic species that was once exceptionally abundant in South Africa, but has been subjected to unsustainable levels of illegal harvesting in the last 20 years.

Less well known than rhinos, elephants and pangolins is a South African marine mollusk, abalone (*Haliotis midae*), which has seen an increase in trade. It is a highly sought-after seafood delicacy, produced and harvested worldwide for predominantly East Asian markets where it is consumed as a high-value delicacy. Abalone is an endemic species that was once exceptionally abundant in South Africa, but has been subjected to unsustainable levels of illegal harvesting in the last 20 years (de Greef, 2015). Over 2000–2016, global imports of *H. midae* have increased by an average of 8% per annum (Okes et al., 2018).

African lions (*Panthera leo*) are also becoming a species of concern, with an increased interest in the bone trade which has spurred a rise in the South African lion and tiger breeding industry (UNODC, 2020). The African lion is hunted for trophies, but also increasingly for their bones as a supplement to tiger bones. Lion bones are used in the production of products marketed for medicinal use or tonics in China and as an ingredient in “bone strengthening wine” (UNODC, 2020). Between 2007 and 2017, about half the legal live trade, over 80% of the trophies, and virtually all the skeletons, bones, and bodies of lions were exported from South Africa. UNODC fieldwork in South Africa suggests that exporters sometimes illegally combine tiger bones with lion bone exports, the two being difficult to distinguish. Examples of illegal trade in tiger bone from South Africa to Asia have been detected (UNODC, 2020).

The illegal trade in plants continues unabated with more than 365 protected plant species openly traded via Amazon and eBay (IUCN, 2018). Southern Africa has the richest and most diverse succulent flora in the world (Newton & Chan, 1998). They are in demand within the global horticultural industry as ornamental plants as well as in rural communities for medicinal properties (Newton & Chan, 1998.) South Africa has a well-established industry of artificially propagated plants, although the 1970s saw the destruction of the *Lithops pseudotruncatella* subsp. *voulkii* and *Lithops julii* subsp. *fulleri* var. *Rouxii* (succulents). The destinations for South Africa’s succulent plant exports are Europe, the United States and Asia.

South Africa is also a global hotspot for the over-harvesting of cycads (*Stangeria* and *Encephalartos* spp.), which are believed to be the most endangered group of species on the planet (IUCN, 2018). Cycads are among the oldest living seed plants, and are in demand to supply private horticultural collections (TRAFFIC, 2011). The International Union for the Conservation of Nature (IUCN) classified the *Encephalartos* genus as threatened with extinction, while four other species no longer exist in the wild (TRAFFIC, 2011a). Illegal trade threatens two-thirds of the species. Thirty-one percent of the country’s species are classified as Critically Endangered (TRAFFIC, 2011b). The illegal trade in cycads (*Stangeria* and *Encephalartos* spp.) is said to be the main threat to the survival of cycads in the wild in South Africa.

Some of the wildlife traded in the largest quantities were species that received little political attention within CITES, including reptiles, crocodylians, lizards, snakes, tortoises, and more specifically: leopard tortoises, ball pythons, and African spurred tortoise (*Centrochelys sulcata*) (Outhwaite & Brown, 2018). Reptiles dominated trade in live animals: the most common species being leopard tortoise (*Stigmochelys pardalis*) and Nile crocodile (*Crocodylus niloticus*). Reptile



Reptiles, from tortoise to crocodiles, are high value products for the luxury goods market.

species are primarily traded for décor or fashion items, for food, tonics, or medicine, and for the pet trade and breeding. Live reptile seizures meant for the pet trade are becoming far more common than seizures of reptile skins (UNODC, 2020). Reptiles and amphibians destined for the pet or leather goods trade are sourced from Africa. (UNODC, 2020). The three largest markets for illegally traded reptile (UNODC, 2020) that appear in the seizure records are:

- Reptile skin or shells used in the décor or fashion industries;
- Reptile meat organs, or venom consumed as a food, tonic or medicine;
- Live reptiles used as pets, for zoos, or breeding.

A. Drivers, Causes, Motivations and Enablers of IWT

It should be noted that there are several terms that are used to describe, or define, the underlying causes of IWT such as “drivers, causes, motivations, enablers, facilitators” etc. Price (2017b) makes a distinction between “economic drivers of the IWT” - which includes poverty, demand, and livelihoods; and “enabling factors” of the IWT - which includes governance, regulatory frameworks, and law enforcement. Other papers cite “ideal contexts” such as the presence of armed non-state actors in source countries which fuels IWT (Lawson and Vines 2014). It is important to make these distinctions in order to design appropriate policies, strategies, and programs to mitigate IWT. For the purposes of this paper, “causes of IWT” will be aggregated under an umbrella to include “causes, drivers, motivations and enablers”.

Driver: Consumer demand in Asia

IWT is a highly lucrative business, with wildlife products commanding high prices on illicit international markets. There is a consensus in the literature that IWT is largely driven by consumer demand in Asia (Lawson & Vines 2014; Miliken 2014; Moneron et al. 2017; Nellemann et al. 2013; Outhwaite & Brown 2018; UNODC 2020; UNODC 2013a; Price 2017b; WWF 2012). Economic growth, population growth, a growing middle class, and burgeoning affluence has led to rising demand for exotic and luxury products, including wildlife products in Asia (Nellemann et al. 2013; UNODC 2013; UNODC 2020). Consumption for some goods is driven by complex forces such as lifestyle and recreational choices, individual aspirations, as well as desire for individual, social, and corporate status (Burgess et al. 2018). China is the region’s largest economy and simultaneously the largest consumer market for wildlife. Most wildlife is consumed as food or as ingredients in traditional medicines, although beliefs about the medicinal properties of wildlife and wildlife species are unverified (UNODC, 2013; Nellemann, 2013; Burgess et al., 2018).

Driver: Poverty, lack of alternative livelihoods, subsistence, and income generation

The poverty-IWT nexus is a complex issue although there seems to be consensus in the literature that it is one of the drivers of IWT. It is essential to differentiate between hunting for subsistence; local poachers and foot soldiers, who often belong to vulnerable sections of society; and traffickers related to crime syndicates who can belong to wealthy and powerful sections of society. It should also be noted that communities that live either inside or on the edge of

national parks do not form homogenous groups, and poachers and villagers do not all benefit equally from poaching (Hübschle- Finch, 2016). Furthermore, the root causes of poaching touch on the colonial history in southern Africa where it is argued that land expropriation, and loss of hunting and other land use rights were implemented during the colonial and apartheid eras, which contributed to the marginalization of people living in or near protected areas. Hauenstein (2019) conducted a quantitative analysis which tested whether local conditions in different sites and in different years can explain variation in poaching rates between and within elephant populations, and concludes that annual poaching rates in 53 sites strongly correlate with poverty. The proxies that were used in the study were infant mortality rates (IMR) and poverty density of ivory demand. Similarly, the SADC Anti-Poaching Strategy (2016-2021) also notes that infant mortality emerged in successive MIKE⁹ analyses as the strongest indicator linking high levels of poverty with high levels of elephant poaching. More recently the proportion of people living in extreme poverty (defined as people living with less than US\$ 1.25 per day) in and around MIKE sites was tested and found to be as strong a predictor of PIKE (Proportion of Illegally Killed Elephants)¹⁰ at the site level as the infant mortality rate (SADC 2015).

These macro-level conclusions are supported by micro-level research from specific locales around SADC. Lunstrum's research (2020) focuses on the Mozambican borderlands adjacent to Kruger National Park in South Africa, and concludes that economic factors including poverty are central drivers of rhino poaching. Calvo (2015) presented evidence that economic pressures are behind poaching in the Ruvuma landscape¹¹, where poaching is the main source of income for local communities. Lindsey et al. (2011) conducted a study around Savé Valley Conservancy in the South- East Lowveld of Zimbabwe to investigate the dynamics and underlying causes of the bushmeat trade, and found that bushmeat hunting is conducted mainly by unemployed young men to generate cash income, used mostly to purchase food. Bushmeat is mainly sold to people with cash incomes in adjacent communal lands and population centers, and is popular by virtue of its affordability and availability.

Moneron et al. (2020) draw similar conclusions in their study of criminal behavior and IWT. They show that 74% of surveyed convicted poaching offenders in South Africa were either unemployed or informally employed prior to their arrest; and all but four offenders surveyed had at least one dependent reliant on them for financial support. Moreover, many offenders perceived themselves as "poor"¹², reporting that their household income was not enough, that they were only able to afford day to day basics, and that they struggled to make ends meet. While the majority of offenders exhibited the above characteristics (incomplete education, insecure employment status, and families financially dependent on them), there were some offenders for whom this was not true. These offenders were more educated (17%), having completed secondary schooling or higher; some were also formally employed (25%), and they did not consider themselves to be "poor" or "struggling financially" (26%).

Other studies, while not focused on SADC countries, provide some interesting insights, and call for a more nuanced approach to studying the IWT-poverty nexus. Duffy et al. (2015) found there is a need for a better understanding of what poverty is and what motivates people to hunt illegally. They further posit that the definition of poverty is itself flawed; that illegal wildlife hunting may not simply be a way of averting want and deprivation, but may be a means of seeking and affirming identity, status, lifeways, custom, and local prestige, and multidimensional factors such as voice, prestige, and status should be taken into consideration (Duffy et al. 2015). Moreover, it is essential to differentiate motivations of local poachers and foot soldiers, who often belong to vulnerable sections of society, and traffickers related to crime syndicates who can belong to wealthy and powerful sections of society.

Harrison et al. (2015) focuses on Uganda and concludes that poaching is sometimes conducted to meet basic subsistence needs by illegally harvesting resources from protected areas. These resources can either be used directly to meet household needs (bushmeat and honey), or be sold to generate income with which to pay for resources. Another driver was to generate income above and beyond basic needs (commercial). Some may turn to wildlife crime because they feel unable to access legitimate or high-paying employment. Price (2017b) cautions that individuals from poor communities would not engage in the poaching of commercially valuable species unless there was demand from wealthier communities.

Driver: Inequities and perceived injustices

⁹ *Monitoring the Illegal Killing of Elephants* (MIKE) is a site-based monitoring of elephant mortality used to provide information needed for elephant range States and the Parties to CITES to make appropriate management and enforcement decisions. <https://cites.org/eng/prog/mike/index.php/portal>

¹⁰ Proportion of Illegally Killed Elephants (PIKE) provides a sensitive measure of poaching trends, and is calculated as the number of illegally killed elephants found divided by the total number of elephant carcasses encountered by patrols or other means, aggregated by year for each site.

¹¹ This region straddles northern Mozambique and southern Tanzania, and incorporates the Selous Niassa Wildlife Protection Corridor (SNWPC), and the Quirimbas Niassa Corridor (QNC).

¹² This region straddles northern Mozambique and southern Tanzania, and incorporates the Selous Niassa Wildlife Protection Corridor (SNWPC), and the Quirimbas Niassa Corridor (QNC).

Price (2017b) mentions that although not a driver, colonial history should be taken into consideration since some communities do not benefit from revenues accrued from wildlife in protected areas (or private reserves), which creates strained relations with the wildlife sector. In some cases, such relations are worsened by heavy-handed anti-poaching efforts and historical grievances over the loss of land. In such instances, illegal hunting may be practiced as a form of protest. Hübschle (2017) has a similar thesis that states that the lack of engagement with the historical context of land expropriation, loss of hunting and other land use rights, as well as the forced removals during the colonial and apartheid regimes is a gap in the literature. This is also echoed by Harrison et al. (2015) who found that one of the five main drivers of wildlife crime in Uganda is perceived injustice. There were a number of ways in which local people perceived themselves to be unjustly treated by protected area authorities. Their responses to this injustice may include targeted retaliation at individual animals or species, and general disregard for protected area rules and regulations. Some communities are often marginalized from the benefits derived from wildlife in protected areas (or private reserves), which creates strained relations with the wildlife sector. A more recent example in Angola showcases the importance of community involvement and consultation before establishing a protected area. After the end of the civil war Angola gazetted a number of protected areas without prior consultations with communities living on-site, creating justifications for non-compliance and no consideration for environmental laws at local level (Panthera, pers. comm., 2020).

Driver: Organized crime groups in SADC

The information on organized crime in the SADC region is quite general. In recent years, wildlife crime has grown into a significant and specialized area of transnational organized crime, driven by high demand particularly from East Asia (Price, 2017b). Such crime overlaps with other criminal activities, including the illicit trade in arms, money-laundering, and drug-smuggling (Lawson & Vines, 2014). A broad discussion is provided below.

Little is known about the profits made by organized crime groups from illicit wildlife trafficking. Some estimate between US\$5 - 20 billion per annum (Miliken, 2014). The World Bank (2019) estimates that the economic value of IWT globally ranges between \$7 -23 billion per year). UNODC estimates that illicit income generated by ivory was estimated to be US\$400 (310 – 570) million and the income generated by rhino horn US\$230 (170 – 280) million in between 2016 and 2018 (UNODC, 2020). Governments lose millions of dollars per year in potential fiscal revenues as a result of organized crimes. These foregone taxes also represent opportunity costs for governments if efforts to reduce the illegal activities cost less than the amount ultimately collected (World Bank, 2020).

Seizures of large-scale ivory are indicative of the presence of organized crime in the illicit ivory trade. Firstly, because they comprise anywhere from one-half ton to over seven tons of ivory in a single consignment, they involve a far greater and sustained level of finance to undertake and the development of procurement networks from elephant poaching in protected areas to orchestrated thefts of government-held ivory stocks (Miliken, 2014). Secondly, they entail a more sophisticated degree of planning, organization, and intelligence to instigate, including investment in the development of local poaching and transport networks for sourcing sustained volumes of contraband ivory; the procurement of specialized equipment (such as shipping containers with hidden compartments), transport, storage and staging facilities; the creation of “dummy” companies and other forms of business fraud to mask the true identity of those involved; facilitation of networking and, as opportunistically required, corruption with political, regulatory or law enforcement authorities to prevent legal interventions; and utilization of money laundering, tax evasion and other forms of economic subterfuge to hide profits and other evidence of financial dealings. Thirdly, these criminal operations exhibit special knowledge and connections linking African source countries with Asian end- use markets so that illicit ivory readily moves into black markets or, whenever feasible, legally- sanctioned trade channels. It is believed that currently most of these transnational syndicates function as Asian-run, Africa-based operations (Miliken, 2014).

Enablers: IWT, corruption and weak governance structures

Corruption is a severe threat to wildlife conservation globally and is a main enabler of wildlife crime. It has negative impacts on conservation by reducing the effectiveness of conservation programs, reducing law enforcement and political support, and establishing incentives for the overexploitation of resources. It undermines the effectiveness and legitimacy of laws and regulations and can be an indicator of the presence of organized crime groups. Corruption in wildlife trade can take many forms and can take place at sourcing, transit, and export stages, and involve both the public and private sectors. It can be ad hoc, involving smaller amounts of money, and lower-level officials, or systemic, involving larger amounts of money, and higher-level officers (UNODC, 2020).

