Soothing the Perfect Rhino Poaching Storm

An Analysis of the Rhinoceros Poaching Crisis
in South Africa, Namibia and Nepal

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Acronyms

AU	African Union
ANC	African National Congress
APU	Anti-Poaching Unit
CBAPU	Community-based Anti-Poaching Unit
CBC	community-based conservation
CBD	Convention on Biological Diversity
CBNRM	Community-based Natural Resource Management
CIB	Central Investigation Bureau
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COIN	counter-insurgency tactics
CODIS	Combined DNA Indexing System
CoP	Conference of the Parties
CSIR	Council for Scientific and Industrial Research (South Africa)
DEA	Department of Environmental Affairs (South Africa)
DEFF	Department of Environment, Forestry and Fisheries (South Africa)
DNPWC	Department of National Parks and Wildlife Conservation (Nepal)
EAC	East African Community
ESPU	Endangered Species Protection Unit (South Africa)
GLTFCA	Great Limpopo Transfrontier Conservation Area
HAWEN	Horn of Africa Wildlife Enforcement Network
HUMINT	human intelligence
HWC	human-wildlife conflict
ICCWC	International Consortium on Combating Wildlife Crime
ICDPs	Integrated Conservation and Development Projects
IGAD	Intergovernmental Authority on Development
INTERPOL	International Criminal Police Organization
IPZ	Intensive Protection Zones
IST	Investigative Support Team
IUCN	International Union for Conservation of Nature
Kruger NP	Kruger National Park
MoU	Memorandum of Understanding
NamPol	Namibian Police Force

NWCCCC	National Wildlife Crime Control Coordination Committee (Nepal)
NWCRU	National Wildlife Crime Reaction Unit (South Africa)
NEMBA	National Environmental Management Biodiversity Act
NEST	National Environmental Security Task Forces
NPA	National Prosecuting Authority of South Africa
ODA	Official Development Assistance
PLAN	People's Liberation Army of Namibia
SADC	South African Development Community
SADF	South African Defence Force
SANParks	South African National Parks
SAPS	South African Police Service
SANDF	South African National Defence Force
SCP	Situational Crime Prevention
SMART	Spatial Monitoring and Reporting Tool
STR	short tandem repeats
SWAPO	South West African People's Organisation
TCM	Traditional Chinese Medicine
TOPS	Threatened or Protected Species
WC³	Wildlife Crime Combating Centre (South Africa)
WCCB	Wildlife Crime Control Bureau (Nepal)
WENSA	Wildlife Enforcement Network of South Africa

1 Introduction

When 13 rhinoceroses (hereafter: rhinos) were killed in South Africa's protected areas in 2007, conservation practitioners and criminologists were not yet fully aware that a poaching storm was about to emerge. At the same time, Nepal was already dealing with the highest poaching rates worldwide, well aware of the storm. From the perspective of many African countries, however, the Nepalese struggle to protect biodiversity was taking place in a distant theatre on another continent.

At the onset of South Africa's poaching crisis, Namibia was still spared from the illegal killing. Internationally, Namibia was well known for its community-based natural resources management programmes (CBNRM) which manage to include local stakeholders as stewards of wildlife. Criminal groups and poaching syndicates did not wait for long though. When more than 30 rhinos were killed in 2014, including highly endangered black rhinos on communal land, the poaching storm had finally arrived in Namibia.

Criminologists observe that many enablers of wildlife crime, such as deep-seated poverty, weak governance and corruption among enforcement officials, were always present, and they only needed a catalyst, in the form of a high-value demand from East Asia, to create a 'perfect storm'. This term is used by observers of the current poaching crisis to describe 'a rare event where circumstances, none of which would independently be lethal, converge with a catastrophic outcome' (Conrad, 2012, p. 246).

Over a decade later, in 2020, the poaching storm is continuing unabated. South Africa lost over 8,500 rhinos and Namibia around 350 in their protected areas. Nepal, on the contrary, has managed to reduce rhino poaching and celebrated its third consecutive year of zero poaching.

Since the onset of the poaching crisis, state- and non-state actors have implemented measures and conducted capacity-building to protect rhinos. The plight of the rhino has moved transnational organizations, as well as private donors, to contribute to biodiversity preservation. In most rhino range states, biodiversity laws have been tightened, field rangers have been equipped and trained, management of protected areas has been improved and community-based programmes have been piloted.

After a decade of struggle against wildlife crime, policymakers, criminal-justice actors and conservation practitioners in rhino range states are still struggling to identify effective strategies for reducing the poaching pressure on one of Africa's most endangered species, and scholars are still passionately debating the success of different approaches. This

research will take stock of the lessons learnt and map the policies and approaches that have successfully reduced rhino poaching in three significant range states across Africa and Asia.

1.1 Central Research Question

This dissertation will analyse forms, causes and enablers of contemporary rhino poaching with the help of three empirical case examples: South Africa, Namibia and Nepal. The empirical section will display the site-specific criminogenic environment in which the killing of megaherbivores is embedded. Within this context, the efforts of state- and non-state actors to counter rhino poaching will be analysed.

South Africa, Namibia and Nepal now have nearly a decade's worth of experience of rhino poaching. This research aims to harness that experience and seeks to single out strategies, intervention areas and methods that have proven valuable in reducing the poaching crisis. The research follows a holistic perspective and takes different approaches into account – from bottom-up to top-down. The research findings will be valuable for scholars and practitioners alike. They will illustrate the strengths and weaknesses, failures and successes of conservation and enforcement efforts to date. The central research questions are:

- ***How do state and non-state actors encounter rhino poaching?***
- ***Which methods serve to reduce rhino poaching against the backdrop of the country-specific forms and causes of the current poaching crises?***

These questions lead to the following sub-questions:

- *What are the current forms and manifestations of wildlife crime in selected African and Asian range states? How are criminal actors and syndicates organized, and what strategies and methods do they apply to kill megaherbivores?*
- *What are the country-specific enablers of wildlife crime?*
- *How are state- and non-state actors responding to commercial poaching?*
- *What are the strengths and weaknesses of current approaches and initiatives, and what are the successful elements in containing rhino poaching?*

While this research acknowledges the central role of curbing Asian demand when soothing the storm (Conrad, 2012; OECD, 2012; Milliken & Shaw, 2012; Schneider, 2008, p. 275), it will predominantly focus on traditional horn sourcing countries and analyse their

conservation and enforcement efforts. In order to avoid overburdening the already wide focus of this research, the situation of transit and destination countries will only be analysed with secondary literature.

2 Methodology

This thesis will apply a qualitative research paradigm to achieve the study goals. Miller et al. (2015, p.3) define qualitative criminology as 'the collection and interpretation of the meaning of textual, verbal or real-world observational data to inform about the causes, nature, and consequences of, as well as the responses to, crime.' During multiple field visits to South Africa, Mozambique, Namibia and Nepal from 2017 to 2020, qualitative semi-structured expert interviews (N=60) have been conducted. This supplemented the method of participatory observation. The gathered material was triangulated with the secondary literature that has evolved in the area of conservation crime since the onset of the current rhino and elephant poaching crisis.

2.1 Reasons for a Qualitative Research Design

Criminology and criminal justice research have applied quantitative designs more frequently than qualitative approaches (Tewksbury et al., 2010; Worrall, 2000; Miller et al., 2015). Societal and political discussions concerning crime primarily demanded hard, and hence quantifiable, facts (Meuser & Löschper, 2002, p.1). The dominance of quantitative methods has decreased slightly in recent years. Nevertheless, in the field of conservation criminology, comprehensive qualitative studies remain rare. Due to limited budgets for biodiversity conservation, the impact of conservation interventions on wildlife crime in the Global South is rarely systematically evaluated. A contextual understanding of the effect of policies in protecting biodiversity is lacking (Linkie et al., 2015, p.852; Ferraro & Pattanayak, 2006). According to Naro et al. (2020), there is a misalignment between local people and the sometimes detached community of conservation practitioners about what drives illegal exploitation of wildlife. Pro-wildlife initiatives are not always best informed by the realities on the ground.

A qualitative research method is helpful in achieving this contextual and multifaceted understanding of wildlife crime. With the help of qualitative interviews, the perceptions of a multitude of actors can be explored, from local villagers to criminal justice-system actors, to park officials and international NGOs. This method is suitable for assessing factors that enable wildlife crime and underlying cultural perceptions towards conservation crime as well as human–environment relations in general.

Qualitative approaches help in understanding how offenders and those tasked with containing wildlife crime operate (Copes & Miller, 2015; Miles & Hubermann, 1984, p. 15).

They shed light on ‘real-life situations from the point of view of the insider, rather from the point of view of the outsider’ (Nieuwenhuis, 2007, p. 56).

Standardized methods would reach their limits in the analysis of complex multifaceted settings of wildlife crime. Worrall (2000, p. 359) concludes that qualitative methods are suitable for generating new perspectives and constructing theories, whereas testing each of those theories is to a great extent a quantitative exercise.

However, qualitative research frameworks also have several weaknesses, which Jooste and Ferreira (2018, p. 54) point out for the field of green criminology. They evaluated articles that used qualitative research designs to support the notion of ‘green militarization’. These contributions were often lacking a clear set of hypotheses and quantitative measures to test and falsify their findings. It is common practice to illustrate findings by using selected quotes from interviewed participants. This needs to be viewed critically, as researchers might naturally choose those quotes that support their preconceptions.

Alongside the application of stringent scientific measures during the conduct of qualitative research, the researcher must apply a critical mindset that is open to different and sometimes opposing arguments.

This research is operating under the charged relationship of scientifically verifying each causal effect and influencing factor of wildlife crime while maintaining the bigger picture to illustrate how different and context-specific stressors contribute to wildlife crime. This contextual, broad-based understanding from an insider-view will be suitable for assessing the effectiveness of conservation policies, practices and innovations in combating wildlife crime.

2.2 Prior Experience of the Subject of Research

The author has worked in several areas of nature conservation and conservation related projects with ties to law enforcement. Further insight was gained through participation at various conferences and business-trips that deal with wildlife crime in East, Central and Southern Africa. The author has completed the Master’s programme ‘Criminal Justice, Governance and Police Science’ at the Ruhr-University Bochum and submitted a Master’s thesis: *How to Soothe the Perfect Storm: An Analysis of the Rhino Poaching Crisis in South Africa,* in April 2018. The thesis analyses causes and enablers of wildlife crime in South Africa and evaluates policy options for containing the illegal exploitation of high-value species. There are similarities to the present research. This dissertation

introduces theories of wildlife crime and enablers of rhino poaching (Chapters 3.3, 4 and 5). Some of the methods for reducing wildlife crime (Chapter 6) are similar. The case example of South Africa (Chapter 8) displays a few similarities due to the use of the same literature on conservation crime, however, basic concepts that were introduced in the Master's thesis were usually less detailed. The findings for the present dissertation were collected with the help of empirical research visits exclusively for the present research. The Master's thesis, on the other hand, applied a theoretical research framework. Moreover, some of the scientific insights of the Master's thesis are outdated, as new dynamics have shaken environmental crime in South Africa.

2.3 Selection of the Case Examples

South Africa, Namibia and Nepal were chosen as suitable study objects for several reasons. As an extension of the South African case example, research has been conducted in rural villages in Mozambique close to Kruger National Park, where some of the wildlife offenders come from.

The three countries conserve a significant share of the global rhino population. South Africa and Namibia are the two biggest rhino range states on the African continent. Together they conserve 94% of Africa's white and 73% of Africa's black rhino population (Emslie et al., 2016, p. 1). Nepal conserves 17% of the greater one-horned rhino population and is, besides India, the second most significant range state for greater one-horned rhinos in Asia.

Furthermore, the countries chosen for empirical research are or have been affected by heavy poaching. South Africa and Namibia are currently struggling with high poaching numbers. From 2007 to 2020, more than 8,500 rhinos were killed in South Africa's protected areas, reserves and private parks, while Namibia lost approx. 310–404 rhinos from 2014 to 2019 (compare Table 10 and Table 18).

Nepal, in contrast, is widely regarded as a success story, with more than three consecutive years of zero poaching. The last case of rhino poaching in Nepal dates back to April 2017 (Esterman, 2017). From 2000 to 2010 Nepal lost 158 rhinos to poaching (compare Table 26). In relation to the smaller population size, Nepal had one of the highest poaching rates in the world. All three countries rely on experience in dealing with rhino crimes within their country, which will be harnessed for this research. Moreover, researching both African and Asian case studies serves to take different regional perspectives into account.

While the emphasis is clearly on the African continent with two country examples, the Nepalese case provides valuable insights and perspectives, especially against the background of the country's success in achieving zero poaching of high-value species. The chosen countries also demonstrate basic similarities that allow for comparison. Across the board, high-value demand from East Asian countries is the main driver that fuels wildlife crime. Furthermore, criminal poaching groups that are organized in different layers are responsible for the majority of rhino crime cases. The countries demonstrate similarities in their socio-economic framework conditions, such as high rural poverty and endemic corruption. South Africa and Namibia share plenty of similarities due to their regional and cultural proximity. Nepal and Namibia also show similar features in their approaches to containing wildlife crime. Both countries rely on a rich tradition of community-based conservation. In terms of strict in-situ enforcement, South Africa and Nepal share similarities.

While there are similarities, valuable insights will also be gained through the differences between the criminogenic situation and the country-specific enforcement response. For example, Nepal's contemporary cultural attitude towards wildlife preservation is significantly different from the culturally tainted perception of wildlife conservation in South African communities. When looking at each case example, there are plenty of regional differences. This allows for a rich context-specific analysis of the drivers of wildlife crime and the assessment of the effectiveness of regional, national and international enforcement responses.

2.4 Qualitative Interviews

In the course of the empirical research, 60 semi-structured interviews were conducted. These were supplemented by many conversations in the field that had not been framed as interviews but shed light on important aspects of wildlife crime. However, key insights into the research object were captured by the more formalized interviews.

The target group of interviewees were experts with special knowledge in the protection of biodiversity, in particular rhino poaching, as well as the state of law enforcement and other responses to the control of social behaviour and crime.

Most of the interviews were digitally recorded and transcribed, especially those that were conducted in a more formal setting, e.g. at the premises of ministries, NGOs and other

conservation actors. They normally had a duration of one to two hours. However, a dynamic and sometimes unpredictable research setting required a flexible approach. In some cases, additional interviews were conducted with the same person either to continue the conversation due to an abundance of topics or to capture new developments.

The interviews followed the aim of systematically capturing the respondent's experiences and perceptions of selected areas of expertise. An open discussion format helped to give the interviewees sufficient space to respond to the questions and to express new impulses and points of view (Schnell et al., 2005, p. 387). The questions were worded in a completely open-ended format, in order to avoid leading question bias.

Atteslander (2008, p. 125) points out that the more structured questionnaires are, the more they serve to analyse quantitative aspects. Open and only semi-structured questionnaires are suitable for capturing qualitative aspects and a contextual understanding of the research subject.

The interviewer used a basic questionnaire, which was open in composition and contained mainly bullet points and only a few formulated questions. Besides the open conversation style, interviewees were encouraged to raise further issues that they deemed important to understanding wildlife crime and its containment. By guaranteeing confidentiality and ensuring anonymity, the researcher encouraged respondents to reveal and talk about sensitive topics.

A considerable risk for independent scientific research arises from the tendency of humans to adhere to confirmation bias, the 'seeking or interpreting of evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand' (Nickerson, 1998, p. 175). The broad, qualitative focus of the present research, which draws and analyses information from a vast variety of sources with a multitude of actors, further increases the risk of confirmation bias. During the selection of regional case examples and interviewees, as well as in the subsequent analysis phase, leading hypotheses and positions were critically questioned on a regular basis and debiasing techniques, such as applying the devil's advocate method, were explored. Moreover, confirmation bias during the interview phase can be reduced, when the interviewer has prior experience in conducting independent research (Powell et al, 2012).

2.5 Empirical Research Visits

Several research visits, with an overall duration of five months, were conducted in the following countries:

- **Namibia** (1) from [redacted]
- **Nepal** from [redacted]
- **South Africa** and **Mozambique** from [redacted]
- **Namibia** (2) from [redacted]

In the course of the empirical research visits, 60 semi-structured expert interviews were conducted alongside participatory observation through the author's work in conservation projects and anti-poaching operations. Table 32, 33, and 34 provide an overview of the experts that were contacted for the formal interviews. However, these were supplemented with a multitude of informal conversations and interviews that were not explicitly framed as interviews[1].

2.6 Sampling Method

The present research applies the snowball sampling method, which starts with a small pool of initial contacts with knowledge and expertise on the subject. These individuals are then asked to provide contacts to other potential interviewees and the sample grows like a rolling snowball (Green, 2011, p. 29). Snowball sampling helps the researcher to access additional respondents by way of referral and has the advantage that a bond usually already exists between the initial interviewee and the recommended expert (see also Berg, 1988; Cohen, 2011, p. 427).

Snowball-sampling was combined with purposive sampling. With this method, the researcher relies on their own judgment when selecting members of the sample. This sample-technique is cost-effective and practical, as the pool of experts in the wildlife industry is small and manageable.

Initial contacts for the expert interviews were participants at multiple levels of involvement in wildlife security initiatives. Personal contacts of the author, that were

[1] In Mozambique, for example, the author supported an NGO in the area of environmental education. The programme closely and successfully works together with former wildlife criminals. However, the personal background of the researcher, including working experience in anti-poaching, as well as the research interest for the current dissertation were kept secret. Nevertheless, frequent exchange with villagers, including with former wildlife criminals, provided the opportunity to approach some of the research topics cautiously and at the right time.

generated during his engagement in rhino conservation, helped in the early phase of the empirical research, especially as trust was already established. Other first contacts were generated via desk research. In some instances the author would show up and visit experts without previous correspondence. The end justifies the means and conservation practitioners who were not available via email showed a greater willingness to agree to an ad-hoc interview if they met the author in person. Moreover, a personal encounter during the initiation of an interview has the advantage that issues and concerns, e.g. around confidentiality, can be framed directly, which again led to a greater level of commitment by potential interview candidates.

Due to the snowball-method, interviewees have not been selected by a sampling frame. Some experts have a higher visibility and are easier to approach, such as conservationists with well-known NGOs. There is the risk that the cluster of experts might only hold one-sided expertise, which could lead to a distorted view and would contradict the holistic claim of this research. This was addressed during the course of the research by making several attempts to tap into distinct and diverse networks and hence starting to roll different snowballs. Here it also helped that the author had worked in various backgrounds from enforcement-related professions to development cooperation. When it comes to reaching rule-breakers, the limitations of snowball-sampling become apparent, however, according to Cohen (2011), it is the second-best method under imperfect conditions. Due to the limitations of this method, the data needs to be verified and triangulated thoroughly (Hübschle, 2016).

Random sampling was not regarded as useful for this research. The empirical research rather focused on getting access to outstanding people from a broad variety of areas related to conservation and wildlife crime enforcement. Moreover, this research did not strive for general comparability between interviews in quantitative terms, as each expert would portray his or her perspective in their area of expertise. Nevertheless, there were recurring topics that most experts discussed, such as assessments on specific elements to contain rhino poaching: wildlife crime enablers, community-conservation, specific law enforcement tools, etc. During the analysing phase, the author used a simple coding technique, which served to provide an overview of the perspectives of different actors regarding central topics and elements of the analysis.

2.7 Composition of the Sample

This research achieved a diversified expert cluster that incorporated a broad range of perspectives on wildlife crime and enforcement. Amongst the interviewed experts were wildlife crime practitioners, criminal-justice actors, employees from NGOs, local villagers, police, military personnel, intelligence experts, park officials, private rhino owners, rangers, prosecutors, veterinarians, professional hunters and former wildlife offenders.

The primary goal for the present research was to capture the 'bigger picture' to explain wildlife crime and hence evaluate different policy options for containing poaching. Moreover, the quality of interviews was regarded as more important than the number of interviews. In each country example, a number of conducted interviews were discarded as they did not provide valuable insights. Approximately 20 meaningful interviews were used for each country.

2.8 Participant Observation

Participant observation is a method in which a researcher systematically views and takes part in the daily realities and routines of people in order to capture the tacit and explicit aspects of their actions (DeWalt & DeWalt, 2011, p. 1; Gray, 2009, p. 397).

While research typically evaluates the 'knowledge for understanding', participant observation brings an additional perspective as it looks at 'knowledge for action' (Clark, et al., 2009, p. 2). A key aspect of participatory research is being involved in the research process by capturing the everyday interaction of people in public spaces. It offers a distinct advantage in terms of accessing and understanding the culture. This method helps to interpret people's behaviour and analyse the impact of various actors on the conservation and enforcement of rhino crimes. Moreover, the method of participatory observation serves to complement expert interviews and contextualize the gathered data (Patton, 2015; Moreto et al., 2018).

During the course of the research, participatory observation was conducted at different sites. The author participated in ranger patrols with enforcement personnel in South Africa and Namibia. While working as a farm manager in Namibia, the author was responsible for overseeing anti-poaching operations and also managed a paid network of informants. Community-based projects were supported in Mozambique, which helped to assess the social situation in rural villages where offenders derive from. Furthermore,

additional contacts for formal interviews were generated in the course of participant observation.

Nevertheless, this research could not guarantee the same level of participant observation in each of the country examples. Practical experience was conducted to a greater extent in South Africa and Namibia (and Mozambique) than in Nepal. While the author spent a lengthy time in Nepal's Chitwan NP, including with park officials, he had no opportunity to work alongside enforcement personnel.

2.9 Challenges for the Empirical Research

It is a challenge for the empirical fieldwork to obtain insights into the day-to-day activities of ranger units, as they handle their *modus operandi* with discretion[2]. Anti-poaching personnel are concerned that information could be leaked to wildlife offenders. Often, game rangers and patrol leaders do not see the benefit of providing insights to scholars. Sometimes they are also concerned about receiving a negative assessment of their work. It was especially through personal work experience in South Africa and Namibia, that the author was able to gain insight into key areas of anti-poaching, and to frame valid perspectives for this research. In other areas, this proved to be a greater challenge. Soldiers in Nepal's Chitwan NP, for example, were reluctant to even start a conversation with non-military personnel. In this case, the current research relied on secondary sources. While the empirical part of this research provides valuable perspectives, it will leave out critical insights, that could be of value to wildlife crime perpetrators.

2.10 Obtaining Reliable Secondary Data

Data on wildlife crime is prone to a great deal of uncertainty and bias. From the perspective of social research, rule-breakers will be reluctant to disclose their behaviour and discuss their motivations openly (Keane et al., 2008, p. 76). Dark figures on wildlife crime are problematic from a strategic perspective as crime is often underestimated and not viewed in true proportion by policymakers and the general public. On the one hand, this results in too little public support. On the other hand, because of its covert nature and

[2] The empirical research maps out various aspects of the enforcement response, such as anti-poaching and its effect on reducing wildlife crime. Besides conventional ranger patrols inside protected areas, it will include specialized forms, such as intelligence-led anti-poaching, which extends outside the park.

lack of knowledge about the crime, enforcement is struggling with identifying appropriate policy responses to combat wildlife crime (Wellsmith, 2011, p. 136). There are also differences in public perception between species. The poaching of iconic flagship species, such as rhinos, elephants and tigers receives greater attention than that of other less well-known or valued species such as abalone or pangolin (Cochrane, 2020).[3]

Official departments in range states are often reluctant to provide accurate data on wildlife crime. In some cases for good reason, as information might be misused by offenders. Site-specific information that reveals patrol routines or gives insight into how a network of informers is run is treated as highly sensitive by enforcement officials. Moreover, some information or data which would not be regarded as sensitive is simply not collected or provided on an aggregated level by official channels. One reason for this is a lack of political interest on the subject of conservation crimes that happen in remote areas (Gibbs et al., 2009; Moreto, 2015). When departments compile data on wildlife crime, they do not always adhere to scientific standards and might lack accuracy. Published figures can either be too low or inflated. National law enforcement agencies might feel the need to underline their competency and inflate success rates in the struggle against wildlife crime. Others want to send the message that 'everything is under control' and prefer to play down conservation challenges. Some agencies simply do not report wildlife crime, either due to strained budgets or to an agency structure that does not attach priority to accurately capturing and monitoring wildlife-related crime trends.

Moreover, the scientific contributions of (independent) research are not bias-free and sometimes carry misrepresentations. This can be the case when dealing with topics that are emotionally charged, for example, top-down conservation approaches versus softer bottom-up community-based measures. Here we find contributions on both sides of the spectrum that follow a one-sided line of argument.

Moreover, the funding-source for a specific research project can influence the outcome. Studies that are funded by providers of military equipment tend to favour strict, top-down responses to wildlife crime. Some contributions even tend to over-emphasize the 'terror-poaching link'.

Another factor that undermines the objectivity of research in conservation criminology is that, due to practical limitations, it is often not feasible or is simply impossible to measure the counterfactual of a specific enforcement approach (Ferraro & Pattanayak, 2006).

[3] From 2001 to 2017 about 40,000 tons of abalone were poached, which exceeded the quota by 10 times and brought the abalone population to the verge of collapse (Steyn, 2017).

Differences in the level of enforcement, which led to more or fewer cases being prosecuted, also influences the available data on wildlife crime (Sina et al., 2016, p. 10). Hence, distortion effects can happen naturally by failing to apply scientific standards. For example, greater patrol efforts can lead to a high detection rate in specific areas while criminal activity in less patrolled areas might go unnoticed (Gavin et al., 2010). For the given example, additional information on the corresponding enforcement effort would be needed, e.g. the number of patrols and area covered. Distortion effects especially apply to seizure data, e.g. from custom officials. Increases in seizures do not automatically indicate that the illicit wildlife trade is on the rise, they may simply be caused by improved detection measures (Mundy-Taylor, 2013, p. 46).

Technical advancements, such as the sophisticated patrol monitoring system Spatial Monitoring and Reporting Tool (SMART) and Cmore, that allow for in-depth analysis of enforcement data, may help to counter a misinterpretation of wildlife crime figures (Barichievy et al.,2017, p. 555).

The research will carefully evaluate different sources and figures and seek to corroborate them. The origin and intention of the given dataset will be taken into account and different perceptions will be considered.

3 Criminological Perspectives

This chapter will define various criminological concepts and perspectives and will provide an overview on the factors and circumstances that drive wildlife crime and converge to create the 'perfect storm'.

3.1 The Green Criminology Perspective

'Environmental criminology' is an umbrella term for crimes that involve the natural environment in the sense of a green criminology. This should not be confused with a description of the role of environments, situations and opportunities, for which conservation scientists propose the term 'place-based criminology' (Wellsmith, 2010; White, 2010. p.6).

Green criminology is a relatively new area in criminological research (Lynch & Stretesky, 2016). In the German literature, there are only isolated contributions that deal with the perspective of a green criminology (Schmidt, 2013). In the English-speaking literature, a moderate discourse under the collective term of green criminology has evolved during the past 20 years (Schmidt, 2013). Judging from the number of publications, green criminology is peripheral in criminology, with about one environmental-related publication for every 300 scientific publications in the field of criminology.[4] Several scholars notice a lack of methodological depth and an absence of closed theoretical frameworks in the scientific debate (Gibbs et al., 2009, p. 124). Schmidt does not refer to green criminology as an independent branch of science, but rather a 'perspective within (critical) criminology' (Schmidt, 2013, p. 263).

In the past, research contributions in environmental crime have typically focused on large corporations as central offenders, e.g. enterprises that produce and dump toxic waste in violation of pollution laws (Gibbs et al., 2009, p. 126; Situ & Emmons, 2000, p. 4; White, 2013a). However, especially during the onset of the rhino poaching crisis in South Africa (2009), but effectively from 2012 onwards, numerous scientific contributions emerged in the area of wildlife crime. Despite this, in comparison to mainstream criminology, offences against non-human animals receive relatively little interest (Wellsmith, 2010; Lynch & Stretesky, 2016). Some scholars call for a greater emphasis on environmental

[4] As a broad indicator, a Google search reveals 2,750 publications for 'green criminology' compared to 818,000 publications in 'criminology' (as of October 2019).

crimes within traditional criminology, arguing that environmental crimes often cause greater harm to the biotic systems and humans than for example street crimes, an area that has been the extensive subject of research in criminology (Lynch & Stretsky, 2016). There are several reasons why criminology has not, so far, been greener. On the one hand, criminology has traditionally focused on harm to humans. On the other hand, it predominantly focuses on behaviour that lawmakers select as harms (Lynch & Stretesky, 2016, p. 4).

3.1.1 The Legalistic Perspective

A predominant perspective in green criminology is the legalistic perspective, which looks at criminal violations of environmental law and refers to green criminology as 'the study of environmental harm, environmental laws and environmental regulation by criminologists' (White, 2008, p. 8). With a focus on criminal violations in strictly legal terms, proponents of the legalistic perspective often regard criminal penalties as a major tool in addressing environmental crime (Gibbs et al., 2009, p. 126). This can be seen in the proposed solutions for wildlife crime, that often come with a call for tougher penalties for offenders. It can go so far as proposing 'shoot on sight' practices for rhino poachers.
While a strict legalistic perspective has the advantage of defining precisely what falls under environmental crime, the approach has received criticism. Predominantly, the environment is not only harmed by criminally relevant acts, but also by those actions that are not penalized by law (Schmidt, 2013). Regulatory systems in many societies tend to be anthropocentric. They often fail to cover detrimental behaviour to the flora and fauna and the biotic system in general (Gibbs et al., 2009, p. 126). Scholars such as Wyatt (2012) refer to this with the term 'speciesism', claiming that harms to non-human species are frequently not considered, as they are not protected by law (Beirne, 2009). One example is Mozambique, where wildlife crime was considered a misdemeanour until 2014 and was subject to civil sanctions (Massé, 2017, p. 123).
There are a multitude of factors, other than considering the environment, that shape legal environmental frameworks, such as the social position of actors involved, and their asymmetrical power relations as well as their economic interests. According to Lynch and Stretsky (2003, p. 218), crimes are often performed by powerless societal actors, as they have no means to express themselves in the discourse that leads to legal definitions of what is considered a crime and what is not. One example are local villagers, for whom

(illegal) resource extraction is a part of daily life. Often their actions are not perceived as personal wrongdoing, which is referred to as 'contested illegality' (Hübschle, 2016, p. 366). It remains challenging to define criminality in this context.

Moreover, contemporary media discourses play a role in shaping law enforcement responses, which can also work in favour of one species. A distorted representation can be seen in the contemporary media discourse, where cases of rhino and elephant poaching, as flagship species, are reported more frequently than the illegal exploitation of other equally endangered species, such the rampant poaching of pangolin (Cochrane, 2020). [5]

3.1.2 The Harm-Based Approach

Because of the limitations of the legalistic perspective, several scholars propose a broader descriptor of crime than as defined in strictly legal terms (White, 2013b). Lynch and Stretesky (2003, p. 227) define green crime under a harm-based approach and refer to 'an act that may or may not violate existing rules and environmental regulations; has identifiable environmental damage outcomes; and originated in human action.'

Underlying the concept of harm to the environment are different perceptions of the relationship between human beings and nature (Gibbs et al., 2009). Environmental justice scholars argue that it is often the weak and vulnerable who are affected by environmental hazards (Gibbs et al., 2009, p. 126). Losing rhinos as a species would reduce pleasurable activities for humans and negatively affect the local tourism industry. However, this perspective is still overly human-focused (Gibbs et al., 2009, p. 126; White, 2008). From the ecological justice perspective, extinction of the rhino and other key species represents a loss of biodiversity and negatively impacts the functioning of the ecosystem. According to the species justice perspective, animals have the right to live (Wellsmith, 2010; Griffiths, 2017), which corresponds with a 'deep green' or biocentric perspective that looks at any environmental harm as a direct or indirect result of human activity that disrupts a biotic system (Halsey, 2004).

[5] The pangolin is currently the worlds most trafficked mammal (UNODC, 2017, p. 2). Especially in South Africa, pangolin poaching has increased (Patrick, 2019).

3.1.3 Conservation Criminology and Green-Cultural Criminology

Herbig & Joubert (2006) and Gibbs et al. (2009) introduce the term conservation criminology. From an interdisciplinary perspective, conservation criminology seeks to integrate criminal justice, conservation and natural resource management as well as formal risk and decision sciences. Criminology contributes experience in understanding criminal behaviour and designing criminal justice interventions, while natural resource management can contribute to understanding ecosystems and the interaction with local people. Conservation crime has proximity to the situational crime prevention perspective and is especially suited to looking at conservation challenges and wildlife crime (Gibbs et al., 2009; Gore, 2011).

Brisman and South (2013) propose the perspective of green-cultural criminology. This concept emphasizes the cultural dimension of environmental harm. Cultural features and the way they are framed, e.g. via the news media and other platforms, shape and construct people's perception of environmental harms.

3.1.4 Green Criminology Focus of this Research

The current research will apply a broad focus and take different perspectives into account when analysing drivers and enablers that lead to the proliferation of high-value species poaching but also when looking at effective policy measures to ease the conservation storm. Although this research takes the traditions of critical criminology and green criminology as a point of departure, inter- and multidisciplinary perspectives such as political and social science, psychology, conservation and environmental sciences will all be taken into account.

The interrelationship of culture and crime, in the sense of green-cultural criminology, will also be relevant for this research. The empirical part will capture the cultural perceptions of wildlife crime, which differ between South Africa, Namibia and Nepal. While assessing the legal situation as a reference point, this thesis does not dismiss the importance of a broader biocentric focus which often implies that human beings are the central cause of environmental harm and human action needs to be controlled (Gibbs et al., 2009; Herbig & Joubert, 2006). The current research welcomes a changing perspective towards the greater inclusion of harms to the natural environment and the protection of flora and fauna. However, green criminology research needs to be careful not to serve as a platform for environmental activism. Some authors even express unease

with the term ‘green’ as being politically loaded (Ruggiero & South, 2013, p. 363). Because green criminology is an emerging perspective in criminology, its findings need to be based on criminological theories, and research subsequently needs to develop a sound empirical base (Schmidt, 2013, p. 275).

3.2 Wildlife Crime and Poaching

Wildlife crime includes a wide array of areas and activities, from the collection of firewood to the sophisticated killing of high-value species (Harrison et al., 2015; Cooper et al. 2009). Wildlife crime refers to ‘poaching for trade or personal possession; illegally killing for bushmeat; (and) killing animals due to human-animal conflict’ (Pires & Moreto, 2011, p. 104). Poaching refers to the ‘illegal taking of wildlife, which can include any activities such as hunting, fishing, trapping, seining, netting and other methods of capturing and/or killing wildlife’ (Musgrave et al., 1993, p. 979).

Jooste & Ferreira (2018, p. 49) use a broader definition of poaching. They refer to the ‘active killing or capturing of individuals of a species and the start of the trafficking supply chain.’ This definition emphasizes that after the initial killing of commercially high-value animals, other steps in the trafficking supply chain follow. Poaching is often a predicate offence to other crimes, foremost the illegal trade and consumption of wildlife contraband, but also forms of conventional crimes, such as money-laundering (Chin & Murillo Vega, 2020).