There is a wide range of corrupt practices that have been identified in IWT including bribery of military, poachers, rangers, administrative government officials, police, and border officials (UNODC 2020). Another is the mishandling of evidence which is the single most important factor in losing wildlife crime cases in some countries (SADC, 2015). Bribes can also be offered by a trader to obtain a fraudulent export permit that falsely verifies wild animals as

captive-bred.

Table 1: Forms of Corruption

What forms of corruption occur?	
(a) Abuse of office	Officials abusing their authority, for example to influence processes for allocating access rights, or when checking permits.
(b) Bribery	The explicit exchange of money, gifts in kind, or favors as payment for access rights or permits that should legally be free or should be allocated on terms other than willingness to pay.
(c) Conflicts of interest	Officials have a personal stake in who receives rights or permits.
(d) Elite capture	Economic, political, and social elites gain control of decision-making processes or institutions to skew policies governing access or permitting in their favor.
(e) Extortion	Demand of a bribe or favor by an official for doing his or her duty, or where force or threats are used by individuals such as harvesters or traders to obtain access rights or permits.
(f) Fraud	Issuance and use of illegitimate permits such as fake, counterfeit, fraudulent, expired or forged documents. Commonly obtained by corrupting officials through bribery.
(g) Nepotism/Cronyism	Preferential issuance of access rights or permits to family members, friends or associates based on social ties rather than merit or competitiveness.
(h) Private sector corruption	The abuse of professional obligations within a corporation or other non-governmental entity for private gain. This includes individuals or groups from the private sector influencing officials to take decisions and actions that constitute abuses of entrusted power.
<p>These actions can take place at the administrative (“petty”) or political (“grand”) level, with the difference often determined by the scale of benefits to those participating in the corrupt action and the commensurate loss of public benefits.</p> <p>Corrupt actions often take place at the interface of government and private actors, but corruption solely within the private sector is also possible. An example of the latter may be collusion among companies to drive down prices paid for access rights.</p>	

Note: information above derived from Outhwaite, 2020

According to Milliken and Shaw (2012), Asian operatives involved across the illegal rhino horn trade have exploited South Africa’s “unusually high” levels of crime and institutional corruption to establish an extremely sophisticated criminal enterprise linking key demand countries such as Vietnam to South Africa. Similarly, the relative attraction of eastern Africa as a transit area is a product of corruption. The countries of eastern Africa are well aware of this challenge, which is both a product of and a contributor to the lack of public sector capacity, particularly law enforcement capacity (UNODC, 2013b).

High poaching levels are more prevalent in countries where governance is weaker, and vice versa. This is likely to be a causal relationship, with poor governance facilitating the illegal killing of elephants and movement of illegal ivory, be it through ineffective law enforcement or active aiding and abetting by unscrupulous officials (SADC, 2015). At the national level, the strongest correlate of PIKE¹³ is governance, as measured by Transparency International’s Corruption Perceptions Index (CPI) or the World Bank’s Worldwide Governance Indicators.

Enabler and Driver: Armed conflict and IWT

Armed conflict is absent for the most part from the SADC region although instability and the presence of armed non-state actors in some source countries facilitates poaching. The SADC country most at risk for armed conflict as a driver of IWT is the DRC, and the spillover effects into neighboring Tanzania. In DRC, ivory poaching is centered in the Garamba-Bili-Chinko landscape of southeast Central African Republic (CAR) and northeast DRC, referred to as Garamba-Bili-Chinko or GBC (Ondoua et al., 2017), where rebels from the Sudan People’s Liberation Army (SPLA) track and poach elephants (Wyatt & Kushner, 2015). The Lord’s Resistance Army (LRA) also trade ivory in this region for resources such as food, medicine, weapons, and ammunition (Wyatt & Kushner, 2015). Ivory flows through the DRC, Uganda, and to the transit hotspot of Mombasa, to the coast in Kenya ready for shipment to Asia (Lawson & Vines, 2014).

¹³ Proportion of illegally killed elephants (PIKE)

Illegal hunting appears to spike during periods of political instability or poor governance, due to breakdowns in law enforcement and elevated reliance by people on natural resources for survival (Price, 2017b). In Garamba NP in DRC, bushmeat hunting increased fivefold during periods of armed conflict and by 2013 the Park's population of 22,000 elephants had decreased by 90% to around 2,000 animals (Nellemann et al., 2014). Lacking infrastructure and a strong state presence, the region has a limited formal economy. Similarly, Mozambique's wildlife was decimated during and after the country's civil war (1977-1992) for ivory and meat to buy guns and ammunition (Quammen, 2019).

In DRC, the lack of governance has exposed people and resources to exploitation by various armed groups, and the lack of law enforcement has rendered the wildlife in this landscape an easy target for well-equipped poachers and armed groups. The combined impacts of the activities of armed groups, the illegal trade in wildlife, and illicit cross-border movements have resulted in instability. Currently, CAR and the DRC rank 4th and 7th on the Fragile States Index respectively¹⁴. In addition, CAR and the DRC rank in the bottom end of Transparency International's Corruption Perceptions Index (they rank 91 and 88 of 100, respectively). Corruption and the flow of arms are two additional major impediments to law enforcement that must be tackled by governments in the region for wildlife conservation efforts to succeed. Regarding the proliferation of guns, especially semi-automatic firearms, numerous reports have been published on the risks and availability of small arms in CAR and the DRC (Ondoua et al., 2017).

Motivator: Bushmeat trade

The illegal trade in bushmeat represents a severe conservation threat in several African countries. It is the single most important cause of wildlife declines in most of Africa. Central and western Africa are arguably the most affected with demand greatly outweighing the sustainable level of production of the forest ecosystems. Hunting and the sale of bushmeat also represent an important survival strategy for significant numbers of people in rural forest areas of west and central Africa (Lindsey & Bento, 2012). In countries with high levels of urbanization (e.g., Dar es Salaam, Nairobi, Lusaka, Maputo), the demand for bushmeat is high as it is consumed as a "luxury" item in urban areas (SADC, 2015). In rural areas, often close to wildlife source populations, bushmeat is preferred because it is normally cheaper than alternatives. In urban areas, demand for bushmeat is driven by preference for its taste, and may be seen as a way of preserving traditions, it is commonly more expensive than other types of protein (Lindsey et al., 2015; UNODC, 2016). The prevalence and impacts of the illegal trade in bushmeat are under-appreciated in southern Africa despite indications that it constitutes a serious conservation threat in parts of the region.

In southern Africa, the bushmeat problem, while still less acute than that found elsewhere in Africa, is rapidly growing and impacting on wildlife populations in and around protected areas. Poaching and hunting for bushmeat are exacerbated by poverty, and recent studies suggest that the killing of elephants for their meat will grow as other kinds of bushmeat and protein sources become scarcer (Nellemann et al., 2013). Key drivers of the bushmeat trade in the southeast Lowveld include poverty, unemployment, food shortages, settlement of wildlife areas by impoverished communities that provided open access to wildlife resources, failure to provide stakes for communities in wildlife-based land uses, absence of affordable alternative protein sources, inadequate investment in anti-poaching in areas remaining under wildlife management, and weak penal systems that do not provide sufficient deterrents to illegal bushmeat hunters (Lindsey et al., 2011).

While this research is not based in the SADC region, Harrison et al. (2015) looks at livelihoods and poaching in Uganda where many protected areas are the traditional homelands of various groups such as the Batwa in Bwindi Impenetrable National Park and the Batooro of Katonga Wildlife Reserve. Because people have traditionally lived in certain areas, they have traditional uses for the resources, including bushmeat, found there, some of which can no longer be found outside the protected areas.

B. IWT Value Chains, Routes, Products, and Destination Markets

TRAFFIC has a number of reports on illicit ivory, pangolin, rhino horn, and abalone supply chains which are described in Miliken (2014); Miliken and Shaw (2012); Heinrich et al. (2017); Okes et al. (2018); and Moneron et al. (2017). UNODC (2020) also published the World Wildlife Crime Report that highlighted trade routes for IWT of endangered species. All literature indicates that the trade pattern for both legal and illegal wildlife from different African countries to Asia is quite distinct (UNODC, 2013). Traffickers move wildlife products by land, sea, and air, often concealed in legitimate cargo (UNODC, 2020).

In 2019 and in the first half of 2020, several major seizures of ivory, rhino horn, pangolin and rosewood were recorded. There also appears to be geographic consolidation of trafficking routes across several markets, with Nigeria emerging as a key source/transit country for many of the shipments noted above. Similarly, Vietnam has emerged as a key

¹⁴ <http://fundforpeace.org/fsi/data/>

destination country for shipments of ivory and pangolin scales, although the domestic market for both commodities appears to be limited (UNODC 2020). The majority of ivory seizures were traced back to two broad elephant populations: one extending from central Tanzania to northern Mozambique (including Selous and Ruaha), and one centered on the TRIDOM area (north-east Gabon, north-west Congo, and south-east Cameroon). They also align with the trafficking data, discussed below, which indicate East African (Mombasa) and West African (Lagos) hubs for illicit trade (UNODC, 2020).

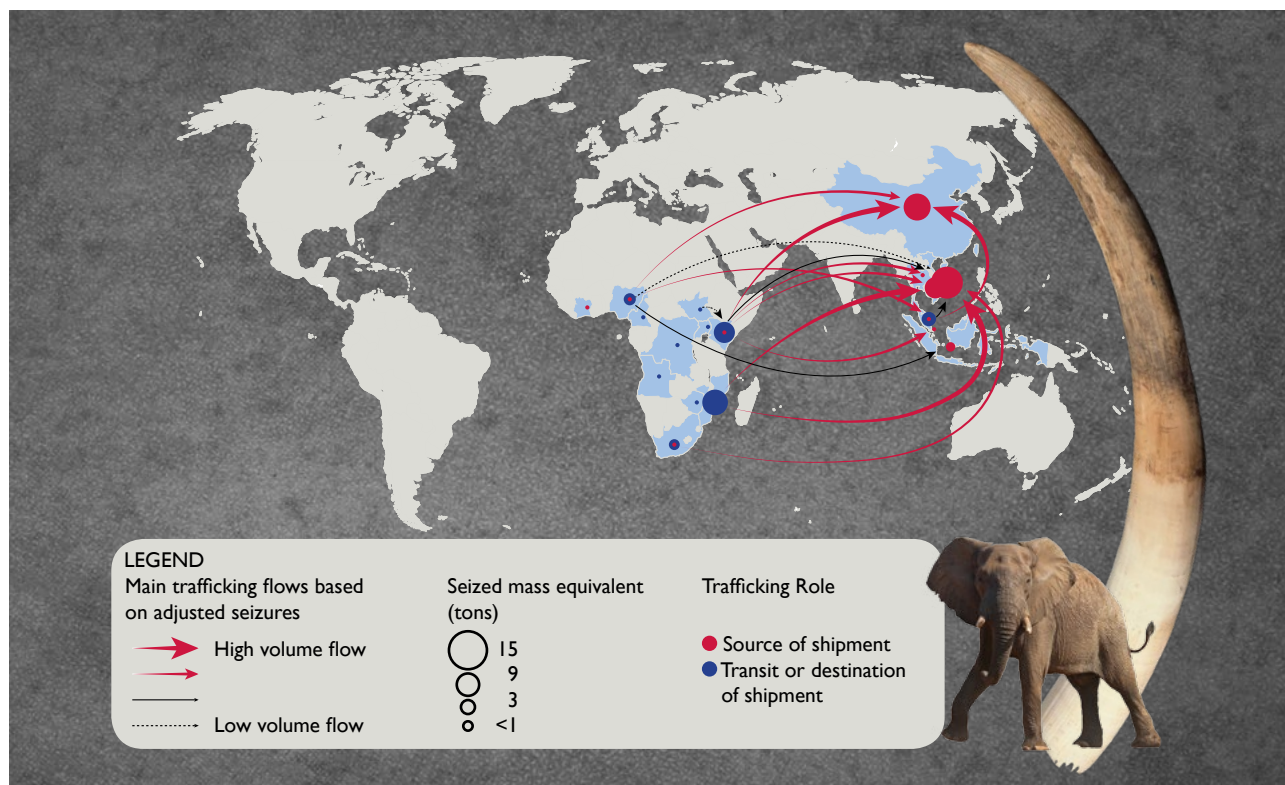
Trade chains for IWT may include both domestic and international specialists involved in storage, handling, transport, manufacturing, industrial production, marketing and retailing of wildlife products (UNODC, 2013).

Supply chain of illegal trade in ivory and rhino horn

The illegal supply chain for ivory and rhino horn describes the processes and actors involved in sourcing, manufacturing, trafficking, and selling products to end consumers. While there are some differences between the rhino horn and ivory trades, the general set-up of the illegal supply chain appears to be comparable. The levels may vary case by case in composition and nature, and some products may not be handled by all levels when arriving at their end consumer. (UNODC, 2020).