Estimates of the extent of wildlife crime are associated with high uncertainty. Poaching is a control crime and is not recorded systematically in many countries. Every year CITES-listed species worth US$8–20 billion are traded (Challender et al., 2014, p. 484).[6] If illegal fishing and illegal logging are included, estimations go as high as $91 billion to $258 billion annually (Vandome & Vines, 2018, p. 4). However, these aggregated figures are rather rough estimates and need to be dealt with cautiously. Some scholars refer to these estimations as highly exaggerated (Williams et al., 2016; Vandome & Vines, 2018, p. 4).

[6] This framework includes approx. 58,000 animal and 30,000 plant species (CITES, 2017).

3.2.1 Forms of Poaching

Poachers can be categorized according to various criteria and the choice of the appropriate profiling variable largely depends on the research goal. Criteria to explain deviance in the categorization of poachers often look at the *modus operandi* and demographic background or the motivation of the offender (Von Essen, 2014). However – as with many attempts to bring order into complex realities – a static determination of profiling variables might lead to inaccuracies. Offenders can take different profiles over time. A resident of a nearby game reserve might begin with subsistence poaching and turn to the illegal killing of rhinos once the opportunity arises. Members of a poaching gang might come from diverse backgrounds. Finally, the *modus operandi* can change over time, as illegal hunters seek opportunities to improve and adapt their behaviour to evade detection or simply to increase their poaching success (Von Essen, 2014).

3.2.2 Subsistence Poaching

A common and useful distinction looks at the motivations of poachers. Subsistence-driven poaching is the most widespread form of wildlife crime on the African and Asian continent in terms of the number of species and protected areas that are targeted (Gichohi & Wasige, 2016). The primary goal of bushmeat poaching is to obtain protein. Alongside household consumption, some of the meat is traded in small quantities on informal markets. An estimated six million tons of 'bushmeat' is consumed each year in the Congo Basin (Nasi et al., 2008). Subsistence-driven wildlife crime makes use of basic technologies that can be fabricated at home, such as traps or snares (Harrison et al., 2015; Ayling, 2013; Knapp, 2012). Snares are low-cost items because the material is easily available in many areas, such as wire from electricity lines, fencing or extracted from burned tyres (Lindsey et al., 2015). Snares violate fundamental principles of nature conservation and animal welfare. They kill indifferently and the trapped animal often suffers a long and painful death. In some cases, the animal will escape with injuries, leaving one foot in the snare (Noss, 1998).[7] Meat poachers frequently have some connection to the location in which they hunt. Snare poachers need to check their traps at regular intervals. They might live in a local village, work close by on a game farm, or as seasonal construction workers on a nearby roadworks project. This is supported by Gichohi &Wasige (2016, p. 13). Their Africa wide study reveals that 83% of the meat

[7] In some cases snares are collected once the operation is over, in other cases they are left at the scene which leads to more animals dying and rotting without being retrieved.

poachers came from the same province, 12% from another province but the same country, and only 4% from abroad.

While this research focuses on the illegal exploitation of flagship species, smaller species, foremost among them common plains game, deserve equal attention and need to be monitored carefully. If illegal off-take of bushmeat reaches a tipping point, the depletion of wildlife will follow (Cochrane, 2020).

3.2.3 Commercial Poaching

Commercial poaching is driven by the desire to attain wealth. It can initially be motivated by a lack of alternative income sources. Commercially motivated wildlife offenders are more often organized in groups and have somewhat sophisticated technology at their disposal, such as a modern hunting rifle or a vehicle to transport meat (Duffy & St John, 2013; Harrison et al., 2015). In some cases, the lines between subsistence poaching and commercial poaching are blurred and might change over time. The local market also plays a role. Damania et al. (2005) demonstrated that if local bushmeat market prices increase, poachers might change their *modus operandi*, in this case from snaring to gun hunting, which was more effective and could yield greater amounts of meat. Often, the forensic background of a wildlife crime incident provides information about the motivation and hence the classification of the respective wildlife offender. Snares for giraffes, which are situated high in the trees would hint towards commercially motivated wildlife crime. A giraffe can weigh up to 1,200 kg and requires several people for its disassembly. Furthermore, a vehicle would be needed to transport the meat which in many cases would include bribing a game warden to let the vehicle enter and exit a conservancy.

3.2.4 Poaching of High-Value Species

A subcategory of commercial poaching is the illegal killing of high-value species such as rhinos and elephants, which will be the focus of this research. Killing megaherbivores usually requires a greater amount of time to find the animal and a bigger group than hunting for smaller game (Stiles, 2011). Furthermore, high-value species such as rhinos and elephants are primarily killed for their horns and the wildlife contraband is moved across countries. According to White (2017, p. 103) transnational environmental crime refers to:

- ‘Unauthorized acts or omissions that are against the law and therefore subject to

criminal prosecution and criminal sanctions

- Crimes that involve some kind of cross-border transference and an international dimension; and
- Crime related to pollution (of air, water and land) and crimes against wildlife (including illegal trade in ivory as well as live animals.'

Table 1 demonstrates the causes of wildlife crime across the African continent. Subsistence and commercially driven poaching on a local scale cover the majority of cases.

Table 1: Causes of Poaching[8]

International trade	8%
Local trade	36%
Meat (domestic consumption)	42%
Ceremonial purposes	8%
Sold as pets	5%

Source: Gichohi & Wasige, 2016, p. 10

The poaching of high-value species for international trade only covers 8% of the cases. When analysing the illegal exploitation of wildlife, this research will primarily focus on high-value poaching destined for international markets.

3.2.5 Links between Meat and Rhino Poaching

This research will also look at the possible connection between meat and rhino poaching. No obvious link exists between these forms of wildlife crime. The underlying motivation and *modus operandi* of meat versus rhino poaching are different. Often, they are regionally separated. Smaller game for meat consumption can be found in most areas, including in those that do not conserve rhinos. This research will demonstrate that due to increased patrolling efforts at rhino sites, illegal killing for meat declined in five big reserves.

Only in rare cases do poaching teams hunt for meat and for high-value species at the same

[8] This data was collected from 36 Biosphere Reserves across Sub-Saharan Africa.

time. Central Africa serves as an example where elephants are also killed for their meat. Stiles (2011) has shown that elephant meat is not the end goal but rather a by-product. Usually, less than half of the available meat is harvested due to logistical and security constraints. In this example, meat clearly remains the secondary incentive for committing wildlife crime and ivory is the main driver.

There can be a connection over time in a sense of career paths as meat poachers might turn their attention to rhino crime. Meat poaching can serve as a training ground where offenders learn how to effectively track animals and evade enforcement officials within and outside protected areas. When not apprehended by law enforcement, positive offending experiences can also increase the likelihood of continuing with other, more severe forms of crime, such as rhino poaching.

The degree of interconnectedness will also have implications for a suitable law enforcement response. The concept of zero tolerance policing proposes going after misdemeanours decisively. Zero tolerance policing is based on the broken window theory. The authors of this concept, Wilson and Kelling (1982), argue that if a broken window in a house isn't fixed, in time it creates an atmosphere of impunity that eventually invites criminals to further damage the building. The distinction between subsistence poaching and the killing of high-value animals is important because it requires a nuanced response. According to the broken window theory, the detection rate combined with punitive measures for and against subsistence poachers need to be enhanced. However, being overly punitive towards small-scale offenders carries the risk of further disenfranchising rural communities which could then lead to increased motivations to offend. Moreover, there are practical limitations to this approach. Due to scarce resources in the Global South, the capacity to effectively control meat-poaching is often lacking.

3.2.6 Interfaces with Conventional Crime

Wildlife crime and illegal wildlife trade can go alongside other forms of conventional crime, such as drug and tobacco trading (MET, 2014, p. 10). One practical argument is that illicit wildlife trade attracts actors already engaged in criminal activities. Organized criminal groups opt for the most lucrative trading opportunities (Cook et al., 2002, p. 4). A network of criminal actors might already have established illicit trading avenues and have moved other illegal goods in the past. These actors will then include illicit wildlife contraband as a secondary business if it promises easy profits (Nurse, 2011, p. 41).

Wildlife crime as an extension of other forms of crime has practical enforcement implications. For example, drug traffickers are sknown to review their methods of drug transportation on a regular basis and are prepared to change them if necessary (Kenney, 2007). This means that the criminal organization has already undergone a learning curve before they begin engaging in the illicit wildlife trade. This will enable those criminal groups to engage with a higher degree of sophistication. Their experience in other conventional areas of crime poses a challenge to law enforcement. Furthermore, the investigation of wildlife crimes, especially at the higher end of the trafficking chain, might involve other forms of crime, such as money-laundering or tax and customs fraud. Poaching is often a predicate offence to these crimes (Chin & Murillo Vega, 2020).

3.2.7 The Terror–Poaching Link

There have been claims that wildlife crime proliferates terrorism. Kalron and Crosta (2012) stated that the involvement of al-Shabaab in Kenya's ivory trafficking accounted for up to 40% of the terrorists' operating costs. Since then, the mainstream media and some scientific contributions (such as Sina et al., 2016) have also cited this figure. However, the concept of ivory-funded terrorism often derives from unverified sources and could not be supported by substantiated research.[9]

In Al-Shabaab's territory, there are only a few elephants. The majority of ivory comes from the Tanzania-Mozambique border and from central Tanzania, far removed from Al-Shabaab's area of influence. If at all, al-Shabaab is only involved in elephant poaching in an ad-hoc or opportunistic manner (Maguire & Haenlein, 2015). The most credible connections between the illegal trade of wild flora and fauna come from the illicit charcoal trade in East-Africa, where al-Shabaab presumably makes millions of dollars annually (Rembold et al., 2013).

In order to support the terror-poaching link, Boko Haram is also accused of funding their activities via elephant poaching. Moritz et al. (2017) conclude that the regions in which Boko Haram is operating have such low elephant rates that it would be a faulty business idea to base their organization on ivory sales. Instead, in Cameroon and Nigeria, Boko Haram uses profits from cattle raids (Pennaz et al., 2018).

Bergenas and Knight (2015) also paint a gloomy picture of direct links between wildlife

[9] Nir Kalron is CEO of Maisha Consulting and Andrea Crosta is the co-founder of Elephant Action League. Both organizations offer services to fight wildlife crime and hence are dependent on attracting donor money (Fahlman, 2015, p. 8).

trafficking and terrorism, referring to local rebel groups and warlords, such as the Lord's Resistance Army (LRA) and the Sudanese Janjaweed militias in the DRC and the Central African Republic. While there are credible claims that the LRA has been involved in the illegal killing of elephants, the wider context was ignored, such as an abundant culture of poaching in this region and a broad range of other actors being involved, such as the military (Titeca & Edmond, 2019). Still, from the militia and rebel-groups mentioned, the claims that the Lord's Resistance Army was involved in wildlife crime, probably as an opportunistic side-business, are amongst the most credible when looking at different examples that have been put forward to support the terror-poaching nexus.

In general, there is a risk that if an abundance of high-value animals are in a geographical area that rebel groups have access to, exploitation of wildlife could serve to generate income in order to strengthen the group's operational capacity and combat strength. This would further undermine state order and prolong a state of civil war. This can be detrimental to wildlife, as armed rebel groups often have the capacity to kill animals on a large scale, compared to the rather clandestine incursions of smaller poaching groups. Bouban Djida National Park in Cameroon is one example where heavily armed foreign poachers killed 200–400 elephants in 2012. Furthermore, larger criminal groups pose enhanced risks to enforcement staff, as they are less fearful of bumping into rangers in the field. During a poaching incident in Chad in 2012, an entire anti-poaching-squad was ambushed and killed (Anderson & Jooste, 2014). In April 2020, twelve rangers have been killed in the Democratic Republic of Congo during an ambush inside Virunga NP. The attack was supposedly carried out by a Hutu led rebel group (The Guardian, 2020).

For the situation in Southern Africa, it can be stated that wildlife crime has fueled corruption and reached high-ranking officials and threatens to erode critical state institutions such as the police and the military (Anderson & Jooste, 2014), However, while environmental crime has the potential to have debilitating consequences for state order and a functioning rule of law, the criminal groups involved in Southern Africa rarely seek political objectives. For this region and socio-political context, the allegation of a terror-poaching connection would be misleading.

3.3 Drivers and Enablers of Wildlife Crime

There are a number of independent factors that enable and drive wildlife crime and converge to create the 'perfect storm'. Enabling conditions and drivers can be confused

as they hold the same logical relationship to the effect. Drivers motivate crime directly while enabling conditions develop their effect by making a crime more profitable, less risky, or even possible in the first place. Most of the factors which are introduced in the following chapters are enabling conditions, such as weak law enforcement and corruption. However, the motivation to obtain personal wealth is regarded as a driver for wildlife crime (Harrison et al., 2015). The enablers and drivers are highly context specific. They further depend on the criminogenic environment and the targeted species (Price, 2017). Within the same national borders, the explicit criminogenic environment and their underlying enabling conditions can change significantly.

Actor-specific drivers and enablers should be considered by policies and approaches to combating wildlife crime (Ayling, 2013; Conrad, 2012; Challender et al., 2014). Several conservation approaches seek to influence and ease enabling conditions. Some enablers are easier to influence by policy-measures, while other enablers have proven to be rigid and endemic. The broad variety of enabling conditions demonstrate that effective conservation models need to consider a multitude of intervention areas. It also implies a great deal of uncertainty regarding the outcome of policy-interventions.

3.3.1 Poverty and Wealth

Chronic poverty and livelihood vulnerabilities are key enablers of wildlife crime (Duffy & St John, 2013).[10] Scientific contributions that support the poverty-poaching link overwhelmingly refer to subsistence poaching. Loibooki (2002) demonstrated that involvement in illegal bushmeat hunting in Tanzania decreased when personal wealth increased. Poachers considered bushmeat to be an additional source of protein or cash income. When villagers had alternative opportunities to generate income, wildlife crime reduced. Uganda serves as another case example, with subsistence poachers primarily deriving from economically impoverished social backgrounds (Twinamatsiko et al., 2014).

In deprived rural villages adjacent to protected areas with little potential for alternative livelihood, illegal exploitation of wildlife can even form a major pillar of local economic

[10] One weakness of studies that examine the link between poverty and wildlife crimes is that often a narrow version of poverty – e.g. income deprivation – is applied. These studies should take dimensions such as absence of basic needs, education or health services, or social inequality as well as spatial dimensions of poverty into account. Some studies already follow a more refined concept of poverty by considering inequality. Nevertheless, they fall short if they conceptualize income inequality only by using the Gini-coefficient (Roe, 2010; Duffy et al., 2016).

development (Rademeyer, 2016b). Other studies suggest that wildlife crime hinders national development in the long run, as resources are being depleted unsustainably. Furthermore, high levels of violence and wildlife crime might reduce investment into local economies (UNODC, 2017, p. 5). The COVID-19 pandemic is leading to economic loss and livelihood deprivation and is thereby aggravating the enabling factor of poverty (see Chapter 3.3.12). From a human-centered perspective, the illicit wildlife trade is as much a development issue as it is an environmental concern (IUCN et al., 2015).[11]

Table 2: Socio-economic Indicators in Rhino Range States[12]

Country	Ranking Gini Index (1-150)	% Below the poverty line	Youth-Unemployment (15-24)	Literacy-rate[13]
South Africa	**2 (62.5)**	**16.6%**	**53.4%**	**94.4%**
Botswana	5 (60.5)	30.3%	36%	88.5%
Namibia	**6 (59.7)**	**28.7%**	**44.9%**	**81.9%**
Zambia	7 (57.5)	60.5%	24.0%	63.4%
Eswatini	16 (50.4)	63%	47.1%	87.5%
Kenya	23 (48.5)	43.4%	11%	78.0%
Malawi	33 (46.1)	50.7%	8.5%	62.1%
Mozambique	**39 (45.6)**	**46.1%**	**39.3%**	**58.8%**
Zimbabwe	48 (43.2)	72.3%	16.5%	86.5%
Uganda	71 (39.5)	19.7%	2.6%	78.4%
Tanzania	82 (37.6)	22.8%	9.4%	77.9%
India	96 (35.2)	21.9%	10.1%	71.2%
Nepal	**115 (32.8)**	**25.2%**	**11.4%**[14]	**63.9%**

Source: compiled from CIA, 2019

Table 2 demonstrates that South Africa and Namibia are amongst the most unequal societies in the world with high youth unemployment of around 50%. However, they have fairly good literacy rates compared to Mozambique and Nepal.

While subsistence poaching is often driven by poverty, targeting high-value species is ultimately driven by wealth (Duffy & St John, 2013). In the case of rhino crime, the primary motivation is not to alleviate poverty by obtaining protein, but to substantially improve financial well-being in a short period of time. Massé (2017) refers to the 'get-rich-quick mindset' of wildlife offenders. However, when looking at the composition of

[11] This perspective is supported by the 'Strategic Agenda for the Convention for Biological Diversity 2011–2020' (CBD) which underlines the concept of Integrated Conservation and Development (ICD), stating that conservation should contribute towards poverty alleviation (CBD, 2010).

[12] Numbers from 2009 to 2016.

[13] Age 15 and over can read and write.

[14] Khanal, 2019.

rhino poaching networks, impoverished local villagers often work as ground-level poachers and are seldom higher up on the illegal value chain. They tend not to be the driving force behind criminal poaching networks (Harrison et al., 2015; compare Chapter 4.1).

3.3.2 Historical Legacy of Colonialism

Some scholars regard wildlife crime in connection with the legacy of colonialism and claim that Africans have long been deprived of hunting rights by European colonialists (Duffy & St John, 2013). Wildlife crime can be motivated by local offenders who seek identity, status, lifestyle improvements and local prestige (Duffy et al., 2016). Perceived inequality and unequal sharing of benefits can contribute to a disregard of conservation rules within protected areas. The aspiration for political autonomy can influence a poacher's mindset of working against the elite (Roe, 2010).[15]

South Africa, in particular, was shaped by its history of colonialism and apartheid. Conservation was long perceived by some to be an elite white business. However, political realities have changed with democratic elections in Namibia (1989) and South Africa (1994). Still, deep-rooted economic structures and disparities maintain. While a new black political and business elite has risen in South Africa and Namibia, these countries are still socially and economically divided. The rift runs between a new elite of black and white citizens and disadvantaged, primarily black citizens with little prospect of economic participation (Draper et al., 2004). Today's socio-economic disparities and the degree of disenfranchisement in park-people relationships will also form an important aspect of this research.

3.3.3 Population Growth

Alongside wildlife crime, range loss will be the predominant challenge to sustaining wildlife in the future. The population in Sub-Saharan Africa will quadruple by the end of the century from nearly 1 billion to 3.9 billion people (Bongaarts, 2016). Much of the population growth will be in urban areas (Cobbinah et al., 2015). Governments across

[15] This corresponds to the image of poachers in Western Europe in the nineteenth century which had a touch of transfigured romance in the public perception. Poachers often rebelled against large landowners and the established class, which had exclusive hunting rights. A well-known German poacher was Georg Jennerwein (1884–1877), who was killed under mysterious circumstances in the Bavarian Alps. After his death Jennerwein became a symbol of rebellion against the authorities. A folk song was devoted to him and several local rifle associations were named after him (Stöger-Ostin, 1929).

Africa will be under pressure to provide income opportunities and will make every effort to achieve food security. Land for agriculture will probably be expanded and bushmeat markets will thrive (Vandome & Vines, 2018, p. 3). The pressure on wild flora and fauna will increase drastically and human settlements will reach deep into wildlife habitats. Moreover, infrastructure projects in rural areas, such as building roads for logging, contribute to a rise in poaching pressure as they increase access to wildlife habitats (Gichohi & Wasige, 2016).

3.3.4 Human-Wildlife Conflicts

Human-Wildlife Conflicts (HWC) are conflicts between humans and wild animals with a negative result on people and their resources. HWCs can take the form of livestock depredation, property damage, injuries or loss of human life (Hudu et al., 2017; Elliot et al., 2008). The potential for HWCs increases with the proximity of local people to wildlife. Often, rural settlements are fragmented and can stretch into parks and protected areas. Rapid population growth will accelerate the loss of wild habitats as land is converted for agricultural use (Dublin & Hoare, 2004; Distefano, 2005, p. 8; Sapkota et al., 2014). Moreover, successful conservation in the form of recovering wildlife populations can increase the potential for HWC.

HWCs have a political dimension. Some scholars refer to them as to the biggest and most widespread challenge for conservation goals (Shrestha, 2007, p. 8; Sapkota et al., 2014). Frequently, rural villages that are in economically dire straits and with limited livelihood options are hit hardest by HWC (Distefano, 2005, p. 8). While local communities are often not given an active role in managing wildlife, nor receiving the benefits from it, they have to bear the costs of living close to wildlife (Sibanda & Omwega, 1996; O'Connell-Rodwell et al., 2000; Distefano, 2005, p. 8). Strained relationships between local people and wildlife can also lead to (illegal) retaliatory killings.

Considering megaherbivores, most of the human-wildlife conflicts are between humans and elephants. Elephants can walk long distances and have a large appetite. They have the propensity as well as the ability to destroy property (Shrestha, 2007, p. 9).[16] Furthermore, elephants can be extremely dangerous and have frequently caused the death of local villagers (Dublin & Hoare, 2004).

[16] A single African elephant eats between 160 and 240 kg of plant material a day and can destroy one hectare of crops in one night (Sukumar, 2003, p. 196).

The potential for HWC depends on the specific distribution and the interface between humans and wildlife. In Namibia's Caprivi Region in the North-East, the potential for HEC results from approximately 5,000 free-roaming elephants.[17] These animals move between two National Parks and cross over national borders. Villages adjacent to these parks report a high number of HWCs (O'Connell-Rodwell et al., 2000). In South Africa, most of the parks and protected areas are fenced, resulting in a lower potential for HWCs. In general, there are fewer conflicts between humans and rhinos. Nepal is an exception, with human rhino conflicts close to Nepal's Chitwan NP occurring on a regular basis (Sedhain & Adhikary, 2016).

There are different ways to mitigate HWC. Direct measures include fencing, guarding or removing wildlife. Indirect measures include systems of returning benefits from wildlife to communities (O'Connell-Rodwell et al., 2000), individual compensation schemes and educational awareness campaigns (Treves, 2007; Hudu et al., 2017).

High levels of rural poverty contribute indirectly to HWC because farmers might not have the means to invest in proper fencing and HWC mitigation measures (Dublin & Hoare, 2004). As a result, local NGOs, often seek to support subsistence farmers with low-tech solutions, such as simple fencing, in order to reduce the risks of HWC. Innovative solutions include bee farming or chili fencing.

3.3.5 Weak Governance and Corruption

From a macro-level perspective, corruption and weak governance are negatively correlated with a country's environmental performance. There is sufficient evidence that poor governance and corruption at various levels such as the military, police, wildlife authorities and customs are amongst the core enablers of wildlife crimes (Nellemann, 2013; Couto, 2014; Burns et al., 2011; Biegus & Bueger, 2017; UNODC, 2017). For example, elevated corruption rates correlate with African countries that experience high levels of elephant poaching (Brennan & Kalsi, 2015; Wyatt & Cao, 2015). Moreover, the international community recognizes corruption as a central enabler of wildlife crime (Williams et al., 2016).[18]

Corruption can be especially detrimental towards conservation goals when corruption

[17] Other sources estimate 9,100 residential and 30,000 migrating elephants (RoN, 2017, p. 18).

[18] Many international agreements have linked corruption and wildlife crime, such as the London Declaration on the Illegal Wildlife Trade (2014 and 2018); the Kasane Statement (2015) and the 17th meeting of the Conference of the Parties to CITES(CoP) (Williams et al., 2016) as well as the 18th CITES CoP meeting in 2019.

involves key law enforcement officials who are tasked with overseeing wildlife crime (Peh & Drori; 2010; Bennett, 2015b). Mozambique is often referred to as an example of a country where complicity goes deep into security and law enforcement circles. Border guards and the Mozambican Republic Police have frequently been connected to cases of corruption. Several poaching rifles have been seized in Limpopo National Park which could be traced back to police officers in Mozambique. One rifle from a police station in the Massingir district was seized several times. Because of persistent involvement in wildlife crimes the whole Massingir police department was restructured in 2014 (Couto, 2014).[19]

In addition to enabling wildlife crime in the first place, corruption within the judicial sphere is especially problematic as it leads to enforcement gaps in criminal prosecution and often prevents the prosecution of members of criminal syndicates once they are apprehended (Jayanathan, 2016, p. 10; Anderson & Jooste, 2014).

The cross-sectional nature of corruption poses a challenge, as it infiltrates several steps of the enforcement chain from petty corruption, such as the local guard who takes bribes up to grand corruption, such as higher ranking government officials who are complicit and turn a blind eye to organized crime (David et al., 2016, p. 5; Williams et al., 2016, p. 7). The countries for the empirical case study rank differently in the 2018 Corruption Perception Index (CPI) from Transparency International, which captures perceived levels of public sector corruption. The CPI covers 180 countries. Namibia (52) ranks lowest, South Africa (73) in the middle, while Nepal (124) and Mozambique (158) display high corruption rates (Transparency International, 2019).

3.3.6 Failed States and Armed Conflict

While poaching is enabled via weak state institutions, the absence of state order leaves wildlife crime unhampered (Duffy & St John, 2013). High levels of violence coupled with the proliferation of weapons increase the opportunities for wildlife crimes to occur (Bouché et al., 2012). This applies to many failed states on the African continent that have decimated their wildlife. In a state of civil war, rebels often use protected areas as places of retreat. They seek to take control of resources that generate revenues. This can be illegal logging and killing wildlife, however, often not as their central 'business activity'

[19] Massingir is a small village located in Mozambique east of the South African boarder in proximity to Kruger National Park and Limpopo National Park.

(see Chapter 3.2.7). During civil war, it is not only the armed rangers, as direct representatives of the government who are threatened, but also the unarmed staff of conservation agencies and NGOs (Baral & Heinen, 2005). While there are credible claims that rebel groups, such as the LRA have been involved in wildlife crime, the terror-poaching nexus should not be overstated (see Chapter 3.2.7).

Besides the devastating short-term effects that result from civil war, there are considerable long-term consequences that this research will illustrate. Civil war serves as a training ground for future poachers. The example of South Africa will illustrate that many of the 'shooters' in a poaching group come from Mozambique and have acquired their skills during the civil war. Furthermore, long-term effects in terms of deprivation, economic impoverishment and a traumatized youth contribute to the pool of would-be poachers of tomorrow.

3.3.7 Regulatory and Enforcement Failure

Several Sub-Saharan African countries are not currently attaching priority to environmental crimes. Legislation on wildlife crime and frameworks for biodiversity protection are often unclear and lack popular support (OECD, 2012). In Mozambique, commitment at the political level to criminalizing high-level poaching was long absent (Knight, 2013). The country has only recently increased the severity of penalties (Reuters & Vice News, 2015). Challenges also derive from structural and capacity-related shortages within judicial systems. A review in Kenya investigated 743 wildlife crime related cases (from 2008 to 2013). Overall poor case management and corruption prevented a stringent rule of law and offenders were given lenient sentences during the study period. In 70% of the cases, files had been misplaced in courts or simply went missing. Out of 224 cases with enough material for convictions only eight individuals went to jail. Within the cases of rhino and elephant poaching – which attracts a potential sentence of up to 10 years imprisonment – only 7% of defendants received a prison sentence (Kahumbu et al., 2014). In order to deter poachers effectively, law enforcement needs strong statutory punishment but also a systematic application of the law (Anderson & Jooste, 2014).

3.3.8 Porous International Borders

Many of the world's biodiversity hot spots and nature reserves are positioned close to national borders. This is not coincidental, as urban-industrial zones are more often located centrally, leaving space for large-scale conservation in peripheral locations (Cochrane, 2020). South Africa's Kruger National Park is one such example. The park is situated in the northeastern part of the country and shares an extensive open border of 180 km with Mozambique (Eloff & Lemieux, 2014, p. 36; Lunstrum, 2014).[20] Porous international borders serve as an enabling factor for wildlife crime for two reasons. First, wildlife offenders take advantage of them to cross the border. As the research will demonstrate, poachers in Kruger National Park frequently trespass from Mozambique (Rademeyer, 2016a). Second, weapons can be traded through leaky borders. The porous Kenya–Somalia border provided an opportunity to smuggle light weapons from Somalia into Kenya which have been used to conduct poaching operations (Karanja, 2012). Furthermore, wildlife contraband can leave the country through leaky borders. In cross-border regions, it is common to trade goods for daily use, such as petrol or charcoal. For local people moving illicit wildlife products is 'just another commodity' (Cochrane, 2020). In Asia too, rhino horn is moved across borders. Horn that is bagged in India is believed to be smuggled through Nepal into China (Milliken et al., 2009, p. 15).

The travel restrictions and border closers due to the COVID-19 pandemic have hampered the movement of criminal syndicates. However, this effect will probably be only temporary and criminal activity is likely to resume (see Chapter 3.3.12).

Within national borders, this research will also look at other spatial factors that influence the criminogenic environment. One example is the proximity of urban centres to wildlife habitats, which results in a rise of bush-meat poaching (Gichohi & Wasige, 2016, p.7).

3.3.9 Technology

Wildlife offenders make use of the enhanced communication and transportation possibilities of today's globalized world (SAWEN, 2015, p. 3). While specific high-end technology has become more accessible, such as night vision, poachers tend to make use of simple technologies, such as mobile phones, to arrange a pick-up after a poaching trip

[20] The border with Mozambique was fenced in the past. With the establishment of the Transfrontier Conservation Area, the fence towards the less protected Limpopo National Park in Mozambique was removed in an attempt to create a huge contiguous territory for transboundary environmental management that allowed animals to roam around freely (Milliken & Shaw, 2012).

or connect to buyers. Technology is also changing the *modus operandi* of traders in consumer countries of wildlife contraband. The internet has helped to create a vibrant marketplace in order to connect buyers with sellers (Kretser et al., 2017, p. 158).

Online markets can range from e-commerce platforms to specialized groups in social networks. However, trade can also take place in hidden platforms, such as the dark web (Chin & Murillo Vega, 2020).

3.3.10 Availability of Skilled Poachers

An enabling factor is that many of the skills needed for successful poaching operations are commonly available. Villagers near protected areas frequently possess the appropriate skills required to hunt in the vast bushveld terrain. The relevance of this will be shown in Chapter 4.2 when explaining how the abundance of skilled would-be offenders contributes to the unbroken resilience of criminal rhino poaching syndicates. In South Africa's greater Kruger area, there are about 1,000 skilled and enabled poachers (Hübschle & Shearing, 2018, p.4).

3.3.11 East Asian Demand

The trade in environmentally sensitive goods is ultimately driven by demand. The predominant factor for sparking the 'perfect storm' is the demand from East Asia for rhino horn. (Conrad, 2012; OECD, 2012; Milliken & Shaw, 2012; Schneider, 2008, p. 275).

Rhino horn is used for a variety of ailments in Traditional Chinese Medicine (TCM). In Vietnam, rhino horn is used as a gift in business circles (Biggs et al., 2013; Hanley et al., 2018). Rhino horn is not among the substances to which traditional African societies and tribes attach ceremonial or recreational value, such as, for example, vultures, which are targeted by poachers in several African countries. These animals have tremendous eyesight and traditional healers (Sangomas) believe that by consuming specific body parts, they will be able to see into the future (McCall, 2015).

It is assumed that Asian-led infrastructure projects and resource extraction operations in Sub-Saharan Africa set the foundations for creating networks between consumers and suppliers of rhino horn. With a potentially large number of Asian buyers living on the continent, it was easier to form networks for illicit trade operations (Nellemann, 2013; Bennett, 2015a; Milledge, 2007; Eloff & Lemieux, 2014, p. 36). Asia has substantially

scaled up its investments in Africa. In 2011, when the poaching crisis started to pick up pace, China invested US$160 billion in the continent (MET, 2014, p. 11). When Chinese companies conduct infrastructure projects, they usually bring many Chinese nationals to be employed at the projects and construction sites. Chinese officials estimated that there were around 259,000 workers in Africa in 2014, while other estimations go up to one million (Dollar, 2016, p. 72). There was a similar development in Central Africa, where the increasing engagement of East Asian businessmen, construction workers and diplomats led to a change in local ivory demand. Larger elephant tusks were sold to Asian middlemen residing in Africa and shipped to the Asian market while smaller tusks would be crafted for local or nearby markets (Stiles, 2011).

Estimations of black-market prices for rhino horn are subject to a great deal of uncertainty. Anderson and Jooste state that demand and prices have increased through the proliferation of upper-class consumers in Asia (2014), while Knight claims that prices have dropped significantly (2016). However, researchers agree that the black-market prices for rhino horn are amongst the highest for wildlife products. The average weight is 5.88 kg per set of white rhino horns (Pienaar et al., 1991). Knight claims a price of US$31,000 per kilogram (2016) while others estimate up to US$100,000 per kilogram (Poaching Facts, 2017). The mark-up between poachers and consumers is significant. It is estimated that a shooter – whose skills are specialized – earns around US$9,000 and a porter – with a lower skillset – will receive US$4,000 for a successful hunt (Serino, 2015). Knight (2016) estimates a mark-up of around 16:1.

3.3.12 The COVID-19 Pandemic

This chapter will evaluate the effects of the COVID-19 pandemic on wildlife crime. First detected in December 2019 in Wuhan, China, the novel coronavirus spread around the world. On 11 March 2020, the World Health Organization (WHO) announced COVID-19 to be a pandemic (WHO, 2020). Many countries closed their borders, among them, South Africa, Namibia and Nepal, and initiated partial or complete lockdowns.

Some sources are stressing the human dimension of wildlife crime when referring to the link between the global COVID-19 pandemic and the illegal wildlife trade. There are speculations that the zoonic virus SARS-CoV-2 resulted from the consumption of pangolins, transmitted from horseshoe bats, e.g. at local markets in Wuhan (Chin & Murillo Vega, 2020; UNODC, 2020). Some media sources and environmental NGOs are stressing

that the illegal wildlife trade is becoming a concern to human safety due to the risk of zoonotic diseases (Chin & Murillo Vega, 2020; Cochrane, 2020). As a consequence of recent developments, China has proposed a ban on their local wildlife markets (Awale, 2020). However, the ban currently does not include species for traditional Chinese medicine (TCM) (Chin & Murillo Vega, 2020).

At present, there is only limited knowledge about the effects of the COVID-19 pandemic on wildlife crime. Moreover, this impact will be context-specific (Cochrane, 2020). In the short term, poaching of high-value species for East Asian markets is falling in most range states. However, the pandemic is increasing food insecurity in rural and urban areas which tends to lead to an increase in low-level bushmeat poaching across Southern Africa (Cochrane, 2020; Tagziria, 2020).

There will be short-term and long-term influences on the criminogenic environment as a result of the pandemic. Wildlife economies which suffer a loss of income due to the crisis will have fewer resources for conservation and wildlife crime enforcement. This poses a further burden on already strained budgets for conservation. A lull in income can be detrimental to community-based programmes, especially when they are financed by income from tourist activities (Cochrane, 2020; Neupane, 2020).

The global measures that have been taken against the coronavirus outbreak, such as border restrictions and national lockdowns, strongly influence the criminogenic environment. Several reports state that the illegal trade in wild animals for markets in East Asia has gone down as traffickers face challenges in moving illicit wildlife contraband across borders (WJC, 2020). The response to the pandemic caused disruption in various parts of the supply chain. In the early stages, ground-level poachers might have taken advantage of loopholes in the security architecture, due to park closures and reduced conservation enforcement (WJC, 2020, p. 6) as the authorities were preoccupied with enforcing lockdown-measures (Saeed et al., 2020). However, the lockdown measures also made unobserved movement more difficult, meaning that the middlemen who orchestrate the killing could not move about as freely as they usually do.

There is also disruption at the latter stages of the supply chain. Demand in China has gone down significantly (Tagziria, 2020). Traders have faced challenges in moving wildlife contraband and reaching rhino horn consumers. This has resulted in some stockpiling of wildlife products (WJC, 2020, p.6). These obstacles have partly been compensated for by changing distribution methods. One example is the increased use of online markets for illegal wildlife products (Chin & Murillo Vega, 2020). In May 2020, Facebook and

Google, along with other tech-companies, took down millions of online-ads related to the illegal wildlife trade that had been posted on their platforms (Hoare, 2020).

COVID-19 has also impacted on the work of the international donor community. Many training sessions, international meetings and conferences to coordinate capacity-building for cross-border law enforcement were cancelled due to the pandemic (Neupane, 2020).

While the pandemic may lead to a short-term reduction in high-value wildlife crime, criminal activity can easily resume, especially when solid networks are in place where actors have established a high level of trust (Tagziria, 2020, WJC, 2020).

4 Criminal Rhino Poaching Syndicates

Policy makers and criminal-justice actors frequently link rhino and elephant poaching to organized crime (Nurse, 2011; Cook, Roberts & Lowther, 2002; Schneider, 2008, 2012; Bennett, 2015a; Sina et al., 2016 p. 33). The United Nations Convention against Transnational Organized Crime regards wildlife trafficking as a 'serious organized crime' (EC, 2014) and uses the following criteria to define an 'organized criminal group' (UNODC, 2004; Article 2a):

- a structured group of three or more persons;[21]
- existing for a period of time;
- acting in concert with the aim of committing one or more serious crimes;
- motivated by financial or other material benefits.

Many groups consist of three or more persons and have some degree of organization with transnational ties. Defining characteristics are a 'profit-driven nature' and a 'seriousness of offences' (UNODC, 2004; Uno, 2010, p. 25). Wyatt (2013, p. 90), considers organized crime to be 'violent, long-lasting, structured, rational and adaptive.' The UN definition also includes those criminal acts that attract prison sentences of more than four years (Goyes et al., 2017, p. 232).

This definition implies that organized criminal groups need to have a degree of permanence. They do not necessarily need a defined structure or role allocation. Some poaching groups might evolve spontaneously for the sole purpose of committing a criminal act and thereafter disperse while others have a more permanent character. This means that some criminal groups won't classify as 'organized criminal groups' while others fall into this category (Ayling, 2013). Some crimes that are carried out in a sophisticated and well-organized manner, will not fall under the category of organized crime (Goyes et al., 2017, p. 231). For the poaching of megaherbivores in Southern Africa, the question remains as to what crime can be categorized as 'organized crime' or 'crime that is organized' (Ayling, 2013).

There are many indications that the illegal killing of high-profile species has moved towards organized crime. In the wake of the conservation crisis, individuals and informal groups that were engaged in wildlife crime had no distinct structure and their level of organization was poor. Few unsophisticated poachers managed to find buyers for their

[21] Other definitions of organized crime refer to the involvement of more than two people, as well as a capacity to operate across national borders (Schneider, 2012, p. 52).

horn. Because they lacked a permanent structure at that time, they did not classify as an organized crime group (Warchol, 2004). When poaching rates started to accelerate, the composition and *modus operandi* of involved actors and networks developed towards a more permanent structure (Ayling, 2013; Milliken & Shaw, 2012; Rademeyer, 2016a & 2016b).

4.1 The Five Layer Model

This chapter introduces the five-layer model (also referred to as different tiers), which is used to describe the composition of criminal syndicates and the different levels of organized crime (Milliken & Shaw, 2012; Haas & Ferreira, 2016). The layer structure shown below is not a fixed concept and can take different forms. In some cases levels overlap and in other cases a criminal network consists of fewer than five layers. However, the following illustration is useful in describing common patterns and the distribution of labour along the illicit wildlife trade chain.

Figure 1: Layers of Conservation Crime

Source: Milliken & Shaw, 2012, p. 78; see also Naro et al., 2020, p. 4

The basis of the wildlife-crime pyramid is made up of 'Tier 1 poachers', individuals or groups that trespass into protected areas to kill rhinos and cut off their horn. Methods of

sourcing illegal horn also include pseudo-hunting or the infiltration of wildlife officials, e.g. by using horn from regular and certified dehorning for illegal trade. Tier 2 participants include recruiters, local couriers and buyers. They are also referred to as 'middlemen' who provide a link between their lower-tier counterparts ('the ground-level poacher') who initially sources horn for Tier 3 and 4 traders (Laws, 2017). The role of middlemen along the illicit wildlife value chain is assessed differently within the scholarly literature. Haas & Ferreira (2016) claim that middlemen don't add much value because they only connect suppliers to retailers. Based on their observations from legal markets, Haas and Ferreira make the claim that in time the middle layer will be outcompeted. According to the author's experience and much of the literature on conservation crime (Milliken & Shaw, 2012; Naro et al., 2020), middlemen actually have a key role in the illicit wildlife trade chain.

Level 5 refers to international buyers and consumers of the rhino horn destined for East Asian markets.

The network ties between different levels and especially those that reach across national borders can be loose. The value of the illicit wildlife contraband increases exponentially with every step in the value chain. Especially for those engaged high up in the illicit market, profits are greater in absolute terms (OECD, 2012). However, in relative terms, profits are also huge at the bottom of the pyramid for Tier 1 participants from impoverished backgrounds.

The three- to five-tier model is helpful for analysing criminal rhino and elephant poaching syndicates. Scholars and wildlife crime experts voice consensus about the existence of different levels along the illicit wildlife crime value chain (for example: Naro, 2020; Hübschle, 2016; Milliken & Shaw, 2012). However, it is unclear how actors cooperate across different levels. A reason for limitations in the empirical database is that criminal syndicates operate in secrecy and do not display their business practices (Laws, 2017, p. 5). There are different scholarly perspectives as to what degree supply-side actors find buyers of horn or vice versa (Hübschle, 2016, p. 29). The features and *modus operandi* of a poaching cell might change over time. In the beginning, it could have been mainly demand-driven, and then after time with improved experience and local capacity of Tier 1 individuals, they could turn into supply-side actors. Another aspect of differentiation relates to how broadly each level is defined. Fenio (2014) includes a sub-category to level 1, which are those people who do not poach, but give aiding support (Fenio, 2014; Naro et al., 2020). This thesis will apply the three- to five-tier perspective as a flexible concept

and will adapt it to each case example.

4.2 Criminal Networks and Resilience

Mapping out the structure and composition of criminal networks is a continuous undertaking for enforcement actors. Criminal networks are challenged by law enforcement and need to adapt their efforts to disrupt them. Furthermore, the acquisition of new business opportunities, competition against other illicit actors, or internal power-struggles create the need for criminal entities to regularly change their *modus operandi* (Catanese, Meo & Fiumara, 2016; Duijn et al., 2014, p. 2). Special attention is given to those factors that increase the resilience of organized criminal groups and their underlying network structures. Identifying the reasons for the longevity of criminal syndicates also highlights possible areas of intervention for enforcement strategies (Ayling, 2013; Xu & Chen, 2005).

The resilience of a criminal enterprise consists of two aspects. First, the ability to withstand disruptions and second, the capacity to adapt to a changing environment. This can range from minor adjustments to a robust transformation of the network structure and its *modus operandi* (Ayling, 2009 & 2013; Bouchard, 2007). The degree of resilience of a criminal network reflects the amount of disruption and external pressure that a system is able to absorb before it disintegrates (Ayling, 2009, p. 184). In essence, a resilient criminal network has the ability to deflect interventions from law enforcement authorities. When port authorities introduce sniffer dogs, the criminal entity changes its *modus operandi* by either applying additional concealment as a minor adaption or taking alternative smuggling routes as a major adaption (Ayling, 2013). Criminal actors find themselves in a process of competitive adoption with law enforcement agencies. Both parties are constantly dealing with the changes and improvements of the other side (Kenney, 2007).

4.2.1 Enabling Factors of Resilience

The longevity of organized crime and poaching syndicates shifts the focus of criminologists to those factors and circumstances that contribute to the resilience of criminal entities. Organized crime does not appear in a social vacuum. Social ties and relationships form a crucial part of understanding organized crime. The social network analysis serves as a helpful tool by putting the focus on social interactions within a criminal entity rather than regarding it as a fixed organization with unique features (Duijn

et al., 2014; Sparrow, 1991; Kleemans & Van de Bunt, 1999). Ayling (2009; 2013) analyses facilitating factors that strengthen organizations to enable them to withstand disruptions.

4.2.1.1 Human Resources, Learning and Innovation

A typical example of external disruption of a criminal network is the arrest of one of its members. This could challenge the very existence of a criminal enterprise (Ayling, 2013). Criminal entities are eager to attract suitable candidates who have the skills to conduct specific operations. This aspect goes along with other factors, such as having a favourable environment. In the case of rhino and elephant poaching, an illicit market that is highly rewarding and has low barriers of entry will make it easy to recruit new participants e.g. new ground-level poachers (Bouchard, 2007; Ayling, 2013). The empirical section will demonstrate several factors that determine resilience. Besides the high market value for rhino horn, an abundance of poaching skills amongst the rural poor makes it easy for syndicates to attract potential new recruits (Milliken & Shaw, 2012).

Similarly to formal businesses, the ability to learn is of fundamental importance. Criminal organizations innovate by overcoming challenges and by experiencing 'what works and what not' (Ayling, 2009, p. 192). Duijn et al. (2014) regard capacity building effects that derive from learning, including as a result of 'trial and error', as significant. In their line of research, criminal networks gained additional strength after being disrupted by law enforcement. The authors conclude that it is important to dismantle criminal networks at an early stage. This research will demonstrate that it is more difficult to crack down on rhino poaching groups once they became fully operational and have accumulated experience.

4.2.1.2 Links to the Licit World and Community Support

The degree of interpenetration, described as the 'relationship with the licit world' (Ayling, 2009, p. 188) forms a favourable environment for criminal enterprises. Wildlife officials and veterinarians who use their insider position to engage in rhino poaching serve as an example. Complicity can reach up to the highest levels of the state. The end-user market also provides interfaces where legal and illegal activities blur. Opponents of a controlled legalized horn economy point out that illegal wildlife contraband can easily be mixed with and labelled as legal horn. The resilience that criminal entities gain through linkages with the licit world can certainly pose a challenge to law enforcement.

Rural communities often provide aiding support to offenders who live amongst them. This happens on the basis of community traditions but also because poachers from villages tend to give the benefits of their illicit undertakings back to their communities (Ayling, 2009, p. 188). Especially in the African context, it is customary to share with the family, extended family and friends, and to some degree with the wider community. This concept also finds its expression in the Zulu term *Ubuntu* (Nussbaum, 2003).[22] Intimidation towards community members, coupled with the insufficient presence of rule of law, plays a role. A threat does not need to be formulated directly. Within the close ties of community members, villagers would automatically be cautious about reporting illicit activities to enforcement authorities. Here, the relationship between people and parks plays an important role. Where there is anger and frustration towards park authorities, it is more difficult for enforcement officials to operate.

4.2.1.3 The Structure and Composition of the Network

Structural factors, such as the size of a poaching cell, influence the degree of resilience. Generally, small networks have a low probability of detection because fewer intra-network transactions are necessary to maintain operations. A small network has a high degree of flexibility and often little redundancy, which makes it easier to change the *modus operandi*. However, if one member of a small network is taken out by law enforcement and no immediate substitute person is available, the very existence of the criminal undertaking could be challenged (Ayling, 2013). Levi and Maguire (2004, p. 398) argue from an organizational perspective and attribute a greater resilience to large organized crime groups due to economies of scale. Additionally, outsourcing key criminal activities to peripheral actors can increase the resilience of a network. Baker and Faulkner (1993, p. 856) identify the tendency to decentralize risky activities in covert networks. When villagers from impoverished backgrounds, who are peripheral to the criminal network, conduct the actual killing, it serves to diffuse risk and protect key network members from legal vulnerability.

[22] *Ubuntu* can be translated as 'humanity towards others', expressing the commitment to sharing and helping each other out, especially in deprived settings such as rural communities.

4.2.2 Targeting the Resilience of Criminal Networks

The appropriate enforcement response depends on the specific business model of the criminal enterprise and its operating environment. This chapter will introduce several general criteria for network disruption.

Borgatti (2003) attaches importance to targeting criminal actors according to their centrality and refers to 'key players'. This perspective is particularly useful when disrupting terrorist networks with prominent leaders who motivate and orchestrate their groups (Catanese, Meo & Fiumara, 2016, p. 4). Setting priorities also corresponds to the limited resources and strained budgets of law enforcement agencies in the Global South. However, other scholars such as Duijn et al. (2014) suggest that taking out the kingpin does not guarantee significant disruption or the destruction of a criminal network.

Sparrow (1991, p. 269) suggests decisively damaging criminal networks by incapacitating those who conduct specialized operations and are difficult to replace. Sparrow proposes targeting members of criminal organizations according to the criteria of 'substitutability'. Law enforcement should focus on those individuals that carry out tasks requiring specialized knowledge. Ideally, not many candidates should be available with that specific skill set, making replacement difficult. This could, for example, include experienced traffickers (Tier 3), who possess expertise in outsmarting customs officials and border guards.

Morselli & Roy (2008, p. 72) stress the importance of value chain brokers within criminal networks. They help to facilitate the process of crime commission. The broker's position is predominant because actors on both sides of the brokerage rely on this person for the conduct of an illicit transaction. Due to their valuable contacts or access to resources, brokers increase social and human capital. (Duijn et al., 2014, p. 3). Within the framework of the wildlife crime pyramid, we can see that international traders (Tier 3 and 4) perform an important networking function by connecting the Asian consumer side (Tier 5) to African source countries (Tier 2 and 1).

Trust plays an important role in forming networks. Kleemans and Van de Bunt (1999) stress the importance of social connections in organized crime with the 'hostile environment' that offenders have to work under. While the licit world has many institutions that cater for trust between businesses partners, these mechanisms are largely absent for criminals, so they need to find other ways to build trust. Ayling (2013) attaches importance in mapping out how and where criminal actors locate each other and build trustful relationships. This could also form entry-points e.g. for informants to infiltrate

criminal organizations.

Other scholars state that only arresting members of a criminal organization is not sufficient, because the network will simply reorganize itself and fill open positions (Catanese, Meo & Fiumara, 2016). These scholars suggest that targeting the profits is a viable strategy of breaking resilience. Seizing illegal wildlife contraband and fining traders can be more effective than targeting poachers at the lowest tier (Keane et al., 2008, p. 77). Targeting bushmeat sales at local markets is sometimes more effective than trying to arrest poachers (Damania et al., 2005). In this regard, law enforcement can make criminal activities less profitable by seizing illicit wildlife contraband or profits, but also by making criminal operations more expensive as criminal actors have to spend time and resources evading enforcement authorities (Broussard, 2017, p. 119).

5 Traditional Theories to Explain Wildlife Crime

There are several criminological theories that seek to explain wildlife crime. Much attention has been given to the exploration of the social background and other early influences that shape an offender's mind-set (Clarke, 1997). According to Clarke (1997), wildlife crime cannot be only explained by investigating the dispositions of wildlife offenders. A motivated offender needs to come across an environment that offers a suitable target with the absence of a guardian (Cohen & Felson, 1979). The following chapters introduce several theories that focus on the situational place-based context in which crime arises. In particular, the logic of situational crime prevention approaches (SCP) can frequently be found in law enforcement responses to policing wildlife crime. Situational crime prevention is based on several perspectives, such as the routine activity theory and the crime pattern theory.

5.1.1 The Routine Activity Theory

The routine activity theory is controversial among those who believe in social causes of crime. It was expressed by Cohen and Felson (1979) who regard deviant behaviour first and foremost as a function of attractive opportunities. This perspective understates the importance of socio-economic stressors that lead individuals to become involved with the commercial poaching trade, such as poverty, inequality or unemployment. It postulates the assumption that crime events not only result from criminogenic individuals but as a result of the criminogenic elements of the crime scene (Wortley & Mazerolle, 2008). The routine activity theory implies that if either the target or the aggressor is absent or if a suitable deterrent is present, crime can be prevented (Miró, 2014). Besides identifying offender profiles, the opportunities and situational context, such as the park environment in which animals are being targeted, become relevant. Underlying this argument is the assumption of 'rational choice'.

5.1.2 The Crime Pattern Theory

Deviance does not occur randomly in time or space but in certain spaces and specific times. The decision to target a high-value species and the process of criminal execution is often patterned. Crime pattern analysis identifies and observes the rules behind a pattern on a detailed or general level of analysis. As criminal activity happens in a specific situational clue and often is part of a planned process, it will be concentrated around crime

opportunities and other environmental factors that motivate the offender. The crime pattern perspective identifies and describes these patterns according to time, location or criminogenic environments (Wortley & Mazerolle, 2008).

Poaching hot spots serve as an example. Elephant poaching is widespread in certain countries, in specific locations and particular times (Kurland et al., 2017). A greater number of rhinos in Kruger National Park are killed on the southern side of the property (Rademeyer, 2016a). Poachers increase their activity during the full moon and in the gibbous phases of the moon, which provides them with better vision at night. There are peaks on certain days and weeks, for example in December or around holidays. In particular, small-scale poachers hunt to obtain meat for celebrations or in order to gain cash to purchase gifts (Milliken & Shaw, 2012; Kurland et al., 2017; Moreto & Lemieux, 2015).

Crime pattern approaches also examine offender adaptation patterns. Criminal groups and poaching syndicates adapt to changes in the enforcement approach. The specific offender adoption processes often determine the resilience of criminal syndicates.

5.2 The Perspective of Rational Choice

According to the rational choice perspective, human beings are somehow rational and tend to maximize utility, traditionally modelled with the help of a utility function (Keane et al., 2008). Wildlife crime is often considered as 'low risk and high reward', with low or ineffective penalties for offenders on the one hand and substantial financial gain on the other (Kretser et al., 2017, p. 159; Schneider, 2008). However, while this might have been the case at the onset of the poaching crisis, many offenders have also lost their lives during a poaching trip. Additionally, the level of custodial sentences has increased.

In rational terms, risk depends on the probability of detection, capture, punishment and the severity of punishment. A suitable law enforcement response should consider all of these factors (Rubino & Pienaar, 2017, p. 94). Several studies state that the probability of being detected is more important than the severity of punishment (Koen, 2017, p. 30; Milner-Gulland & Leader-Williams, 1992; Ehrlich, 1996).

The assumption of rational choice is frequently criticized, as many other factors and cognitive anomalies influence the decision-making process (Muntifering et al., 2017; McFadden, 1999). Economic models of enforcement and compliance dismiss psychological, social and cultural factors (Keane et al., 2008, p. 79). Furthermore, decisions are often based on reference points, but the framing of the decision is important

too (Tversky & Kahneman, 1992, p. 298). On a policy level, rational choice models favour top-down enforcement approaches. This is criticized by some scholars, such as Muntifering et al. (2017) and Naro et al. (2020) who propose that higher yields can be achieved through bottom-up approaches.

5.2.1 The Offenders' Risk Perception

An offender's risk aversion describes how much a person values the present over the future. The discrepancy between the perceived financial benefits via the revenues of wildlife products and the possible negative consequences needs to be assessed on an individual basis. This individual assessment is rooted in the personal belief structure and characteristics of each individual. The 'poacher's mindset' is influenced by culture and the individual's 'way of life' (Leader-Williams & Milner-Gulland, 1993). Leader-Williams and Milner-Gulland (1993) argue that especially in Africa, the distant future is often uncertain and hence valued less than the immediate future. Other scholars suggest that people who decide to engage in wildlife crime tend to follow a short-term horizon. For these individuals the chance of obtaining a cash income will be rated more highly than the possibility of being penalized.

Further, the social background of the offender matters. In many of Africa's townships and deprived rural communities, where poachers are frequently recruited from, life circumstances are harsh. Death and illness are more present in daily life. This will influence personal risk perceptions and may lead to a willingness to take on greater risks. Gender also plays a role in offending. Serious and violent crimes are committed predominantly by men (Newburn & Stanko, 2013; Nurse, 2011). This is particularly the case for Tier 1 offenders who trespass into protected areas. The research will demonstrate that the majority are younger men (Eloff & Lemieux, 2014, p. 32). Social stereotypes, often embedded in cultural values, play an important role. Young men tend to follow notions of 'hegemonic masculinity' and are guided by their social and cultural upbringing to follow the concept of a fearless man (Goodey, 1997). Traditional masculine stereotypes can be found in wildlife crime, such as aggression, thrill-seeking and recklessness (Nurse, 2011, p. 43). These traditional masculine stereotypes contradict assumptions of rational choice. Being fearless, for example, does not only imply the absence of the emotion of fear while conducting a risky operation, e.g. while trespassing into a protected area, it often implies that a fearless decision-maker does not evaluate negative scenarios (e.g. being detained or killed by rangers) according to their actual magnitude.

Still, while the rational choice perspective needs to be considered in light of its inaccuracies and exceptions, a general correlation between risks and rewards and the willingness to commit wildlife crimes cannot be disregarded either. Here, the risk perception and deterrence effect also depend on the type of poaching. Du Toit (2013) states that increasing the severity of penalties in Zimbabwe, acted as a deterrent primarily to opportunistic poachers. However, on a core group of professional, well-equipped poachers it had little impact. A challenge for policymakers and criminal-justice actors in designing effective law enforcement strategies is that the assessments of poachers are, to a large degree, unknown variables. In many cases, rule-breakers themselves are not fully aware of their decision-making process and underlying motivations. In the field of conservation-related crimes, further research needs to be conducted to map out the underlying factors that influence decisions towards deviant behaviour.

5.2.2 The Situational Crime Prevention Theory

The perspective of situational crime prevention has affected much of the traditional responses to wildlife crime (Von Essen, 2014). SCP focuses on the situational context of a crime as opposed to the characteristics and social circumstances of the criminal. Offenders are regarded as rational beings who strike a balance between risks, efforts and rewards when making a decision to conduct a crime (Cornish & Clarke, 1987).

The theory proposes a stronger focus on the role of criminogenic environments which should provide crime prevention practitioners, conservationists and policymakers with a powerful tool in drafting crime prevention strategies and concentrating scarce resources appropriately (Wortley & Mazerolle, 2008). SCP identifies contributing factors in order to modify the physical setting (Schneider, 2012). The approach offers a practical set of opportunity-reducing techniques for managers and conservationists, ranging from simple target hardening to sophisticated methods of discouraging offenders (Clarke, 1997; Wellsmith, 2010; von Essen, 2014):

- Increase the perceived risk (*e.g. anti-poaching, increase the severity of punishment*)
- Increase the perceived effort (*strengthening fence lines*)
- Reduce the perceived rewards (*dehorning, reducing the end-market price*)
- Reduce the perceived provocations (*maintaining good relationships with communities*)

- Remove the excuses associated with offending (*awareness-building*)

5.2.3 Criticism of Crime Prevention Approaches

Situational crime prevention plays into a fortress conservation mentality. Critics state that target hardening, although widely recognized, should not be the only focus. Comprehensive conservation strategies need to offer viable approaches for reducing the socio-economic stressors and social factors that incentivize individuals to become involved in wildlife crime. Opponents of a one-sided *mano dura* approach point to the social embeddedness of wildlife crime and argue that community-beneficiation initiatives should be part of a comprehensive conservation and enforcement strategy (Muntifering et al., 2017).

A major criticism of SCP approaches is that the successful application of crime prevention might only shift criminal activities to other sites (Wellsmith, 2010). Offenders are most likely to displace crime when similar targets are available to them elsewhere (Eck, 1993), as well as when there is high potential for the application of a particular type of offending skill set in different targets (Johnson et al., 2014).

Herbig and Minnaar (2019, p. 12) distinguish between different types of wildlife crime displacement: [23]

- **Target** – committing the intended crime type on a different target, *e.g. poaching a different species*
- **Spatial** – committing the intended crime on the same target in a different place, *e.g. targeting another reserve with fewer guardians*
- **Temporal** – perpetrating the intended crime at a different time, *e.g. during a holiday when enforcement officials are on leave*
- **Tactical** – committing the intended crime in a different way, *e.g. posing as tourists in order to get access to the park*
- **Functional** – committing a different type of crime, *e.g. using the hunting gun to rob a shop instead of poaching a rhino*

The empirical research will analyse crime displacement after successful target hardening. However, criticism of crime displacement also acknowledges that SCP does work – at least within a local perspective.

[23] The concept (target, spatial, temporal, tactical and functional) goes back to Reppetto (1976)

5.3 Top-down Versus Bottom-up Approaches

The current conservation literature is divided, with proponents of community-based conservation models on the one side and those who favour strict protectionism on the other side. In the literature, the so-called 'fortress conservation' perspective emerged in the 1960s and 1970s and shifted to having more people-oriented contributions in the 1980s and 1990s. Currently, there are still more community-based proponents, but there seems to be a slight shift back towards fortress conservation. The debate takes a u-shape with proponents of both approaches on each side of the spectrum (Jones, 2007).

Those who argue in favour of a strong law and order approach see the twin goals of economic development and conservation as inherently incompatible. Community-based conservation approaches have failed to protect natural resources thus far, hence higher penalties and greater enforcement is needed (Büscher & Dietz, 2005). Scholars who propose people-oriented strategies, are mindful that militarized approaches might disenfranchise communities and lead to confrontational relationships with people living adjacent to protected areas (Duffy, 2014). People-oriented strategies send positive messages to motivate people's inherent self-interest to contribute to the management of natural resources., motivating key-stakeholders to work towards conservation goals and not against them (Stern, 2008). This stands in contrast to negative incentives, such as trade bans and law enforcement, which all too often do not provide enough incentive to deter individuals from committing wildlife crimes (Allen & Edwards, 1995, p. 94). In addition, programmes to include local communities are regarded as a counter-reaction to the colonial legacy of ownership structures that alienated rural Africans from resource use, and hence have a moral imperative for many proponents of this approach (Hackel, 1999, p. 727). This thesis will research both current law enforcement and community-based approaches and their contribution to soothing the storm. In this regard, the social situation of local 'poaching villages' around Limpopo National Park in Mozambique will be assessed.

5.3.1 Militarization of Enforcement

Proponents of people-oriented approaches regard the increased application of armed rangers within protected areas with scepticism and use the term 'green militarization' which refers to 'the use of military and paramilitary (military-like) actors, techniques, technologies and partnerships in the pursuit of conservation' (Lunstrum; 2014, p. 817). Büscher and Ramutsindela (2016) frame the term 'green violence' to describe violent

instruments and tactics in nature conservation. A military culture can clearly be seen in ranger training programmes that take place in the form of boot camps. Core military values such as discipline and obedience rank highly amongst the learning objectives for ranger recruits. The rhetoric of militarization can be seen in the public conservation debate.[24] In some forums, nature conservation is presented as a fight of ruthless and brutal poachers against wildlife guardians, who are putting their lives in danger to preserve wildlife (Duffy, 2014).

Nevertheless, scholars, such as Duffy (2014), who voice strong criticism against military features in nature conservation, should consider the point of departure of traditional anti-poaching, especially when it comes to high-value species protection.

In the past, military approaches were applied in Africa's thick bushveld. During the first wave of elephant and rhino poaching in the 1980s, many African governments provided their rangers with automatic weapons and rigorous training (Lunstrum, 2014).

While the enforcement response in rhino range states has clearly become more rigorous and to a degree militarized, it is problematic to label the development in recent years as 'radical militarization' or an 'arms race' of anti-poaching as portrayed by Büscher and Ramutsindela (2016). What conservationists observe instead is that rangers have shifted their focus from conservation tasks to enforcement tasks (Hübschle, 2017a). Rangers without sophisticated equipment or those who lack discipline are not able to pose as credible guardians. When conservationists seek to professionalize anti-poaching, they often strengthen the military aspects that go along with it. However, critics of militarized anti-poaching rightly voice concerns that those approaches and their underlying (military) culture can lead to increased risk of human rights abuses, especially when shoot on sight practices are being applied (Duffy, 2014; Büscher & Ramutsindela 2016).

5.3.2 'Shoot on Sight' Policies

'Shoot on sight' policies are a controversial form of tough enforcement practices. Kenya's President Daniel Arap Moi adopted shoot on sight during the first poaching crisis in 1988. The government of Botswana is one of the recent examples of the institution of a shoot

[24] Media articles make frequent use of military metaphors such as 'rhino wars', 'war against poaching' and 'ivory poaching wars' (Neumann, 2004). War as a metaphor for wildlife protection can also be assessed in social media networks such as Facebook, where the death of a rhino poacher has been celebrated (Büscher & Ramutsindela, 2016). Some media articles link wildlife crime to international terrorism stating that profits of the illicit wildlife trade are used to finance terror attacks (Bergenas & Medina, 2014). Overall, the discursive way anti-poaching is portrayed as a fight of 'good against evil' backs the logic of a militarized law enforcement response.

to kill policy under their former president Ian Khama, who served from 2008 until 2018. During the Africa Elephant Summit in Gaborone in 2013, Botswana's Minister of Environment, Wildlife and Tourism verbally reiterated the country's shoot-to-kill approach (Mogomotsi & Madigele, 2017; Konopo et al., 2016; Hanks, 2015, p. 191; *Botswana Gazette*, 2016). The same goes for Zimbabwe, where former prime minister Robert Mugabe approved a shoot-to-kill policy when rangers came across heavily armed poachers (De Beer, 2016, p. 72; Hanks, 2015, p. 30). A 'shoot to kill' policy might not necessarily be put into formal legislation but may be be encouraged if it is tacitly approved by politicians and patrol leaders. In 2017, the Zimbabwean Minister for the Environment, Water and Climate (Oppah Muchinguri-Kashiri) urged rangers, who had recently graduated from Zimbabwe Parks and Wildlife Management Authority, to take tough measures against poachers, saying: 'our rangers will not hesitate to shoot and kill those found on the wrong side of the law' (ASC News, 2018).

Although shoot on sight is officially banned in most of the countries, such as in South Africa, Namibia and Nepal, there is a lack of oversight in remote conservation areas, which can be misused by rangers. Even if shoot on sight is neither explicitly stated by the political leadership nor implicitly encouraged by a patrol commander, the risk remains that rangers may open fire on poachers when they are not directly threatened.[25] Actual numbers of killed poachers are difficult to obtain. The relevant park authorities and enforcement agencies are usually reluctant to issue details about the numbers of fatally shot poachers in their jurisdictions.

Aside from the serious impact that shoot on sight practices have on human rights,[26]only a few scholars propose using 'shoot on sight' as a deterrent (such as Goemeone et al., 2017; Messer, 2010). The majority of scholars rightly point out the detrimental effects of shoot on sight policies for park–people relationships (Duffy, 2014; Neumann, 2004). Harrison et al. (2015) claim that excessive and brutal law enforcement can frustrate surrounding communities and eventually lead to an increase in wildlife crime. Depending on the positions that conservationists take, different policy solutions to soothing the storm are

[25] Besides the underlying culture and mindset, it depends on the respective training wildlife guardians are given to only use violence as a last resort. When rangers come across poachers, they need to fall back on well-trained behaviour patterns that lead to situations in which criminals are overwhelmed and arrested but not shot at. Precautions must be taken so that lethal force should only be applied as a last resort in rare instances of self-defence. However, if rangers who do exchange fire with poachers find themselves hastily accused and potentially ending up with a murder charge, it will be harder to motivate wildlife-rangers to go on patrol in the first place.

[26] A key human right is the right to live, which is based on Article 3 of the Universal Declaration of Human Rights, so shoot on sight policies are regarded as violating human rights.

suggested. On the one hand, there are proponents of a tougher, top-down anti-poaching enforcement approach that supports strict enforcement capacities. Others favour a bottom-up approach that promotes the role of communities with soft measures, to encourage them to become stewards of wildlife, e.g. via community-conservation initiatives (Knapp, 2012). However, most scholars propose something in between these positions, stating that a certain level of enforcement inside and outside protected areas must go hand-in-hand with community empowerment and cooperative approaches (David et al., 2016, p. 5).

5.3.3 Militarization of Poachers

In the scholarly literature, there are opposing views on the degree of sophistication and militarization of poachers. Some argue that poachers are becoming increasingly aggressive and sophisticated (T' Sas Rolfes, 2012) and see this development as an arms race between poachers and anti-poaching forces. Lunstrum similarly recognizes a 'dual militarization process' in which each side increases its lethal capacity via militarized methods and technology (2014). Some authors claim enlargements of the average poaching group size, which they interpret as militarization because additional group members are being tasked to protect the group (Milliken & Shaw, 2012). Funk (2016) maintains that poachers have military-grade equipment at their disposal that, aside from automatic weapons, includes helicopters, infrared scopes and heavily armored vehicles.

This thesis disputes the notion that wildlife offenders continue on the path of technological militarization to exploit high-end technical possibilities: 'If people think of a poacher in most cases they probably think of some sort of Special Forces guy (…) the opposite is true' (Rademeyer, 2016a, p. 11).[27] The empirical research will demonstrate that wildlife offenders have only professionalized to a certain degree since the advent of the current poaching wave, e.g. by gaining experience in tracking and becoming more professional to evade rangers in the field. The use of basic technology, such as cell phones, can be interpreted as a technical advancement that helps to improve the logistics of poaching operations, e.g. when arranging for pick up (Milliken & Shaw, 2012). While there is no arms race in terms of the application of modern technology, poachers do use their conventional strengths, especially when mapping out the area and gathering

[27] Rademeyer (2016a) is quoting Ken Maggs, the head of SANParks Environmental Crime Investigation Unit (South Africa)

intelligence. They try to achieve a proactive position but overwhelmingly hunt with basic methods and technology (Konrad, 2019).

6 Ways to Soothe the Storm

This chapter will present an overview of the general enforcement response as well as the specific areas of intervention that range states undertake to soothe the storm.