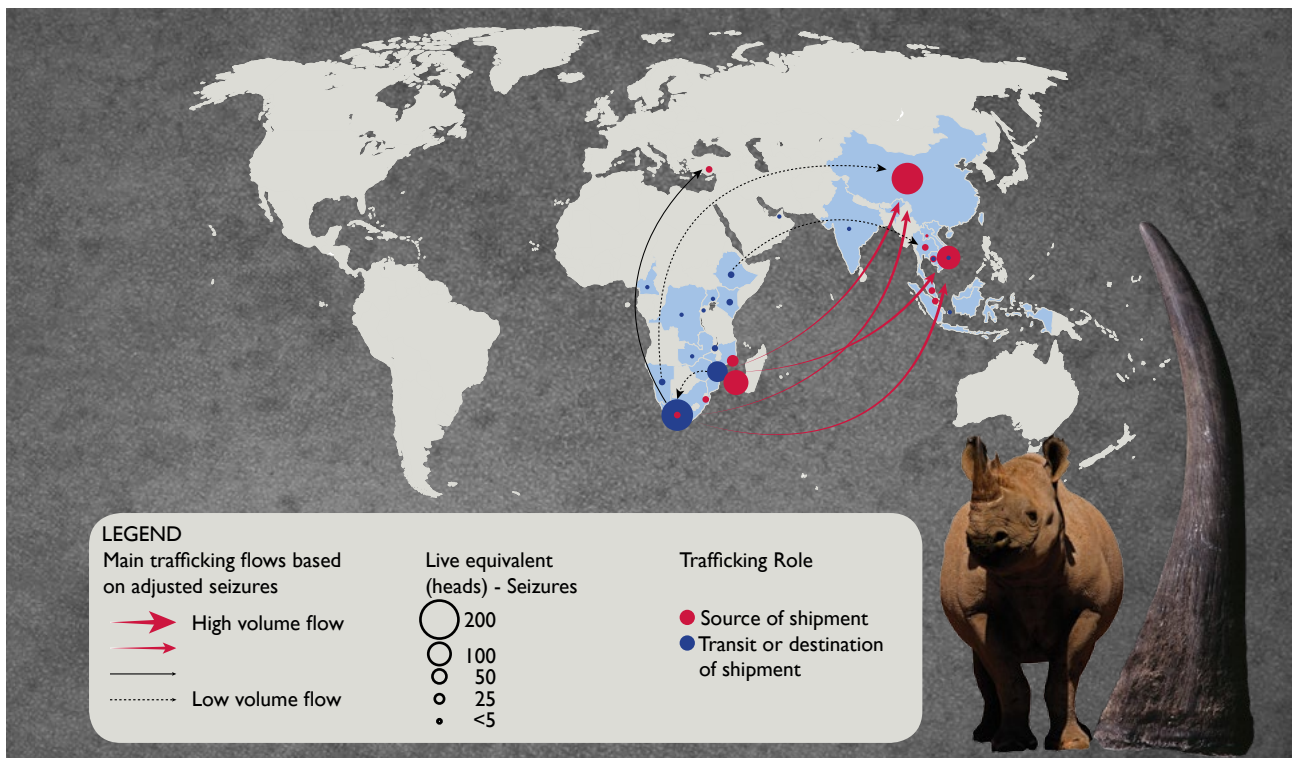
The illicit supply chains start with poaching. Most of the ivory and rhino horn on illicit markets come from (newly) illegally killed animals and some – comparatively small – amounts from other sources such as stockpile thefts or theft from natural mortalities. Between 2006 and 2017, 86% of the recorded rhino poaching incidents took place in South Africa (UNODC, 2020), which was home to 75% of the African rhino population in 2017. Other countries of origin of illegally sourced rhino horn were for example Kenya, Namibia, and Zimbabwe. Countries in East Asia and the Pacific can play one or more roles (source, transit, and destination) in the illegal international wildlife trade.

Once poached, the horn and tusks are collected and further trafficked. These products are passed on or sold to local traders and then to intermediaries who compile and organize larger shipments at the national level or subregional level. Typically, these shipments are then trafficked by internationally connected individuals or groups to destination markets in Asia, where wholesale and retail traders sell final products to end-consumers (UNODC, 2020). Citizens of destination countries in Asia are often heavily engaged within Africa in rhino horn and ivory trafficking. They play major roles in the acquisition and transport of rhino horn out of Africa to Asian destinations.



Source: World Wildlife Crime Report, UNODC 2020

Figure 1 : Trafficking flow map - Elephant ivory (2014-2018)



Source: World Wildlife Crime Report, UNODC 2020

Figure 2 : Trafficking flow map - African rhinoceros horns (2014-2018)

According to UNODC World WISE seizure data from 2015-2019, most ivory tusk shipments were destined for Vietnam (42%), China (34%) and Cambodia (12%). For rhino horn, based on a longer time period from 2002 to 2019, the main destinations were similar, with Vietnam (41%), China (39%), Malaysia (5%) and Thailand (3%) (UNODC, 2020).

Changing routes

Trafficking routes are in constant flux with traffickers seeking out emerging transit opportunities. For the SADC region, Mozambique and Tanzania were key exporters of ivory between 2000 and 2008. South Africa was the most prominent transit country owing to one exceptional 7.1 ton movement of ivory from Malawi through the port of Durban to Singapore, and then reportedly for onward shipment to Japan (Milliken, 2014). In the period 2009-2011, there is a shift to the Indian Ocean ports of Dar es Salaam and Zanzibar in Tanzania, with most of the Tanzanian trade initially directed to Malaysia as the principal transit country, but some shipments also going to the Philippines, another transit country, whilst other consignments were sent directly to China (Milliken, 2014). Trade out of Mombasa, Kenya also firmly develops during this period with multiple shipments being sent to Malaysia, Vietnam, Cambodia, and the United Arab Emirates as transit countries; these consignments would probably ultimately be destined for either Thailand or China. In the most recent period, 2012-2013, Tanzania is still heavily involved in the trade, but Kenya's port of Mombasa becomes the leading conduit through which major flows of ivory repeatedly exit Africa (a development that coincides with a Presidential election in that country).

The majority of rhino horn shipments originate in southern Africa, particularly Mozambique, Namibia, South Africa, and Zimbabwe (Moneron et al., 2017). Countries or territories that have been used as export or transit points for the illegal rhino horn trade include Cambodia, Ethiopia, the EU, Hong Kong, Indonesia, Kenya, Malaysia, Qatar, Singapore, Thailand, and the United Arab Emirates. Countries such as Ethiopia and Kenya play a pivotal role as transit countries in Africa as they have direct links to Asian countries through their international ports and airlines. OR Tambo International Airport—Africa's largest airport and a key hub for international and domestic travel from Johannesburg—accounted for the bulk (86%) of rhino horn seizures reported at South African airports. For destination countries in Asia, Vietnam's Noi Bai International Airport in Hanoi and Tan Son Nhat International Airport in Ho Chi Minh City—key links in the illicit supply chain—have recorded 16 and 12 seizures, respectively. Hong Kong International Airport and Beijing Capital International Airport in China have also reported more than 10 seizures of rhino horn since 2010 (Moneron 2017).

Destination markets

TRAFFIC has published a number of research papers on markets for elephant ivory, rhino horn, and pangolin, many of which are located in Asia. These include: *Study widens insight into illicit ivory trade in Indonesia, Thailand and Vietnam*

(Indraswari, et al. 2020), *Southeast Asia: At the heart of wildlife trade* (Krishnasamy & Zavagli 2020), *An assessment of the illegal ivory trade in Vietnam* (Stiles 2008), *The Elephant Ivory Trade in Thailand* (Stiles 2009), *The State of Wildlife Trade in Macau* (Lau & To 2019), *In Transition: Bangkok's ivory market* (Krishnasamy et al. 2016), *Deadly Messaging: Ivory Trade in China's Social Media* (Guan and Xu 2015); and *From Tusk to Trinket: Persistent illegal ivory markets in Vietnam* (Nguyen et al. 2018), to name a few.

TRAFFIC has also produced publications on ivory markets in SADC markets such as: *Ivory Markets in Central Africa. Market Surveys in Cameroon, Central African Republic, Congo, Democratic Republic of the Congo and Gabon: 2007, 2009, 2014/2015* (Nkoke et al., 2017), and *Le marché de l'ivoire d'éléphant à Kinshasa, RD Congo: 2015-2016*. (Mashini et al., 2017). While the illicit trade is ultimately driven by demand, the easy availability of illegal ivory exacerbates it. Ivory can be found openly on display in markets and shops in many African cities, such as Khartoum, Kinshasa, Lagos, and Luanda, as well as in certain Asian cities (ETIS, 2012). Most of these markets operate with impunity due to lack of law enforcement action, and often in blatant disregard of national legislation prohibiting trade in illegal ivory. A series of studies of African ivory markets supports the notion that increased national control over domestic markets weakens these markets, while poor law enforcement allows them to grow (Mubalama, 2005; Martin & Milliken, 2005; Vigne & Martin, 2008; Latour & Stiles, 2011; Randolph & Stiles, 2011; Stiles 2011; Martin & Vigne 2011a). In China, although a regulated and legal market for ivory exists, gaps in enforcement result in the wide availability of illegal ivory (Martin & Vigne 2011). These markets are now reaching their target consumers more directly, given the increasing numbers of Chinese citizens living or working in Africa, whether on short term contracts for infrastructure projects and resource extraction or as long-term residents who frequently travel between Africa and Asia (Milliken, 2012).



Control of the sale of ivory products is generally weak, even when the sale breaches national legislation.



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World Wildlife reported in 2016 that the African elephant population fell by 111,000 animals in the span of a decade.

Impacts of IWT

A. Environmental Impact

The direct impact of IWT on the environment is usually a drastic reduction in the populations of specific species. However, monitoring this impact can be challenging for species such as pangolins, about which little is known. Reduction in certain species' populations such as predators and large mammals has further impacts on ecosystem functioning, as some key services provided by these species might go missing and create imbalances within the ecosystem. This in turn can lead to a biodiversity loss much greater than just the species traded.

Monitoring wildlife populations in southern Africa

Population monitoring is necessary to manage and conserve threatened wildlife populations. There are a number of organizations that are dedicated to these efforts. Globally, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) monitors elephant mortality on site¹⁵. This program is called *Monitoring the Illegal Killing of Elephants* (MIKE). Proportion of illegally killed elephants (PIKE) is the "share of the detected elephant carcasses that have been illegally killed" and it is calculated at the subregional and continental levels. The official CITES data on elephant ivory seizures are maintained by TRAFFIC in the Elephant Trade Information System (ETIS). UNODC monitors and maintains the World Wildlife Seizures (World WISE) database of seizures of illegal wildlife.

The African Elephant Database (AED) stores data on the conservation status of African elephants – their numbers (abundance) and distribution (range) (IUCN 2016). The database is a collaborative effort between governments, conservation agencies and researchers and has been managed and maintained by the African Elephant Specialist Group (AfESG)(IUCN). The African Rhino Specialist Group (AfRSG) and Pangolin Specialist Group are two of many Species Survival Commissions (SSC) of the IUCN that led efforts to save endangered and threatened species from poaching and illegal trade, collecting available data and information.

At the national level, some countries carry out systematic wildlife counts and analyze trends of wildlife populations in public, private, and community conservation areas (for example Namibia and South Africa). In some countries this monitoring is less systematic, with ad-hoc wildlife counts in some national parks, often depending on available donor support (for instance in Zambia and Zimbabwe)¹⁶. The illegal ivory trade has been identified as one of the main causes

¹⁵ Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) [website]. *Monitoring the Illegal Killing of Elephants* (MIKE). <https://cites.org/eng/prog/mike/index.php/portal>

¹⁶ For more details please refer to the Summary Knowledge Table at the end of this report

of declines in elephant populations in both Africa and Asia. Wildlife is further threatened by habitat loss, deforestation, illegal hunting, encroaching agriculture, transhumance, and industrialization. Eastern Africa has been the region most affected by poaching, having experienced an approximately 50% population decline (IUCN 2016). IWT, through its impact on wildlife populations, triggers ecosystem service losses, biodiversity losses, and losses of social capital (jobs and livelihoods etc.).

Reduced populations

Elephant poaching is now at its highest rate in 20 years. During a period of uncontrolled legal ivory trade from 1979 to 1989, Africa's elephant population more than halved from 1.3 million to 600,000. Over half of this continental decline can be attributed to the losses in Tanzania where the estimated population declined from 135,853 in 2006 to 50,433 in 2015. The elephant populations in the Selous and Ruaha reserves in Tanzania alone declined by nearly 75,000 elephants between 2006 and 2013 (UNODC 2020). A worldwide ban on ivory trade was approved by CITES in 1989, resulting in a dramatic fall in poaching levels for the immediate few years afterwards (Lawson & Vines 2014). Forest elephants throughout Central Africa have suffered a serious decline during the past decade, with the most catastrophic drop occurring in DRC (Maisels et al., 2013).

Botswana, Namibia, South Africa, Zambia, and Zimbabwe host about 70% Africa's elephants, and are behind efforts to get a CITES agreement on a legal and highly regulated trade of ivory. It estimates that between the 2007 and 2016 status reports, there has been a reduction of 118,000 elephants on the African continent, with populations in southern Africa declining by almost 30,000 (IUCN 2016). SADC estimates that there are 350,088 elephants in the SADC region as a whole.

African rhinos differ from African elephants in that there are far fewer of them, and they are far more concentrated geographically. South Africa alone was home to 75% of the African rhino population in 2017 (UNODC 2020). South Africa has been and remains the epicenter of rhino killing in Africa (Milliken 2014). Eighty-six percent of the recorded rhino poaching incidents between 2006 and 2017 took place in South Africa, which was home to 75% of the African rhino population in 2017 (UNODC 2020). Over the past 50 years, Africa's rhinos have faced two catastrophic crises. From the 1960s through the early 1990s, relentless poaching of rhinos was rampant. Between 1960 and 1995, large-scale poaching caused a dramatic 98% collapse in numbers. The majority of Africa's (black and white) rhinos are conserved by just three SADC range states: Namibia, South Africa, and Zimbabwe (SADC, 2015). Seventy-five percent of the remaining rhinos can be found in just one: South Africa - mostly white rhinos. Drought and poaching have caused South Africa's rhino population to decline since 2012, however, driving down the overall continental population. More recently, it has been estimated that more than 7,100 rhinos have been killed illegally by poachers in Africa over the past decade (Moneron et al., 2017). The black rhino (*Diceros bicornis*) specifically was the world's most abundant of rhino species but relentless hunting and poaching of the species, and land clearing for settlement and agriculture, have reduced numbers to a critically endangered state with only 4,880 individuals in the wild (Lawson and Vines 2014). White rhinos are listed as "Near Threatened" on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species.

Pangolins are currently the most heavily trafficked wild mammals in the world (Heinrich et al., 2017), however detailed data on their population trends in southern Africa is lacking to understand the impact of this trade on the species. Between 2014 and 2018, seizures of pangolin scales increased tenfold (UNODC, 2020). The reasons for this increase are unclear. All species of pangolins were elevated to CITES Appendix I in 2016, but there was little legal trade before this time (UNODC, 2020). There has also been a shift in the nature of pangolin seizures over time, away from live and meat seizures (mainly of Asian species) and towards African pangolin scale seizures. With declines in populations of Asian pangolins, there is now evidence of fast-developing intercontinental trafficking of African pangolins to Asian markets, facilitated by increasing economic ties between East Asia and many African nations. Information on pangolin populations remains limited and the extent of the impact of IWT on this population is hard to evaluate.

Bushmeat trade also has a significant impact on smaller ungulates populations in some areas, for instance in and around Zambia's National Parks (WCP, pers. comm. 2020).

Ecosystem degradation

Wildlife has considerable impact on the environment, and plays an integral role in maintaining ecological balance. Wildlife provides key ecosystem services such as biological control of pests and disease, waste and nutrient cycling, food web functions, landscape management are among some of the benefits provided by wildlife (Wall and Nielsen 2012). Each species functions with a specific role such as predator, prey, decomposer, forager, or preserver, and in this way, contributes to the overall health and balance of an ecosystem. Large mammals and predators that are victims of poaching have seen their populations drastically reduced over the past century, thus diminishing the ecosystem

services these species can render, sometimes putting the stability of an entire ecosystem at threat.