To date, a 'silver bullet' is lacking, and most of the experts propose a comprehensive enforcement policy. While there is agreement amongst scholars on the multifaceted dimension of the current wildlife crisis, there are opposing views on the specific emphasis of such a broad-based approach. Some favour a stronger top-down model with a focus on effective enforcement to achieve deterrence. Others state that threats of prosecution and punishment are not the only way to achieve compliance and advocate bottom-up approaches with strong inclusive elements and environmental governance structures that are managed by local people (Muntifering et al., 2017).

The response to combating rhino crime has a national character. The national legal framework and the specific condition of the enforcement agencies, including their capacities to police wildlife crime, are relevant. However, wildlife crime has an international dimension, so there is a need to broaden the perspective from a national focus to collaborative cross-border enforcement policies that target the international engagement of criminal syndicates (Broussard, 2017, p. 118). In the long run, the international community needs to find suitable measures to ease the demand for illegal wildlife products. However, the focus of this research will be on combating wildlife crime in the source countries for rhino horn in the context of continuing international demand.

6.1 Policing Wildlife Crime

The empirical part of this thesis will analyse the national capacities and approaches to countering wildlife crime in South Africa, Namibia and Nepal. Often, national governments in rhino range states and their conservation authorities have been taken by surprise by a sudden rise in poaching. In many cases, the capacity to police wildlife crime was not well developed or had to be built from scratch. Wildlife crime usually takes place in remote, rural areas where police coverage is weak. Moreover, a comprehensive approach to wildlife crime can be frequently hampered by a lack of cooperation between different enforcement and wildlife authorities (David et al., 2016, p. 46). Much of the analysis of *Soothing the Storm* is an assessment of capacity building. Moreover, enforcement agencies need to be flexible and innovative. The high profits associated with rhino horn have lured different kinds of actors into the game. As well as there being a

multitude of actors, criminal syndicates tend to regularly change their *modus operandi*. When law enforcement successfully closes one loophole, criminal actors find new ways to source and trade rhino horn (see Chapter 4.2).

6.1.1 Allocation of Criminal Responsibilities

At the onset of the poaching crisis, rhino range states first had to scale-up wildlife crime expertise. Within the institutional structure, countries have to decide on the respective mandate and allocation of criminal investigation responsibilities. In many countries, traditional enforcement agencies, such as the police, have the primary mandate and take the lead in investigating wildlife crime. Other countries have allocated responsibility for investigating wildlife crime to wildlife authorities, usually under the auspices of the ministry of the environment (Broussard, 2017).

Wildlife authorities tend to have in-house expertise in topics relating to wildlife, such as species identification, breeding and hunting regulations, forensics and permit validations regarding the trade of flora and fauna. However, they often come without a clear mandate and only little institutionalized experience in criminal investigation and prosecution. They are not equipped with full enforcement capacities, and also lack expertise in other forms of transnational organized crime, such as smuggling or the arms trade (Broussard, 2017, p. 123). The police on the other hand, although lacking environmental expertise, have (in theory) deep-rooted expertise in criminal investigation techniques. They conduct advanced criminal investigations, manage crime scenes, interrogate suspects and gather intelligence (Broussard, 2017, p. 122). Some countries pursue a hybrid solution which requires inter-agency cooperation (Broussard, 2017, p. 122). India is an example of a country that has a statutory multi-disciplinary body to combat wildlife crime. India's Wildlife Crime Control Bureau is part of the Ministry of Environment and Forests but is headed by a senior police officer (WCCB, 2020). Broussard (2017) argues that an agency tasked with combating wildlife crimes needs to be equipped with full law enforcement authority.

6.1.2 Funding for the Protection of Biodiversity

A fundamental challenge for enforcement and conservation agencies is the availability of financial resources. In order to manage wildlife, key actors depend on a sustainable flow

of resources. Relevant conservation agencies need to generate income on a regular basis and use available resources effectively (Berghöfer et al. 2017).[28]

National budgets in the Global South are tight. Often, political priorities are directed towards easing pressing social and economic needs. Key enforcement organizations at the national level tend to be underfunded and lack capacity, and national enforcement authorities are often occupied with other forms of serious crime. In this context, policymakers tend to see conservation crime as of secondary importance and allocate small budgets for conservation (Wilkie et al., 2001; Berghöfer et al. 2017; Kretser et al., 2017, p. 159).

The same applies to national parks and protected areas. Only a few conservancies manage to fully cover their running expenses with self-generated funds, such as through entrance licensing and concession fees. Kenya, for example, has several large and popular conservancies that are able to generate a surplus with park entry-fees (Berghöfer et al., 2017).[29] Other protected areas are often dependent on the government to supplement finances, providing up to 40% to 80% of the funding stream (Berghöfer et al. 2017). In some cases, funding for protected areas is complemented by Official Development Assistance (ODA)[30] or via philanthropy and corporate sponsorships. South Africa's Kruger National Park has gained substantial financial support from private donors in recent years (see Chapter 8.4.2). However, in order to overcome dependency on external sources, protected areas should self-generate the major share of their running costs. There is an ongoing debate that legalizing rhino horn could generate significant income possibilities for protected areas and private rhino holders (CITES Management Authority, 2016; see Chapter 6.2.3).

[28] The reasons for ineffective spending are vast. Often management capacity and an enabling environment are regarded as a prerequisite. A frequent point of departure for greater financial sustainability hence relates to capacity-building that allows for effective management of resources. Another challenge is that the actual spending and overarching conservation aims might not be in line (Berghöfer et al. 2017, p. 16).

[29] There are claims in the literature that rampant poaching could threaten these sources of income, via declining tourist numbers (Lubbe et al., 2019). However, experience with visitor numbers demonstrates that despite ongoing poaching in many parts of Southern and East Africa, tourists continue to visit parks and protected areas. Ironically, the poaching crisis has increased the value of the 'viewing experience' of a rhino. In South Africa's Kruger NP, visitor rates slightly increased during the poaching crisis (Morais et al., 2018, p. 7). However, this is not the case for PAs such as Virunga National Park in DRC where rebel groups pose a serious threat to the safety of human park visitors.

[30] ODA needs to be managed cautiously. Moreover, the sources can cause frictions, as governments might be tempted to withdraw their own funds once external donations are flowing. When ODA funds and private donations are earmarked, conservation practitioners might only pursue certain activities while dismissing a comprehensive approach (Berghöfer et al., 2017). On the other hand, ODA can create positive synergies between funding mechanisms. In Cameroon, ODA assistance has stimulated government support for biodiversity (Berghöfer et al., 2017).

6.1.3 Ownership of Wildlife

The ownership model influences the management and enforcement of wildlife. The prevailing ownership-model differs between the respective case examples. In South Africa, rhinos are conserved in state-protected areas and on private farms. In Namibia, rhinos can be found in large state-owned protected areas, at private farms and also on communal land. In Nepal, rhinos are only conserved in state-owned reserves and are consequently managed by the government.

Large state-owned areas are usually administered by the Ministry of the Environment and their subordinated park management authorities, while private rhino custodians bear the costs for conservation and enforcement on their own. The expenses for conserving rhinos include fencing, supplementary feeding, veterinary expenses, costs for permits and enforcement (Rubino & Pienaar, 2017). Even when effective spending is achieved, conservation costs increase when the poaching pressure is high. In particular, anti-poaching ranger units are a driver of conservation costs due to the high cost of personnel. Since the onset of the rhino poaching crisis, allocations for anti-poaching services have increased and are now forming a significant part of the budget of rhino custodians (David et al., 2016; Berghöfer et al., 2017). Some estimate the cost for each rhino to be US$3,500 per annum (CITES Management Authority, 2016, p. 13). In South Africa, costs range between US$1,210 to US$10,620 per rhino per year (Emslie et al., 2016, p. 12). Rising conservation costs are leading some private rhino farmers to reevaluate their decision to conserve rhinos (Rubino & Pienaar, 2017).

6.1.4 Investigative Capacities and Conservation Forensics

Investigative capacities to support the judicial process need to improve in many rhino range states. Poor crime scene management and evidence collection frequently render cases inadmissible (UNODC, 2017, p. 4). The enhancement of investigative capacities should include sophisticated conservation forensics, such as DNA testing (Kretser et al., 2017). However, often even basic methods are not applied, such as evaluating the mobile phone records of arrested poachers (Milliken & Shaw, 2012).

Law enforcement also need to be vigilant to other forms of wildlife crime that are related to poaching, such as money-laundering and customs fraud. These cases are often not detected by traditional enforcement methods, that focus on wildlife crime in a narrow sense (UNODC, 2017, p. 4).

When investigative units focus on prosecuting senior leaders there should be improved

cooperation between police and revenue authorities to capture financial flows resulting from wildlife trafficking (Anderson & Jooste, 2014). At the latter end of the trafficking chain, the trade in illegal contraband might be difficult to monitor as payment methods might shift to cryptocurrencies. In this area, criminal investigation is reliant on sophisticated investigative capacities (Chin & Murillo Vega, 2020).

6.1.5 Prosecutorial and Judicial Engagement

This research will also analyse the prosecutorial and judicial response to enforcing wildlife-related crime. Although legal provisions have been tightened in several rhino range states, judicial systems face plenty of weaknesses that exacerbate the difficulties of combating wildlife crime. Enforcement agencies often fail to bring offenders to court. Cases that make it to court are frequently overturned, often due to procedural errors (UNODC, 2017, p. 4). Furthermore, sentencing can be out of balance. Neimark (2019) postulates an overcriminalization of the rural poor. In Zimbabwe, for example, convicted livestock thieves receive a greater punishment than poachers. While somebody that is stealing a goat might receive a prison sentence of up to six years, poachers get away with a minor fine, usually less than the value of the meat of an impala (Lindsey et al., 2011).

Enforcement agencies tend to concentrate on low-level criminals while failing to arrest key members of criminal enterprises or those higher in the illicit trade chain that are the driving force behind operations and make most of the profits (OECD, 2012). Even when harsh and stringent laws are in place, there is a tendency from police and judiciary officials to dismiss wildlife crimes. In some cases, enforcement agencies fail to take decisive action even if poachers and members of criminal syndicates are known to them (Price, 2017). Moreover, bail is frequently granted to wildlife offenders. For those at the higher end of the criminal network, it is like a fee. They pay and disappear (Anderson & Jooste, 2014).

Capacity building ought to address the entire enforcement chain. This should also include prosecutors and judicial authorities. Environmental NGOs, for example, offer training for judiciaries to address low judicial awareness of the area of environmental crime.

As judges in range states are often unaware of the appropriate sentence, including case law, IUCN has created the website wildlex,[31] which provides wildlife-related legislation and case law. Other NGOs, such as Wildlife Direct in Kenya, use the method of court

[31] https://www.wildlex.org/

case monitoring, especially for high-profile cases. They follow the observation that when expert witnesses appeared for the prosecution, stiffer sentences were handed down (Emslie & Brooks 1999, p. 69).

6.1.6 Cross-Border Cooperation

Range, transit and consumer countries of illicit wildlife products need to enhance their inter-agency collaboration between police and customs administration. If customs seize wildlife products, the police or the respective investigative organ need to conduct an in-depth investigation, otherwise, the potential disruptive impact on the criminal network is lost (Broussard, 2017, p. 122). The inter-agency collaboration between the detecting agency and the investigating agency needs to be quick and smooth. Range states that are affected by poaching need to work together in order to synchronize their law enforcement response. The international community is well aware of the conservation challenge. Organizations such as the International Criminal Police Organization (INTERPOL) promote collaboration in transborder criminal prosecution between countries and their respective enforcement agencies. The empirical section will analyse regional cooperations to improve cross-border law enforcement in Asia and Africa. Rhino poaching and the illicit trade of horn falls under the legal requirements of the United Nations Convention against Transnational Crime (UNTOC) (see also Chapter 4).

The UNTOC is the 'world's largest treaty of mutual legal assistance on organized crime' with 187 member countries (Broussard, 2017, p. 121). The multilateral instrument can be used as a basis to promote transboundary cooperation in the investigation and prosecution of transnational organized crime when specific mutual legal assistance treaties are not in place. UNTOC can also be invoked for extradition. However, the UNTOC framework is limited in its application. In 2015–2016 there were only six requests for mutual legal assistance in the area of wildlife crime under UNTOC. Internationally, little effort is being made to follow up on wildlife trafficking cases through channels of international cooperation in legal affairs (UNODC, 2017, p. 4).

6.2 The Legal Framework

Most states have adopted policies and legal frameworks to penalize wildlife crime. These can be based on their legal traditions and cultural approaches towards conservation and crime. Wildlife law, wildlife-related provisions in forestry law and customs laws form

further relevant instruments for regulating the illegal wildlife trade. International frameworks such as CITES and UNTOC have influenced the legal situation in source, transit and destination countries (Broussard, 2017, p. 119). The level of penalties for wildlife offences has increased during recent years in many range countries of illegal wildlife products, as well as in some transit and destination countries.

Wildlife crime was considered a misdemeanour until 2014 in Mozambique. With stricter legislation, courts are now able to impose prison sentences of up to 12 years (Reuters & Vice News 2015; Massé, 2017, p. 123). For the first time during the current poaching wave, two poachers were convicted in Mozambique, in September 2019 (Jacobs, 2019). Kenya is an example of a country where tougher penalties have resulted in reduced levels of illegal wildlife exploitation. Rhino and elephant poaching are now criminalized, and subject to a penalty of 20 million Kenyan Shillings (equivalent to US$193,000) and life imprisonment (Knight, 2013). The empirical research will analyse the legal frameworks in South Africa, Namibia and Nepal. All of these countries have introduced criminal provisions and jail sentences for the most serious wildlife offences. As empirical research will demonstrate, the legal framework and the possible level of sanctions is only one part of the picture. Due to inefficiencies of the judicial system, such as lack of expertise in wildlife crime or corruption amongst judiciaries, the penal code is often not fully imposed. Still, the sentences that have been handed down during recent years have increased compared to those being imposed at the onset of the current poaching crisis (Emslie et al., 2016, p. 14). The same goes for Asia, where most countries have put provisions in place to criminalize and prosecute wildlife crime and the illegal wildlife trade. Still, according to Broussard (2017, p. 122) only a low number of investigations occur in Asia. Cases that make it to court often focus on small players and conviction rates are extremely low.

6.2.1 The Convention on International Trade in Endangered Species of Wild Fauna and Flora

Trade bans have emerged as a major conservation tool for endangered species. The underlying assumption is that the illegal trade in wildlife products is a central factor in species decline (Roe, 2002). The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is the predominant tool and contains a set of far-reaching rules regarding wildlife trade. The CITES agreement came into effect in 1975 and currently has 183 member countries, including South Africa, Namibia and

Nepal.

Once a state adheres to the convention, they are obliged to follow CITES rules and regulations. In order to comply with CITES, member states have to put relevant national legislation in place. The CITES convention is dependent on the cooperation of its members and has only limited power in addressing infractions or the non-compliance of single member states (Biegus & Bueger, 2017).

6.2.1.1 CITES listing of African Rhinos

Within the CITES framework, each protected species or plant is listed according to their conservation status in one of three appendices. They contain roughly 29,000 plants and 5,000 animals. The listing is substantiated by scientific research but is also a result of negotiations during the Conference of the Parties (CoP), which takes place every three years (CITES, 2017; Conrad, 2012).

Appendix I covers critically endangered species. Under this listing, international commercial trade is only approved in exceptional circumstances. Appendix II covers species that can be traded internationally but with strict regulations. Appendix III lists species that are protected in at least one member state (CITES, 2017).

In 1977 all rhino species moved to Appendix I, which meant that commercial trade of live rhinos or body parts was strictly forbidden. Non-commercial movement of hunting trophies is allowed under CITES regulations (Milliken & Shaw, 2012).[32]

In 1994 South Africa's white rhino population had recovered to a point that CITES moved the country's white rhino population from Appendix I to II. During that time, South Africa was the only range state with a rhino population listed in Appendix II. This listing allowed the international trade of white rhinos to acceptable and appropriate destinations. However, trade of live rhinos is subject to careful scrutiny. The importing country has to enclose a letter from the CITES Scientific Authority to certify that the rhino recipient is prepared and suited for the species-appropriate treatment of the animal. The importing country must also prove that appropriate national legislation is in place to ensure that rhinos will only be used for conservation and not for other purposes (Milliken & Shaw, 2012).

[32] Hunting is subject to strict quotas. Many conservationists argue that strictly regulated hunting of wildlife can have a positive influence on conservation goals (Lindsey et al., 2012).

6.2.2 Effectiveness of Trade Bans

Neotropical parrots are an example of wildlife crime significantly reducing after the introduction of a trade ban (Santos et al., 2011). Nevertheless, there is a question as to whether conservation-motivated trade controls are a suitable approach to the rhino poaching crisis, especially when black-market prices are soaring.

In the field of rhino conservation, the CITES framework has demonstrated clear limitations during recent years. The elimination of illegal trade has proven to be a challenge when substantial profit can be generated. When conditions for a perfect storm are present, trade bans are especially difficult to enforce (Conrad, 2012). Some scholars argue that when incentives to supply the market with an illegal product are strong, trade bans can even undermine conservation efforts. Criminal actors are encouraged by the complete blockage to search for illegal avenues in order to bypass regulations (Santos et al., 2011; Rubino & Pienaar, 2017, p. 95). A trade ban might even help to establish a monopoly position for black market actors (Conrad, 2012). When assessing the effectiveness of trade bans, different time horizons need to be considered. After the elephant trade ban was introduced in 1989, poaching rates first dropped but then accelerated in some countries a few years later due to the presence of unregulated domestic ivory markets (Lemieux & Clarke, 2009).

6.2.3 Legalizing the Rhino Horn Trade

There is a controversial debate as to whether to legalize rhino horn. Advocates of legal trade argue that flooding markets in East Asia with horn will cause prices to drop, thus reducing the incentives for criminals to engage in the illegal exploitation of wildlife.

Legal trade of rhino horn could generate positive financial incentives that could flow back into nature conservation. At present, rhino conservation programmes only offer limited options for income generation. Communities could generate funds by holding rhinos and harvesting their horn (Martin et al., 2016, p. 7). South Africa's annual horn production is estimated at 5,319–13,356 kg (Taylor et al., 2017). A legal trade regime could also have the advantage that key data about the market would become visible. At present, many variables of the end-user market are unknown. A legal market would facilitate the monitoring of market developments and allow direct engagement with consumers (T' Sas Rolfes, 2012). Additionally, African range states could sell live rhinos to consumer states to build up ex situ populations. This idea has so far been opposed by African range states. Asian consumer states could build up their own ex situ populations and then be allowed to dehorn rhinos periodically for their domestic market use. This model could include

revenue sharing from Asian countries to South Africa with a rhino-leasing agreement.

Another possibility – aside from allowing international trade on a permanent basis – would be to allow one-off sales of rhino horn stockpiles. This idea has been proposed by the Rhino Issues Management Report (DEFF, 2013a). South Africa's Department of Environmental Affairs wanted to propose this idea to the 2016 CITES Conference of the Parties but withdrew their plans shortly beforehand. Instead, Swaziland put forward a request to sell horn from its country's stockpile. However, this plan was rejected by the CITES parties (CITES Management Authority, 2016; Save the Rhino, 2018).

Opponents of a free rhino horn trade point out that the consequences of lifting the trade ban are uncertain (Conrad, 2012). Many of the assumptions of pro-market views are based on partial equilibrium models. While this model can be helpful in the context of a single-source commodity under perfect information, it offers limited value for the complex rhino horn market (Nadal & Aguayo, 2014). With such a thin research base, it is also possible that legalizing demand could drive prices up even more (Ayling, 2013, p. 13). And it would most likely undermine past demand reduction initiatives in Asian consumer countries.

Even if rhino horn prices were to go down, the reduction would need to be significant. It is doubtful whether the price for legal rhino horn can be reduced to levels that would erase the incentives for sourcing it illegally. In this regard, the price difference between legally and illegally sourced wildlife products becomes relevant (OECD, 2012).

Many conservationists fear that legal trade creates avenues and opportunities for criminal actors to conceal or disguise illegal horn (OECD, 2012). Pro-market approaches would require the establishment of robust regulatory and oversight frameworks to ensure that rhino horn from illegally killed animals could not be laundered into legal trade chains (Cochrane, 2020). The high and persistent levels of corruption in source and destination countries point towards the assumption that a perfectly structured legal trading regime cannot be effectively controlled and is wishful thinking (Bennett, 2015a).

The fact that rhino poaching continues to surge despite CITES regulations cannot provide a secure assessment of the convention's impact as it is unknown how conservation crime would have developed without a ban. There are many risks associated with the creation of a legal market. However, the potential for farm owners to generate income by dehorning their rhinos rather than applying for hunting quotas should not be underestimated either.

6.3 Anti-Poaching Ranger Patrols Inside Protected Areas

Anti-Poaching Units (APUs) inside protected areas have emerged as a cornerstone of biodiversity conservation. The spearhead of anti-poaching units are scouts and armed game rangers as well as special reaction teams who carry out on-site protection. The employment of anti-poaching rangers follows the logic of situational crime prevention and is considered to be a special form of target hardening. Providing effective guardianship increases the detention risk for would-be offenders and reduces the attractiveness of poaching opportunities at a specific site (Lemieux, 2014; Anderson & Jooste, 2014).

6.3.1 The Effect of Ranger Patrols on Wildlife Crime

The primary effects of a functioning anti-poaching unit are arresting offenders, confiscating hunting rifles and other poaching tools, as well as deterring would-be-offenders. There are also secondary effects, such as providing employment and income to local villagers.

There are certain risks involved when applying anti-poaching forces. One risk relates to the possibility of increasing tensions between protected areas and communities. There is the danger of inappropriate use of force at the hand of rangers such as ‘shoot on sight’. Another risk relates to complicity: by educating rangers in bushcraft they could become wildlife offenders themselves one day.

The specific impact of ranger patrols on wildlife crime is difficult to isolate for a given area, as many factors influence biodiversity preservation. The current literature overwhelmingly recognizes that employing ranger forces has a positive effect on wildlife protection. Enforcement experience from the Luangwa Valley in Zambia during the 1990s showed that increased patrol efforts reduced the levels of illegal activity. Fresh carcasses and other signs of incursion declined in areas that were patrolled more frequently (Leader-Williams et al., 1990, p. 1055).

However, scholars have different and at times competing perspectives about the interrelationship and the intensity of impact between a measure and the desired goal. Some scholars propose tough and more rigid anti-poaching patrols to act as a deterrent and hence reduce wildlife crime, while others stress that it will deepen the rift between communities and conservation authorities, and only further increase wildlife crime. Both perspectives can be valid at the same time. While a *mano dura* enforcement approach will deter some offenders, it might motivate others. The careful analyst needs to assess, and if

possible measure, the intensity of the impact of each of the interrelationships and compare them in an overall assessment. To a large degree, the current literature falls short in this respect.

Furthermore, an assessment of a given PA is highly context specific. The proximity of communities and their current relationships to park authorities as well as the criminogenic environment have to be considered among other factors. Additionally, differences in the duration and underlying time logic between the desired measure and its intended effect need to be considered. Community improvement initiatives often take longer to bear positive results while placing a ranger squad close to rhinos shows some immediate effect (David et al., 2016). Hence, when making an assessment, scholars will come across cases where the effect of a certain anti-poaching intervention is significant in the short-term but might gradually fade out and even be reversed in the long run.

6.3.1.1 Estimating the Deterrence Effect

Some scholars single out deterrence as being the greatest impact of ranger patrols on reducing wildlife crime. Criminal deterrence refers to the avoidance of a criminal act due to fear of sanctions or punishment (Paternoster, 2010, p. 766). The specific level of deterrence due to a ranger force is difficult to measure. According to Paternoster (2010), the literature on deterrence for nature conservation-related offences is sparse and the effects of a criminal justice policy on human behaviour are underexplored.

From a rather theoretical perspective of rational choice, a motivated offender would consider the perceived reward from a poaching trip against the associated risks of detection and the severity of possible punishment, including death. For achieving deterrence, it is important to navigate between the adjustment screws of conviction rates and the severity of penalties. Criminology research claims that the certainty of punishment has a greater deterrence effect than imposing heavy penalties (Barichievy et al., 2017). The challenge for the empirical assessment of deterrence is that it largely depends on unknown variables, foremost the poacher's risk perception. The offender's subjective perception of the effectiveness and intensity of anti-poaching patrols is an important factor in achieving deterrence, rather than the effectiveness of the anti-poaching unit per se. Stern (2008) proposes, that in order to achieve compliance, would-be offenders need to estimate the risk of being caught or shot at as extraordinarily high. This leads some scholars to attach more importance to the presence of ranger forces rather than after-the-fact law enforcement (Barichievy et al., 2017; T' Sas Rolfes, 2012). However,

if the judicial system is unable to hand down appropriate sentences, anti-poaching can hardly act as a deterrent. In short, the many approaches to reducing wildlife crime work interdependently.

6.3.2 Effective Ranger Patrols

This chapter will map out several challenges for the effectiveness of anti-poaching patrols. There are different types of patrolling: (1) active patrolling, usually conducted by rangers who move through the area; (2) investigative checks where rangers follow specific signs of poaching activity; and (3) passive observation, with the mere on-site presence of rangers observing their surroundings (Moreto & Matusiak, 2017, p. 12).

Active patrols inside protected areas are conducted on foot, by vehicle and, in rare cases, via air surveillance (Geldmann et al., 2013). Clandestine foot patrols form the backbone of effective on-site protection. Studies have shown that in Africa's vast and dense bushveld, foot patrol units are more likely to encounter signs of wildlife crime than those on vehicle patrol (Nahonyo, 2005, p. 16). A key component within these small units is the use of trackers (Henk, 2006), who can often be deployed from hunter-gathering societies such as the San-Bushmen. A fully functioning anti-poaching unit needs a supportive infrastructure. The requirements are different from area to area but usually include a central control room where the information converges and from where the patrol leader operates. Throughout the protected area there are outposts or pickets, which are usually small tents with a capacity of two to three rangers, surrounded by a protection wall, often made out of thick branches of local material, such as buffalo thorn, which serves as protection against predators and other animals. The pickets are hidden and scattered so that poachers and their scouts are not aware of the presence of ranger forces (see Figure 2). They are a practical tool for having a clandestine ranger presence throughout the area, including remote areas (David et al., 2016, p. 38). Ranger teams usually consist of two or more people. They can conduct a full patrol circle for a period of 14 to 21 days or longer in a location. The food supply is stocked for that time period and additional water is delivered on a regular basis.

Figure 2: Picket in a Protected Area

Source: Smale (2019)

Sighting poachers, hearing shots and tracking human spoor form elements of the daily work of the rangers. Once the spoor of a group of poachers is spotted, rangers will follow their tracks in order to locate them. Ranger units need to have a high degree of flexibility as orders can change abruptly, so it is an advantage if the unit has a functioning vehicle fleet at its command. The different teams are connected via radio with their unit's operational room from which their respective superiors coordinate ranger forces in a given area. Once a team apprehends poachers, their aim is to arrest them. They are usually armed with automatic weapons for making arrests and ultimately for self-defence.

A basic underlying tactic of anti-poaching is described by the triple foraging process. It relates to the intertwined patterns of victims, offenders and guardians in spatial and temporal terms. Basically, the behaviour of rhinos will influence the hunting strategy of poachers, while rangers will map out their plans according to the possible behaviour of wildlife offenders. With rhinos, poachers and rangers in a protected area, there are different scenarios. The behaviour of each group will determine the outcome of a poaching attempt. With each group following a specific goal, they display certain

behavioural patterns. The victims, rhinos and elephants, seek solid feeding grounds and can be encountered more frequently in their preferred habitats. Offenders seek areas where rhinos roam frequently while guardians seek to encounter offenders and patrol hotspots where poachers trespass often (Lemieux, 2014; see also Moreto & Matusiak, 2017, p. 12).

There are several scenarios in a triple foraging process. If poachers trespass in grid cells where rhinos and rangers are not present the successful outcome of the poaching attempt, and hence the harm to biodiversity, is limited. This is still problematic from the perspective of credible law enforcement because offenders are not being penalized. The greatest potential harm for biodiversity is when poachers are foraging in grid cells with a large number of rhinos and no guardians present (Lemieux, 2014).

6.3.2.1 'Boots on the Ground'

While foot patrols form a key element in the day-to-day work of rangers, a constant challenge evolves around manpower and having enough 'boots on the ground'. Protected areas can range from a few hundred hectares to the size of small countries. South Africa's biggest state-owned nature reserve, Kruger National Park, covers an area of 19,485 km². Namibia and Nepal have sizable protected areas, such as Etosha National Park (22,270 km²) and Nepal's Chitwan National Park (952.6 km²).

When it comes to suitable ranger densities to effectively cover a given area, scholars and conservation practitioners propose different numbers. Within large protected areas in Zambia at least one ranger per 20 km² has been proposed (Leader-Williams et al., 1990, p. 1056). The SADC Anti-Poaching Strategy recommends one ranger for every 50 km² (SADC, 2015).

However, those suggested figures can only serve as a rough guideline. Patrol staff numbers depend on other factors, such as size and vegetation of the area and the actual threat level. Furthermore, the effectiveness of ranger units seems more important than just high patrol staff numbers. The strength of on-site protection relies on the individual ranger and the way they carry out their duty (David et al., 2016, p. 7).

Patrol staff numbers in many of the protected areas seldom match the recommended ranger density, mainly due to strained budgets for nature conservation. The high proportion of a budget given over to personnel costs makes anti-poaching expensive on an ongoing basis. The smart management of available resources, e.g. concentrating the forces in high-risk areas, helps to overcome shortages in manpower (David et al., 2016).

6.3.2.2 Qualified Rangers and Patrol Leaders

Much of the effectiveness of a ranger unit goes back to having qualified rangers and patrol leaders. Effective training starts with a rigorous selection process at entry-level. Ranger recruits usually then undergo a physically and mentally demanding boot-camp. Training should be applicable to working within a protected area and should offer simulated field situations. Amongst the key training objectives are physical fitness, bushcraft, tracking human spoor, discipline and teamwork. The skills that rangers learn have many parallels to those that were needed in the South African border wars, especially when it comes to tracking and pursuing poachers in the vast bushveld terrain (Rademeyer, 2016a, p. 11). Ranger education should build confidence and team cohesion. Each ranger needs to learn their role in an organization that has a predominantly military structure.

Often, training for rangers is a one-off event at the beginning of their career. The military on the other hand values ongoing capacity-building throughout the career. Anti-poaching units should secure an in-service training stimulus on a continuous basis (David et al., 2016, p. 10). Furthermore, competent patrol leaders are important for effective on-site protection. Patrol leaders form a vital link to senior area managers, direct active patrol teams and manage tactical operations. They have the ultimate responsibility for processing intelligence, handling crime scenes and making sure that the unit's equipment is maintained and ready if needed. Patrol leaders need leadership qualities combined with extensive experience in anti-poaching. They should have gathered significant experience in practical on-site protection. In addition, patrol leaders can benefit from in-service trainings that are designed to develop and reinforce leadership skills (David et al., 2016, p. 11).

6.3.2.3 Ranger Motivation

The effectiveness of anti-poaching can be hampered by a lack of motivation to conduct patrols thoroughly. 'Poor ranger performance' can take different forms. Rangers may choose to walk only short patrol distances. While on patrol they might pay less attention to checking for signs of incursions. They could give away their presence by chatting loudly and walking on the road. Performance can be reduced by the consumption of marijuana or alcohol while on duty.

Rangers usually spend lengthy periods in remote areas, away from their family and friends, which can also reduce motivation (Fang et al., 2019, p. 25). Furthermore, patrol staff can become dissatisfied by poor working conditions and low salaries. Studies have

shown that dissatisfaction does not primarily result from the danger of the work but the context of the job (David et al., 2016, p. 21). Anti-poaching companies in the Global South often fail to provide basic equipment, which rangers interpret as lack of appreciation. Especially for many African rangers from impoverished rural villages, the financial aspect is key. Instead of being 'heart and soul conservationists', to them being a ranger is simply a job undertaken in order to generate income to provide for their family (Serino, 2015). Hence, patrol staff can be incentivized by providing rangers with suitable equipment and rations in the field as well as by offering decent salaries and benefits, according to their field-performance (David et al., 2016, p. 21). Improved working conditions should be combined with regular performance evaluations which, in reality, seldom take place (David et al., 2016, p. 11). Jachmann (2008) shows that the introduction of a monitoring scheme for anti-poaching patrols in Ghana led to a reduction in poor ranger conduct. Ranger patrol performance improved by 58%. Overall, far-sighted management can increase the ranger's attachment to the job by paying attention to setting the appropriate working conditions and remunerations.

6.3.2.4 Equipment and Technology

Ranger units are primarily dependent on basic equipment in order to fulfil their duties. Food and water rations, and communication infrastructure, and a suitable firearm rank amongst the most important gear (David et al., 2016, p. 14). Particularly at the onset of the poaching crisis, rangers lacked basic equipment. When it comes to sophisticated technologies, there has been some debate. High-end technologies, such as night vision, gunshot detectors[33] or Unmanned Aerial Systems (drones) can be helpful (DEFF, 2013b, p. 11). Some authors state that with the help of drones, vast areas can be controlled, including those zones that are difficult to access on foot (Kretser et al., 2017, p. 174). While drones bring some advantages to an anti-poaching unit, they cannot replace basic methods and approaches, especially ranger foot patrols, which rely on tactics that have accumulated over decades (David et al., 2016). Experience from Botswana demonstrated that the main success factors were basic and primitive counter-poaching techniques applied by small, stealthy and disciplined anti-poaching teams. These units were backed by rapid helicopter reaction forces (Henk, 2006).

Furthermore, the use of technology requires training of personnel. The introduction of

[33] This technology uses several microphones to triangulate and locate the shot, which helps rangers to reduce response time once a shot was allocated (Eloff & Lemieux, 2014, p. 37).

high-end technologies often involves significant long-term costs. For the successful application of drones, employees must be able to download and manually process thousands of pictures and video material (Kretser et al., 2017, p. 167). Apart from the challenge of identifying suspects from the vast quantities of material that drones are able to produce, technology can only bring tangible benefits if enforcement officials in the field act quickly, once a fresh lead comes in, such as a poacher sighting (Kretser et al., 2017, p. 167). However, the application of new technology can have positive side effects. The introduction of Patrol Monitoring Systems (technology in anti-poaching) SMART[34] led to greater patrol effort by rangers because they knew that the SMART technology could monitor their patrol movements. Another side effect relates to local deterrence once poachers knew that drones were used in a certain area.