As the largest of all land mammals, African elephants play an important role in balancing natural ecosystems. Elephants are keystone species in ecosystems meaning that they provide vital ecosystem services, many of which are essential for the survival of other species in the community¹⁷. Elephants create new paths for smaller animals, and elephant dung is a food source for other species such as dung beetles. They trample forests and dense grasslands, making room for smaller species to coexist. Elephants also create water holes used by other wildlife. Similarly, rhinos are also keystone species; they are important grazers, consuming large amounts of vegetation which helps shape the landscape, and maintains the diverse African grasslands on which countless other species depend (Smithsonian Magazine, 2014).

Pangolins are known to be soil caretakers as they excavate ant and termite nests for food, which aerates, mixes, and improves the nutrient quality of the soil. Their burrows provide habitat for other animals. They also maintain the balance of insect populations - mainly ants and termites - in their ecosystems and are known to be “pest controllers”¹⁸. They also aid in the decomposition cycle by providing a healthy substrate for vegetation to grow from.

B. Economic Impact

The impact of IWT on southern African economies is often described as highly detrimental, potentially costing billions of dollars to the regional economy¹⁹. Sub-Saharan countries tend to be more affected by IWT because of their dependence on natural resources and wildlife as sources of revenue, but also because they tend to be more vulnerable to illegal activities with limited capacity for law enforcement (OECD, 2012).

The main direct macroeconomic impacts of IWT are direct consequences of decreasing wildlife population with associated loss in current and future income through loss of natural capital. This includes lost income from wildlife tourism, legal hunting, non-timber products, and carbon markets, among others. This also leads to indirect macroeconomic losses in jobs and investments in these sectors and all associated economic activities (OECD, 2012). IWT also affects the tourism and the trophy hunting industry by triggering insecurity, governance issues, and corruption, further undermining the reputation of tourist destination countries (Price, 2017; Douglas and Alie 2014).

In addition to income losses associated with natural capital, the loss of wildlife also results in losses of non-market benefits provided by these species. As mentioned in the previous section, biological control of pests and disease, waste and nutrient cycling, food web functions, and landscape management are among some of the benefits provided by wildlife (Wall and Nielsen 2012). These are important benefits that are lost when wildlife populations decline. They are also particularly valuable in the unique geographical and socio-economic context of Africa (Wangai et al. 2016).

The expenditures necessary to protect wildlife from poaching and smuggling also constitute major costs for government and private owners of wildlife (Minnaar-Herbig, 2018). These expenditures represent a significant opportunity cost as these funds could otherwise be directed towards furthering economic development in various sectors including tourism and conservation. Governments are further losing from non-paid taxes and revenues on illicit financial flows from IWT (Martin and Stiles, 2017).

Local level economic impacts of IWT are complex and often context-specific, with both positive and negative outcomes. The OECD (2012) highlighted that these impacts remain poorly understood. IWT indeed constitutes a short-term source of income for local poachers and traffickers often from poor backgrounds, with potential social benefits associated with increased income (Duffy and St John, 2013; Harrison et al. 2015). In general, it is essential to remember that IWT usually has a net positive short-term impact on individuals, and a net negative long-term impact on communities and countries as a whole (Price, 2017b).

Comprehensive assessments of the full economic costs of IWT are not available for Southern African countries in a form where comparisons can be made between countries (Lawson and Vines 2018). However, some studies do provide qualitative and some quantitative evidence of where these economic losses occur, as presented below.

Cost of IWT: Impact on tourism and legal hunting

The UNWTO carried out a survey in 2014 suggesting that 80% of trips to African countries were intended for wildlife watching (UNWTO, 2014). Poaching is expected to have a negative impact on tourism in Africa as it reduces wildlife populations and changes animal behavior, often decreasing the frequency of wildlife sightings. Animals become shy and

¹⁷ African Wildlife Foundation - <https://www.awf.org/blog/elephants-are-pillars-africas-ecosystems-and-they-need-our-support>

¹⁸ Pangolins: Natural Pest Controllers and Soil Caretakers <https://www.pangolins.org/2011/11/01/pangolins-natural-pest-controllers-and-soil-caretakers/>

¹⁹ ‘The critical link between resource plunder and illegal trade in wildlife’, Africa Renewal, United Nations <https://www.un.org/africarenewal/web-features/critical-link-between-resource-plunder-and-illegal-trade-wildlife>

harder to find and approach. Bad sightings, carcasses, rhinos without horns, marked animals, and slaughtered and live animals on sale all significantly affect the tourism experience²⁰. Similarly, damaged animals and scarcity of big animals impact the value of trophies and the attractiveness of trophy hunting activities.

It is therefore expected that the negative impact of IVT on iconic wildlife populations will directly lead to reduced income from wildlife tourism and legal hunting activities. Some evidence from SADC countries seem to confirm this statement, such as a case study on poaching of elephant and other species in Gonarhezou National Park in Zimbabwe. This study showed that poaching was perceived to be compromising ecotourism potential, reducing the trophy quality for safari hunting, and limiting the financial benefits from Community-Based Natural Resource Management (IUCN et al, 2015 in Price, 2017).

A study from Lubbe et al. (2017) on tourists' attitudes towards experiencing instances of poaching during their visit to a national park in South Africa showed that visitors had much higher levels of doubts about future visits if encountering a rhino carcass. They also concluded that international visitors and frequent visitors who see a poacher (or what is perceived to be a poacher) would be significantly more inclined to not return to the park.

Although some qualitative evidence strongly suggests a negative impact of poaching and IVT on wildlife tourism and legal hunting activities (WildAid, 2015; Fin24, 2013; Namibian, 2017), there is only a very limited number of studies quantifying the costs associated with these impacts in southern Africa. To our knowledge, only two major studies from Smith and Porsch (2015) and Naidoo et al. (2016) provide clear quantitative evidence at regional level.

Smith and Porsch (2015) conducted a quantification of the costs of IVT in elephants (across Africa), and in rhinos (in South Africa, Kenya, Zimbabwe, and Namibia). They used CITES' MIKE database for elephant populations and poaching rates impact on population, and statistics from the IUCN/SSC African Rhino Specialist Group for rhino population estimates. Rhino poaching rates and impact on population were derived from national statistics of the four rhino countries. The quantified economic impacts are directly linked to estimated loss in rhino and elephant populations over time (include future losses due to lower growth rates). If the poaching did not lead to reduced numbers of the species, the societal loss is valued by estimating the alternative legal income that the host society could reap from the animals, if they would not be poached. If the poaching reaches a level that leads to a reduction of the population, the loss is valued as a loss of natural capital.

Looking strictly at wildlife tourism revenue, and assuming that an extinction of one of the "big five" species would lead to a reduction of wildlife tourism by 20%, the authors estimate that a 1% reduction in rhino population would incur a loss of up to €1 billion per year in South Africa, up to €56 million in Namibia, and up to €68 million in Zimbabwe (See Table 2).

Table 2: Wildlife Tourism and Legal Hunting Losses from Rhino and Elephant Poaching in Africa (Porsch and Smith, 2015), 2015 prices.

Rhino	South Africa	Namibia	Zimbabwe
Loss in tourism income from extinction of all rhinos	€79 - €118 billion	€3.7 - €5.6 billion	€4.5 - 6.8 billion
Loss in tourism income from decrease in 1% of rhino population	€0.79 - €1.18 billion	€0.037 - €0.056 billion	€0.045 - €0.068 billion
Loss in legal hunting income from average poaching rates in first decade of 2000s	€133 million	€0.26 million	€16.9 million
Elephant			
Loss in tourism income from extinction of all elephants	€237 - €356 billion		
Loss in tourism income from 1% reduction in elephant population	€2.4 - 3.6 billion		
Loss of potential legal hunting income per elephant	€22,331 - € 31,264		
Loss in legal hunting income from decrease in 1% of elephant population	€2.4 billion - €3.6 billion		

Source: Adapted from Porsch and Smith (2015).

²⁰ 'Negative Impact of Poaching on Tourism', Namibian, 2017 accessed at: <https://www.namibian.com.na/172011/archive-read/Negative-Impact-of-Poaching-on-Tourism>

Naidoo et al. (2016) conducted a study of the economic loss in protected areas' (PA) tourism income incurred by elephant poaching in Africa. Their model builds on global and continental-scale models of tourist visits to PAs and estimate the marginal contribution of elephant densities to the expected number of visits to a PA in 25 countries in Africa. Based on illegal killing records from the IUCN elephant database, they estimated that across Africa the direct economic losses from reduced PA visitation due to elephant poaching is between US\$4.86–US\$15.7 million per year (2016 prices). Additionally, between US\$8.56– \$28.9 million are estimated to be lost every year from tourists' indirect and induced spending. Southern Africa accounts for a large share of these losses as it has a strong wildlife tourism industry.

They estimated that southern African PAs lose on average US\$13 million per year due to elephant poaching. In Tanzania, the average total tourism benefits lost due to elephant poaching are about \$540,000 per year, or between 4% and 11% of the total revenue from all visitors to PAs (estimated at \$5–\$15 million per year). They also underlined that the economic benefits that elephants deliver to African countries exceed the costs necessary to halt elephant declines in east, southern and west Africa.

A study from Lindsey et al. (2011) provides estimates of lost income from legal hunting at local level in the conservancy of Savé Valley in Zimbabwe. The authors monitored illegal killing of wildlife in the conservancy between 2001 and 2009. The value of illegally hunted species were derived from conservancy prices for legal wild meat sales (US\$0.6 per kg), trophy hunts daily fees and trophy fees for high value species, value of zebra skins for each zebra killed, and mean live sale value for each rhino poached. They estimate that illegal killing of wildlife for trade incurred financial losses of about US\$25,000 per year in potential meat sales and US\$43,000 per year of lost potential income from trophy hunts of high value species.

The Ministry of Environment and Tourism in Namibia also attempted to assess the economic losses related to rhino and elephant poaching. They estimate that Community Conservancies lost N\$6 billion (US\$ 580 million in 2014) in foregone trophy hunting fees and N\$600,000 in meat value due to elephant poaching in 2012 only. They also estimated that National Parks lost about N\$3.8 billion (US\$360 million) in foregone fees from elephant poaching in 2012 (Financial Intelligence Center, 2017).

Cost of IWT: Anti-poaching and anti-trafficking expenditures

The increased poaching threat related to an ever-increasing IWT market for key products such as rhino horn, ivory, and pangolin scales often leads to a significant rise in expenditure to protect and conserve threatened species. These expenditures constitute a major component of the economic impact of IWT as they are often financed by taxpayers' money from national government, international aid but also by private owners of game ranches and reserves. In some cases, protection costs become too high for private actors to keep certain wildlife on land, as it has occurred for rhinos in private reserves in South Africa (Minaar and Herbig, 2018).

Although integrated data and information on expenditures to fight IWT from different sources is rarely compiled at national or regional level, some aggregation of expenditures can be found for specific institutions or groups of institutions.

In the face of increasing poaching threats some countries have ramped up their investment into anti-poaching measures, such as South Africa where the parastatal SANParks increased its spending in security and anti-poaching from R4 million (US\$400,000) in 2008 to R240 million in 2018 (US\$18.2 million in 2018)²¹. Namibia has also had to massively increase its expenditures towards anti-poaching since 2015²². Governments do not generally publicize their expenditures dedicated to anti-poaching and other measures to curb IWT. However, such information could be retrieved from national budgets and expenditure data directly from relevant agencies (See Summary Knowledge Table at the end of this report for reference by country).

Governments in southern Africa only have limited resources to invest in the fight against IWT²³. A significant share of these expenditures is thus directly funded by international grants from bilateral and multilateral partners, as well as global funds and private donors.

²¹ 'Anti-poaching drive in the Kruger bears fruit as incidents are reduced by half', Sowetan Live 22 August 2018. Accessed at: <https://www.sowetanlive.co.za/news/south-africa/2018-08-22-anti-poaching-drive-in-the-kruger-bears-fruit-as-incidents-are-reduced-by-half/>

²² 'Anti-poaching war to cost billions', Namibia 3rd April 2016 accessed at: <https://www.namibian.com.na/index.php?page=archive-read&id=148117>

²³ Budget cuts due to government austerity measures in Botswana have directly affected anti-poaching effort for instance: <https://conservationaction.co.za/media-articles/botswana-budget-cuts-imperil-anti-poaching/>

In 2019, a database was created by a consortium led by the World Bank for the “Analysis of international funding to tackle illegal wildlife trade”. This database shows project-level funding information over the period 2010-2018 for recipient countries in Africa and Asia, including a full coverage of SADC countries. They estimate donor funding in IWT at US\$392 million for countries in southern Africa over that period (Table 3). It should be noted however, that this might not be a comprehensive overview of all IWT-related donor funding.

Table 3: International Funding to Tackle IWT, 2010-2018, Selected Countries in Southern Africa

Recipient	Donors	Grant amounts
Angola	GEF, US, UK	US\$ 12.6 million
Botswana	GEF, US, Netherlands, private donors	US\$ 9.5 million
Madagascar	Germany, GEF, UK, US, World Bank, UNDP, WCS	US\$ 130 million
Malawi	GEF, US, private donors, Wildcat, WCS	US\$ 22 million
Mozambique	US, Germany, World Bank, GEF, FFI, UK, private donors, UNDP, Wildcat, WCS	US\$ 93 million
Namibia	US, Germany, GEF, private donors, UNDP, Wildcat	US\$ 44 million
South Africa	GEF, US private donors, UK, Wildcat, WCS	US\$ 22.5 million
Tanzania	World Bank, US, GEF, Germany, private donors, UNDP, Wildcat, WCS, ZSL	US\$ 162 million
Zambia	US, GEF, Germany, Wildcat, private donors, WCS	US\$ 33 million
Zimbabwe	US, GEF, Germany, Wildcat, private donors	US\$ 25 million
Total		US\$ 392 million

Source: World Bank (2019) accessed at: <http://www.appsolutelydigital.com/WildLife/chapter5.html>

In some SADC countries, where threatened species are kept in private game reserves, private agents are also spending substantial amounts of money on security and anti-poaching. The only comprehensive estimation of these expenditures from the private sector was assessed for South Africa in 2018. In a report for the Ministry of Environment, Forestry and Fisheries, SANBI estimated that private reserves’ owners were spending on average R250 million per year (US\$18 million in 2018) on rhino protection (DEA, 2019). The Ministry of Environment also estimated the average financial costs per rhino on private land based on a survey of 54 rhino owners at R275 (US\$ 25 in 2014) per hectare per year (Taylor et al., 2014). The median annual expenditure for protecting rhinos on the 30 private properties was R310,500 (US\$ 28,500), ranging from US\$1,800 to US\$390,000.