6.3.2.5 Complicity

Rangers switching sides and becoming poachers or supporting poaching operations by providing information is a constant challenge. Wildlife guardians from impoverished villages are at especially high risk of switching sides. In South Africa for example, rangers earn salaries ranging from 2,700 rand (approximately US$159, and the South African minimum wage) up to 12,000 rand (approximately US$705) a month. This poses a danger as rangers might be lured away by poachers who could offer substantially higher rewards. The financial benefit for a rhino poacher ranges from US$4,000 for the porter to approximately US$9,000 for the shooter (Serino, 2015). Many of the wildlife officials live close by the protected area they work in. This is an easily accessible environment for poachers to approach possible recruits, e.g. in the local drinking spots (shabeens). Rangers who switch sides to join poaching operations can be devastating to wildlife populations, as they possess insider knowledge on the whereabouts of current ranger posts and patrol cycles. An example from Central Africa found that after formally training eco-guards, 22 of the 60 guards engaged in wildlife crime (Fajardo del Castillo, 2016).

[34] SMART is a software application that enables the collection, storage and analysis of ranger-based field data. SMART enables the documentation of patrol efforts, such as time spent, area covered and success of patrols (Kretser et al., 2017, p. 161). Through various data analysis programmes, the users of SMART can obtain an overview on enforcement efforts and threat levels, thus SMART is a suitable tool for supporting the patrolling of hotspots.

6.3.3 Risks for Rangers

Table 3 demonstrates the plentiful risks that rangers face. Vehicle accidents and collision with animals are amongst the greatest risks.

Table 3: Risks for Rangers in Africa

	2012	2013	2014	2015	2016	2017	2018	Total
Murder	18	40	14	8	22	37	37	**176**
Vehicle accident	1	1	2	1	1	10	7	**23**
Animal	0	5	2	1	2	4	7	**21**
Drowned	2	0	1	1	0	6	4	14
Illness	0	0	2	0	0	4	3	9
Accident – other	0	5	0	2	0	0	0	7
Accidental shooting	0	0	0	0	3	1	0	4
Unknown	0	1	0	5	4	1	4	15
Total	**21**	**52**	**21**	**18**	**32**	**63**	**62**	**269**

Source: Africa Geographic, 2018[35]

There are also great regional differences. Most of the rangers who were killed came from the Democratic Republic of Congo (57), followed by Kenya (30), Nigeria (15), Cameroon (10), Uganda (10), Mali (8) and South Africa (8) (Africa Geographic, 2018).

6.3.4 Ranger-Military Cooperation

The military can be tasked with supporting wildlife crime enforcement, often in cooperation with traditional ranger forces. In some countries, ranger-military cooperation faces great challenges, such as in South Africa. Other countries report a positive experience. In Botswana, a fruitful military-ranger cooperation with members of the Botswana Defence Force developed. Soldiers regarded anti-poaching as a valid mission and concluded that it helped maintain good soldiering skills (Henk, 2006).

[35] Africa Geographic reports from data of the Game Rangers Association of Africa (GRAA), which partly incorporated figures from the International Ranger Foundation (IRF).

Ranger-military cooperation can be evaluated from different angles. Basic military characteristics can be helpful for anti-poaching: low recruitment age, physical fitness, obedience and the tendency to use violent forms of training. The military is not suited on the other hand to taking over internal law enforcement tasks as they were traditionally equipped and trained for fighting a 'primitive war'. There are fundamental differences in the level of violence that either military personnel or rangers are able to inflict. Soldiers are trained to identify a visible target. This stands in contrast to poaching cells that are organized around network structures and have no identifiable centre of gravity. Even when armed confrontations between poachers and enforcement officials take place, they tend to have the character of a counterinsurgency (Neuteboom, 2010; Easton & Moelker, 2010; van der Spuy, 2012; Olivier, 2015). While soldiers typically work in large groups that are bound to a clear hierarchy, rangers operate on an individual basis or within small teams (Last, 2010). Furthermore, the conduct of military personnel when confronting and killing enemies does not comply with that of traditional law enforcement officials. For example, an officer typically arrests a suspect and imposes measures to carefully secure the chain of evidence (Friesendorf, 2010). A further significant distinction between military and ranger forces can be found in the different laws that each party adheres to. Law enforcement normally works under domestic civil and criminal law, whereas the military in combat adheres to their own military law (Last, 2010). Some scholars claim that soldiers involved in law enforcement run the risk of using excessive force and violating the very rule of law they are mandated to protect (Friesendorf, 2010). However, this can also be the case with anti-poaching rangers, as illustrated by the contested issues of 'shoot on sight' and green militarization.

6.3.5 Concluding Remarks on Ranger Patrols

There are plentiful challenges around the establishment of a functioning anti-poaching unit. Most of the success factors go hand in hand. Furthermore, the development of a professional ranger force takes time, effort and resources. Far-sighted management is needed to guide, encourage and develop the unit in the right direction. This is an ongoing process and requires many small acts and incremental changes towards effectiveness and efficiency (David et al., 2016). A functioning anti-poaching unit should be constructed as a learning organization, as poachers adapt to specific enforcement patterns and circumvent anti-poaching efforts (Cheteni, 2014; p. 14; Gurung & Guragain, 2000). As ranger units are costly on an ongoing basis, other innovative forms of engagement, such

as ‘hot spot patrolling’ should be used (Fang et al., 2019, p. 26). When anti-poaching units are innovative and ‘one step ahead’, they avoid becoming predictable for offenders. While technology can support the rangers during their operations, they cannot replace the importance of foot patrols inside protected areas. Even once the organizational challenges around creating an effective ranger force are mastered, there are internal risks, foremost among them being when rangers collaborate with poachers. The empirical part cannot assess each of the criteria for a well-functioning anti-poaching unit in-depth, but it will map out challenges and assess the contribution of anti-poaching in soothing the storm.

6.4 Intelligence Through Networks of Informants

In several African range states, intelligence-led operations serve as an effective pre-emptive tool in the struggle against wildlife crime (David et al., 2016, p. 43). Intelligence-led conservation is inspired by intelligence-led policing. As a proactive policing method, intelligence is used to map out offenders and gather evidence of their activities and whereabouts (Moreto, 2015).[36] Nepal is often cited as an example where the use of proactive intelligence led to a significant reduction in wildlife crime (Knight, 2016). The application of actionable intelligence in conservation has several advantages. First, it has a preemptive character as wildlife offenders can be detected before an animal is killed. Second, intelligence-led conservation promises to use resources more efficiently, especially when applied in conjunction with other enforcement methods (Ball et al., 2020, p. 99). Experience from the 1990s in Zambia demonstrated that foot patrols, guided by actionable intelligence, had a 34-times higher probability of encountering poachers (Leader-Williams et al., 1990). The cost-benefit ratio is better with a functioning intelligence unit at hand than, for example, relying solely on ranger patrols (David et al., 2016, p. 44). Third, intelligence has the potential to harm criminal syndicates by reaching those offenders higher up the syndicate ladder which orchestrates the crime (Milliken & Shaw, 2012). Tanzania is an example of success in this respect. Their task force ‘Spider Net’ was effective in arresting middlemen and high-ranking members of poaching syndicates.[37]

[36] Intelligence-led policing started in the 1990s in Great Britain when the country had to target chronic offenders and key criminals with strained policing budgets. ‘Intelligence-led policing is the application of criminal intelligence analysis as an objective decision-making tool in order to facilitate crime reduction and prevention through effective policing strategies and external partnership projects drawn from an evidential base’ (Ratcliffe, 2003, p. 3).

[37] Spider Net combined personnel from several authorities such as the Tanzanian National and Transnational Serious Crimes Investigation Unit (NTSCIU), the Intelligence and Security Service (TISS),

Intelligence can serve different operational and policy levels. At the national level, intelligence is helpful for relevant agencies in better informing their policies and aligning approaches to actual threats and poaching trends, e.g. focusing on provinces and conservancies that face high poaching threats. At the regional and local level, actionable intelligence needs to be rather specific to inform those working on the ground, such as providing insights into patterns of local offenders with mapped out plans to trespass into protected areas or as identifying smuggling methods. Typically, local police stations or specific anti-poaching units would be engaged with collecting intelligence. At a later stage, intelligence can support investigations and case preparation (Fahlman, 2015; David et al., 2016, p. 44; Ratcliffe, 2016).

6.4.1 Human Intelligence

Human intelligence (HUMINT) is the most important support of anti-poaching measures. It aims to collect insights on planned poaching operations and can be harnessed from a wide range of sources (David et al., 2016, p. 46). The predominant way of gathering HUMINT is to create a network of informants, who are distributed in hotspots where wildlife offenders typically derive from, such as villages adjacent to protected areas or nearby townships. A network of intelligence officers, rangers and game scouts, who often live in the same village as wildlife offenders, can provide valuable information to intelligence officers (Nahonyo, 2005, p. 19). Furthermore, apprehended poachers usually possess a great deal of information that should be utilized (David et al. 2016, p. 47). In this respect, the local criminogenic environment is as important as skilled intelligence officers. When park–people relations are strained, villagers tend to provide aid and support to poachers. In such settings, it becomes challenging as well as risky for informants to gather information.

6.4.2 Challenges to Building an Effective Network of Informants

It has proven to be cumbersome to establish effective and accountable networks of informants. Intelligence officers need to be highly skilled. They need to be able to network and build trust with people. In most cases, the informant comes from the same social and cultural background as the potential wildlife offender so this person is regarded

the Police Force, the Tanzania National Park Authority (TANAPA), the Tanzania Peoples Defence Forces (TPDF), the Wildlife Division, as well as local informants (The Citizen, 2015).

as one of their peers. In other cases, the informant poses as an outsider. Most of the skills for successfully gathering HUMINT have to be brought along by the informant as they cannot be fully acquired in a formal training environment (David et al., 2016).

The communication ties between informants and senior operation managers must function well. Superiors need to be able to advise their team quickly when acting upon fresh leads (Maguire & John, 1995, p. 28).

The design of a network of informants and the attributes of the reward systems need to be carefully balanced. Rewards are usually paid on a results basis, e.g. upon arrest or conviction of a wildlife offender. The tip-off payment needs to be significant in order to motivate informants and they should be paid in a timely manner (Ball et al., 2020, p. 99). However, high tip-off payments increase the likelihood of false information and set-ups (David et al., 2016, p. 48).

Moreover, informer related corruption can undermine effective intelligence gathering. Even when reward systems are somehow accountable, incomplete supervision creates opportunities where there is a risk of the dishonest use of funds (Cowan et al., 2019). Some informants become vulnerable to the temptation of a sudden opportunity, others were corrupt in the first place and actively seek to exploit loopholes in the informant handling system. Because significant amounts of cash are involved, a high degree of honesty and integrity between management and the intelligence staff needs to be established (Clark, 2001, p. 38). Furthermore, informants as well as the intelligence officers face risks to their personal safety when denouncing wildlife offenders, especially if they come from within their community and related social networks.

A further challenge relates to the admissibility of evidence in court. Evidence that is collected by informants might only serve to locate and get hold of offenders but does not necessarily comply with the standards required for criminal prosecution. In order to improve the reliability and value of the evidence during criminal court proceedings, inter-agency collaboration – especially with the local police or the local magistrate – is needed to ensure that the collected evidence is of a high standard (David et al., 2016).

To date, the potential of intelligence-led policing in Africa's protected areas has not been fully utilized. Although intelligence units have increasingly been established, they frequently lack resources and manpower (David et al., 2016, p. 44). Moreto (2015) sees an increasing potential for intelligence led enforcement due to the continuing development of technical solutions, such as surveillance systems. Likewise, advanced technical capacities in handling large data volumes have promoted the application of

intelligence led policing (Ratcliffe, 2016, p. 2). However, for many of the African and Asian range states, HUMINT plays a greater role than technical intelligence. 'Law enforcement programmes are often implemented by conservation practitioners who prioritize field-based actions over quantitative analyses of operational outcomes' (Linkie et al., 2015, p. 852). The institutional development of functioning informant networks needs committed and devoted leadership over a sustained timespan. This process includes a great deal of trial and error. Experience from the field demonstrates that it is difficult to identify those informants who will deliver good HUMINT in advance. The lead agency first needs to invest significant time and resources and only at a later stage will they be able to identify those informants who reliably deliver actionable intelligence (David et al., 2016, p. 47). While new technologies can support the collection of information as well as their analysis, they will hardly replace traditional methods of HUMINT, which is collected in networks of people who live in impoverished, rural villages.

6.5 The Application of New Technologies

Technologies can support enforcement staff as well as conservation efforts, e.g. through supporting ex situ breeding capacity (Pacheco, 2018). This chapter will primarily look at the role of technology in supporting enforcement activities. With ongoing technological development, prices for the purchase of technology will go down, which again increases the chances of successful technology transfer initiatives in the conservation sector.

There have been several initiatives to introduce specific technologies in protected areas across Asia and Africa. However, when it has come to introducing high-end technologies, initiatives to date have been scattered and inconsistent (Joppa, 2015). Large and well-funded conservation sites, such as Kruger NP, became testing grounds and innovation hubs (see Chapter 8.4.2). This 'technology-push' was often supported by external actors, such as conservation NGOs or private security providers (Konrad, 2019, p. 66). The NGO WWF for example has implemented a 'Crime Technology Project', which aims to increase protection of key conservation areas by applying new technologies, such as UAVs, satellite remote sensing, gunshot detectors and ranger-based monitoring (SMART) (Joppa, 2015, p. 523). A key learning outcome from WWF's implementation phase is that bottom-up and problem-driven approaches are needed. However, current technology transfer initiatives can be seen as both top-down and supply-driven approaches (WWF, 2017).

The process of adopting new technology is characterized by unforeseen challenges (Joppa, 2015). The current corporate social responsibility and philanthropic initiatives lack the endurance and continued support required to match those challenges (Konrad, 2019, p. 66). The typical project cycle of international donors and NGOs lasts for two to three years. For a successful technology transfer, longer timeframes with secured budgets are needed. This should be accompanied by a broad variety of actors, also referred to as 'communities of practice' reaching from academia and funding agencies to end-users (Joppa, 2015, p. 522). Projects to test new technologies at specific sites need to capture learning systematically. To date, capacity-building has often been limited to those practitioners and enforcement staff within a protected area (Konrad, 2019).

The empirical part will also analyse the application and contribution of new technologies to soothing the storm. In many protected areas in the Global South, basic equipment is lacking, and costly high-end technology has only a secondary appeal. Technology needs skilled people to apply it. The 'tech-unreadiness' of a protected area can be a limiting factor for the successful application of new technologies (Konrad, 2019, p. 71). At the onset of the poaching crisis, conservationists hailed the use of new technologies as a potential game-changer. These expectations have often not been met (Konrad, 2019; Joppa, 2015). Nowadays, conservation practitioners tend to have a greater awareness of the limitations of technologies. Likewise, providers of military equipment found that conservation budgets are often tight and scaled down their engagement in promoting high-end technological solutions for protected areas (Konrad, 2019, p. 66). However, there are examples where technical improvements in ranger equipment created lasting change, such as the ranger-based monitoring application SMART, which has been used at 765 sites in 60 countries (SMART Partnership, 2018, p. 6).

6.6 Community Based Conservation

Rural communities close to wildlife play a significant and sometimes ambiguous role in any conservation approach. Having the advantage of proximity to potential poaching sites and knowledge of wildlife enables communities to contribute to conservation goals, but also provides the necessary skills and opportunities to engage in conservation crime (Biggs et al., 2017). Conservation specialists and also, increasingly, law enforcement practitioners, stress the importance of providing incentives and alternatives via projects that target development and conservation at the same time (Harrison et al., 2015;

Newmark & Hough, 2000; Mufune, 2015). Community conservation approaches follow the assumption that when local people are empowered and benefit from natural resources, they are motivated to use nature in a sustainable way. Sharing revenues and contributing to local livelihoods also tend to improve people's attitudes towards conservation (Jones, 2007; Twinamatsiko et al., 2014).

6.6.1 Informal Enforcement Systems

Local villages in many rural areas often have 'informal enforcement systems' embedded in their culture (Gezelius, 2002). From the perspective of the individual, they are deeply rooted in a sense of belonging to their peers. Villagers who comply with socially acceptable norms increase their utility, while those who go against contemporary values face normative pressure (Keane et al., 2008, p. 77; Nielsen, 2003). Informal group control in local African and Asian villages can take extreme forms, such as extrajudicial killings. Gezelius (2002) underlines the importance that informal control systems and their underlying local values have for compliant behaviour. When state enforcement is absent, communities might entirely dismiss the incorporation of the legal situation into their informal enforcement systems. Even partial and ineffective enforcement, as is often the case in remote areas close to wildlife habitats, is better than none, because it promotes a symbolic significance of the law. However, the contemporary legal values also need to be perceived as legitimate by the respective resource users, otherwise, they become costly to enforce (Gezelius, 2002; Sutinen & Kuperan, 1999).

The Norwegian fishing industry is an example of high levels of compliance, despite a low degree of formal enforcement. Gezelius (2002) demonstrated that moral standards played a greater role in influencing compliance than formal laws per se. These informal enforcement systems were driven by collective moral judgments which also contained informal sanctions for individuals who went against group norms: 'While the state enforces the law, the community enforces the moral obligation to obey it' (Gezelius, 2002, p. 312). Legal judgments and moral perceptions need to be compatible, either by designing environmental laws and regulations which reflect the needs and sometimes harsh realities of local people as well as by influencing the moral standards of civil society towards the legal norms (Gezelius, 2002). When current conservation approaches and their underlying claims of ownership are perceived by local villagers as a 'white man's business' with traditional colonial features, the moral and value-based perceptions of

community members can significantly differ from the formal set of rules and regulations. Hübschle (2016, p. 366) refers to this as 'contested illegality', where criminal actors don't perceive their illegal resource extraction as personal wrongdoing as they feel that they have a right to harvest and use natural resources. However, social norms and values within African communities and their 'traditional informal enforcement systems' are undergoing change. The trend towards urbanization will probably lead to higher levels of anonymity amongst members of society, with traditional social norms partly losing their influence over people.

6.6.2 Direct and Indirect Benefits

Several models have evolved under the umbrella of Community-based Conservation (CBC), such as the concept of 'Integrated Conservation and Development Projects' (ICDP's) and 'Community-based Natural Resources Management' (CBNRM). The definition of ICDP is wider than the concept of CBNRM and includes a broad variety of stakeholders at different levels as stewards of wildlife. ICDPs refer to: 'an approach to the management and conservation of natural resources in areas of significant biodiversity value that aims to reconcile the biodiversity conservation and socio-economic development interests of multiple stakeholders at local, regional, national and international levels' (Franks & Blomley, 2004).

The concept of CBNRM is tailored to the central role of communities as stewards of wildlife and refers to the 'management of natural resources under a detailed plan developed and agreed to by all concerned stakeholders. The approach is community-based in that the communities managing the resources have the legal rights, the local institutions and the economic incentives to take substantial responsibility for sustained use of these resources. Under the natural resource management plan, communities become the primary implementers, assisted and monitored by technical services' (CBNRM Net, 2020).

The outline of a community-based intervention largely depends on the local context. A general feature is that these approaches imply decentralization of authority from the state or the provincial level to defined groups of resource users, often on communal land (Büscher & Dietz, 2005; Jones, 2007). According to Gibson and Marks (1995, p. 944), there are three ways in which local communities adjacent to protected areas benefit:[38] (1)

[38] Hackel (1999, p. 727) comes up with similar principles: (1) Allowing people who live adjacent to

direct benefits from wildlife, e.g. through jobs, or villagers who profit from safaris or killed game; (2) indirect benefits for communities, e.g. advantages from development initiatives, improved health clinics and schools through benefits via revenues from nature reserves; (3) empowerment of local residents, via initiatives that allow for greater participation in the decision-making processes; empowerment of vulnerable groups, e.g. discussing land-use issues with government officials or having an exchange with government officials about the communities preferred development projects.

CBNRM also seeks to reduce negative effects for those living close to protected areas, e.g. via human-wildlife conflicts. A recurring aspect of community improvement initiatives is the assistance of conservancies with the development of 'human-wildlife conflict management plans' and the support of local people in the development of site-specific mitigation measures. Community-based conservation approaches are regarded positively by locals. Villagers, surveyed by Smallhorne (2013), expressed their willingness to take part in community-based projects. Respondents cherished the hope of benefitting from employment and voiced the opinion that local residents should be given preference when job opportunities arose (Smallhorne, 2013).

6.6.3 Challenges of Community Based Conservation Approaches

This chapter deals with the challenges around the successful implementation of community-based programmes. Community-based approaches have often been rather ambitious undertakings and failed to create lasting incentives for local people to steward and sustainably manage wildlife (Roe et al., 2015). Studies that promote community-based conservation as a success-story often lack the data to back up their findings. Figures are sometimes provided without essential contextual information (Kiss, 2004). There is a lot of 'wishful thinking' regarding the impact of community development initiatives (Kiss, 2004, p. 236).

6.6.3.1 Conflicted Relationship Between Conservation and Development

Some scholars claim that CBC is based on unrealistic or even false assumptions. In particular, the link between conservation and development can be challenged (Barrett &

protected areas to participate in land-use policy and management decisions; (2) providing local people proprietorship or ownership over wildlife resources and (3) giving local people economic benefits from wildlife conservation.

Arcese, 1995). A common conservation tool is designating specific geographic territories as protected areas (PA), which is supported by the international community and the International Union for Conservation of Nature (IUCN). In 2014, there were about 197,368 PAs on over 20.6 million km^2 land, which is about 15.4% of the terrestrial surface (Juffe-Bignoli et al., 2014, p. 8). The purpose of a PA is to protect wild biodiversity and the habitats they depend on.[39] Usually, there is a core area, where the extraction and use of wildlife resources are strictly limited and often prohibited completely. The concept of PAs is useful for biodiversity conservation but limits economic potential for villagers. Adams et al. (2004, p. 1146) claim that villagers bear the costs of lost economic opportunity, as the land cannot be put to alternative uses.

For the future, there is the risk that with population growth, especially amongst the rural poor who are dependent on a subsistence existence, the clamour for converting many of the PAs into farmland could potentially gain public and political support. Converting protected areas into farmland would support livelihood opportunities for the rural poor, but it would certainly challenge the preservation of wild habitats and biodiversity (Hackel, 1999, p. 731). The recent directive from the president of Tanzania, John Magufuli, in preparation of handing over wild habitats to farmers points in that direction (Peterson Wood & Stein, 2019). However, at present, there are also many forms of coexistence between people and parks. Protected areas can be grouped into different categories, from strict protection to non-consumptive use to extractive resource utilization (Emerton et al., 2006, p. 6). Especially in buffer zones, such as in Nepal's Chitwan National Park, regulated utilization and sustainable use are allowed.

6.6.3.2 Limited Livelihood Potential

The possibilities for enhancing livelihoods with the help of conservation approaches are limited. A notion that is often referred to is that healthy and well-managed animal populations will attract more tourists. Ecotourism is often mentioned as a prime example of creating alternative livelihoods and additional income (Xu et al., 2009; Honey, 2008). While this may be the case, it is not the rule. Many communities are unable to develop viable options for tourism because they are in remote areas with inadequate infrastructure to cater for tourists (Duffy & St John, 2013). Even in areas with a regular inflow of

[39] According to the IUCN (2019), a 'protected area is a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values.'

tourists, communities only obtain some benefit (Banerjee, 2012). A substantial portion of revenues go into the pockets of elites or is used on imported goods and services (Barrett & Arcese, 1995, p. 1078). In some cases, less than 2% of the revenues spent by tourists reach local villagers (Norton-Griffiths, 1995; Barrett & Arcese, 1995, p. 1078).[40] Kiss (2004) notes that benefits need to be significant in order to provide effective incentives for villagers to become stewards of wildlife.

ICDPs that are based on harvesting schemes run the risk of overharvesting, especially when surrounding communities are densely populated. This is frequently the case. According to Balmford et al. (2001), human population density in sub-Saharan Africa is positively correlated with richness in species. High population growth rates in Africa and Asia will increase the pressure on natural resources. Managers of community areas, who regulate the off-take, can be tempted to overharvest, or resist harvest rate reductions, in order to please the members of their community (Barrett & Arcese, 1995, p. 1075). This was the case in some of Namibia's communal conservancies. Conservancy residents found it difficult to accept that harvest rates had to be lowered after a number of years of drought (MET & NACSO, 2018).

6.6.3.3 Time Horizon of Interventions and Target Group

Often CBC fails due to poor project execution and a project design that is not tailored to the local context. External actors sometimes roll out community-based conservation initiatives with little indigenous input (Horwich and Lyon, 2007). International donors and NGOs frequently come as 'outsiders' to a rural area where they implement projects. They run the risk of coming with a pre-designed plan that is sometimes based on false or untested assumptions and does not match local conditions and cultural values (Newmark & Hough, 2000; Gibson & Marks, 1995; Barrett & Arcese, 1995, p. 1073). Furthermore, a suitable time-horizon for implementing sustainable environmental governance structures becomes relevant. Donor-driven initiatives run the risk of coming to a standstill once financial benefits stop pouring in. This stands in contrast to the usual two- to three-year project cycles in development programmes.

Moreover, CBC do not always create community-wide acceptance. Approaches need to reflect the heterogeneity of community members and their values (Spiteri & Nepal, 2006,

[40] These are older figures, from 1989, and relate to Kenya's Masai Mara National Reserve but serve to support the argument that often only small portions of the tourist revenue flow into the household-income of local villagers.

p. 3). Community-based initiatives run the risk of bypassing the intended recipients, or those most in need, and tend to support existing class structures. Wealthier community members manage to draw benefits from people-oriented conservation programmes more frequently, whereas poorer households and vulnerable individuals are left out (Twinamatsiko et al., 2014; Spiteri & Nepal, 2006). Furthermore, revenue sharing programmes are often limited to uneven distribution through endemic corruption. Effective control mechanisms that ensure the appropriate use of wildlife resources are lacking. This can deepen the rift between insiders who draw benefits and outsiders who are then motivated to engage in wildlife crime (Harrison et al., 2015). Spiteri & Nepal, (2006, p. 11) conclude that reaching the intended beneficiaries poses an even greater challenge than creating benefit opportunities for communities.

6.6.3.4 A Challenge in Outreach

There is a tendency for small-scale poachers to have some local connection. The geographical area from which poachers for high-value species derive is significantly larger. The South African example will demonstrate that poachers frequently trespass from Mozambique into Kruger NP (Bouché et al., 2012). In Namibia's Caprivi region in the north, poachers come from Angola, Botswana, Zimbabwe or Zambia (Nakale, 2017). In Nepal, poachers may come from neighbouring India.

Even if programmes effectively target 'would-be offenders' to lift them out of poverty, the number of impoverished households, and hence the group that could have the most incentive to engage in wildlife crime, would still be large. Without wholesale transformation into little Switzerlands there will always be individuals suffering from poverty and hence having the potential motivation to engage in illegal resource use (IUCN et al., 2015). Reducing Africa's and Asia's rural poverty is a task that is simply too large for limited conservation budgets.

The assumption that local people are inherently interested in biodiversity conservation and motivated to protect natural resources once their community becomes a shareholder and reaps benefits from its use can also be challenged (van Schaik & Rijksen, 2002; Kiss, 2004; Hackel, 1999). Benefits from conservation areas often come in the form of quasi-public goods, such as improved infrastructure or access to water, and hence fail to reward individual behaviour. This creates a typical free-loader problem. People can profit from conservation programmes and still have the incentive to engage in wildlife crime (Gibson & Marks, 1995, p. 942). Furthermore, deep-rooted poverty and deprivation in many of

Africa's and Asia's rural communities need to be considered. There are various indications that people who are experiencing hunger or material deprivation tend to put overarching conservation objectives aside. Oates (1999) concludes that, when provided with the opportunity, local people living near protected areas will exploit natural resources for their own economic development, just like all other people.

6.6.3.5 Community-based Anti-Poaching

In order to generate direct benefits through employment, Massé (2017) proposes the employment of rangers from local villages. This concept is referred to as 'community-based anti-poaching' or 'inclusive anti-poaching'. Massé supports this approach with an example from the Mangalane community in Mozambique where locally employed scouts supported the APU with fence patrols and intelligence on possible incursions. The respective APU recognized positive contributions towards a reduction in illegal exploitation. Several NGOs are promoting a similar concept of 'community game scouts'. These guards are recruited from the local villages, in agreement with the relevant ministry but without a formal mandate for enforcement activities, which is why they are often unarmed. Community scouts serve as watch guards alongside law enforcement and should influence perspectives in the villages towards conservation at the same time.

However, this approach also has disadvantages. It can be ineffective to create parallel structures, often with the help of NGOs backed by foreign donors. While inclusive anti-poaching should promote a locally owned wildlife economy and ease the tension between law enforcement and local communities (Massé, 2017), it can also lead to tension within the community. Community game scouts can be perceived as intruders who spy on their own community-members. Massé's research (2017) falls short of proving that higher levels of local employment results in lower levels of entrenchment between communities and protected areas. On the contrary, he states that all Mangalane rangers had been threatened with violence or even death (Massé, 2017), but he fails to bring this up in connection with his assessment of the 'good cooperation' between communities and the park administration. Another challenge results from the risk of complicity of enforcement officials with wildlife offenders. When rangers and scouts are recruited from the vicinity of protected areas, it increases the possibility that they share the same public or private space with potential wildlife offenders, who could happen to come from their circle of friends or extended family (David et al., 2016, p. 9).

6.6.3.6 The Supportive Function of Law Enforcement

Previous chapters have demonstrated challenges around the conceptualization and implementation of community-based approaches. However, without the inclusion and support of local communities, conserving and enforcing protected areas will be a constant challenge that will swallow considerable resources. Community-based conservation contributes by promoting an enabling environment for law enforcement within communities. With improved relations between local villagers and conservation authorities, enforcement officers will experience improved access to local villages, e.g. when creating viable networks of informants. While target-hardening techniques, such as ranger patrols, are able to reduce the magnitude of wildlife crime directly, community-based conservation approaches work more subtly – they have the potential to change the overall criminogenic environment in which wildlife crime is embedded. As communities take on the role of informal enforcement systems, would-be-poachers could be convinced by peer-pressure not to engage in rhino poaching in the first place.

6.7 Reducing the Rewards by Dehorning

Dehorning follows the logic of situational crime prevention as it reduces the financial benefit that offenders are able to draw from a rhino kill. In the course of the dehorning procedure, the animal is tranquilized and the horn is cut off above the germinal layer.

6.7.1 Effectiveness of Horn Removal

To date, there is little agreement in the literature and amongst practitioners about the positive effect of dehorning on reducing wildlife crime.

During the first wave of poaching in the 1990s, several African range countries were able to gain experience and gather data for scientific evaluations. The effect of dehorning on poaching is not easy to single out and explain with data at the country-level, because parallel developments and influencing factors, such as improved anti-poaching, also affect the outcome. However, most examples from the 1990s suggest a positive impact. In Namibia and Swaziland dehorning resulted in significantly lower crime rates (Lindsey &Taylor, 2011). In Zimbabwe's Lowveld Conservancy dehorned rhinos had a 29.1% higher chance of survival (Du Toit, 2011). Research, on the other hand, has also demonstrated that dehorning doesn't completely eliminate the poacher's incentive to kill

a rhino (DEFF, 2013b). Horn removal strategies can be a vital tool in the struggle against wildlife crime when they are coupled with other enforcement measures, especially the presence of anti-poaching forces. A disadvantage of dehorning is that this method is site-specific. Poaching pressure can simply be pushed to other reserves. Dehorning needs to be conducted on a broad scale including national parks and in periodic intervals. This needs to be coupled with awareness campaigns, such as in Namibia during the 1990s (Lindsey &Taylor, 2011).

6.7.2 Economic Considerations Around Dehorning

The feasibility and practicability of dehorning depend on several factors, such as the size and shape of the habitat, the population density and the associated costs. In South Africa, the costs vary between 5,000 and 8,000 rand per rhino (Lindsey &Taylor, 2011, p. 29). Dehorning is practicable for small populations in a manageable area where the animals can be located easily. For populations that are scattered in large terrains, such as Kruger NP or Etosha NP, the costs per rhino will be higher (Morgan, 2017; Lindsey & Taylor, 2011). Dehorning needs to be conducted on a regular basis as the horn regrows at a rate of up to 6 cm a year (Rachlow & Berger, 1997).[41] Given the high black-market value of horn, it can still be attractive to target a rhino for the remaining horn stump. Under severe threat conditions, it is advisable to re-dehorn every 12–24 months (Rachlow & Berger, 1997). However, there are still considerable research gaps regarding poachers' perceptions of the attractiveness of dehorned rhinos (Lindsey &Taylor, 2011).

Furthermore, the legal requirements, such as obtaining a dehorning-permit, pose a burden on private and communal rhino owners. In South Africa, the Threatened or Protected Species Regulations (TOPS) sets strict standards for private rhino owners to dehorn. The National Environmental Management Biodiversity Act (NEMBA) requires additional certification. Besides detailed documentation throughout the dehorning process, the methods of transporting and storing the horn are strictly regulated. On the one hand, state authorities could ease the overregulated certification process and remove cumbersome bureaucratic procedures to make dehorning accessible. On the other hand, dehorning is strictly regulated in order to avoid criminal exploitation, as is described in the following chapter.

[41] This figure is an approximation as the annual horn regrowth depends on several factors such as rhino species, sex and age.

In recent years veterinarians have gathered expertise to minimize health-risks for the animals (Lindsey &Taylor, 2011). In the 90s, mortality rates during the immobilization procedure could reach up to 14%. Improvements in immobilization drugs and capture techniques for in situ immobilization have significantly reduced this figure. Out of a sample of 381 rhinos, the Lowveld Rhino Trust has recorded a mortality rate of 0.026% (Lindsey & Taylor, 2011). There are a few scholars who assert that immobilization has negative effects on the rhinos' fertility rate (Alibhai et al., 2001).[42]

6.7.3 Criminal Opportunities Around Dehorning

Rhino owners who retrieve legal horn can be tempted to sell it into illegal markets. This is illustrated by the case of the 'pseudo conservation network' (see Chapter 8.2.2), where industry-insiders and conservationists were engaged in channeling horn from dehorning into illegal markets (compare Chapter 8.2.2). Other examples in South Africa are known where rhinos have been captured and dehorned by farm owners without a Threatened or Protected Species Regulations (TOPS) permit (Milliken & Shaw, 2012, p. 77; Louw-Carstens, 2012). These cases are particularly challenging to law enforcement because perpetrators often have insider knowledge and there are no protective measures against veterinarians or rhino stakeholders.

Furthermore, the possession of rhino horn is risky for the owners. In South Africa, there have been several incidents of armed robberies that followed registration processes after information was leaked from provincial nature conservation authorities to criminals (Milliken & Shaw, 2012, p. 10). In Namibia, private rhino owners report that many banks are refusing to store rhino horn, as they deem it too risky.

6.7.4 Chemical Horn Infusion

Some reserves had injected chemical substances into the horns of rhinos, that if consumed by people would make them seriously ill. There were claims that poaching decreased shortly after injecting dye and broadcasting the message (Koen, 2017, p. 6).

Other comprehensive studies refute the claim that inserting chemicals is an effective

[42] Other concerns regard the rhino's ability to defend itself. Mothers guard their calves with their horns, protecting it against predators such as lions or spotted hyenas. Rhino bulls use their horn to defend their territory (DEFF, 2013b). However, dehorned rhinos are not defenceless. Lindeque & Erb (1995) were unable to identify cases where dehorning female rhinos had effects on calf survival.

method of curbing poaching. There are logistical challenges, especially with larger reserves. Additionally, technical challenges arise. Often the dye had not penetrated the whole horn so that poachers were unable to see it when they removed the horn. Moreover, there are ethical concerns when actively poisoning substances that humans might consume. Ferreira et al. (2014) conclude that poisoning horn did not significantly reduced rhino poaching. The authors classify this method as an ineffective deception.

6.8 Addressing Wildlife Crime Related Corruption

Scholars and wildlife practitioners identify corruption as a predominant enabler that fuels wildlife crime (see also Chapter 3.3.5, WWF, 2016). The research base on wildlife crime and corruption is rather thin and further research is needed to assess corruption risks and entry points for mitigation measures (Musing et al., 2019, p. 1; Williams et al., 2016, p. 8; DFID, 2015, p. 57). When looking at measures to contain corruption, traditional donor-driven initiatives do not always have the desired effect. Often, they are designed under the assumption that countries which receive aid function similarly to countries that provide it. Some donor initiatives advocate for stricter anti-corruption laws, which can indeed have a positive effect. However, it can also mask weak anti-corruption commitment and largely evaporate as window dressing (Williams et al., 2016, p. 9). Strengthening the criminal justice system is proposed by many scholars to combat corruption. Another challenge are judicial institutions that are corruptible and 'corruptors' who can also be found within the criminal justice system (Gloppen, 2013, p. 68). Scholars further propose the improvement of monitoring and evaluation regimes for anti-corruption laws. A broad variety of stakeholders should be included in this process, including NGOs (Williams et al., 2016, p. 11).

Anti-corruption programmes need to be based on contemporary societal values in order to achieve widespread approval. Cultural frameworks and social moral values can diverge from the legal framework and assign legitimacy to certain activities even if deemed illegal by contemporary laws (Hübschle, 2017c, p. 178). Bushmeat hunting serves as an example. Although formally illegal in most jurisdictions across Africa, it finds widespread approval with local people. This makes it more challenging to contain corruption associated with the illegal extraction of bushmeat.

Combating wildlife-crime related corruption requires context specific entry points, such as levels of renumeration. Low salaries can motivate enforcement officials to supplement

their income through corrupt practices. Higher salaries, together with improved checks and balances, could reduce corruption, as enforcement officials would be less willing to risk losing their job (Wyatt & Cao, 2015, p. 8).

6.9 International Engagement

International organizations and the broader donor community demonstrate the commitment to combating poaching and the illegal wildlife trade. Several conventions have been adopted, such as the 'Convention on Biological Diversity' (CBD), the 'Convention on the Conservation of Migratory Species of Wild Animals', as well as the 'Lusaka Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora' (UNODC, 2017, p. 5). Several high-level meetings have been devoted to the topic of wildlife crime, such as the London Conference on the Illegal Wildlife Trade in 2018. The focus and importance that the international community attaches to transborder wildlife crime could also be seen at the CITES Conference of the Parties (CoP) in 2016, where member states agreed to treat poaching and wildlife trafficking as a form of transnational organized crime (Biegus & Bueger, 2017; Rademeyer, 2016b).

The European Union (EU) is active in combating wildlife trafficking.[43] The European Commission adopted the EU Action Plan against Wildlife Trafficking in 2016. The plan proposes the closure of enforcement deficits within the EU and intends to build a global partnership in the area of wildlife law enforcement with African source countries (EC, 2016). In 2014, the EU had ongoing projects worth €160 million that were earmarked to reduce wildlife trafficking. Furthermore, single member states are engaged. Germany is currently funding bi- and multilateral cooperation projects worth around €200 million to reduce wildlife crime (Deutscher Bundestag, 2018). Of particular importance is the project Partnership against Poaching and Illegal Wildlife Trade (in Africa and Asia) which is funded by the Federal Ministry for Economic Cooperation and Development (BMZ) and the Federal Ministry for the Environment, Nature Conservation and Nuclear

[43] The EU is a relevant destination and transit region for illegal wildlife products, with 2,500 seizures every year. The EU member states have a robust regulatory framework in place. Enforcement is only lacking in some cases, but often due to missing information about what species are protected (Sina et al., 2016). The EU itself is not a relevant end-user market for elephant and rhino products. In rare cases rhino horn, destined for Asian markets, had been stolen out of exhibitions, museums or private homes (Sollund & Maher, 2015; Sina et al., 2016, p. 30). In the EU, most of the seizures relate to other animals, e.g. corals, reptiles and pangolins, and plants. Ivory was only seized in small quantities and often in transit to other countries, foremost China. (Mundy-Taylor, 2013).

Safety (BMU). The project aims to curb poaching and the illegal trade in rhino and elephant products in source, transit and destination countries.

Other international players with global significance engage in conservation and enforcement. The US set up a Presidential Task Force in 2016 to combat wildlife trafficking (GAO, 2016). China was often regarded with ambivalence by conservationists, but in December 2017, closed its national ivory market (Gamso, 2019). Hong Kong is supposed to close its markets by the end of 2021 (Actman, 2018).

From 2010 to 2016 international donor countries spent a total of US$1.3 billion to reduce poaching and the illegal wildlife trade; of this 63% of the funding went to African range states and 29% went to Asia. (World Bank Group, 2016, p. 12).

Table 4: Funding Allocated to Combat the Illicit Wildlife Trade[44]

Funding	%
Protected Area Management to prevent poaching	46%
Law enforcement / intelligence-led operations	19%
Sustainable use and alternative livelihoods	15%
Policy and legislation development	8%
Research and assessment	6%
Communication and awareness-raising	6%

Source: World Bank Group, 2016, p. 19

The majority of funding was allocated to strengthen protected areas (46%) and law enforcement (19%). It is apparent that a greater emphasis is being put on enforcement as opposed to reducing motivations to offend as only 15% of the funds are designated for 'sustainable use and alternative livelihoods'.

There are specific international organizations, such as the World Customs Organization and INTERPOL, that address the challenge of weak cooperation between source, transit and destination countries by compiling data and promoting channels to exchange information (Broussard, 2017, p. 124). INTERPOL attaches value to environmental crime by running an 'Environmental Crime Working Group'. Their mandate is to facilitate cooperation between law enforcement agencies in various countries.

One of Interpol's approaches is the National Environmental Security Task Forces (NEST), which are national multi-agency cooperatives. NESTs should bring together relevant agencies and authorities such as police, customs, prosecutors and intergovernmental partners. NESTs aim to bundle expertise in order to work towards

[44] For the period 2010 to 2016

specific conservation aims. INTERPOL also offers support with the deployment of Investigative Support Teams (ISTs). National law enforcement authorities can request additional investigative capacity and technical support for specific wildlife crime cases (INTERPOL, 2018, p. 7).

International actors are attributing importance to regional cooperations and the bilateral exchange of best practices in combating wildlife crime (CITES, 2016). The International Consortium on Combating Wildlife Crime (ICCWC) is a coordinated effort of five high-profile inter-governmental organizations: The CITES-Secretariat, INTERPOL, the United Nations Office on Drugs and Crime, the World Bank and the World Customs Organization. ICCWC seeks to support the collaboration of national wildlife law enforcement agencies by creating regional networks.

Furthermore, a wide range of environmental NGOs are active in the field of rhino and elephant conservation, such as the World Wildlife Fund (WWF), the African Wildlife Foundation (AWF) and the Wildlife Conservation Society (WCS). These NGOs usually maintain field offices in the range states where they are active. They support a broad range of conservation and enforcement-related areas, such as community-based livelihood programmes and conservation education, but also strengthen law enforcement, e.g. by supporting capacity building for enforcement officials. The support that NGOs offer depends on the political objectives of the specific host country, the requirements and articulated needs of local actors in the project area, as well on the objectives of the donors. This research will also consider the role of the broader donor community when assessing the response to wildlife crime. However, it cannot provide a comprehensive assessment of the impact of donor-driven initiatives. On the one hand, they can provide important external stimulus and expertise and promote needed capacity-building, but on the other hand, NGOs and other international donors lack a formal enforcement mandate. ODA-driven projects need to ensure close cooperation with local partners. Their engagement runs the risk of lacking ownership from local authorities or building parallel structures. NGOs are often tempted to ‘sell their product’, in which they offer their specific training packages and consultancies without making sure that their engagement really targets a specific weakness in the regional context of the assignment. NGOs are also dependent on external funding and end their support abruptly once the project cycle of donor initiatives phases out.

6.9.1 South-South Cooperation

There are several regional cooperation agreements between African and Asian range states to reduce wildlife crime. The African Union (AU) adopted a comprehensive anti-poaching strategy in 2015. This has trickled down to regional state associations. The South African Development Community (SADC) developed a comprehensive Law Enforcement and Anti-Poaching Strategy for 2016–2021. The strategy prompted the creation of the SADC Wildlife Crime Prevention Coordination Unit (WCPC), which is mandated to coordinate efforts with member states regarding enforcement and monitoring of wildlife crime (SADC, 2015). The bureau is located in Gaborone. Their strategy promotes stiffer penalties for wildlife offenders during criminal proceedings in SADC member states, for example by installing mandatory minimum penalties for the illegal killing of rhinos and elephants (SADC, 2015).[45] Furthermore, the bureau intends to close enforcement gaps. In particular, member states should be strengthened in their enforcement capacity to convict high ranking poachers and traders (SADC, 2015). While the SADC anti-poaching strategy is touching upon many weaknesses of the enforcement response towards wildlife crime, the cooperation has faced criticism. Some countries are uncomfortable with SADCs *mano dura* approach which they regard as a form of judicial interference that undermines their national court processes (Seretse, 2016).

In Asia, the South Asia Wildlife Enforcement Network (SAWEN) was formed in 2010. The SAWEN Secretariat is located in Kathmandu (see Chapter 10.9). The East African Community (EAC) has developed an anti-poaching strategy, as well as the Intergovernmental Authority on Development (IGAD) and the Horn of Africa Wildlife Enforcement Network (HAWEN). However, for the EAC strategy and HAWEN, it has become obvious that policy initiatives need to be coupled with funds and specific goals to create impact. Furthermore, strategic plans, drafted at a high level carry the risk of lacking ownership in respective member countries, especially when member states have different perceptions about how to approach wildlife crime enforcement.

6.10 Public-Private Partnerships

In Asia and Africa, various forms of cooperation between public and private actors have emerged that are intended to soothe the storm. In many cases, public-private partnerships

[45] The SADC Rhino Management Group (RMG) consists of members of several rhino range states and has an advisory function. The group originally focused on the conservation of black rhinos but has extended its efforts to include white rhinos.

have been initiated and supported with the help of international organizations and NGOs. The NGO TRAFFIC for example supports a wide range of PPPs in Asia. Chinese companies from the global transportation industry have committed to zero tolerance for the carriage of illegal wildlife products *inter alia* by providing information on suspected wildlife trafficking to enforcement officials (UNODC, 2017, p. 6). TRAFFIC further supports public-private partnerships with Chinese internet companies in the field of wildlife cybercrime. While current bilateral initiatives have already shown some success, a broad-scale multilateral engagement is still lacking. Furthermore, the lessons learned in monitoring and combating the online trade in illicit wildlife products still need to be scaled up (TRAFFIC, 2019a, p. 11).

Several PPPs have been formed in rhino range states. In South Africa, the Howard Buffet foundation is contributing significantly to anti-poaching in Kruger NP. Often, private sector cooperation comes in the form of philanthropic engagements, simply because nature conservation is not their core business (Joppa, 2015, p. 524). Hemmersbach Anti-Poaching on the other hand has created in-house expertise in conservation and anti-poaching and is regarded as a game-changer in most of the areas they operate in, after having brought down rhino poaching rates significantly. Likewise, there are forms of public-private partnerships via African Parks. African Parks is currently managing 15 parks and protected areas across nine African countries. The organization claims to employ 1,000 park rangers who arrested 555 poachers in 2017 (ICCF, 2018). Approaches, such as African Parks, where the entire park management is being taken over, need to ensure that local capacity is built and that government structures are not being undermined. Furthermore, there are also defence companies which cooperate with conservation initiatives in order to provide and test technologies, such as Unmanned Aerial Systems (drones).

6.11 Tackling the Illegal Wildlife Trade

With the international trade ban in place, source, transit and destination countries are looking for ways to increase their capacity to detect smuggling of illegal wildlife products. It is hard to assess how committed CITES-member states really are to closing smuggling loopholes. Surveillance has increased at South Africa's O.R Tambo airport (Milliken & Shaw, 2012). In 2015/16, South African customs officers received further training from the Environmental Management Inspectorate to be able to better detect

illicit movement of endangered species at borders and entry ports (DEFF, 2016). It seems that important destination countries are also willing to recognize the severity of rhino horn smuggling. Vietnam recently revised its penal code and intensified penalties for illegal wildlife trade. The country introduced prison sentences of up to 15 years and monetary sentences of US$9,000 for individuals and of US$700,000 for corporations involved in wildlife crime (Knight, 2016). Despite advances in the legal situation, only a fraction of the illegal rhino horn is being seized. Table 5 provides an overview of the number of African rhino horns that enter the illegal trade. Approximately 75.7% of the horn is not being detected. Of the 24.3% that is being detected, 14.1% is confiscated in the field, 4.5% outside protected areas (but inside Africa) and 5.8% of the horn is confiscated outside Africa.

Table 5: Number of African Rhino Horns Entering the Illegal Trade[46]

Horns on all recorded poached rhinos	7,875	90.6%
Horns stolen from natural mortalities (estimate)	149	1.7%
Thefts from government stockpiles	148	1.7%
Other thefts in Africa (private stocks, museums, etc.)	241	2.8%
Horns illegally sold from private stocks (estimate)	78	0.9%
White rhino horns obtained from legal trophy hunts (estimate)	200	2.3%
Source Total	***8691***	***100%***
Recovery of illegally obtained African rhino horns by government enforcement agencies		
Confiscations / seizures in Africa	387	4.5%
Recoveries in the field of horns from illegally killed rhino (estimate)	1,221	14.1%
Horns recovered in seizures outside of Africa	503	5.8%
Horns from Africa going into the illegal trade	**6,580**	**75.7%**

Source: Emslie et al., 2016, p. 3

The world's international police organization, INTERPOL, advocates a close engagement of customs and port authorities and improved transboundary cooperation between countries. INTERPOL supports the approach of targeting the profits of criminal organizations in order to drain them financially. Customs officials in the Global South lack training to detect illegal wildlife species. One challenge is that smugglers regularly

[46] from October 2012 to December 2015

change their *modus operandi*. Once a loophole has been closed by enforcement officials, criminals figure out new smuggling avenues. There is also a lack of knowledge on what species are legal and what are illegal to trade.

NGOs and international organizations are supporting customs and port authorities with new tools and capacity-building initiatives to better detect illegal wildlife trade. The NGO TRAFFIC promotes AFRICA-TWIX (Trade in Wildlife Information eXchange). TWIX is an innovative system for the exchange of information on the illegal trade of flora and fauna, primarily amongst customs officials but also amongst other law enforcement officers and monitoring bodies. TWIX started in Central Africa and is being extended to other African countries, such as the SADC region (TRAFFIC, 2019b).

6.12 Reducing Asian Demand

Scholars overwhelmingly suggest that the rhino and elephant poaching crisis can only be solved with suitable approaches that target the Asian demand side (Milliken & Shaw, 2012). Ivory is a non-consumable good and is mostly used for carvings in China, which represents the greatest end-user market (Gao & Clark, 2014), while rhino horn is a consumable good that is used for traditional medicine (T' Sas Rolfes, 2012).

Some scholars propose a market reduction approach. This can be seen as a proactive policing strategy and has elements of situational crime prevention because it asks *how* the crime occurs rather than looking at dispositional factors (Schneider, 2012, p. 8). By reducing demand for illegal wildlife goods or completely destroying the market, poaching pressure could either be significantly reduced or stopped.

Shark fins serve as an example of how the illicit wildlife trade can be reduced through engagement with consumers. The demand for shark fin soup was significantly lowered via awareness campaigns, in which the NGO Wild Aid played a key role. With the help of Asian celebrities, the NGO managed to reach a broad audience in order to spread the message to stop consuming shark fin soup (Anderson & Jooste, 2014; T' Sas Rolfes, 2012).

A great challenge in identifying effective marketing approaches is that the consumption of wildlife in TCM remains poorly understood (Collins et al., 2013). The demand curve for rhino horn in TCM is probably not a steady linear function.

With high black-market prices, the question is if, and at what point, a demand reduction would effectively lead to lower poaching pressure in rhino range states (Broad & Burgess,

2016). Studies indicate a significant price mark-up of around 16:1 between poachers and traders (Knight, 2016). Therefore, dropping end-user rhino prices could be absorbed by markdowns from Asian retailers. With Asian retail prices and potential revenues at such a high level, poachers in range states can be assured of receiving the current price, of up to US$10,000 per rhino kill, for the foreseeable future.

6.12.1 Persistent Consumer Base

There are many indications that rhino-horn demand is fairly persistent. The use of rhino horn in traditional Chinese medicine (TCM) dates back 2,000 years. In several Asian countries, TCM is recognized as a legitimate branch of medicine and is supported by various training schemes. Methods such as acupuncture have been introduced in Western societies. A large fraction of TCM favours the use of plants only. However, another fraction of TCM users also consume animal products. This fraction has proven to be stubbornly persistent. In addition to traditional beliefs, factors such as status and elitism influence the use of rhino horn. Consumers of rhino horn come from more affluent parts of society. They can be educated, influential businesspeople or government officials (Knight, 2013). Rising income in Asian countries has led to a higher pool of potential consumers of illicit wildlife contraband (Ngwakwe & Mokgalong, 2014).

Further, consumer patterns are linked to general health and well-being. A study conducted in Chinese hospitals demonstrated that ailing patients have a higher willingness to purchase illicit animal TCM products than healthy respondents. Of the ailing participants, 61.3% expressed the intention of purchasing illicit animal products – in this case, tiger bone – despite the fact that 97.2% of the respondents were aware that the product is banned. From the control group of healthy respondents, 88% were aware that tiger bone is illegal, but only 5.6% expressed the intention to acquire an illicit wildlife product (T' Sas Rolfes, 2012). Problematic to demand-reduction efforts is that campaigns will only reach marginal fringe consumers but will often fail to change the behaviour of the solid and much smaller consumer base who are willing to pay extraordinarily high prices (T' Sas Rolfes, 2012). The persistent consumer base would often also dismiss the lack of western scientific proof regarding the curative effect of rhino horn, stating that western scientific proof is not a suitable tool to measure spiritual forces in the first place (Ayling, 2013; T' Sas Rolfes, 2012).[47]

[47] Rhino horn consists primarily of keratin, the same substance which can be found in fingernails and hair.

6.12.2 Awareness Campaigns

To date, the results of demand-reduction campaigns have been mixed. Knight (2016) paints a sobering picture by stating that demand reduction projects from the last ten years have failed to show success. However, the fact that rhino demand is still at a high level should not necessarily lead to the conclusion that past awareness campaigns have been ineffective. It is unknown if demand in Asia's rising economies, with an increasingly wealthy consumer-base, would be even higher without past initiatives. Furthermore, many of the programmes might only display results in the long term. In Vietnam, for example, youth education projects have been conducted. One initiative started in 2016 and seeks to educate young people in schools throughout Ho Chi Minh City. The young people are educated about nature conservation and rhino protection. The initiative further aims to engage pupils by designating them as 'rhino ambassadors' (DEFF, 2016).

There can be positive spill-over effects of awareness campaigns to the policy-level. Gamso (2019) claims that the work of many national Chinese NGOs as well as international NGOs which raised awareness and lobbied against the use of illegal wildlife products, which also included public shaming efforts, had a positive effect in pushing the Chinese government to pass the country-wide ivory ban in 2017. Moreover, ivory prices seem to be dropping globally, partly as a result of a lower demand from Chinese customers (WJC, 2020, p.6).

Rhino horn users tend to believe that the spirit of the animal is stored in body parts.

7 Conservation Status of Rhinos and Elephants

This chapter provides an overview of the biological status of the rhino species. Currently, there are five rhino species worldwide. Two reside on the African continent: the white rhino[48] and the black rhino.[49] Three of them reside in Asia: the greater one-horned, the Sumatran and the Javan rhino. This research focuses on the two rhino species residing in Africa, the white rhino and the black rhino, as well as the greater one-horned rhino in Asia.

Table 6: Conservation Status of the Five Rhino Species

Rhino species	**Population** (in 2015)
White rhino (2 subspecies, 1 nearly extinct)[50]	19,666–21,085
Black rhino (4 subspecies)	5,630 (in 2020)
Greater one-horned rhino	approx. 3,500
Sumatran rhino (3 subspecies)	approx. 30[51]–73
Javan rhino (3 subspecies, 2 extinct)	approx. 63

Source: Emslie et al. 2016; Save the Rhino 2017; IUCN, 2020

The **Javan rhino** population is critically endangered with only up to 63 rhinos left. They all live in Ujong Kulon National Park, in West Java in Indonesia (Setiawan et al., 2018). Having all rhinos in a single location poses a risk for species survival, with the possibility that the whole population could be hit by natural disaster such as a tsunami or volcanic activity (Setiawan et al., 2018), or infected by a disease carried by domestic cattle (Emslie et al., 2016, p. 15). The **Sumatran rhino** is likely to become extinct. The population of approximately 30 to 73 animals is spread in four remaining habitats (Kretzschmar et al., 2016; Hance, 2017; Emslie et al. 2016, p. 15).

For the Sumatran rhino, a ranger unit was been established in 2013 and has – so far – not

[48] The white rhino, *ceratotherium simum,* is also called the square-lipped rhino.

[49] The black rhino, *diceros bicornis,* is also-called the hook-lipped rhino.

[50] The northern white rhino was wiped out of its natural habitat through poaching and range loss by 2007. The species formerly inhabited parts of East and Central Africa south of the Sahara. The last male northern white rhino died in March 2018 from age related complications in Kenya's Ol Pejeta Conservancy. There are only two northern white rhino cows left. These animals are protected around the clock but due to the low fertility of the remaining older animals, the northern white rhino species will likely die out. There are attempts from researchers to save the subspecies with methods deriving from stem-cell technology. The results of this method are uncertain, and if successful it would be the first instance of saving a species with modern reproductive medicine (McKie, 2016; Hübschle, 2016, p. 16; Smith, 2018; Tunstall et al., 2018).

[51] The Sumatran rhino is very elusive. Researchers have tried to monitor the population in the dense and mountainous rain forest, but with little success (Hance, 2017).

discovered any poached rhino. Although the possibility of undetected poaching remains, there are no known cases of poaching for Javan rhinos either (Emslie et al., 2016, p. 15; Milliken et al., 2009, p. 15). In comparison to the Javan and the Sumatran rhino, the **greater one-horned rhino** population is relatively stable and listed as *vulnerable* on the IUCN's Red List. After heavy poaching in the 1990s, the population of overall 3,557 rhinos has been growing by approximately 9% a year. About 82% of the population (2,912) live in India where the majority (82.5%) reside in Assam's Kaziranga National Park in the north-east. The other 18% (645) live in Nepal, where Chitwan National Park is conserving (93.8%) of Nepal's rhinos (Emslie et al., 2016, p. 14). The **black rhino** has a remaining population of 5,630 and is listed as *critically endangered* by the IUCN red list of threatened species. From 2012 to 2018, the black rhino population had an annual growth rate of about 2.5% (IUCN, 2020). Despite this slightly positive trend, IUCN has kept the conservation status as critically endangered. The **southern white rhino's** population is the most stable population in relation to the other rhino species and subspecies, with about 20,378 animals, hence they are listed only as *near threatened* under the IUCN categories (IUCN, 2017).[52]

7.1 Rhino Population in Africa

Table 7 shows the development of the African rhino populations from 2012 to 2015. South Africa is custodian to the largest remaining white rhino population. Important range states for black rhinos are – besides South Africa – Namibia, Kenya and Zimbabwe. Most notably, Mozambique has only 29 white and two black rhinos left.

[52] The IUCN Red List of Threatened Species captures the global conservation status by evaluating the extinction risk of each species and classifying threatened species into the following categories: least concern, near threatened, vulnerable, endangered, critically endangered, extinct in the wild, extinct.

Table 7: Rhinos in Africa

In 2015	**total white rhinos**	**total black rhinos**	**total both**
Botswana	239	48	287
Kenya	444	678	1122
Malawi	0	26	26
Namibia	822	1946	2768
South Africa	18,413	1893	20306
Swaziland	76	20	96
Tanzania	0	133	133
Uganda	15	0	15
Zambia	10	32	42
Zimbabwe	330	472	802
Mozambique	29	2	31
2015 total	20,378	5,250	25,628
Difference to 2012	-230 (-0.4%)	+431 (+2.9%)	+201 (+0.3%)

Source: Emslie et al. 2016, p. 1; Knight 2016, p. 14

According to the figures of Emslie et al. (2016, p. 1), the white rhino population decreased only slightly by 0.4% between 2012 and 2015. The black rhino population increased by 2.9% during that time. Taking into consideration that rhino populations exhibited a yearly increase of 7.1% from 1992 to 2010, the threat from poaching becomes more visible.[53] Ferreira et al. (2018) conclude that the white rhino population is decreasing faster than the black rhino. This can be attributed to behavioural differences between the species. Black rhinos are browsers that feed from trees and bushes. White rhinos are grazers and can be found in the open bushveld more often, where they have a higher risk of being detected by poachers. About 85% of the global rhino population reside in protected areas (Emslie et al., 2016). A relevant distinction is a differentiation between private reserves and bigger state-owned protected areas. Especially in South Africa and Namibia, private rhino owners also hold significant stocks of rhinos. In South Africa, there are approximately 400 private rhino owners (Duffy et al. 2013, p. 3). Depending on the size

[53] According to Milliken (2009, p.2) the white rhino population grew by 7.2% and the black rhino population by 4.8%

of the reserve, there are differences in management and enforcement.

7.1.1 The Spread of Rhino Poaching

At the beginning of the twentieth century, there were over one million rhinos on the African continent. These populations were thinned out until the middle of the twentieth century, mostly by uncontrolled hunting by European settlers (Dublin & Wilson, 1998). During the 1950s, there were about 20–50 rhinos left in the iMfolozi area in South Africa's KwaZulu-Natal province (Knight et al., 2015). The project Operation Rhino, under the leadership of Ian Player, led to a remarkable recovery and repopulation of South Africa's white rhino population. Similarly, in Nepal and India, the Greater one-horned rhino recovered from around 200 animals to over 3,000 (Saha & Mazumdar, 2017, p 261). On the African continent, the current wave of poaching started in Zimbabwe with 21 rhinos killed in 2006.

Table 8: Rhino Poaching in Zimbabwe

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Rhinos	21	38	164	39	52	42	31	38	20	50

Source: Emslie et al., 2016, p. 2

Once the 'easy targets' had been harvested, rhino poaching accelerated in South Africa from 2009 onwards where numbers showed a steady increase. In 2013, the number of rhinos killed exceeded 1,000 in South Africa and spread to other countries (see Chapter 8.1.2). Kenya lost 59 rhinos in 2013. In Namibia, rhino poaching started to accelerate later, from 2015 on (Save The Rhino, 2018).

7.1.2 Elephant Poaching on the African Continent

Currently, there are 400,000 to 620,000 elephants on the African continent.[54] The populations are unequally distributed and over half of the animals reside in Botswana, Tanzania and Zimbabwe (Chase et al., 2016; IUCN, 2013b). During the 1970s, Africa's elephant population was recorded as being one million. The animals were significantly

[54] Between 2014 and 15 the Great Elephant Census (GEC) was conducted in 18 countries. However, there is still little consensus on the actual continent-wide numbers of elephants Estimations are based on carcass monitoring rather than live elephants. Furthermore, many countries do not monitor their elephant populations, which makes it more difficult to compile regional figures (Chase et al. 2016, p. 2).

reduced by the first poaching wave in the 1970s and 1980s (Douglas-Hamilton, 1987). The new, and currently ongoing, wave of poaching started in 2005. According to some conservationists, poaching and habitat loss led to annual death rates of 30,000–40,000 animals a year, which caused elephant populations to shrink at an unsustainable rate of 3% to 8% a year (Chase et al., 2016; Wittemyer et al., 2014; Chase et al. 2016, p. 2). Elephants without tusks are on the rise due to ongoing poaching. While typically only 2% to 6% of elephants are born without tusks, some parks, such as Mozambique's Gorongosa NP, record that around 30% of their elephants are tuskless (Conciatore, 2019).

The elephant poaching rates have slowed down in recent years and vary across the African continent. The pressure is higher in countries with fragile statehood and those regions that are disrupted by civil war, foremost in Central and West Africa which is why those populations have suffered heavily. For example, forest elephants in Central Africa have declined by 62% within nine years (2002–2011) (Maisels et al. 2013). In contrast, populations in range states south of the Zambezi river are well-managed, with only little illegal off-take (Nellemann, 2013).[55] However, in Southern African countries, poaching rates are subject to change. While the illegal killing of elephants has slightly decreased in Namibia and South Africa, Botswana is currently experiencing rising poaching rates (Maron, 2019).

7.1.3 Reaching the Tipping Point and 'Zero Poaching'

Monitoring the size of the rhino population matters from a criminological perspective. Thinned-out populations make it harder for poachers to locate rhinos and hence are an important aspect in the criminogenic environment from a site-based perspective. For range states and single populations, the question arises as to when the 'tipping point' is reached, which refers to the point when rhino deaths outnumber the natural growth rate and populations are declining. For rhinos, the natural birth rate under optimal conditions is approximately 10%. Normal mortalities are around 2% to 3%; hence net population growth is between 7% and 8% (Balfour, 2019, p. 2). Besides the loss to poaching, habitat loss continues to be a reason for decreasing population numbers and extinction risks (Kiss, 1990, p. 1). Climatic events also regularly cause rhino deaths. In 2019 Namibia experienced the worst drought in 90 years (Xinhua, 2019). As a general outline, rhino

[55] In some of the countries south of the Zambezi river elephants run the risk of exceeding the caring capacity, which can also reduce biodiversity, e.g., when elephants reduce mature trees, which serve vultures as nesting sites (CITES Management Authority, 2016, p. 20).

populations have risen in Nepal, slightly risen in Namibia, and faced a reduction in South Africa. Some conservationists and criminologists propose zero-poaching as a benchmark for effective enforcement. Zero poaching is achieved 'when there are no detectable traces of poaching activity in the landscape over a set time period and there is no discernible impact on a species to recover and sustain an increase in population' (WWF, 2015b). Referring to zero poaching as a point of reference also depends on the region-specific criminogenic environment with the particular drivers and enablers as well as the targeted species. Nepal was in the position to host the first zero-poaching symposium in 2015 (The Himalayan Times, 2015). As this research will illustrate, the country has valuable assets that contributed to achieving zero-poaching, foremost due to a culture that is in favour of conservation. For South Africa and Namibia, zero poaching is regarded by many conservationists as too ambitious at present. Some criminologists point to other conventional crimes, such as capital murder or drug use, which also cannot be erased completely in most countries. Hence, in the state of a perfect storm, wildlife crime rates that do not lead to species decline can already be regarded as a success. Indeed, there are only a few countries that have achieved zero-poaching and the question remains as to how far their experiences and lessons learned can be transmitted to less successful countries.

8 Soothing the Storm in South Africa

South Africa conserves up to 80% of the African rhino population (Knight, 2016) and faces the highest poaching numbers worldwide. The country has gathered a decade of experience in responding to the poaching crisis. From 2007 to 2020, over 8,500 rhinos have been killed in South Africa's protected areas, reserves and private parks.

8.1 Wildlife Crime in South Africa

This chapter will present an overview of wildlife crime in South Africa. It will analyse different forms of wildlife crime from meat poaching to the killing of high-value species.

8.1.1 South Africa's Rhino Population

South Africa has the highest rhino population in the world. Exact population numbers are difficult to estimate and comprehensive and recent population surveys, especially relating to the population in larger protected areas, are lacking. Emslie et al. (2016, p. 1) estimate a countrywide population of 20,306 rhinos with 18,413 white and 1,893 black rhinos for the year 2015. This number is estimated to be lower in 2020. Between 2007 and 2019 more than 8,230 rhinos have been illegally killed (see Table 10). This excludes those rhinos that have been taken out by legal hunting and those that have been relocated from South Africa to other countries. During the fieldwork in 2019, rangers and conservation experts noted that they are now seeing fewer rhinos on average on their patrols compared with patrols of the same length and within the same area a few years back. This observation is also shared by the author when comparing patrols in 2014 with those in 2019. Enforcement officials from South Africa's Kruger NP carefully estimate the population as being between 15,000 and 20,000, but probably closer to somewhere between 16,000 and 17,0000 animals (Interviews, 2019). Kruger NP will play a significant role in the South African case example, due to its significant rhino population. Some estimate the park to be home to 7,000–8,300 rhinos, with about 5,000 rhinos inside the intensive protection zone (Poaching Facts, 2020). This would mean that the park is conserving roughly 40% of South Africa's rhinos.[56]

[56] The higher estimation of 8,300 rhinos, both black and white, has been put into relation with the overall population of 20,306 in 2015 (Knight 2016).

Table 9: Rhino Population in Kruger National Park

Year	white rhinos	black rhinos
2015	8365–9337	313–453
2016	6649–7830	349–465

Source: DEFF, 2017b[57]

With continued rampant poaching in Kruger NP (see Chapter 8.4.1), experts regard these figures as optimistic (Interviews, 2019). They estimate that the rhino population declined from 2012 onwards (Emslie et al., 2016). Additionally, a drought has negatively affected the rhino population in the park (DEFF, 2017b). With high poaching numbers in Kruger until 2020, the rhino population might be closer to around 5,500 to 6,000 animals (Interview with SANParks official, 2019). The exact population number is an important reference point for the criminological analysis. First, it puts the sinking numbers of poached rhinos (from 2015 onwards) into perspective with a lower population. Second, it has practical site-based implications for poachers and enforcement personnel. With fewer rhinos in a given area, wildlife offenders had to adjust their *modus operandi*. Compared to the time of the onset of the poaching crisis, scouting incursions have become more common as a preparation tool prior to poachers trespassing with a full team and a weapon into a protected area (compare Chapter 8.3.2).

8.1.2 Rhino Poaching in Numbers

This chapter provides an overview of the development of the rhino poaching crisis in South Africa. Rhino poaching started to escalate from 2007 onwards and hit its peak in 2014, with 1,215 animals lost to poaching. Since then, the number of rhinos being killed has gradually declined. A reduction in the poaching numbers can be regarded as a conservation success, however, South Africa's rhino populations had already significantly decreased, which partly explains the lower poaching numbers in absolute terms.