Increasing poaching pressures on rhinos in South Africa motivated numerous analyses of the cost and effectiveness and different components of rhino protection. Minnaar and Herbig (2018) compiled some of this information. They noted that protection often required hiring the services of a security company which would have to deploy 10-15 trained and armed game guards for patrol purposes, often at night and for periods ranging from four to fifteen days. These types of security guarding services cost between R35,000 and R45,000 (USD\$3,000 to USD\$3,500) per month, or more, depending on how many security guards are deployed by a private security company. They interviewed one of South Africa’s largest rhino owners, who stated that his security bill for 24/7 rhino protection costs him R2 million per month (US\$ 150,000), not including dehorning costs. They also report high and diverse costs for dehorning, estimated in 2011 between US\$620 per rhino for state park dehorning operations and US\$1,000 for dehorning of privately-owned rhinos (Lindsey & Taylor, 2011:29 in Minnaar and Herbig, 2018). Taking into account that dehorning should be conducted once every year or 1.5 years, and increasing costs since 2011, this prevention measure also substantially weighs on rhino owners’ budgets.

Providing estimates of the cost of protecting iconic species, especially rhinos and elephants, from poaching is of particular interest for institutions and individuals managing this threatened wildlife and bearing these significant costs. Some attempts to evaluate the required investments to protect wildlife are conducted at government level but are rarely accessible. To this day the most cited reference on required expenditure for effective anti-poaching remains a set of study conducted by Leader-Williams in the early 1990s.

In Leader-Williams and Albon (1988), Leader-Williams et al. (1990), and Leader-Williams (1993), the authors estimate the cost of effective control from commercial poaching per km² in Africa. The estimates are based on a detailed study of law enforcement undertaken in Luangwa Valley, Zambia, from 1979-1985 assessing manpower and resources needed to protect elephants from heavy commercial poaching. The findings from Luangwa Valley were then extrapolated to other African range states, using data on numbers of elephants during 1981-87, together with estimates of budgets and



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The future of rhino may in part lie with the private sector. Rhino in South Africa are owned by between 150 and 180 land owners. One specific owner provides a refuge for more than 2,000, mostly white, rhino.

manpower in national conservation agencies in 1981 extracted from surveys undertaken by or on behalf of AERSG. The final results conclude that to achieve a zero decline of elephants, spending levels should be between US\$350-700 per km² (adjusted to 2020 prices). This study still serves as a central reference for required expenditure to fight IWT on the ground, it is for instance referred to in SADC Law Enforcement and Anti-Poaching Strategy (SADC, 2015: p.28) A more in-depth analysis of the cost of action against IWT is essential to assess and compare cost effectiveness of different measures and exchange on best practices between SADC countries, further collection and integration of expenditure data should be conducted at SADC level.

Cost of IWT : Opportunity cost to development

The opportunity cost of IWT could be reflected in multiple ways and is generally quantified by the value and economic impacts of investments and resources currently used to tackle IWT if they were dedicated to other productive sectors of the economy. For instance, it is directly reflected in the missed growth of wildlife-based sectors that would have happened if there were no poaching threats, beyond immediate losses.

Price (2017b) mentions this opportunity cost caused by the depletion of wildlife populations, limiting opportunities such as development of tourism or mechanisms for payments of environmental services, provision of income for rural communities, and loss of future opportunities.

Yet, to our knowledge, no rigorous quantitative analysis of the opportunity cost of IWT at local, national, or regional level is available. Some elements of this opportunity cost can be found in Porsch and Smith (2015) where they assess not only direct losses due to rhinos and elephants but also reduced natural capital leading to reduced expected growth for the tourism sector due to IWT and poaching.

Value of trade

Estimating the total value of products traded in illegal markets is particularly challenging because of limited information on prices and volumes traded. It is even more challenging to assess the distribution of this value along the value chains.

Many estimates at global level are based on assumptions that the value of IWT would equal one-third of legal trade value, where legal trade exists (Haken, 2011). A review of different estimates conducted by Global Financial Integrity concludes that globally IWT could generate around US\$7.8 to US\$10 billion per year (ibid.).

The only regional assessment of the value of IWT found at this stage was conducted by Martin and Stiles (2017) in their assessment “Illicit Financial Flows” (IFFs) related to wildlife trade in southern Africa. Their study focuses on the illegal trade in seven key species traded: rhinos, elephants, abalone, cycads, crocodiles, lion parts, sharks, and rays. They found that the illegal trade in products of the seven species over the period 2006-2014 had a total value of US\$1.481 billion. They conclude that the average value of illicit financial flows from IWT in southern Africa is about US\$ 165 million per year. Abalone meat was the highest-valued commodity with an illegal trade value of \$94 million. The illegal trade in rhino horn was estimated at \$43 million, and illegal ivory trade at \$38 million.

Martin and Stiles (2017) rely on records of market value of different products in final markets in Asia to estimate the value of illegal exports, assuming export price in Africa would be half of the current price in Asia. In order to estimate prices of rhino horn and ivory they have reviewed an extensive array of literature and CITES data to model price trends. They estimate the price of ivory in Asia below US\$350/kg in 2006 increasing rapidly to over US\$2,000 per kg in 2011, remaining above this level until 2014 and then falling to about US\$1,000 per kg from 2015 onwards. For rhino horn they use data from Gao et al. (2016) for different rhino horn products at the end markets in China, with price ranging from US\$30,000-US\$490,000 per kg.

Some studies also provide insights on specific value chains and products, especially for products that also have a legal market providing some reference data for value assumptions. For instance, a TRAFFIC report estimated the value of illegal trade in abalone products from South Africa at US\$60 million per year, for a total value of US\$891 million between 2000 and 2016 (Okes et al., 2018).

The Financial Action Task Force of the OECD compiled information on key prices and values of key illegal wildlife products (FAFT, 2020):

- **Ivory:** They report that elephant poachers usually get US\$200 or less per kg of ivory, while in destination markets ivory can be priced between US\$500 and US\$1,000 per kg. They also highlight that the price of ivory has been decreasing in recent years due to high profile ivory bans in a number of countries.
- **Pangolin scales:** The value to poachers on the ground were found to be around US\$2.5-US\$9 per kg of pangolin scale, while the price in demand countries would be around US\$200 per kg (but could reach up to US\$700 per kg). Between 2016 and 2019, countries confiscated an estimated 206.4 tons of pangolin scales across 52 seizures globally, which amounts to US\$41- 144 million in sales in destination countries (Wildlife Justice Commission, 2020 in FAFT 2020).
- **Rhino horn:** The price of rhino horn has been recorded to be around US\$65,000 per kg, but has also been known to be sold as low as US\$9,000 per kg, according to US authorities. Approximately 4,500 trafficked African rhino horns were recorded between 2016 and 2017, generating estimated proceeds of between US\$79 and US\$292 million (Wildlife Justice Commission, 2017 in FATF, 2020).

Reliable estimates of prices in source countries - reflecting the value poachers and low-level traffickers get for wildlife products - are hard to find and highly variable. Various NGOs and investigative journalists also attempt to compile information on street prices of different IWT products in Southern Africa. For instance, the CWP program in Zambia systematically compiles prices reported on poachers' arrests documents. They estimated field prices for ivory at US\$20 per kg, with a drop to US\$10 per kg in 2020 due to the COVID19 crisis. They also reported that a whole

pangolin was on average worth US\$1,990 in 2020 (CWP, pers. comm. 2020). This price however would be much lower in Mozambique or Angola where it could be as low as US\$20 per animal (Panthera, pers. comm. 2020). These field prices are expected to highly vary between countries but also between poaching cases themselves. A report compiling prosecution cases in Namibia mention prices between US\$650 – US\$1,200 per rhino horn at poacher level and up to US\$5,100-US\$7,000 per horn for the intermediary. One statement records the buying of a rhino horn from local people at less than US\$150 (Financial Intelligence Center, 2016). A lot of uncertainty remains on the value of illegal wildlife trade for different products in southern Africa, but more specifically how this value is distributed and what prices local poachers and traffickers receive.

Income to local poachers and traffickers

Illegal trade in wildlife product generates income to various actors along the value chains. Although most of the value is reaped by actors at the end of the value chains, IWT activities can represent a substantial source of short-term cash income or in-kind benefits for local poachers and traffickers (UNODC, 2020). The individual benefits generated by IWT for local poachers include both cash income and in-kind benefits such as meat, or other goods traded against wildlife. However, often these benefits are transitory and won at the expense of communal benefits and longer-term resilience (Harrison et al. 2015; OECD, 2012).

In Zambia, some hunters are able to earn nearly US\$100 from a single expedition, and hunters are considered to be among the wealthiest community members (Brown, 2007 in Lindsey et al, 2015). Minnaar and Herbig (2018) report that in South Africa, trackers and carrier/porters involved in rhino horn smuggling might receive around R50,000 (approximately US\$3,500-4 000); while the shooter would probably earn closer to R120,000 (US\$9,000) (Serino, 2015: np in Minnaar and Herbig, 2018).

A study in Namibia indicates that poaching syndicates offer up to three times the mean annual household income for a single set of rhino horns (Muntifering et al, 2017 in Price, 2017b). Knapp (2012) reports that in Tanzania a large majority of poachers earn US\$425 from poaching, five times the average revenue from crop selling. In Zimbabwe, it has been reported that a successful poacher can earn amounts of US\$150 to US\$200 per kilogram of ivory (FCN, 2020).

In countries where local demand is low, such as Mozambique and Angola, the prices for wildlife products can be extremely low. Benefits reaped by local poachers are thus extremely limited unless they manage to reach international demand (WCP, pers. comm. 2020). In Angola for instance, poached pangolins can be traded against maize, soap, or other daily goods (Panthera, pers. comm., 2020).

The increase in income generated by IWT for local poachers can also trigger substantial socio-cultural benefits (Harrison et al., 2015), as presented in the section below.

C. Social Impact

Local poachers can derive some social benefits related to increased income generation within family circles and through accessing additional socio-cultural activities (Harrison et al., 2015). A report from TRAFFIC (2020), assessing the motivations of prisoners prosecuted for wildlife crime showed that family pressure for income generation was a substantial reason for engaging into IWT activities in South Africa. However, the social costs of IWT can be significant at individual, community, and national levels.

Violence and casualties at local level

IWT causes significant human and social capital losses at local level for both poachers and law enforcement officers. Nature reserves in southern Africa are being militarized at a fast rate due to increasing rhino poaching. These impacts are disproportionately affecting the poorest and most marginalized groups in society, who are at the frontline of poaching on both sides (OECD, 2012). Based on information from the International Rangers Federation, Vandome and Vines (2018) report that between 2009 and 2017 at least 264 rangers were killed in Africa. Some communities are directly exposed to violence by criminal networks attempting to coerce them into carrying out poaching.

Kideghesho (2016) reports that in the past 15 years, poachers have killed over 30 wildlife officers in game reserves across Tanzania. Community game guards there have been shot or had their homes destroyed by fire (Lotter and Clark, 2014 in Price, 2017b). Minnaar and Herbig also report injuries and trauma among rangers, community members and staff working at game parks and reserves in South Africa. It has been observed that many rangers also suffer from post-traumatic stress due to difficult work conditions with the constant threat of violence and death (Minnaar and Herbig, 2018).

On the other side of the fence, poachers and suspected poachers also count many casualties. In northern Botswana, the killing of numerous fishermen and suspected poachers from Namibia and Zimbabwe led to widespread unrest²⁴. It has been reported that over the past ten years 30 Namibians and over 22 Zimbabweans were killed by the Botswana Defence Force, sometimes without clear evidence of planned poaching²⁵.

Corruption and governance

Although corruption can be seen as an enabler of IWT, as mentioned in the above section on that topic, IWT can also trigger further corruption and disrupt governance mechanisms. IWT is often associated with degrading local and national governance and is usually intertwined with corruption at different levels. It therefore often has a detrimental effect on the functioning of societies and state authorities (OECD, 2012). IWT often involves instances of abuse of position, illicit enrichment, bribery, money laundering, and obstruction of justice (Vandome and Vines, 2018). Corruption undermines IWT law enforcement success and has a direct budget impact on law enforcement resources (ibid.). Vandome and Vines (2018) consider that the link between corruption and IWT is under-researched. They state that there is little evidence on the relationships between different actors and the actions of those involved in IWT.

A report from the EIA (2010) suggests that criminal syndicates involved in IWT in Tanzania and Zambia rely upon high levels of collusion and corruption between the private sector and government institutions, which undermines enforcement (EIA, 2010). Anderson and Jooste (2014) and Abotsi et al. (2016) also suggest that IWT directly provides funding to finance the bribing of public officials, worsening corruption behavior within public authorities across African countries. Lemieux and Clarke (2009) documented higher levels of corruption linked to illegal ivory trade in Africa.

²⁴ Namibia citizens up in arms over Botswana's 'shoot to kill' approach', News24, 9 November 2020, accessed at: <https://www.news24.com/citypress/news/namibia-citizens-up-in-arms-over-botswanas-shoot-to-kill-approach-20201112>

²⁵ "Family demand answers over fishermen killing", Neweralive 9 November 2020, accessed at: <https://neweralive.na/posts/family-demands-answers-over-fishermen-killing>



Each party to CITES is required to submit an annual illegal trade report on all seizures for violations involving CITES-listed species.

Actions to Curb IWT

A. Regulatory Framework and Legislations

At the global level, trade in wildlife is regulated internationally by the United Nations Convention on International Trade in Endangered Species (CITES) and at national level via legislations. In sub-Saharan countries, national-level legislations against wildlife are unequal. It has been observed, however, that in many countries regulations on wildlife crimes are either under-developed or poorly enforced (Nellemann et al, 2014).

Increase in poaching pressures in southern Africa over the past two decades demanded the formulation of stricter anti-poaching strategies and regulations to protect targeted wildlife populations (Price, 2017a). Yet, the response from SADC countries to the IWT crisis remained uncoordinated for a long time, with each individual country tackling the issue in-country rather than cooperating as a network of states that face a common problem (ibid.). To tackle this issue, a Joint Extraordinary Meeting of the Ministers of Environment and Natural Resources from SADC member states in 2015, adopted the SADC Law Enforcement and Anti-poaching (LEAP) Strategy. The LEAP Strategy aims at reducing the level of poaching and illegal trade in wildlife fauna and flora and enhance law enforcement capacity in the SADC Region by 2021 focusing on: enhancement of legislation and judicial processes; minimization of wildlife crime and illegal trade; improvement and strengthening of field protection; integration of people and nature in natural resources management; and ensuring sustainable trade and use of natural resources (SADC, 2015). The meeting was attended by Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe, where these countries ministers approved the establishment of the Regional Wildlife Crime Prevention and Coordination Unit (WCPCU). This Unit should be supported by National Wildlife Crime Prevention Task forces comprising of police, wildlife, customs, defense, immigration, intelligence and judiciary officials in each Member State (Price, 2017a).