[57] Kruger NP made use of the block count method to estimate the rhino population.

Table 10: Rhinos Poached in South Africa[58]

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
SA	13	83	122	333	448	668	1,004	1,215	1,175	1,054	1,028	769	594
KNP	10	36	50	164	252	425	606	827	826	662	504	422	328
Rest	3	47	72	169	196	243	398	388	349	392	524	347	266

Source: DEFF, 2017a; DEFF, 2019a; Poaching Facts, 2020; DEFF, 2020c

Table 10 shows the numbers of rhinos killed in Kruger NP and in the rest of the country, predominantly private reserves. Kruger loses a disproportionally high number of rhinos (compare Chapter 8.4.1).

8.1.3 Regional Distribution of Rhino Poaching

There are regional differences in rhino crime. The main reason for this is that those provinces affected by poaching conserve the largest part of the rhino populations. From 2017 to 2019, over half (52%) of the poaching incidents took place in Kruger NP. Geographically the park is situated across two provinces, Limpopo and Mpumalanga. A further 21% of the poaching incidents took place in Kwa-Zulu Natal, so Limpopo, Mpumalanga and Kwa-Zulu Natal took the brunt of rhino poaching (79%).

[58] Despite the many challenges of obtaining data on wildlife crime, basic rhino poaching figures, if captured by wildlife authorities in a systematic way, carry a reasonably high degree of accuracy. The white rhino for example has a body weight ranging from 1,800 to 2,500 kilos (Dinerstein, 2011) and vultures are unable to penetrate the thick rhino skin. This prevents other scavengers from further dismantling a dead rhino. Even after days and weeks the carcass has a high chance of being discovered by rangers. However, the estimated number of illegally killed rhinos is lower than actual rates as some carcasses might not be discovered. This especially applies to vast conservancies such as Kruger National Park or Etosha National Park (Knight, 2013). Alternatively, numbers might be slightly inflated as some rhinos will have died of natural causes and not at the hand of poachers (Wittemyer et al., 2014).

Table 11: Regional Distribution of Rhino Poaching

Provinces and NPs	2017	2018	2019	Percentage
SANParks (Limpopo and Mpumalanga)	504	422	328	52%
Kwa-Zulu Natal	222	142	133	21%
North West	96	65	32	8%
Limpopo	79	40	45	7%
Mpumalanga	49	51	34	6%
Free State	38	16	11	3%
Northern Cape	24	12	4	2%
Eastern Cape	12	19	2	1%
Gauteng	4	2	5	0.04%
Western Cape	0	0	0	0
Total	1028	769	594	100%

Source: DEFF, 2019b; DEFF, 2020c

However, some provinces and reserves are hit harder than others. Kruger NP has faced high poaching pressure for several site-based reasons (see Chapter 8.4). Within South Africa, threat displacement clearly takes place, as wildlife offenders demonstrate mobility across provinces. Poachers are also not bound to the specific form of land governance and target larger protected areas as well as small private reserves. Experts frequently report a counterfactual relationship when it comes to poaching pressure across South Africa. 'Whenever we (referring to Kruger NP) suffer, they (other protected areas) are better off. It is the same network that operates'. (Interview with SANParks official, 2019). Target hardening demonstrates local effects, but due to threat displacement, some of the poaching pressure will shift to another site.

8.1.4 Rhino Stakeholders in South Africa

South Africa's wildlife ownership model influences the conservation efforts and anti-poaching response on the ground. South African National Parks (SANParks) is responsible for conservation and enforcement in state-owned conservancies. On private land, landowners often hire private security anti-poaching units (Milliken & Shaw, 2012). There are nearly 9,000 game ranches in South Africa with a land area of approximately

17–20.5 million hectares, which makes up 16.8% of the total land surface. Private rhino holders conserve about one-third of South Africa's rhino population (2016; Taylor et al., 2016, p. 22; Cousins et al., 2008). The continued poaching pressure has increased the security costs for private farm owners. Some landowners view rhino conservation as a threat to their own health and life, as well as that of their farmworkers. Approximately 70 of 400 private rhino owners have been motivated by the escalating security costs to sell off their rhinos (CITES Management Authority, 2016, p. 13).

The South African Government does not compensate farm owners for rising security costs, which conservationists regard with concern. Landowners in South Africa cannot claim tax advantages for farming rhinos, unlike landowners in Kenya (Knight, 2016; Milliken & Shaw, 2012; DEFF, 2015a; Rubio & Pienaar, 2017, p. 98; Koen, 2017, p. 31). However, even with rising security costs for privately owned rhinos, it is easier to protect smaller land areas. The farm of John Hume, South Africa's largest private rhino owner, for example, demonstrates that the consolidation of rhinos in small areas is practical from a security perspective. Hume conserves a population of 1,600 animals. Since 2014, he has lost approximately 40 rhinos to poaching (Save the Rhino, 2018). During the previous two years, no rhinos were poached (Interview with conservationist, 2019). John Hume's farm is also an example of the high security and maintenance costs for private rhino farmers: he spends US$5 million per year conserving and securing rhinos (Save the Rhino, 2018). Some scholars and conservationists suggest that South Africa should increase the financial benefits for private rhino owners so that they can continue with their significant contribution to the preservation of the rhino species (Koen, 2017, p. 31).

8.1.5 Elephant Poaching

South Africa has stable elephant populations and poaching was absent for many years. Between 2000 to 2013 no illegal killings were recorded. Kruger NP has a population of about 17,433 elephants (Herbig & Minnaar, 2017). In 2014, when rhino poaching peaked, the first two cases of elephant poaching were recorded. After that, the numbers gradually rose to 72 in 2018. Almost all the cases of elephant poaching have occurred in Kruger NP (Heidberg, 2018) and most of the recent incidents have taken place in the northern part of the park. While poaching rates showed a clear upward trend until 2018, numbers fell significantly in 2019. Compared to South Africa's stable and sizable elephant population, the actual poaching off-take is relatively low and isn't currently posing a threat to the

viability of the population.

Table 12: Number of Elephants Poached in Kruger NP

Year	2000–2013	2014	2015	2016	2017	2018	2019
Elephants poached	0	2	22	46	68	72	31

Source: Poaching Facts, 2017; Heiberg, 2018; DEA. 2019; DEFF, 2020c

When the first cases of elephant poaching took place, there was speculation that unsuccessful rhino poachers might kill elephants on their way out of the park, with the motivation of at least bagging some commodity to trade. Other experts say that there are only a few poaching groups that target elephants, as they have established contact with a buyer of ivory. The comparison between elephant and rhino poaching also provides an indication of the relevance of the end-user price as a driver for wildlife crime. While many of the enabling factors are similar in South Africa for both species, the price for ivory is much lower than the price for rhino horn. Furthermore, ivory is heavier and bulkier, making it more difficult to transport, while rhino horns can be smuggled in a bag.

The comparably low level of elephant poaching could be an indication that elements of rational choice perspective are valid as the general circumstances regarding risks and rewards influence decisions to commit wildlife crime. In the case of the limited elephant poaching numbers, the risk of being apprehended could be perceived to be disproportionately high when balanced against the lower financial rewards associated with elephant poaching ventures.

However, it could also be caused by fewer middlemen being willing to offer money for ivory. Enforcement in South Africa's protected areas, especially in the form of mobile ranger units, has demonstrated some effect. There are indications that ivory is illegally sourced in Botswana, as well as South Africa and Namibia, and then smuggled to Zambia. Because of the size of the illegal commodity, the ivory trade has been linked to the illegal timber trade. In some cases, ivory has been smuggled amongst illegal timber logs (Interviews, 2020).

8.1.6 Meat Poaching

Meat poaching is widespread in South Africa. The primary targets are common plains game, such as antelopes or warthogs, to obtain bushmeat. Abalone poaching is also at high and currently unsustainable levels. The illicit annual off-take of abalone exceeds 3,000 tonnes a year, which is 30 times higher than the legal quota set by the South African government (de Greef, 2018).

Poaching methods vary from using basic technologies, such as snares, or hunting with dogs and spears, to illegally hunting with vehicles, silenced guns and spotlights. Populated villages close to wildlife areas are usually a reason for increased poaching pressure. In areas that have rhinos and elephants, meat poaching has declined in recent years as meat poachers are deterred by the intensified presence of armed rangers. Although these patrols are directed to apprehend rhino poachers, meat poachers are targeted and arrested when trespassing. Furthermore, meat poachers usually need to spend more time in protected areas, e.g. checking snares at regular intervals so they face a higher risk of being apprehended (Interviews, 2019). There are possible linkages between meat poachers and rhino poachers, which chapter 8.2.6 describes.

8.2 Methods of Rhino Poaching

Huge potential profits from the receipts of illegal rhino horn have attracted a variety of criminal actors. Some forms of poaching can be found frequently while others are a rather peripheral phenomenon. A harbinger of South Africa's rhino poaching crisis were forms of pseudo-hunting (see Chapter 8.2.1). In some cases, wildlife professionals joined the side of rhino poachers (see Chapter 8.2.2).

The diagrammed tiers (3–5 layer structure) shown in Figure 1 serves as a helpful characterization and classification for describing the composition of criminal rhino poaching and trading syndicates for the South African case example. There are variations in the number of layers. Some syndicates consist of fewer than three layers. Also, the *modus operandi* and the level of cooperation between the different criminal actors and functions varies. Chapter 8.2.3 will describe the most common method of illegally sourcing rhino horn to date: a group of two to three poachers, predominately from deprived rural backgrounds trespass into protected areas to find and kill rhinos and remove their horn. Other methods of obtaining rhino horn, such as theft, are also relevant, but will only briefly be addressed.

8.2.1 The Pseudo-Hunting Network

Cases of pseudo-hunting can be seen as an early harbinger of the upcoming storm. Foreign hunters made use of the legal trophy permit system to obtain rhino horn for illicit trading avenues, violating CITES regulations (Ayling, 2013).[59] Traditionally, the hunting market for international clients was dominated by European and North American clients. From 2003 onwards, South Africa's hunting industry witnessed a dramatic increase of Asians hunters applying for rhino hunting licenses. The large majority of these rhino hunts turned out to be cases of pseudo-hunting. It quickly became evident to the involved hunting industry stakeholders that Asian clients were primarily interested in obtaining rhino horn. In many cases, outfitters and professional hunters had to guide Asian clients who were unskilled in shooting and had no prior hunting experience. This culminated in the Asian sex worker scandal. Asian prostitutes were being used as additional hunters in order to bypass a regulation that each hunter was limited to one white rhino licence per calendar year (Hübschle, 2016; Milliken & Shaw, 2012).

Between 2009 and 2012 nearly half (48%) of the rhino hunts in South Africa were conducted by Vietnamese nationals. The overall number of rhinos killed by Vietnamese hunters reached 400 in April 2012. Finally, South Africa's Department of Environmental Affairs prohibited the issuing of hunting permits for Vietnamese, Chinese or Thai nationals (Milliken & Shaw, 2012; Hübschle, 2016; Ayling, 2013). In order to obtain a better national overview on hunting permits, the South African government established a coherent integrated electronic permit system. Nine provincial departments that had initially not been cooperating are now required to contribute to the central permit system. In addition, a permit from the Department of Environment, Forestry and Fisheries is required. Stricter government measures led to some improvements and a sharp drop in the numbers of rhino permits issued from 2012 onwards, as the following table illustrates.

Table 13: White Rhinos Hunted in South Africa

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Rhinos	78	92	124	103	107	131	173	73	91	79	64

Rademeyer, 2016a, p. 36

[59] CITES regulations allow restricted hunting and transport of live animals to safe locations. Rhino trophies can legally be transported to the home country of the hunter. Trophies cannot be traded or used for other purposes (Milliken & Shaw, 2012).

Still, the process of implementing tighter control measures and the establishment of a central register has been slow. This can be traced to the structural weaknesses of effective service provision of government authorities. In addition to institutional lapses, corruption continues to be a challenge (Rademeyer, 2016a). Despite the progress made in dealing with pseudo-hunting, the problem has not been eliminated completely. Associated criminal groups tend to change their *modus operandi* on a regular basis. The statistics for rhino hunts show a growing number of hunters from Eastern Europe, especially from the Czech Republic, Poland, Ukraine and Slovakia, which could indicate new cases of pseudo-hunting (Rademeyer, 2016a).

The pseudo-hunting phenomenon demonstrates that wildlife offenders make use of existing weaknesses and loopholes in environmental laws. The challenge for law enforcement authorities is to apply a broad focus that transcends conventional forms of rhino poaching.

8.2.2 The Pseudo-Conservation Network

A group that infiltrates illegal wildlife markets at different levels is what Milliken (2012) calls the 'white professional game industry insider'. These individuals come from more affluent parts of society and are driven by huge profits. The term pseudo-conservation network describes cases of rhino crime in which conservationists and industry insiders are involved. These cases are particularly challenging to law enforcement because perpetrators often have insider knowledge. In some cases, rhinos have been captured and dehorned by farm owners without a TOPS permit. The horn was then illegally sold in Asia (Milliken & Shaw, 2012). Jacques Els, a game farmer from Limpopo, sedated and dehorned rhinos from his own game ranch and traded them illegally. In this case, the law was enforced; the farmer received a prison sentence of eight years and had to pay a fine of one million rand (Louw-Carstens, 2012).

Another example of a pseudo-conservation network is the Groenewald gang (Ayling, 2013). This group consisted of two safari operators, two veterinarians, a professional hunter, and other members. The Groenewald gang obtained rhinos from game farms supposedly for conservation purposes but with the actual intention of dehorning them and illegally selling the horn (Ayling, 2013).

Other cases have been reported where poachers pose as tourists. During these so-called 'drop-off incidents' wildlife offenders illegally enter the park with a vehicle. Once a rhino

is spotted in a suitable location the shooter jumps out. After making the kill this person is picked up again at a prearranged location and the vehicle leaves the protected area via the tourist exit road (Rademeyer, 2016a).

Also detrimental to wildlife is when former military personnel, police or game rangers join the side of poachers. Former anti-poaching rangers pose an especially high risk when they switch sides. Often these individuals are familiar with the bush and possess the necessary tracking and shooting skills (Montesh, 2013). Thus, it is of particular concern that low ranger salaries cannot compete with the high gains to be made from engaging in rhino crime.

These examples illustrate that sophisticated wildlife game industry members have joined the illicit trade. Their legal engagement in areas of nature conservation or the tourism industry make it especially difficult to identify them. There are many indications that South African national and provincial conservation officials are also involved in either turning a blind eye to poaching or supporting operations by providing intelligence (Milliken & Shaw, 2012).

It is hard for law enforcement to focus on cases of conventional poaching while monitoring innovative forms of wildlife crime at the same time – and it is especially difficult to detect those cases which fall in the intersection between legal and illegal avenues (RoN, 2017, p. 21). In April 2017, the Constitutional Court set aside the moratorium on trading rhino horn, lifting the country-wide restrictions of domestic rhino horn possession and the limited trade thereof (Bale, 2017). This also opens avenues to illegally divert rhino horn onto the black market. Individuals can purchase rhino horn within South Africa from other rhino horn owners. In August 2017, the biggest private rhino farmer John Hume was allowed to auction 500 kg of rhino horn. His auction site was in English, Vietnamese and Chinese. However, the auction did not bring the expected success for John Hume, as he only sold eight horns. The Department of Environmental Affairs was reluctant to issue permits (Bega, 2019). Since 2017, 23 permits have been issued for the sale of rhino horns (DEFF, 2019a). Due to the short time period since the court ruling, not much research has been conducted on the possible channelling of legal rhino horn into the illegal market. However, there are concerns that Chinese and Vietnamese expatriates could buy rhino horn and leak it into the Asian market (Save the Rhino, 2018).

8.2.3 Poachers from Deprived Rural Backgrounds

The typical group of ground-level poachers is recruited from deprived parts of society, often from villages surrounding the park. A group consists of two to three persons that trespass into protected areas to kill rhinos (Serino, 2015; Rademeyer, 2016a; Interviews, 2019). Within a group, there are several roles to fulfil. The 'shooter' is equipped with a rifle. Another team-member is the 'navigator'. This is normally someone who possesses local knowledge of the area. A third person carries an axe or machete to remove the horn from the dead rhino. This person, often referred to as the 'porter' or 'carrier', also transports supplies such as basic nutrition and water.

A group of poachers normally enters a rhino conservancy to hunt for a period of time. Depending on the population density and the distribution of rhinos, as well as the enforcement situation, the group can stay for just a few hours up to a number of days, and in rare cases weeks, within the protected area. In cases when poachers spend a long time in an area they sometimes construct camps. These camps provide basic shelter and are made of branches and natural material that can be found in the area. They can be equipped with sleeping bags. Other camps may have basic camping equipment, such as kitchen pots and pans (Interviews, 2019).

When the group spots a rhino, they might kill it instantly or wait for a suitable moment, such as sunset, in order to hamper the pursuit by rangers. After the rhino is killed, the horn is removed from the body. Some groups of poachers cut out the eyes of the dead rhino, cut the tail off and hack the spine. This is an indication of a traditional set of beliefs that without eyes the rhino cannot spot their killers anymore. With a broken spine the rhino is unable to take revenge (Interview with intelligence officer, 2019). After the hunt, the group is picked up at an arranged meeting-spot (Rademeyer, 2016a, Interviews, 2019). There can be deviations from the group size, with fewer than three, and sometimes more, group members (Milliken & Shaw, 2012). One reason for a larger group size is having the additional capacity to protect the team against law enforcement. Additional armed members, possibly with automatic weapons, pose a significant threat to enforcement officials. Larger poaching groups are more common in Central Africa and less so in South Africa. In Cameroon, for example, rebels and larger criminal groups are involved in wildlife crime. They intentionally use additional manpower to fight off soldiers and enforcement officials (Interviews, 2017-20). An argument against a group size that exceeds two to three persons is that the profit has to be shared with additional team members. According to experts, the profile of poachers at the bottom of the poaching

pyramid has not changed much during the past 10 years. Tier 1 operatives tend to come from the many impoverished villages around conservation areas in South Africa or Mozambique. This is supported by the author's observations during his work in several protected areas. A sample of 55 arrested poachers in Kruger NP further provides information on the demographic background of offenders. All arrested poachers were male, 96% were black and 4% white; 60% had South African nationality and 40% were citizens of Mozambique. The majority were young: 82% were under 39 and only 18% were 40 or older (Eloff, 2012). Key officials from Kruger NP have noted a reduction in the number of poachers from Mozambique. At the beginning of the poaching crisis, 75% of wildlife offenders that trespassed into Kruger NP were Mozambique nationals. This figure is now under 40%, while the rest are mostly South African nationals (Interview with SANParks official, 2019). Enforcement officials link this reduction back to increased patrolling close to the border between South Africa and Mozambique (Hübschle, 2017b, p. 430).

Regarding the time of the poaching, patterns have changed slightly. In the past, there was usually a surge in poaching activity during the full moon. Nowadays there is only a slight increase during that time. Poaching activity has risen during the weekend, as poachers expect reduced ranger patrols during weekends. However, nowadays poachers base their operations more on intelligence, and less on external factors such as the phases of the moon (Interview Jooste). Rhino poaching also seems to follow a seasonal pattern. During wintertime, in June or July, when rivers are drying up, rhinos come closer to waterpoints. Some poachers take advantage of these patterns. However, rangers now conduct hot-spot patrolling close to waterholes during wintertime to counter this (Interviews, 2019).

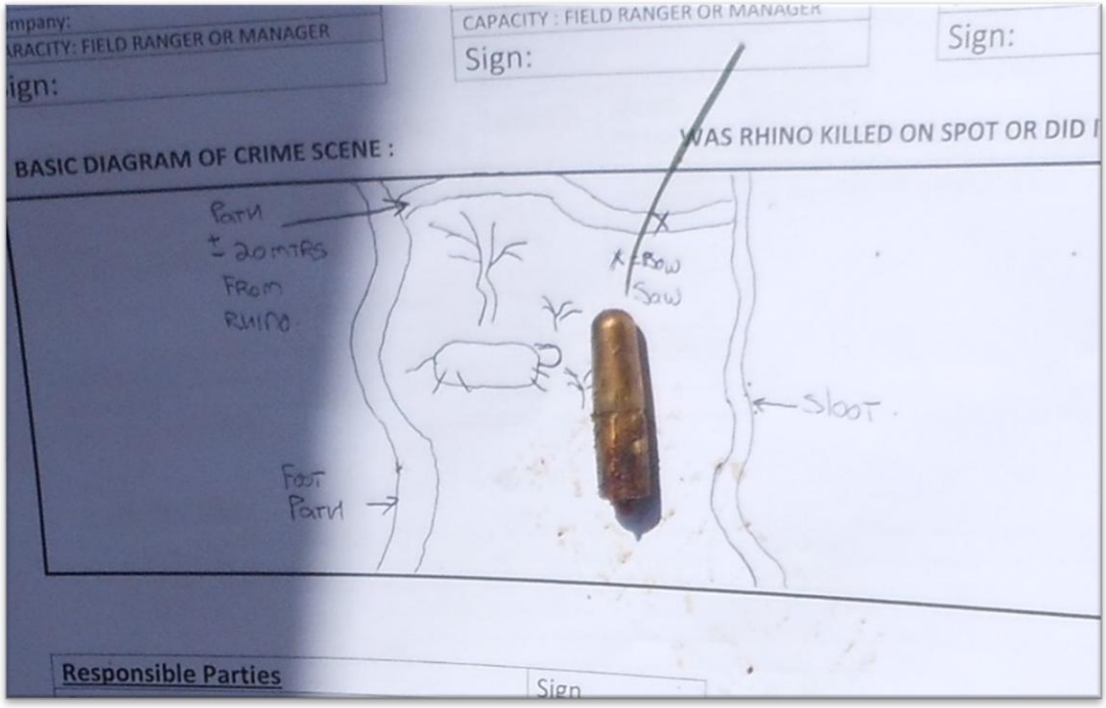
8.2.4 Weapons Used to Kill Rhinos

Rhinos are predominantly killed with high calibre hunting rifles. Typical calibres are .375HH Magnum, 416 Rigby, up to .500 Nitro Express, such as in Figure 3. The bullet needs to have enough sectional density to penetrate the thick rhino skin. Most of the automatic weapons, such as the AK-74, have smaller calibres (5.45x39mm) which are unsuitable as they do not have enough penetrating power and would likely only injure the animal. With a smaller calibre, the poacher runs the risk of having to shoot several times, which increases the risk of detection (Interviews, 2019). [60] From a sample of 51 weapons

[60] When rangers in the field hear the first shot, they are taken by surprise, hence it is harder to locate the

confiscated in Kruger NP in 2011, 80% were high-powered hunting rifles (Rademeyer, 2016a; Interview with SANPark official, 2019). The most common weapon is the 375 H&H Magnum followed by a 458 (Eloff & Lemieux, 2014, p. 33).

Figure 3: High-Calibre Bullet Retrieved from a Rhino Cadaver



Source: Smale (2014)

With the appropriate shot placement, an elephant or rhino can be killed with a smaller calibre weapon. In South Africa, automatic rifles such as the model AK-74, are rarely confiscated (Eloff & Lemieux, 2014, p. 33, Interviews, 2019). There are also regional differences with Central Africa, where automatic rifles with smaller calibres are frequently used to kill elephants (Interviews, 2017-20). The choice of weapon for illegal hunting also depends on the general proliferation of arms in the country, as wildlife offenders use what is available. There are claims that a high proportion of .375- or .458-caliber weapons have been confiscated from rhino and elephant poachers. Those weapons are said to be fabricated by the largest gun manufacturer in the Czech Republic after which they were traded by a Portuguese arms-dealer. From there they were sold to

sound, as they have not expected or concentrated on the shot. When poachers fire a second or third shot shortly after, field rangers are concentrating on the sound which increases the chances of locating the source of the shot.

gun retail shops in Mozambique, where they have supposedly been purchased by middlemen (Austin, 2019). Rifles are nowadays often equipped with a silencer (as illustrated in Figure 4). In South Africa, silencers are only regulated in some provinces and can be easily obtained. Some poachers manufacture silencers at home, but this carries the risk of lowering the rifle's accuracy (Rademeyer, 2016a). Narcotic weapons are rarely used but point towards the engagement of wildlife professionals, who would have access to the necessary equipment and tranquilizing drugs. Crossbows have only been used in extremely rare cases for rhinos (Milliken & Shaw, 2012). Other primitive methods, such as cable snares for the commercial poaching of rhinos are also extremely rare. Between 2006 and 2009 there were two cases where rhinos were snared in South Africa (Milliken et al., 2009). The use of appropriate calibres with accurate shot placement is also an indication of the professionalism of the respective poacher.

Figure 4: Confiscated Rifle from Rhino Poachers with a Silencer

Source: Smale (2019)

8.2.5 Middlemen and Traders

Middlemen (Level 2) fulfil key functions within a criminal group or a poaching syndicate. In most cases, they put together a crew. In other cases, the group already existed. Level 2 actors can come from a wide range of backgrounds, such as retired poachers or corrupt law enforcement (Gustafson et al., 2018, p. 272). During the author's work for an anti-poaching company, intelligence was provided that suspected middlemen were recruiting poachers in nearby villages and were providing the appropriate hunting rifle. This pattern is also common in other parts of Africa. Elephant poachers in Central Africa often work on behalf of middlemen who provide elephant hunters with weapons and ammunition and purchase the ivory once the hunt has been successfully completed (Stiles, 2011). Middlemen fulfil key services by enabling linkages between two distinct groups in an illicit setting. Tier 1 poachers typically derive from disadvantaged backgrounds, while Tier 3 horn traders tend to be from more affluent parts of society, as they have the means to organize the cash-flow for trading illicit high-value commodities. Higher up the chain at Tier 3 or 4, traders may come from Asia of have an Asian nationality, but also have a personal connection in Africa, either through living there permanently or on a work contract. For traders that have Asian origins, even if they have lived in Africa for some time, there will be a cultural gap which makes it challenging to approach rural communities, mingle with villagers, map out areas, identify possible would-be poachers and recruit teams. Apart from which, they would be easily recognizable, and may find communication in local languages difficult or impossible. Distrust is a major and recurring challenge in illegal activities. Like-minded individuals from the same cultural background already share some connection so if a middleman comes from the same cultural background as the Tier 1 poacher, it is easier to build trust and recruit new members. (Kleemans & Van de Bunt, 1999). This shows that middlemen add value for Tier 3 traders by reducing risk and effort. They serve as a single point of contact. For individuals working in the second tier, it means that they have the ability to connect to the third tier. At the same time, they need local knowledge and personal contacts to connect and mingle in rural communities to recruit and direct poachers. This is why Level 2 is predominantly made up of people with a strong local connection, either in South Africa or in one of the 'poaching villages' in Mozambique. This is only a rough characterization as there are many variations.

Some Tier 1 poaching groups function as autonomous entities that already have hunting equipment at their disposal. In other cases, middlemen are central to orchestrating and

motivating the team and providing the hunting rifle. The functions between Tier 1 and Tier 2 can overlap, as middlemen might join the team during the hunt or support the group with transportation services to the protected area and back.

From the perspective of Tier 1 individuals, the middleman offers incentives by promising to pay for successful hunting operations. Milliken (2012) states that rhinos are killed on order with poachers being paid on delivery. There are variations as to how much the middleman contributes and orchestrates. Nevertheless, interviewed experts overwhelmingly assign Tier 2 individuals a central role.

Law enforcement needs to attach importance to middlemen. The more Tier 2 operatives enable, motivate and orchestrate, the greater their contribution to the poaching crisis, and hence the greater the required focus of national law enforcement to disrupt this layer. In conclusion, Tier 2 operatives not only transport wildlife contraband from one group to the other, they also play a key role by acting as a linchpin and encouraging their lower-tier counterparts to conduct their criminal undertakings.

8.2.6 Poacher Recruitment Process

Middlemen that come from outside of the community first need to map out potential new candidates for a poaching group. This is not a clearly structured process and is sometimes a result of accidental meetings, such as a drinking buddy that a middleman meets in the local shabeen. However, intermediaries have certain groups that they favour, such as deprived youngsters or meat poachers. ‘They [Tier 1 poachers] don’t recruit themselves, they are targeted, the poachers, the guys on the ground are being targeted, the guys with no future, the ones without jobs, no education, no future’ (Interview with Informant, 2019). Middlemen recruit members for poaching operations either directly or step-by-step. Sometimes they lure youngsters into the poaching-business by using methods of dependency, as the following interview abstract shows. ‘They will find a group of young men that are hanging around. That is what you find in the village. You get groups of young men; they will braai for them. Buy 1,000 rand worth of meat which is going to be too much, enough for a couple of men, and then cases of beer, and then eat and drink. The young men never had a chance to braai ever, now they braai and eat meat, they will remember this, that sits in their head, they want to be like him. I want to make shit loads of money; I want to help people, give them some happiness, give them some stuff. He has support from the village, that’s why it is not easy if you go to the village and look for

poachers' (Interview with informant, 2019).

Bushmeat poachers are also sometimes recruited by middlemen. Meat poachers possess insight and knowledge of certain wildlife areas, which is a key asset when mapping local conditions for planning a poaching operation. Meat poachers also bring experience in bushcraft. They know how to move through the bush and have the ability to track down animals while evading law enforcement at the same time. As they are already engaged in wildlife crime, albeit on a smaller scale, the middleman perceives the risk that the meat poacher will collaborate with enforcement officials, e.g. by working as an informant, as being low. Meat poachers are often known in the village community, as they trade some of the meat locally. Even if not through direct trading of meat, fellow villagers will have observed and identified meat poachers within the close social ties of rural communities, e.g. when a person leaves town at an early hour and returns with a full backpack a few hours later (Interviews, 2019).

8.2.7 Personal Motivations to Engage in Wildlife Crimes

Personal motivations behind committing wildlife crimes vary.[61] Bypassing economic deprivation and obtaining wealth are amongst the primary motives. 'Without money you are nothing, some poachers have children of their own, but they rate themselves so low, they don't value themselves to be fathers if they have nothing, they will do anything, they will leave them, and the families will suffer more because they are not there, but they overlook this, they rather want to suffer with them than suffering even more without them.' (Interviews with informant, 2019). For young men who wish for a partnership and a family one day, money is a key limiting factor in deprived and poor settings. In a context of extreme poverty women will naturally prefer partners who have at least some means to provide for them and for a future family (Interviews, 2019).

Experts said that another significant personal motivation for committing wildlife crime was boredom. Furthermore, peer pressure and the desire of young men to meet the assigned cultural role of being a provider and caring for the wider community are relevant. A villager described an incident when he killed a rabbit with his dogs at the age of twelve. When he brought the rabbit home, his older family members prepared it for dinner.

[61] Insights into the motives of poachers are based on expert interviews that also include former wildlife offenders. However, in order to claim comprehensiveness for the underlying motivations a greater interview sample of poachers would be needed together with an appropriate research design to evaluate the personal motivations behind individual's involvement in poaching syndicates.

Implicitly they valued his contribution. ‘I felt so proud when everybody was eating the rabbit that I brought to the table (…). For the first time I felt like a real man!’ (Interview with villager, 2019). In many rural African villages, animals are primarily valued according to their consumptive value. They are there to cater to the needs of humans and do not have a high value in and of themselves. In this respect there are major differences to the contemporary Nepalese culture, where both Hinduism and Buddhism attach special value to the lives of animals (Chapter 10.6).

Middlemen also use alcohol and other gifts to create dependency. Local shabeens form points of contact for recruiting new poachers. The recruitment methods of luring young men into poaching with a mixture of promises and dependency in South Africa are similar to those used in Namibia (compare Chapter 9.4.5).

There are different profiles of poachers. One type tends to have an extroverted and expensive lifestyle and spends their illicit profits within a short timeframe on personal leisure, including alcohol, drugs and prostitution as well as providing benefits to their local community. ‘So, the poacher has money now. Girls start taking advantage of him, the drugs come in, it keeps them brave, they have money, you don’t sleep, they make braais in the village, during a funeral they will throw a lot of money, maybe 10,000 rand at a time, for the people each one gets 50 rand or 100 rand, they look at you: “Wow, this man?!” Of course, they know he is a bad man, but he is actually a good guy. He went that side, by the rich people, fucked them up, now he is giving us. This guy is sharp!’ (Interview with intelligence officer, 2019). This interview extract provides insight as to why wildlife offenders are often supported by the community. Furthermore, unsustainable spending will create a situation where novice poachers, accustomed to a rising lifestyle, will feel the need to kill a second and then third rhino once the profits from their first poaching operation have been spent. Rapid spending is also encouraged by larger sums of cash in hand because money from illicit undertakings is often not deposited at a bank, in order to avoid suspicion (Interviews, 2019).

Another significant factor relates to the sense of disenfranchisement some rural communities feel in relation to protected areas (see Chapter 8.5.2). Community improvement initiatives can remedy both of these problems by designing capacity-building measures for wildlife offenders to support economically sustainable investment of illicit proceeds. This should help ‘former’ rhino-poachers to create alternative livelihoods, which in turn reduces dependency on continued inflows from illicit activities.

Another implication for law enforcement is that it is easier to convince a would-be

poacher not to carry out his first act of rhino poaching than convincing experienced poachers to stop their illegal engagement. Besides having 'created a situation', where successful rhino poachers have become accustomed to expenditures of a fraudulent lifestyle, they have a different risk perception, as they have already successfully evaded enforcement officials.

8.3 The Resilience of Criminal Networks

This chapter analyses the strengths of individual offenders and poaching groups that explain the high resilience of criminal networks.

8.3.1 Innovation

The notion of an arms race, as displayed by some scholars (see Chapter 5.3.3), can be dismissed for the South African case example. Trackers and shooters (Tier 1) hunt with similar equipment to that wildlife offenders used during the onset of the poaching crises 10 years ago. There is a slight increase in the application of basic technologies, such as the use of silencers and simple mobile phones to coordinate transportation to and from the protected area. Figure 5 provides an example for rather basic equipment from captured rhino poachers. Besides basic tools, such as an ax, these offenders carried along aluminum foil (center left of the picture). Some wildlife criminals believe that wrapping bagged rhino horn in aluminum foil would help to avoid detection in case a sensor was installed in the horn. Nowadays, some poachers are apprehended with an extra sim-card in their mobile.

However, some poachers were already making use of these methods and technologies during the onset of the poaching crisis. Tier 1 individuals are not using high-tech equipment, such as night vision, primarily for two reasons: first, many of the skills for a successful poaching operation are of a physical and mental nature; second, the inclination towards innovation in deprived and rural settings is driven by push-factors, which can be observed in the way fellow villagers innovate.