In the SADC region, many countries have robust legislation in place that is theoretically capable of combating wildlife crime, however, implementation of these legislations is often poor (ibid.). Substantial differences exist across SADC countries in terms of the severity of penalties for violating local wildlife law. Countries with particularly stringent fines and/or lengthy jail sentences for a wide variety of wildlife offences include South Africa, Zimbabwe, Namibia, and Zambia. Some countries have recently amended or updated their principal legislations. Price (2017a) provides a detailed overview of different legal frameworks in place at regional and national level in sub-Saharan Africa.

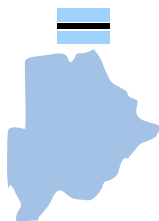
Highlights from national legal frameworks to combat the IWT in key SADC countries

Angola



Angola is considered to have lax laws on IWT. The Decree on Hunting regulations sets a maximum penalty in relation to the killing of elephants include a total fine of AOA333,450 (US\$3,747) (Mauck, 2013). Weak penalties for some offences coupled with critical gaps in legislation, had made Angola a country where wildlife crime was “worth the risk” (UK Aid, 2019). However, legislations are currently under revision to establish stricter penalties (Panthera pers. comm., 2020). Combating IWT is contributing to the nation’s ambition to develop a tourism industry and is a critical part of restoring human security in the wake of conflict.

Botswana



The Wildlife Conservation and National Parks Act (1992) is the main piece of legislation concerning wild animals in Botswana. Numerous regulations have been adopted under the Act to address wildlife crime. Under this Act, the following penalties are stipulated: seven years imprisonment and fine of BWP10,000 (US\$950) for hunting or capture of a protected species and for importing, exporting, re-exporting, or transporting through Botswana any wildlife item without a permit and five years’ imprisonment and a fine of BWP5,000 for selling or processing unlawfully obtained wildlife items. Stronger penalties are stipulated for cases relating to rhinos or elephants. The National Anti-Poaching Task Team exists to improve collaboration between enforcement agencies and devise a joint mechanism for combating wildlife crime (Price, 2017a).

Malawi



Malawi passed a new National Parks and Wildlife Act in 2016, giving courts the power to put serious wildlife criminals behind bars for up to 30 years with no option of a fine. As part of a comprehensive effort to respond to the current poaching and international trade crises, Malawi has redoubled its efforts to improve its wildlife legislation, with the Malawi’s National Parks and Wildlife Act (NPWA) in light of the CITES National Legislation Project. In addition to the NPWA, there are a number of other Acts and Codes that could be used to prosecute wildlife crime. Legislation which could be used in addition to NPWA include: the Malawi Immigration Act, the Malawi Customs and Excise Act, The Malawi Penal Code, Malawi Firearms Act, Corrupt Practices Act, Malawi Forestry Act, Animal Protection Act, and the Malawi Money Laundering Act (Waterland et al, 2015).

Mozambique



Mozambique established an Inter-ministerial Task Force in 2011 which includes various key Ministries (police, customs, military, environment, tourism and forestry). The key institution is the parastatal Administration for Conservation Areas (ANAC) that is mandated to implement the new Conservation Law recently promulgated in Mozambique (Law of Conservation and Biodiversity) (SADC, 2015). In 2014, the new Conservation Law (Law No. 16/2014) was enacted; this coincided with a review of the Criminal Code of Mozambique, which also includes much heavier penalties for wildlife and environmental crime offenders. The highest fine under the Forests and Wildlife Law is not less than MT2,000,000 (US\$27,000) and not more than MT100,000,000 (US\$1.3 million) and the lowest fine ranges between MT1,000,000 (US\$13,500) and MT20,000,00 (US\$270,000) Wildlife Law Africa, 2019). The Forests and Wildlife Law and the Forestry and Wildlife Regulations do not provide for prison sentences. The Conservation Areas Law provides for imprisonment in certain circumstances. The lowest prison term is two years for committing offences using firearms or mechanical traps. The highest prison term ranges between eight and 12 years for killing protected species without a license and using explosives, poisonous or toxic substances or their equivalent in the commission of an offence (ibid.). In early January 2015, the National Ivory and Rhino Action Plan 2015/2016 (NIRAP) was completed, setting out priority actions in wildlife conservation including legislation, frontline enforcement, and training programs. Those include effective prosecution and judicial handling of wildlife crime, national and international cooperation and improving law enforcement operations (Price, 2017a).

Namibia



In Namibia, the legal framework used to be considered too lax in the face of increasing value illegal wildlife products, and increased poaching. To address this issue, the country recently passed into law the Nature Conservation Amendment Act, which significantly increases penalties for wildlife crime. It raised fines for rhino and elephant poachers from a maximum of N\$200,000 (US\$ 13,000) to N\$5 million (US\$330,000), and increased the fines for illegal possession of protected species to N\$10 million from the current N\$20,000 and imprisonment of five to 10 years (LAC, 2017).

South Africa



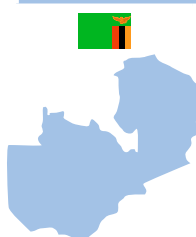
Its principal legislation, the National Environmental Management: Biodiversity Act, Act 10 of 2004 (NEMBA) sets forth the general framework for wildlife protection in the country and creates a list of Threatened or Protected Species. The regulation establishes stringent penalties, including fines and/or imprisonment, for activities such as the illegal hunting, killing, import, export, possession of a threatened or protected species, or related offences concerning false documentation and permits. Over the last few years, the severity of penalty fines for wildlife crimes has increased sharply, largely through amendments to relevant legislations. Penalties under the Threatened or Protected Species (TOPS) regulations are a maximum of R5 million (US\$415,000) and/or a maximum of five years imprisonment, and NEMBA penalties provide for imprisonment for a maximum period of 10 years and/or a fine to the maximum of R10 million (US\$830,000) or three times the value of the listed species in respect of which the offence was committed, whichever is the greater, and/or a maximum of 10 years' imprisonment (CER, EWT and Lewis Foundation, 2018). Provincial laws are also a key component of the effort to regulate wildlife trade in South Africa. There are nine provinces in South Africa, each of which has an authority mandated to implement the national wildlife act with their own legislation, and a dedicated law-enforcement unit. Within the Department of Environment, Forestry and Fisheries (DEFF), specific training has been given to individuals known as Environmental Management Inspectors (EMIs), also informally known as "green scorpions", who do not have prosecutorial powers, but are involved in initial arrests of wildlife crime offenders at poaching sites, exit points and at border controls. Yet, research suggests that the law can differ substantially from one province to another allowing for numerous loopholes to exist in effective law enforcement (Jayanathan, 2016).

Tanzania



The main piece of legislation of Tanzania regarding wildlife is the Wildlife Conservation Act (2009). This Act has replaced the Act of 1974. Although Tanzania's Wildlife Conservation Act 2009 provides for a minimum of five years imprisonment or a fine for illegal wildlife trade, the equivalent legislation in the autonomous region of Zanzibar stipulates a maximum penalty of six months imprisonment or a fine of US\$185 equivalent. In 2014, Tanzania established a National Elephant Action Plan, a National Ivory Action Plan (NIAP) and a national strategy to combat the illegal wildlife trade. Under the NIAP process, the country has significantly improved legislation and law enforcement performance, resulting in more arrests, prosecutions, and higher penalties to address ivory trafficking (Little, 2019).

Zambia



Zambia passed new regulations under the Zambia Wildlife Act, No. 14 of 2015, which came into operation on 6 November 2015. This Act contains new offences and penalties to be applied to wildlife crime related cases. It demonstrates the Government of the Republic of Zambia's commitment to combating the illegal wildlife trade and protecting Zambia's natural heritage by setting out significant custodial sentences and fees proportionate to the serious nature of the crime. The illegal hunting of an elephant or rhino is now charged with five to 20 years imprisonment and the illegal possession of a government trophy can be fined between K300,000-600,000 (US\$14,250 - 29,000) and charged up to seven years imprisonment²⁶.

²⁶ <https://www.ad-dicts.com/wp-content/uploads/2017/05/Wildlife-Crime-Penalties.png>

Zimbabwe



The Environmental Management Act (1975, amended in 2001) sets out the general legal framework for environmental matters, addressing environmental institutions, planning, standards, and impact assessment. Zimbabwe has enacted detailed legislation, namely the Parks and Wildlife Act 22/2001, implementing its obligations under CITES and providing for a relatively comprehensive series of offences and penalties governing illegal trade in wildlife. Fines for poaching (illegal hunting) under the PWA range from US\$400 to US\$500 for less serious poaching. Penalties are greater for ivory and trophies from rhinoceros or other specifically protected animals and include a fine up to US\$5,000 the highest level in Zimbabwe's standard level of fines. (Price, 2017a).

However, it is important to note that Zimbabwe does not regulate trafficking which leaves the brokers and criminals free to facilitate the movement across borders (Wyatt & Kushner, 2014). Many institutions in Zimbabwe, including the Zimbabwe Conservation Task Force, an anti-poaching organization, call for tougher treatment of those convicted of poaching to set a serious example and prevent would-be future poachers (ibid.).

Enhancement of legislation and judicial processes in the SADC region.

Legislation can only have the desired impact if it is effectively implemented, however; in some SADC members states, such implementation is still lacking, and combating wildlife crime has not been set as a priority for enforcement by policy and decision-makers. Many countries have good legislation but have only limited capacity for implementation. Mandatory minimum penalties for poaching are considered an effective way to ensure implementation by removing the discretion of the courts to give light penalties. However, the effectiveness of legislations mostly relies on effective magistrates and prosecutors (SADC, 2015).

Wildlife prosecutions: Wildlife crime is often not considered “serious crime” and police pursue other crimes more vigorously. Magistrates need to be well versed in the relevant legislation and understand the effect of wildlife crime on the local and national economy. The monitoring and tracking of court cases can motivate judges and maintain momentum in court proceedings (SADC, 2015). This type of monitoring is well established in Namibia and supported throughout the SADC regions as part of various projects (Jayanathan, 2016)

Moreover, many law enforcement agencies in range, transit and destination states require additional technical and financial assistance to address capacity gaps, including help to better prevent, detect and investigate wildlife trafficking, and better training and protocols on how to secure and deal with specimens once seized or confiscated. Criminals will continue to exploit legislative and enforcement loopholes (UNODC, 2020).

B. Enforcement and Prevention: Anti-poaching and anti-trafficking on the ground

Law enforcement and prevention efforts are key to short and medium-term actions against IWT at national and regional levels. In the SADC region governments, NGOs and private actors get involved in local, national, and regional actions through the establishment of anti-poaching units, intelligence gathering and cooperation around investigation, as well as prevention measures.

A highlight of different initiatives and approaches to prevention, anti-poaching, and anti-trafficking efforts on the ground across southern Africa follows.

Anti-poaching units at local and national levels

Most countries in SADC have established systems of protections in and around conservation areas through the creation of anti-poaching units (APU), which come in addition to traditional park rangers and game guards already patrolling in specific areas. APUs usually patrol and de-snare in dedicated areas on foot, by vehicle or sometimes by air with helicopters. They track potential poachers or carriers of wildlife products. Recently, more and more APUs are supported by sniffer dogs. Canine units have proven to be a highly effective tool in supporting anti-poaching efforts, owing to their excellent sense of smell, being able to track down poachers and detect illegally trafficked rhino horn, giving teams the ability to stop poachers²⁷.

²⁷ <https://www.savetherhino.org/programmes/anti-poaching-canine-units/>

Across the region, many APUs are publicly funded and tightly linked to either police services or national defense forces. In Zambia, the Directorate of National Parks and Wildlife has deployed 23 intelligence and investigation units with the support of the Wildlife Crime Prevention Program (WCP pers.comm.2020). In Namibia, the Wildlife Protection Services Division coordinates of the Ministry of Environment provides anti-poaching efforts on the ground with units such as the dog unit, which can be deployed anywhere across the country. In South Africa, the Environmental Management Inspectors, known as “Green Scorpions”, are the law enforcement arm of the Department of Environment, Forestry and Fisheries and provide patrolling and investigation services across the country.

Private sector organizations and local NGOs also set up private anti-poaching units to support public efforts or provide services to private game reserve owners. There is a wide range of private security service contractors specialized in anti-poaching. Some of these private contractors are non-profit organizations dedicated to wildlife protection, such as the African Wildlife Defence Force²⁸. In South Africa, many game reserve owners resort to hiring professional security services to protect their wildlife (Minnaar and Herbig, 2018).

Some anti-poaching units involve the hiring of neighboring community members as scouts and rangers into APUs, some even involve former poachers. For instance, in Tanzania’s Serengeti National Park, the Grumeti Fund employs a team of 100 anti-poaching game scouts tasked to patrol across the 350,000-acre reserve – at camps or in Observation Posts, as a free-ranging Mobile Patrol Unit or as part of the Special Operations Group²⁹. In South Africa, the all-female Black Mambas anti-poaching unit³⁰ has proven highly effective in its anti-snaring and anti-poaching patrols³¹. The Black Mambas Anti-Poaching Unit was founded in 2013 by Transfrontier Africa NPC to protect the Olifants West Region of Balule Nature Reserve. Within the first year of operation the Black Mambas were invited to expand into other regions and now protect all boundaries of the 62,000 ha Balule Nature Reserve, part of the Greater Kruger Area in South Africa. In Zimbabwe, the International Anti-Poaching Foundation established another all-female unit known as the Akashinga, initially patrolling the Phundundu wildlife area³². Many other similar initiatives could be cited, such as the Nsama Community Scout Anti-Poaching Unit financed by the International Elephant Foundation, or the Conservation South Luangwa anti-poaching unit in Zambia.

National level coordination: multi-agency teams

The wide array of public and private actors involved in anti-poaching and anti-trafficking efforts requires an extensive amount of communication and cooperation to ensure effective actions. Some countries in SADC have taken this step by establishing information sharing systems and multi-agency task force coordinating actions and centralizing information.

In Malawi, an Inter-Agency Committee to Combat Wildlife Crime (IACCWC) was recently established comprising senior representatives from the Malawi Police Services (MPS), Ministry of Justice, Judiciary, DNPW, Anti-Corruption Bureau (ACB), Financial Intelligence Unit (FIU), MRA, Department of Forestry, National Intelligence Bureau (NIB), Malawi Defence Force (MDF), Department of Immigration (DoI), DPP and INTERPOL (Jayanathan, 2016).

In South Africa, the National Wildlife Crime Reaction Unit (NWCRU) consists of representatives from the South African Police Service (SAPS), South African National Parks, national and provincial nature conservation officials, the National Prosecuting Authority (NPA) and INTERPOL.

In Namibia, the Blue Rhino Task Team ensures coordination between the Wildlife Crime Unit of the Ministry of Environment, the Namibian Defence Force, and the Namibian Police service, as well as the judiciary and prosecution authorities. This cooperation enables the government to maintain an updated database of seizures and prosecution cases with monthly wildlife crime report issued for police and regional courts.

In Tanzania, the Multi-Agency Task Team (MATT) is led by the Tanzania Police Force and includes the Tanzania Forest Services, the Wildlife Division, Fisheries Division, Tanzania Intelligence and Security Services and seeks engagement with the criminal justice system.

The multi-agency platforms have often proven essential in increasing the effectiveness of anti-poaching actions on the ground, but also in investigating and tackling crime at syndicate level by sharing key intelligence services.

²⁸ <http://africanwildlifedefenceforce.com/index-1.html>

²⁹ <https://www.grumetifund.org/our-work/anti-poaching-and-law-enforcement/>

³⁰ <https://www.blackmambas.org/>

³¹ <https://www.un.org/africarenewal/news/mostly-female-anti-poaching-unit-south-africa-wins-top-un-environmental-prize>

³² <https://www.nationalgeographic.com/magazine/2019/06/akashinga-women-rangers-fight-poaching-in-zimbabwe-phundundu-wildlife-area/#:~:text=The%20Akashinga%2C%20or%20E%28%9Cbrave%20ones,the%20country's%20most%20iconic%20wildlife.&text=Petrone%20Chigumbura%2C%20a%20member%20of,techniques%20in%20the%20Zimbabwean%20bush.>

Regional and international cooperation efforts

Cooperation between countries in SADC and beyond is also a key step to curtail cross-border networks carrying IWT. Platforms such as SADC and the Kavango-Zambezi (KAZA) TFCA are promoting multilateral coordination, while bilateral agreements are also developing in the region.

In 2015, the SADC Ministers for Environment and Natural Resources, in cooperation with the Ministerial Committee of the Organ on Politics, Defense and Security Cooperation, adopted the SADC Law Enforcement and Anti-Poaching (LEAP) Strategy for 2016–2021. The SADC LEAP Strategy serves as a guiding instrument for Member States, defining the main strategic areas and actions to combat poaching and illegal wildlife trade in the region. It also outlines success factors and thus allows for its monitoring and evaluation. The major elements of the strategy are:

- Enhance legislation and judicial processes.
- Enable cross-border collaborative intelligence operations and analysis of nationwide data on wildlife contraband trafficking.
- Integrate people and nature into conservation and development processes.
- Ensure sustained trade in and use of natural resources.
- Train scouts and rangers for field site operations, increase ranger patrols and introduce a ranger-based monitoring system.
- Establish a SADC Wildlife Crime Prevention and Coordination Unit (WCPCU) to coordinate the enforcement of laws, and to detect and monitor trafficking, trading, and harvesting of illegal wildlife resources.

The LEAP Strategy also targets the development of the information sharing platform TWIX (Trade in Wildlife Information eXchange) in SADC in cooperation with the global Partnership against Poaching and Illegal Wildlife Trade and building on the experience made in some western and central African countries.

Conservation areas close to borders are often poaching hotspots and the effectiveness of actions on both sides of the borders necessitate cooperation and coordination. For this purpose, the five KAZA Member States adopted guidelines and rules for joint anti-poaching operations. In the past, ranger patrols would have to stop their pursuit of poachers when they crossed a national border. With the new standard operating guidelines in place, the teams can coordinate their actions faster and even cross over into another KAZA Member State while in pursuit of poachers. Through improved intelligence sharing, it is possible to warn law enforcement officials across KAZA countries of poaching activities, to identify poaching patterns and to plan enforcement proactively (GIZ, 2018).

Another cooperation platform created in 1996 is the Rhino and Elephant Security Group/INTERPOL - Environmental Crime Working Group (RESG). Members include government law-enforcement bodies from within the SADC region including Botswana, Malawi, Mozambique, Namibia, Swaziland, Tanzania, Zambia, and Zimbabwe. The RESG has focused upon nine key areas of engagement, which are law enforcement, intelligence, procedures for effective investigation and prosecution and for minimizing illegal international trade, security and management of rhino horn and ivory stocks, co-ordination, networking and information exchange, training and capacity building, positive public involvement, awareness and education, international and regional conventions, and sustainability, functioning and support of RESG. (TRAFFIC in Jathanayan, 2016).

At the bilateral level, a non-exhaustive list of MoUs includes South Africa and Mozambique, Namibia and Botswana, and Mozambique and Tanzania, with the aim to strengthen bilateral cross-border collaboration tackling the gaps in cross-border wildlife crime legislation and trafficking. For instance, Malawi and Zambia aim at establishing a cross-border radio system for improved coordination of anti-poaching units between Malawi and Zambia in the Kasungu-Lukuszi TFCA (GIZ, 2018).

An example of a successful field cooperation is the 2013 Operation Wildcat in East Africa involved wildlife enforcement officers, forest authorities, park rangers, police, and customs officers from five countries — Mozambique, South Africa, Swaziland, Tanzania and Zimbabwe. The operation resulted in 240kg of elephant ivory, 20kg of rhino horns, 637 firearms, and 44 vehicles being seized, and 660 arrests made (Price, 2017b).

Prevention: dehorning

Another common action to prevent or mitigate poaching risks is the dehorning of rhinos. Dehorning is currently used in many game reserves across South Africa and conservation areas in Namibia. These actions are costly (See section on economic impacts above) and prove to have mixed results depending on poachers' behaviors, and communication about dehorning activities deterring poaching motivations.

Initially, dehorning appeared to be successful. In 1989, Namibia became the first country in Southern Africa to use dehorning as a rhino anti-poaching protective measure. This dehorning, coupled with improvements in security and funding for anti-poaching, appeared to have contributed to the reduction in rhino poaching losses in that country (Lindsey & Taylor, 2011 in Minnaar and Herbig, 2018). However, with prices of rhino horns skyrocketing, dehorning has become less and less worthwhile.

Dehorning in the absence of intensive security has become ineffective. Furthermore, horn stumps are still valuable to poachers, and depending on the size of the original horn, at least 500 grams to one kilogram of horn remains on a dehorned rhino (Minnaar and Herbig, 2018).

Since 2008, the dehorning of rhino was implemented as an anti-poaching deterrent by many of the privately-owned reserves in South Africa. However, dehorning is often seen as a last resort effort to keep rhinos alive. There have been doubts whether it, in fact, deters poachers from planning or entering a conservation area. Dehorning is also a temporary protective measure since the horn grows back, thereby tempting the poachers back (Gilchrist, 2014: np; Toon & Toon, 2016: np; Somerville, 2016: np; Save the Rhino, 2017: np in Minnaar and Herbig, 2018).

C. Community-based: wildlife-based livelihoods, wildlife utilization rights.

Poaching behaviors in southern Africa are tightly linked with local communities' relationship with wildlife, as well as the access to local economic opportunities for these communities. A key component of reducing wildlife crime thus lies in creating an environment where a live animal can generate benefits and is therefore valued by local people. It is also essential to try and reduce the need to resort to poaching for income generation, by creating alternative opportunities. Literature seems to suggest that in many southern African countries' communities lack clear rights to the land or the wildlife they live with, which limits incentives to protect wildlife (Lindsey et al., 2015). Therefore, people resort to illegal poaching as a means to benefit from wildlife. Yet some countries in SADC have taken significant steps towards enabling local communities to benefit from wildlife through tourism and legal hunting, by establishing ownership and benefit sharing frameworks. Yet in many cases, ownership transfer is only partial, with the effect that government retains significant proportions of revenue from wildlife (Lindsey et al, 2015).

SADC also promotes local stewardship across multiple land-use areas to conserve biodiversity and increase the welfare and socio-economic development of rural communities, especially in TFCA (SADC, 2015).

Namibia CBNRM program

Namibia's community-based natural resource management framework seeks to create conditions that promote positive conservation behavior by rural communities. This is achieved primarily through provision of property rights and incentives through locally accrued and distributed benefits from wildlife and tourism (Muntifering et al, 2015). In 2018 community conservation facilitated 4,926 jobs and generated N\$147.5 million (US\$10 million) in returns for local communities (NACSO, 2019).

Zimbabwe CAMPFIRE

In Zimbabwe, the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE), which devolved ownership of protected areas, was a pioneer for promoting community inclusion in conservation. A study from Frost and Bond (2008) estimated that between 1989–2001, CAMPFIRE generated over US\$20 million of transfers to the participating communities, 89% of which came from sport hunting. Yet the scale of benefits varied greatly across districts, wards, and households (Frost and Bond, 2008).

Botswana CBNRM

Botswana's community-based natural resource management (CBNRM) program is based on community-based organizations (CBOs) to which the government devolves land. Of the country's rural population, 61% live in CBO areas. While primarily used for wildlife-based revenues, this has widened to include veld products, historical sites, landscapes, and other natural resources (Vandome & Vines, 2018). Ecotourism contributes greatly to Botswana's economy through employment, infrastructure investment and linkages to retail and service industries. For example, in 2012, 14 ecotourism organizations employed 610 people and generated revenue of over US\$600,000 in Botswana's Okavango Delta (Vandome & Vines, 2018).

Mozambique: Sustainable wildlife use of Marromeu National Reserve

Under the MozBIO project, co-management frameworks have been developed to allow local communities to benefit from wildlife tourism in conservation areas, for instance through the Sustainable Wildlife Use of Marromeu National

Reserve. In 2017, this generated more US\$3 million in income derived from tourism and wildlife utilization in targeted CAs and returned to communities.³³

The project also reports that support to conservation areas enable the creation of 31,000 local jobs. Wildlife resources are an important part of rural development in Mozambique.

Malawi: Wildlife policy and local community participation

The Wildlife Policy of Malawi (2000) (WP) and the NPWA present significant opportunity for community involvement and participation in the management of Malawi's wildlife, especially on customary land and open areas like wetlands. This stronger orientation to the involvement of people, user groups, in the natural resources management policies sets the stage for the creation of Community Conservation Areas (CCAs) and Wildlife Management Authorities (WMAs) (Waterland et al, 2015).

Tanzania

The country boasts of political will and stability which is a key contributing factor to successful wildlife conservation. It also has in place a policy and legal framework to ensure proper conservation and protection of wildlife. There is also plenty of local community and private sector support in wildlife conservation. The country intends to increase capacity of local communities to pursue sustainable livelihood opportunities and eradicate poverty (SADC, 2015).

D. Awareness raising

Creating awareness within communities

Across southern Africa, NGOs and national authorities also invest in awareness raising and communication campaigns on the impacts and risks related to IWT. Communication on regulations and sanctions is also essential to reduce motivations to get involved in wildlife crime. In efforts to create awareness about IWT and promotion of wildlife conservation, there exist several international and national awareness campaigns, such as World Rhino Day and World Ranger Day, to create awareness among local communities and the public. World Ranger Day is held annually in South Africa to commemorate those rangers who have lost their lives in the line of duty, and to celebrate the commitment of rangers who battle poaching in protected areas all year long.

World Rhino Day has also been the opportunity to carry awareness events in local communities. In Namibia, soccer tournaments with school children in the Kunene region are held every year, and partnerships to hold these tournaments with other countries is also planned (NNE, pers. comm., 2019) In South Africa, rhino day soccer tournaments are also carried to promote rhino protection among school learner and within their communities as part of the Rhino Ambassadors program, which aims to raise awareness about rhino conservation³⁴.

Many communication and awareness campaigns are carried out in other countries throughout the region. More specifically, the communication on the regulations and sanctions at local level around national parks in Malawi. In Mozambique, the Joaquim Chissano Wildlife Preservation Initiative, launched in November 2013, raises awareness over the high level of poaching of protected wildlife species, particularly rhino and elephant, for illegal trafficking of their trophies by international criminal syndicates (SADC, 2015). The WCP program in Zambia also runs awareness campaigns on the detrimental effects of illegal wildlife crime in Zambia, such as the Bushmeat Awareness Campaign.

Raising awareness among tourists

Informing on the regulations associated with the illegal possession and trade of wildlife products and impacts of IWT among tourist groups also plays a role in tackling potential demand in-country. Many SADC countries have invested in billboards and advertisement campaigns around airports and in key tourist areas for this purpose.

Raising awareness and understanding among the judiciary and customs officers

Increasing the understanding of the economic, social, and environmental impact of wildlife crime among key actors, such as the judiciary, prosecutors and custom officers, is also key to increasing law enforcement effectiveness. Under many projects, workshop and trainings targeted at these groups are being carried. For instance, in 2019, USAID funded a Regional Judiciary and Prosecutor Workshop under its Combating Wildlife Crime Program (CWCP), designed to build the capacity of prosecutors and the judiciary to prosecute wildlife crime in, Angola, Botswana, Namibia, Zambia, and Zimbabwe³⁵.

³³ World Bank project results are published at :

<https://geowb.maps.arcgis.com/apps/MapJournal/index.html?appid=5a7c9b975d6041aabc95b709064b039a>

³⁴ 'Using soccer to save rhinos', 26 June 2019, Earthprotect accessed at:

<https://www.earthprotect.com/blogs/entry/3310-using-soccer-to-save-rhinos-1>

³⁵ <https://na.usembassy.gov/regional-judiciary-and-prosecutor-workshop-under-usaids-combating-wildlife-crime-program/>



The illegal wildlife trade is devastating lesser-known species such as abalone.

IWT and the COVID-19 Crisis

The health and economic crises resulting from the global COVID-19 pandemic in 2020 have substantially affected countries in southern Africa. Most countries in the region closed their borders for an extended period of time, and established country-wide lockdowns and curfews, leading to a drastic decrease in economic activity. Tourism has been one of the most affected sectors by these measures, and the global halt in international travel worldwide.

The impacts of these events on wildlife crime and IWT are yet to be clearly established, however two main factors of disturbance and change can be identified: the closing of borders which increases difficulty for any kind of illegal trade, and the sudden drop in tourism and trophy hunting income to local communities. The impacts across SADC countries appear to be diverse.

Generally, the increasing difficulty in crossing borders between March and September 2020 is expected to have limited cross-border illegal trade, therefore decreasing access to demand in source countries where most products are in demand. Namibia, for instance, reported a decrease in wildlife crime events³⁶. In Zambia, it was observed that ivory prices dropped in 2020 probably due to a lack of access to international demand (WCP, pers. comm. 2020). On the other hand, countries with established demand markets such as DRC might have seen an increase in poaching pressure to supply that demand with local resources.

Concerns that the drop in tourism could trigger an increase in poaching activities have been raised in multiple countries^{37,38}. The drop in tourism and trophy hunting activities has immediately reduced community benefits from wildlife, leaving most community-based conservation areas with no income for patrolling, wildlife management and community development. Coupled with a dire economic crisis leading to worsening poverty levels, poaching for meat as well as for trade might become a last resort solution for poor communities living with wildlife. In Zambia, subsistence poaching seems to have substantially increased in 2020 (WCP pers. comm. 2020).

The decrease in human presence also leaves way for poachers in conservation areas. It has been reported that South Africa and Botswana experienced a high level of rhino poaching events during the lockdown periods³⁹.

³⁶ 'Anti-poaching units active amid Covid-19', Namibian 10 September 2020, accessed at: <https://www.namibian.com.na/204313/archive-read/Anti-poaching-units-active-amid-Covid-19>

³⁷ 'Mozambique' The Independent <https://www.independent.co.uk/news/world/africa/mozambique-conservation-covid-19-poachers-stop-illegal-wildlife-trade-campaign-a9641496.html>

³⁸ 'Covid19 increases the pressure: Botswana rhino poaching crisis', Conservation Frontlines 1 July 2020, accessed at: <https://www.conservationfrontlines.org/2020/07/covid-19-increases-the-pressure-botswanas-rhino-poaching-crisis/>

³⁹ 'Poachers Kill More Rhinos as Coronavirus Halts Tourism to Africa', New York Times 8 April 2020 <https://www.nytimes.com/2020/04/08/science/coronavirus-poaching-rhinos.html>

A survey conducted among PA managers by the IUCN reports that 70% of surveyed PAs in eastern and southern Africa stated that COVID-19 had an impact on their capacity to monitor illegal wildlife trade as well as conducting regular field patrols. Eighty percent stated that the crisis had an impact on their capacity to carry out investigations and intelligence gathering (Waithaka, 2020).

In the long-term it is expected that the economic crisis hitting southern African countries will put further pressure on natural resources, including wildlife, as well as on government budgets to invest in conservation and protection.



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South Africa is home to the largest remaining rhino population. In spite of anti-poaching efforts, almost 10,000 were killed between 2008 and 2021, stoprhinopoaching.com.



Eighty percent of tourists to the SADC come for the wildlife. The illegal wildlife trade has a negative impact on tourism and discourages repeat visits.

Summary Knowledge Table

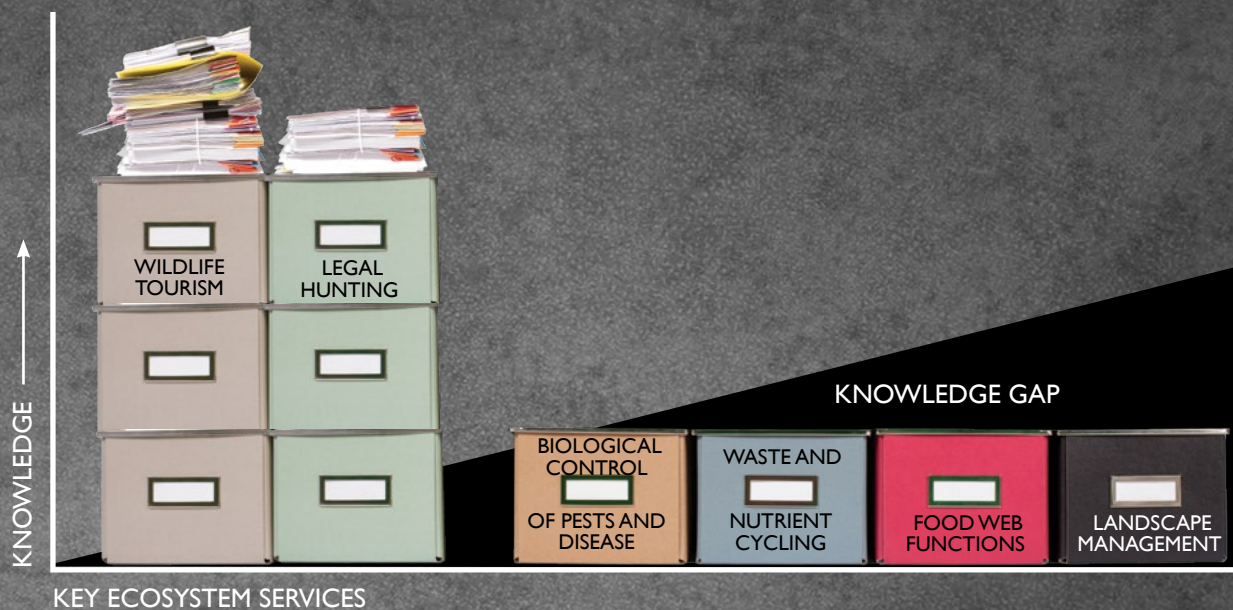
Table 4: Summary of knowledge

Seizures	Prosecution cases	Value of products illegally traded	Expenditures on anti-poaching and anti-trafficking	Recordings of known poaching events locations	Impact of IWT on wildlife population	Impact of poaching on tourism/trophy hunting
ANGOLA						
AVAILABILITY						
Hand-written, difficult to access	Difficult to access, scattered	Very limited	Very limited and scattered	No	No	No
SOURCE OF INFORMATION AND TYPE						
Director General of Environment, National Institute of Biodiversity and Conservation Areas	Directly at court, a database on law enforcement supposed to be developed (NIBCA)	NGOs (Panthera)	Director General of Environment, NGOs		Some wildlife counts by NP authorities for major parks	

Seizures	Prosecution cases	Value of products illegally traded	Expenditures on anti-poaching and anti-trafficking	Recordings of known poaching events locations	Impact of IWT on wildlife population	Impact of poaching on tourism/trophy hunting
BOTSWANA						
AVAILABILITY						
Yes	Difficult to access	Unknown	Not integrated	Unknown	Scattered	No
SOURCE OF INFORMATION AND TYPE						
Department of Wildlife and National Parks (poaching statistics)	Department of Wildlife and National Parks	Botswana Wildlife Intelligence Unit?	Department of Wildlife and National Parks, BDF		Wildlife Population estimates 2014 from DWNP	
MALAWI						
AVAILABILITY						
Yes	Hard to access	Unknown	Not integrated			
SOURCE OF INFORMATION AND TYPE						
Ivory seizure submitted to ETIS			Investigators Training Alliance			
MOZAMBIQUE						
AVAILABILITY						
Unknown	No	Unknown	Not integrated	Unknown	Unknown	No
SOURCE OF INFORMATION AND TYPE						
ANAC	At court and difficult to access.		ANAC, WCS, USAID, WWF	ANAC		
NAMIBIA						
AVAILABILITY						
Yes	Yes	Limited knowledge	Yes, but not integrated	Yes, but not accessible	Yes, for key species	Not quantified
SOURCE OF INFORMATION AND TYPE						
MEFT/NDF Wildlife crime report + database	MEFT/NDF Wildlife crime report + database	Some studies from financial intelligence agency	MEFT, NGOs (WWF, NNF, SRT), NAMPOL, USAID, Game farms	MEFT	Wildlife counts in NPs, conservancies, and game farms	

Seizures	Prosecution cases	Value of products illegally traded	Expenditures on anti-poaching and anti-trafficking	Recordings of known poaching events locations	Impact of IWTT on wildlife population	Impact of poaching on tourism/trophy hunting
SOUTH AFRICA						
AVAILABILITY						
Yes	Yes	Some species only	Not integrated	Unknown	Yes, for iconic species	Some information not systematic
SOURCE OF INFORMATION AND TYPE						
Department of Environmental Affairs (DEFF), SANParks, EMI (Green Scorpions) SAPS (Police)	National Prosecution Authority, Green Scorpions	TRAFFIC, EWT, WWF (abalone and cycads)	Department of Environmental Affairs (DEFF), National Parks, EWT, WWF, Game farms	Department of Environmental Affairs (now DEFF)	Wildlife counts from SANPARKS	One study on loss in tourism income from elephant poaching (Naidoo et al.2016), testimonies for game farms
TANZANIA						
AVAILABILITY						
Yes	Yes, limited in time (IUCN review compiled on WILDLEX)	Unknown	Not integrated	Yes, but not accessible	Yes, but only for some species and in some areas	Not quantified
SOURCE OF INFORMATION AND TYPE						
Wildlife Division seizure data (Ministry of Natural Resources and Tourism), Multi-Agency Task Team (MATT)	Wildlex for 2009-2015 or directly at court for the rest	Multi-Agency Task Team (MATT), TRAFFIC	Wildlife Division (Government), TAWA (Wildlife management authority - Parastatal), AWF, WWF	Wildlife Division (Government)	Wildlife Division, AWF. Ad hoc counts and trend for national parks (elephant census)	
ZAMBIA						
AVAILABILITY						
Yes	Yes	Yes	Yes	Yes, but not accessible	Some counts of wildlife but not integrated	
SOURCE OF INFORMATION AND TYPE						
Department of National Parks & Wildlife (and CWP program)	Department NPW (and CWP program)	CWP program, prosecutors	CWP and Department NPW		African Parks, Frankfurt Zoological Society. Wildlife counts only realized in some NPs	

Seizures	Prosecution cases	Value of products illegally traded	Expenditures on anti-poaching and anti-trafficking	Recordings of known poaching events locations	Impact of IWT on wildlife population	Impact of poaching on tourism/trophy hunting
ZIMBABWE						
AVAILABILITY						
Scattered	Unknown	Some scattered information	Scattered data	Unknown	No	No
SOURCE OF INFORMATION AND TYPE						
DNPWLM, ZimParks, International Anti-Poaching Foundation (Wildlife trade database), NGOs (Zambezi society)		International Anti-Poaching Foundation (Wildlife trade database)	DNPWLM, Conservation Task Force International Anti-Poaching Foundation (Wildlife trade data), NGOs		ZimParks has wildlife counts data for major NPs	
SADC						
AVAILABILITY						
Not openly accessible	Not openly accessible	Unknown	Unknown	Unknown	Yes, for specific species	No
SOURCE OF INFORMATION AND TYPE						
SADC-TWIX	SADC-TWIX		Plan to establish a database of Member State capacity (staff, operational budgets, equipment etc.); (SADC Secretariat)		Planning to integrate existing data : from CITES, MIKE etc. Plan to establish regional database for collation of aerial survey results for SADC elephant range state countries drawing on the AfESG	



Ecosystem services affected by IWT and its impact on environment is usually limited to wildlife tourism and legal hunting, with little assessment of the impact of IWT other key ecosystem services such as biological control of pests and disease, waste and nutrient cycling, food web functions, and landscape management.

Gaps and Concluding Remarks

Although the issue of IWT raises a lot of attention and funding across southern Africa, a lot of information and data remains missing to understand the dynamics of IWT as well as the cost effectiveness of actions undertaken to curb it at regional and national levels. A summary of key gaps identified is presented below.

Expenditures data and cost-effectiveness

In order to understand the real costs of IWT, it is essential to have transparent records of expenditures of all actors involved in the fight against IWT over time. Given the diversity of actors involved and sensitivity of expenditure data for some organizations, this remains a complex task, however efforts could be made at national level to compile such data. Some projects have started this effort through their monitoring and evaluation standards, but these remain hardly accessible. A full accounting of expenditures from national governments, donors, non-governmental organizations, foundations, and private actors is essential to assess and compare cost effectiveness of different measures and exchange on best practices between SADC countries. Further collection and integration of expenditure data could be realized at SADC level, as well as national level.

An attempt to quantify impacts against expenditures should then be initiated to investigate the cost-effectiveness of different measures, thus increasing efficiency and transparency. At this stage, no cost-benefit analysis of different measures to curb IWT could be found for activities in African countries. Such analysis at national and regional level could shed a light on the real costs of combating wildlife crime and the potential benefits from behavior change that supports the reduction in wildlife crime, and in turn support law enforcement and policy making by providing economic evidence on the costs and benefits of curbing IWT.

Ecosystem services impacted by IWT

It appears from this review that little research is available that highlights the potential threats to ecosystems functioning and degradation of ecosystem services related to increased poaching in specific landscapes of southern Africa. The identification of ecosystem services affected by IWT and its impact on environment is usually limited to wildlife tourism and legal hunting, with little assessment of the impact of IWT other key ecosystem services such as biological control of pests and disease, waste and nutrient cycling, food web functions, and landscape management. Moreover, the quantification of these impacts on ecosystem services appears under-researched. There is very limited quantitative evidence regarding the economic losses incurred by the legal hunting industry and the tourism sector due to biodiversity losses from IWT. Local or national level analyses examining the relationship between wildlife losses and its impact on tourism and legal hunting would be a key step to generate quantitative evidence on the costs of IWT to southern African economies.

Estimations of the loss of ecosystem services from the biodiversity losses from IWT have not been fully explored on a regional level. The depletion of natural capital poses a significant challenge to achieving poverty reduction and sustainable development objectives.

Impacts of IWT on population for non-iconic species

The population trends in rhino and elephants and the impacts of poaching events on these trends are well understood in Southern Africa. However, it is not the case of for many illegally traded species. Information on the impact of poaching on pangolin population trends at local and national level is for instance difficult to find, mostly due to the complexity of monitoring this species population. It is also the case for species that are less traded, although some ad hoc information could be found for specific national parks for big cats and ungulates, no regional or national level assessment of the impact of poaching on species such as lion, leopards but also antelopes could be found. This in turn would lead any economic impact assessment of IWT to be only linked to variations in rhino and elephant populations as it is the only data easily available.

Local economic impact of IWT

The knowledge and understanding of economic impacts of poaching and IWT at local level remains limited. Further research should be conducted to assess and compile knowledge on the income generated from IWT by local poachers across Southern Africa. It would also be key to quantify the long- term local economic impacts that IWT can have for the communities living in areas with high level of poaching.

Social and cultural impact of IWT

Evidence on the social and cultural impacts of IWT are essentially limited to reports on violence and casualties, compiling testimonies on rangers' experiences, and investigations on corruption associated with IWT. This review highlighted that very little academic research has focused on the social impacts of IWT in specific communities or societies in southern Africa.

Records of trade values in Southern Africa

The value of different illegal wildlife products along the supply chain in southern Africa is particularly hard to access. Estimating the total value of products trade in illegal markets is challenging because of limited information on prices and volumes traded. It is even more challenging to assess the distribution of this value along the value chains. However, some organizations and institutions do try and keep records of poachers' statements on products prices, such knowledge should be compiled to allow for mapping price variations within and between countries and better understand economic incentives along the supply chains.

Overall, although a lot of knowledge has been accumulated on IWT in southern Africa, much effort is needed in generating further quantitative knowledge necessary to understand how to carry out economic assessments of IWT in different countries in the region. Some countries and institutions however do appear to hold valuable information and data which would need to be compiled and integrated at national and regional level. Further research and understanding of the quantitative impacts of IWT on ecosystem services is also key to understand the costs of IWT to local, regional, and international communities. Finally, efforts to assess the cost-effectiveness of different measures to curb IWT, although underway in many institutions, should be supported by a systematic compilation and integration of expenditure data from different actors of the fight against IWT.

This state of knowledge report provides a basis for a national cost-benefit analysis of IWT and highlights the potential limitations such as the quantification of ecosystem services impact of IWT as well as the quantification of benefits associated with non-iconic species where little information is available.

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