When assessing the innovativeness of the offender in preparation for, during and after the fact, one has to look at the social and economic environment that most of the Tier 1 poachers derive from. Berdegué (2005) has studied the innovative capabilities in rural and impoverished communities. The author concludes that the adoption of innovations by poor people are predominantly driven by push-factors, which are often responses to urgent needs such as drought, lack of health-care services or lack of transportation

possibilities. This stands in contrast to pull-innovations that are more frequent in societies that are wealthier, less crisis-riddled, and with a sound infrastructure in place. In this setting, more individuals can apply a long-term planning horizon and map out ways to best invest the available resources and skills. In contrast, the focus in poor communities is on how immediate suffering and basic problems can be avoided (Berdegué, 2005).

This underlying innovation inclination of people growing up in the cultural and socio-economic setting of deprived communities can be seen in the way poachers conduct their operations. There is a limited propensity to innovate in a technical sense. This corresponds with the observation that poachers seldom have night vision at their disposal. From a purely economic perspective, organizing night vision devices could be a viable choice. This technology reduces the detection-risk by anti-poaching forces and increases the chance of successful hunting. Even with high initial purchase costs for night vision, it could be seen as an investment that would amortize over time. However, even when wildlife offenders can afford night vision or other technical equipment, they rarely make such an investment.

Figure 5: Confiscated Equipment at a Rhino Crime Scene

Source: Smale (2019)

A low propensity towards technical sophistication in the poaching business should not be confused with a lack of innovativeness. The ability to react to basic pressing challenges, such as food or water shortage, physical obstacles or injuries are key assets during a poaching operation. People from impoverished backgrounds are well trained to be innovative on a regular basis. They need to be in order to deal with the daily challenges of poverty. Therefore, when an obstacle arises during a poaching operation, offenders are likely to adapt to new circumstances. They will find an innovative solution and work around that specific challenge. Furthermore, poaching groups usually possess great strengths, for example, they can easily walk 25 km in a night (Interview with enforcement official, 2019).

Conservationists and anti-poaching experts also observe that poachers have improved in

their tactics, such as anti-tracking. Some poachers have been caught with a set of spare socks and spare shoes. Others change their poaching patterns, such as hunting more often at night (Jooste & Ferreira, 2018, p. 51). Figure 6 displays additional set of shoes, recovered from rhino poachers to conduct anti-tracking.

Figure 6: Additional Set of Shoes Recovered from Rhino Poachers

Source: Smale (2019)

Another example of small tactical improvements is that nowadays the carcasses of poached rhinos are frequently covered with branches, which makes it harder for vultures to spot a dead rhino. This gives poachers a head start, as the presence of vultures attracts the attention of rangers and leads them quickly to a dead rhino, where they could start the

pursuit of the poachers. According to interviewed experts, the sophistication of networks has grown. Poachers have advanced in mapping out the area and gathering intelligence (see the following chapter). Part of innovativeness is 'getting things done', which is another strength. Trackers and shooters (Tier 1) are highly motivated to achieve results as they are only paid only after a successful hunt (David et al., 2016, p. 7).

South Africa's field rangers have to adapt to the strength of poaching groups. Although technology can provide partial benefits and advantages, rangers need to meet the physical and mental conditions required to effectively conduct patrols to apprehend offenders who have physical endurance, wiliness and bushcraft skills (Interviews, 2019).

8.3.2 Intelligence Gathering

A key aspect in the preparation of a poaching operation is to map out the area and obtain information about the location of rhinos as well as gathering information on the position and *modus operandi* of enforcement personnel in the field. Gathering intelligence is now even more vital for conducting poaching operations than it was at the beginning of the crisis. First, because there are fewer rhinos, and second because law enforcement has increased their presence and are changing their methods. One indicator that Tier 1 and 2 operatives are attaching greater importance to gathering intelligence prior to the act of killing is the increased occurrence of scouting missions.'In the beginning, it was easy, a group from Mozambique would come in, guaranteed work this week! But now it takes longer, they need to figure out what they are doing, now the anti-poaching is doing another thing which they don't know, now they want to figure out. They are not bringing the weapon out, now they even want to send a scout out without a weapon to check the farm out to see if anyone can arrest them then they go out' (Interview with intelligence officer, 2019). Sending out a scout without a weapon demonstrates awareness of anti-poaching activities and is also an indication that the hunting rifle is a rare commodity.

When it comes to gathering intelligence, poachers can rely on certain strengths and favourable conditions. Tier 1 and 2 offenders that come from Mozambique, can often rely on a network of friends and extended family members on the South African side. Some Mozambicans have dual nationality and carry a South African identification card. When Tier 1 and 2 operatives are in the area of engagement, close to the rhino habitat, they exploit social ties and connections to wildlife industry insiders to obtain valuable

information.[62] Obviously, this doesn't take place in the form of a face-to-face interview where the intention and matter are framed directly. Some of the intelligence that intermediaries and ground-level poachers gather is picked up incidentally via observation or indirect inquiry as is shown in the following examples. A ranger with whom the author worked in 2014 reported: 'Sometimes when I am out drinking in the tavern, guys approach me and say: "Oh, you are a ranger. I bet you can shoot well!" pretending their admiration for anti-poaching forces. Then I reply: "I am the best soldier. There is no target I can't hit"' [making the hand signal of firing a gun]. The ranger's perception was that the casual drinking acquaintance that approached him had the intention gathering intelligence. One aspect of that was to assess the risk that rangers pose in the field. The ranger's statement that he and his unit are amongst the most lethal was intended to deter would-be offenders.

Intelligence can be gathered without an initial clear intention. The drinking acquaintance from the last example might have had a vague interest in the poaching topic but no mapped-out plan. His interest might have been based merely on hearsay that significant profits could be made with rhino horn. A person with a general, but still theoretical, interest could gather information to become familiarized with the security structures of ranger forces in a more spontaneous manner. The intelligence gathered would form a picture about the protection at a specific site including a risk-assessment. It would become relevant once a viable opportunity arose, such as an approach from a Tier 2 operator. However, this example is not representative and studies to corroborate the way intelligence is gathered by wildlife offenders are scarce.

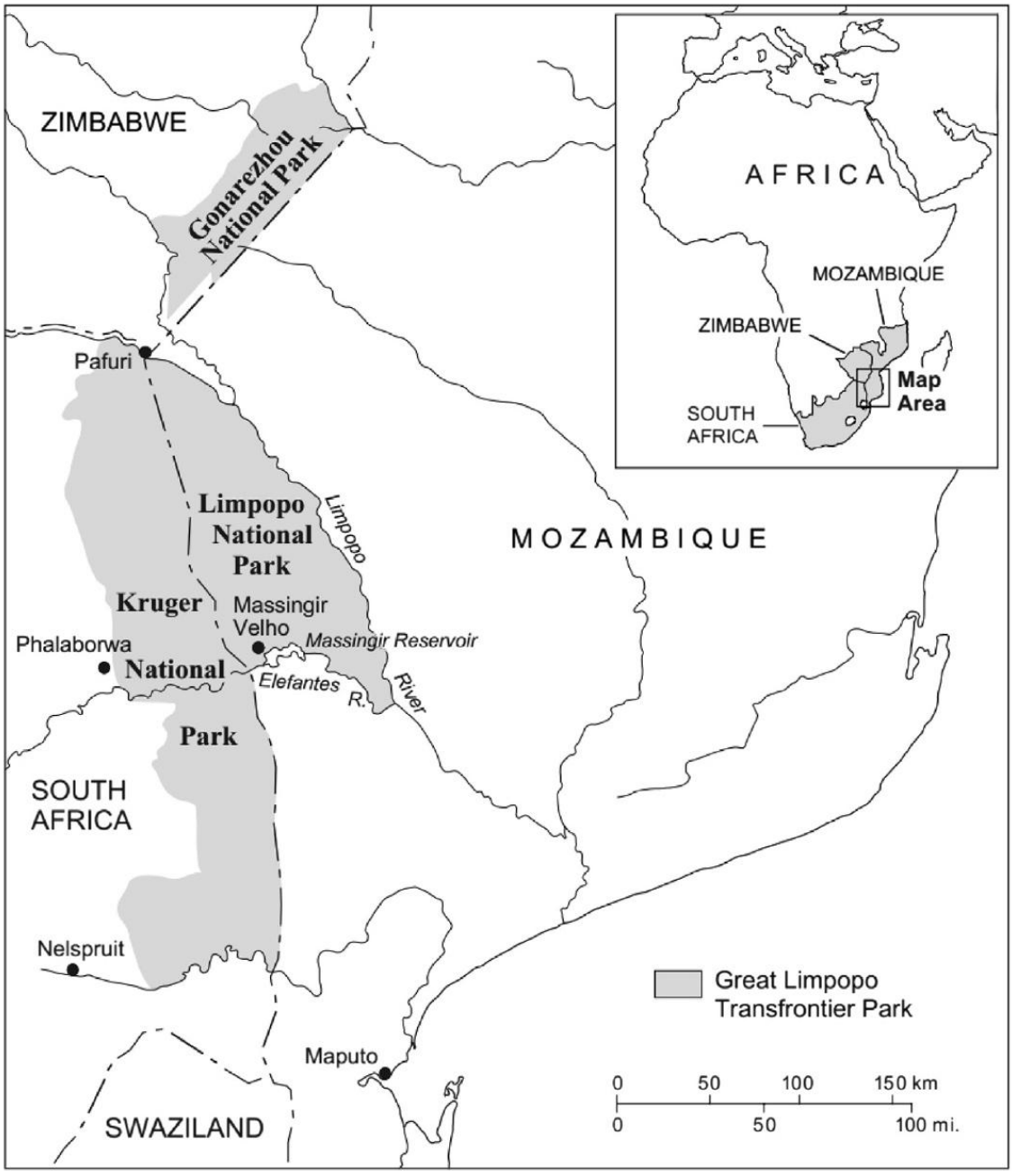
8.4 The Special Situation of Kruger National Park

Kruger National Park is South Africa's flagship conservation project and the biggest rhino habitat worldwide. The park has experienced high poaching pressure and faces several challenges when it comes to soothing the storm. Its size and at times dense terrain make it difficult for rangers to effectively control the area. The park stretches over 19,485 km², which is comparable to the size of Wales. It has a north-south extension of 350 km and is

[62] Rangers in the field are in a position to provide valuable intelligence. They often know the preferred and actual habitats of rhinos and have a good understanding of the patrol activity in a given area. This is why complicity of rangers, either by providing information or by actively joining the poaching team, can be so detrimental.

located at the border of Mozambique's Limpopo National Park (see Figure 7). Open borders towards Mozambique and to Zimbabwe contribute to Kruger NP's vulnerability. Besides poachers from within South Africa, offenders from Mozambique frequently trespass into the park (IUCN et al., 2015; Lunstrum, 2014).

Figure 7: Contours of the Great Limpopo Frontier Park



Source: Morais et al., 2018 p. 6

Another reason for Kruger's vulnerability is that the park has highly populated semi-urban areas close by. Kruger NP has not dehorned their rhinos systematically due to its

vast territory. Private conservancies have applied dehorning more frequently which shifted poaching pressure to the park. Furthermore, corruption amongst SANParks enforcement personnel, SAPS and other officials continues to play a significant role (Rademeyer, 2016a, p. 11). However, Kruger NP has gained attention and considerable funding from national and international donors, which has led to the scale-up of enforcement capacities. The park serves as a testing ground for the application of sophisticated enforcement technologies and has further managed to increase and train their ranger forces. Intelligence gathering networks and methods of processing information have improved, which has led to increasing arrest rates.

8.4.1 High Poaching Pressure

Since the advent of the poaching crisis, Kruger NP has lost a disproportionately high number of rhinos. Most of the poaching activity takes place on the southern side of the park, where the majority of the rhinos reside. Enforcement officials state that at any time there will be several groups of armed poachers in the park (Interviews, 2019). In 2018, rangers counted seven to eight incursions a day which adds up to around 2,500 incursions throughout the year (Interview with SANParks official, 2019).[63]

Table 14: Rhino Poaching in Kruger NP and the Rest of South Africa

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
KNP	164	252	425	606	827	826	662	504	422	328
Rest	169	196	243	398	388	349	392	524	347	266
KNP (%)	**49%**	**56%**	**64%**	**60%**	**68%**	**70%**	**63%**	**49%**	**55%**	**55%**
Rest (%)	51%	44%	36%	40%	32%	30%	37%	51%	45%	45%

Source: DEFF, 2017a; DEFF, 2019a; Poaching Facts, 2020; DEFF, 2020c

From 2010 to 2013, 49% to 60% of the countries' poaching cases took place in Kruger NP (Table 14). The park was conserving roughly 7,000–8,300 rhinos during that time, which is about 40% of the national rhino population (Poaching Facts, 2020), therefore, the figures above 40% indicate a higher vulnerability to poaching compared to the national average. In 2015, this disproportion was aggravated. Kruger NP was hit by 70% of the national poaching cases at that time. From 2018 to 2019 Kruger had a lower share

[63] According to SANParks officials, incursions are only counted when enforcement officials come across clear signs of wildlife offenders, such as fresh human spoor, hearing shots or seeing poachers in the park (Interviews, 2019).

with approximately 55% of the poaching cases. However, these figures do not reveal that the rhino population in the park had by then already been thinned out, with only an estimated 5,000 to 6,000 animals left. Kruger NP continues to bear the brunt of poaching. In 2019, the trend of declining rhino populations in Kruger NP was stopped for the first time in five years, when Kruger NP announced that the number of births equaled the number of rhinos poached for that year (DEFF, 2020a).

8.4.2 Capacity Development and Donor Support

Kruger NP has enhanced and professionalized their ranger forces. SANParks appointed ex-army general Johan Jooste as head of anti-poaching. His command structure is modelled on the military and other former military personnel have been appointed to key positions (Lunstrum, 2014; Duffy, 2014). In 2013, ranger forces in Kruger NP increased from 250 to 400 (Jooste & Ferreira, 2018, p. 51). The park has created Intensive Protection Zones (IPZ) and is divided into 22 sections. Each section has its own section ranger and a team of field-rangers. The rangers are supported by K9 units (Smit, 2020). This process of capacity-building was supported by national and international donors.

In the financial year 2014–15, South Africa received US$29.8 million from international donors to reduce poaching (Vandome & Vines, 2018, p. 18).[64] A large portion of the private donations has been channeled to Kruger NP as South Africa's flagship conservation project. The Howard Buffet Foundation donated US$23.7 million to the park. This contribution was earmarked for improving the tactics and strategies of rangers. Technological capabilities have been enhanced, ranging from sophisticated detection and tracking equipment up to additional air support. As part of this philanthropic support, Peace Parks equipped SANParks rangers with night vision devices, worth US$270,000 (Konrad, 2019, p. 27). A Mission Area Joint Operations Centre directs patrol efforts and provides intelligence (Jooste & Ferreira, 2018, p. 51).

South Africa's Council for Scientific and Industrial Research (CSIR)[65] is supporting technology transfer initiatives (Knight, 2015). Besides professionalizing ranger foot patrols, CSIR's engagement aims to improve the management of the park authority.[66] The

[64] Internationally, the poaching crisis has attracted considerable private donor-funding. From 2010 to 2016, donors from 24 countries contributed around US$1.2 billion to combat wildlife trafficking (Barichievy et al., 2017).

[65] The CSIR undertakes multidisciplinary research and development in various social and technical fields.

[66] SANPark, for example, purchased MEMEX software to improve data management (Milliken & Shaw, 2012).

donor support coupled with the collaboration of public research institutions has increased the effectiveness of anti-poaching in Kruger NP. Capacity-building follows the observation that sophisticated technology must go hand-in-hand with a well-trained ranger force that knows the terrain, is able to identify relevant spoor and has employees who are ultimately willing to put their lives at risk (Anderson & Jooste, 2014; Interviews, 2019).

8.4.3 Enforcement in Kruger National Park

Table 15 illustrates key enforcement figures for Kruger NP. Yearly incursions climbed from 876 in 2012 to 2,290 in 2014. From 2015 to 2018, the level remained somewhat stable, with around 2,500 a year.

Table 15: Enforcement in Kruger National Park

Year	2012	2013	2014	2015	2016	2017	2018
Firearm confiscated	42	69	110	125	148	220	104
Poacher incursions	876	1,487	2,290	2,466	2,883	~2,500	~2,500
Poachers arrested	73	123	174	202	281	189 257 adjacent	229

Source: Martin, 2017b; DEFF, 2017b; DEFF, 2019b

With the official figure of around 2,500 incursions in 2017 and a typical group size of two to three people per poaching operation, this would mean that around 6,250 cases of trespassing occurred in Kruger NP that year. Put into relation with the arrest figures, a poacher that conducts one operation has a 4% chance of being apprehended outside the park and another 3% inside the park.[67] These figures serve as a rough indicator and depend on the quality and accuracy of the underlying figures provided by SANParks. The dark figure of trespassing could be higher as some incursions go unnoticed. They could also be lower as enforcement officials may count false signs of incursions or inflate statistics to underline a continued need for funding. Another indicator of Kruger's enforcement is the number of confiscated firearms. Between 2012 and 2018 an overall number of 818

[67] 6,250 poaching incursions divided by 257 arrests outside and 189 arrests inside the park.

firearms were confiscated within or adjacent to Kruger NP (Table 15). Confiscating weapons contributes to reducing poaching pressure (compare Chapter 8.12.2). The enforcement figures indicate, that although Kruger NP has increased their detection capacity, the poaching pressure remains at a high level. Some scholars and conservationists (such as Duffy, 2014) jump to the conclusion that anti-poaching has not solved the poaching crisis, and therefore a scale-up in enforcement is not the right tool to help to soothe the storm. However, the counterfactual is unknown. It is possible that without enforcement on the ground inside and outside Kruger NP, most of the rhinos could have been killed by now (Interviews, 2019). It remains unknown how many would-be offenders have been deterred and restrained from committing wildlife crime through target hardening measures, in this case, a trained and equipped ranger force. A central role of a ranger unit inside a protected area is to slow down the rate of the killing and buy time until other, more sustainable measures take effect.

With about the same poaching pressure, as shown in yearly incursion rates, fewer rhinos are being poached. This corresponds with views expressed by experts in interviews, stating that poachers now need to spend more time in the field to find rhinos and subsequently avoid enforcement officials. The risks and costs per bagged rhino have increased for wildlife offenders. Some experts note that this also led to a higher personal risk for rangers. ‘It is becoming more dangerous for the rangers. In the beginning, they were trying so much to avoid us, but they are tempted, it’s a long time they got nothing, in my opinion, it’s going to get worse up to the point where the poacher is saying: “You want to bring it, bring it!” “We will shoot back”’ (Interview with anti-poaching ranger, 2019). Armed contacts between Kruger NP enforcement staff and poachers already occur on a regular basis. In 2014, there were 111 armed contacts in Kruger NP. In 2015 this number was slightly higher with 137 armed contacts (Rademeyer, 2016a).

8.4.4 Involvement of the South African National Defence Force

In 2012, the South African National Defence Force (SANDF) was mobilized with 265 soldiers to secure the northeastern borderline of Kruger NP in order to stop poachers crossing over into South Africa (Lunstrum, 2014; Welz, 2013). Moreover, SANDF soldiers were mandated to work with the rangers on the ground: ‘As part of this deployment (referring to SANDF deployment), operations are being conducted to combat cross-border crime, stock theft, and illegal grazing as well as rhino poaching in the Kruger

National Park' (Government of RSA, 2012). The mandate can be seen as a constabularization of the military as it exceeded the military's traditional role of providing external security. The concept refers to a development where the military has an enhanced area of responsibility which encompasses internal security provision and law enforcement tasks (Easton & Moelker, 2010).

Reports indicate that the cooperation between the SANDF-soldiers and rangers in Kruger NP proved to be cumbersome and finally this mandate was discarded. A lack of discipline within the military was mentioned as a major obstacle. Station rangers who asked soldiers to help with anti-poaching patrols were insulted and told that they would not go on patrol because they were busy watching a soccer match on TV (Defenceweb, 2015). Reports emerged of soldiers being drunk at work and bringing prostitutes into the park for wild parties (Rademeyer, 2016a). In contrast to trained rangers, SANDF soldiers further lacked the skills to conduct anti-poaching operations in the bush. One reason for this is that the South African Army abandoned their counter-insurgency tactics (COIN), also referred to as 'bush-war tactics', after the end of apartheid (Rademeyer, 2016a, p. 11).[68] The White Paper on Defence of 1996 and South African Defence Review of 1998 put the primary strategic and operational focus of the SANDF towards the preservation of the sovereignty and territorial integrity of South Africa against external threats in terms of a primitive war (Olivier, 2015).

[68] Anti-Poaching rangers frequently use tactics from the South African Border War, which took place from 1966 to 1990. The South African Defence Force (SADF) was fighting internally against members of the African National Congress (ANC) and externally against the People's Liberation Army of Namibia (PLAN) and the South West African People's Organisation (SWAPO). That conflict was accompanied by heavy battles against insurgents in the vast bushveld of occupied South West Africa. Counterinsurgency was a domain of the South African police but in the course of the 'bush war' SADF soldiers gained intensive experience in this area (Van der Spuy, 2012; Baker & Jordaan, 2010).

Figure 8: Rangers Tracking Poachers

Source: Smale (2014)

Figure 8 shows rangers patrolling in formation. The tracker (in the middle of the picture) is supported by the left and right flank who secure the area. Today there are still many South Africans with active military experience from the Border War, especially in applying counter-insurgency tactics. This experience is a vital element for anti-poaching rangers to counter insurgency-like poaching operations in larger protected areas, such as Kruger NP. However, it also explains the different cultures and approaches between the military and wildlife rangers.

8.5 The Social Situation in Rural Poaching Villages

Tier 1 participants are often recruited from rural villages adjacent to protected areas. Within Mozambique, many wildlife offenders come from villages close to the South African border around Sabie, Kaboc, Magude, Mapulanguene and Massingir. They trespass either on foot into Kruger NP or enter via the formal border (Massé, 2017, p. 70). In Mozambique and South Africa, around 35,000 people live within protected areas in 44

villages that are located in or close by Limpopo National Park (Givá & Raitio, 2017, p. 1200).

Besides villages east of Kruger NP in Mozambique, Tier 1 and 2 individuals come from the populated areas west of Kruger NP, with over two million inhabitants. A senior official of Kruger NP estimates between 5,000 and 1,000 people to be involved in wildlife crime from these areas (Hübschle, 2019).

Many of the villages adjacent to the protected areas are characterized by weak social and economic indicators. Young men lack formal employment and only have limited alternative income opportunities. The government infrastructure is insufficient and basic capacity is lacking, which results in low levels of government support for the most vulnerable. This is accompanied by deteriorating levels of health, education and training. High population growth puts additional pressure on the existing structurally weak social services (see also Hackel, 1999, p. 729). South Africa and Mozambique have staggering crime rates. Besides high cases of murder and rape, cattle theft is common in rural areas. From mid-2017 to mid-2018 there were 28,849 reported cases of cattle theft in South Africa (Clack & Minnaar, 2018, p. 118).

8.5.1 Mozambique's Civil War

An enabling factor for wildlife crime derives from Mozambique's civil war, which took place from 1977 to 1992. The two major opposing combatant groups were Mozambique's ruling Marxist Front for the Liberation of Mozambique (FRELIMO) and the anti-communist insurgent forces of the Mozambican National Resistance (RENAMO). The armed conflict led to the destruction of huge parts of the productive infrastructure and resulted in low agricultural productivity (Dava et al., 2013). Mozambique's wildlife populations were devastated during that time. Elephant populations shrank from 50,000–65,000 animals in 1974 to about 13,000 in 1992 (Koch, 1993; Massé, 2017).

Armed conflicts contribute to wildlife crime by a) increasing poverty and deprivation and b) through the proliferation of weapons that can subsequently be used for wildlife crime. The civil war trained a generation of young men in fighting in the bushveld in an insurgency-type of mode. Guerrilla tactics were especially applied by RENAMO fighters (Dava et al., 2013). After the civil war, some individuals used their acquired skills for rhino poaching. Due to their experience in handling weapons, Mozambicans frequently take the role of 'shooters' within poaching teams. 'The people from Mozambique, the ones that were young soldiers in RENAMO and FELIMO, they can play the bush game,

they can play hide and seek (…) most of the shooters are from Mozambique' (Interview with conservation expert, 2019).

8.5.2 Strained Park-People Relationships

The contemporary culture in many of the villages in South Africa and Mozambique are not in favour of conservation and enforcement thereof (Interviews, 2019). The colonial past and South Africa's legacy of apartheid contributed to a disenfranchisement between people and parks (Jooste & Ferreira, 2018, p. 53). Local villagers have been deprived of their hunting rights as many conservation models neglect the social significance of local hunting (Gibson & Marks, 1995, p. 942). Conservation is sometimes seen as a 'white man's business' amongst local villagers (Interviews with local villagers, 2019) with locals rarely having the privilege of seeing a live rhino. Only 35% of the visitors to Kruger NP are black South Africans while they make up more than 80% of the population (Butler & Richardson, 2015). Moreover, conservation-driven resettlement of villagers in Limpopo National Park caused frustration and resentment (Milgroom & Spierenburg, 2008).

8.5.3 Militarized Enforcement and Park-People Relationships

Overwhelmingly, conservation practitioners state that strained park-people relationships contribute to wildlife crime. However, there are discrepancies amongst scholars as to how militarized anti-poaching responses contribute to this development. Duffy (2014) and Hübschle (2017b) claim that the uptake of militarized approaches in Kruger has led to deteriorating park-people relationships and is a primary driver of rhino poaching. The authors claim that there is deep-seated anger and frustration towards enforcement officials in rural villages in Mozambique and South Africa. Studies suggest that many of the inhabitants in these areas (Mozambique) know someone who has been killed by rangers (Serino, 2015). When poachers are killed during their poaching operations, it can further exacerbate violence as it contributes to anger and frustration. There are negative social effects in poaching villages, with a high number of widows, orphans and fatherless households (Massé, 2017, p. 248). Resentment against enforcement practices also corresponds with the recent example of a popular DJ from Mozambique who composed a song that speaks out against SANParks rangers. The song expresses deep-seated anger and frustration against SANParks anti-poaching forces in neighbouring Kruger Park. The record is not played on state radio but can frequently be heard in clubs and bars, especially

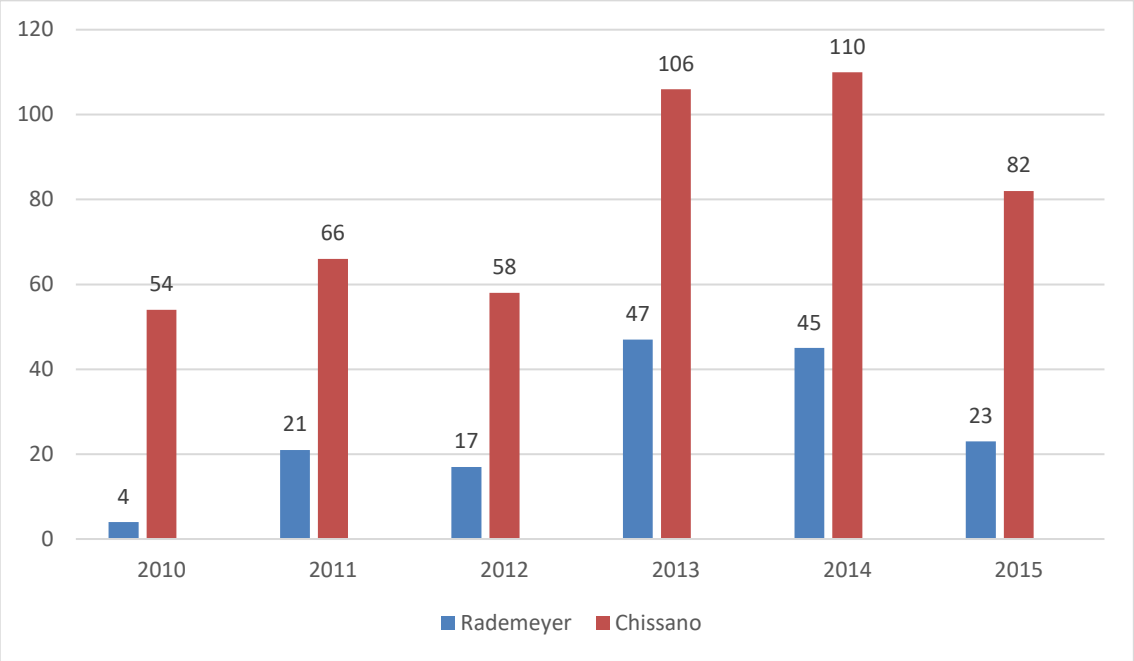
in the border area of South Africa. Extracts of the song state: ‘What is wrong with you? People from SANParks trust you so much, but our children are dying. You are killing our people’ (Serino, 2015).

The notion that militarized enforcement in Kruger is a *central* driver for further rhino poaching can also be challenged. Jooste and Ferreira (2018, p. 52) point to discussion groups and interviews that were conducted by SANParks within the municipalities that border Kruger NP. The study had a sample size of 5,762 people. During group discussions and interviews, negative sentiments towards rangers were not mentioned. Instead, security provision by SANParks was rated as important and some villagers voiced the need for additional rangers. Jooste and Ferreira further point out that SANParks is contributing to the economic wellbeing of local people (see Chapter 8.6.1).

8.5.4 The Human Death Toll

While the rate of prosecutions is low, there are indications of a significant number of killed poachers. The death toll is difficult to assess. Scientific literature and the media provide contradicting information. SANParks and other South African authorities generally won’t provide – aside from isolated cases – comprehensive information about the overall number of fatally injured wildlife offenders (Rademeyer, 2016a; Hübschle, 2016). Duffy claims (2014) that between 2008 and 2013 about 300 suspected poachers were fatally shot. Former Mozambican president Joaquim Chissano stated a much higher number and claims that between 2010 and 2015, 500 Mozambicans were killed in Kruger NP (AIM, 2015). If this information is correct, the overall number of killed poachers in South Africa is even higher because one would have to add killed South Africans and other nationalities as well as deceased poachers in many of the private reserves. The spokesperson for South Africa's national parks service, Paul Daphne, casts doubt on this figure, saying that Chissano’s count of 500 deaths is ‘highly over-inflated’ (Torchia, 2015).

Figure 9: Fatally Injured Suspected Poachers in Kruger National Park



Source: Rademeyer, 2016a; AIM, 2015

Figure 9 shows the number of deceased poachers from two different sources for Kruger NP. Rademeyers figures are significantly lower. He claims to have used information from SAPS and SANParks which is shown in the blue columns. The numbers claimed by former Mozambican president Chissano are shown in the red columns.

On the one hand, there might be dark figures within SANParks and other protected areas. Field rangers may not always report cases of fatal confrontations, or their superiors might order the disposal of a body, which is not difficult in South Africa's dense bushveld terrain. On the other hand, there are doubts as to why Mozambique officials should have accurate numbers. If a poacher does not return home from his trip, it is difficult to clearly assign the cause of death. This person might just as well have been killed in a bar-fight or died in a car accident. Furthermore, it is questionable if the cause of death will be accurately captured and stored in a central register in Mozambique. Overall, Rademeyer's lower numbers seem more likely.

Nevertheless, South Africa's law enforcement is out of balance. The number of poachers who are killed exceeds the number of those who receive a prison sentence. Too many poachers are killed while too few are arrested and convicted. From the perspective of situational crime prevention, South Africa's unbalanced enforcement response is sending contradicting signals to would-be offenders. While the possibility of being killed is a strong deterrent, this is undermined by the soft criminal prosecution practices.

Comprehensive studies on the risk-perception of poachers are lacking. Continuing and soaring crime figures, despite a high number of incidents where poachers have been killed, lead to the conclusion that some offenders either blank out the risk 'It won't happen to me,' while others might completely accept the risk that they might not survive their poaching trip. 'They (the rhino poachers) will take any chance rather than living the way they do. They have no belief in anything, no dream, no future. For them, it's do or die' (Interview with informant, 2019).

A high number of poachers being killed will have negative effects on park-people relationships and pose a burden on the already strained affiliations with many of the communities adjacent to the protected areas. Furthermore, basic social and economic indicators deteriorate when the number of widows, fatherless households and orphans rises. Rigorous anti-poaching can increase poaching pressure in the long run as it intensifies basic enabling conditions, foremost among them poverty and disenfranchisement, in local communities.

8.6 Community-Based Conservation

The South African government claims that it regards the management of biodiversity as a vehicle for social improvement (Morais et al., 2018, p. 13). Several declarations and initiatives have been developed, such as the National Biodiversity Economy Strategy (NBES). The strategy emphasizes the importance of including communities in biodiversity protection (DEFF, 2016). State and non-state actors promote the idea of community-based conservation. SANParks has created a division called People and Conservation, which has implemented several initiatives that seek to address local communities. The joint government-community initiative People and Parks Programme aims to promote the role of local communities in the governance of protected areas (DEFF, 2018). However, implemented programmes to date have only led to isolated local successes in South Africa. It has proven to be challenging to identify effective approaches that incorporate communities as stewards of wildlife. Initiatives that could be regarded as a game-changer are still not on the horizon (Interview with SANParks enforcement official, 2019; Morais et al., 2018, p. 15; Dressler et al., 2010). So far, it seems that South Africa primarily intends to include communities in conservation efforts by providing economic opportunities.

8.6.1 Economic Benefits

South Africa's National Parks system provides direct and indirect benefits to local communities. Employment by SANParks will likely lead to a positive attitude towards conservation (Anthony, 2007, p. 236). In 2013/14, 2,243 people were directly employed by SANParks. 949 were hired through the expanded Public Works Programme and 7,880 people were employed in several conservation areas close by. Jooste and Ferreira (2018, p. 52) take the circle of family members and close friends into consideration and estimate that employment via SANParks provides benefits to 7.0%–7.4% of the people living in the immediate area surrounding of the park. During the year 2014/15 Kruger NP spent 346.8 million rand on goods and services, of which 90% went to Black Economic Empowerment rated companies (Jooste & Ferreira, 2018, p. 52).

However, wildlife crime also creates employment and income opportunities in rural villages amongst poachers, their families and close circle of friends. Jooste and Ferreira (2018, p. 52) estimate that 7,500 people are directly involved in poaching. Taking into account the families and friends of those involved in poaching, the number of beneficiaries' amount to 135,000–142,500 people, or 4.3%– 4.5% of the people living in the immediate area surrounding Kruger NP. In terms of employment and material benefits, SANParks and wildlife crime are both significant providers of benefits to local people.

8.6.2 Poverty and Inequality and Semi-Urban Areas Around the Park

South Africa's conservation model revolves around economic opportunities. However, the direct and indirect benefits that SANParks created for local people did not soothe the storm. South Africa's approach was unable to generate a comprehensive buy-in by local communities. 'It is distant in the sense that some local villagers see work offered here, because of wildlife possible there' (Interview with conservation expert, 2020). One challenge is high population numbers close to South Africa's protected areas coupled with inequality and deep-seated poverty, especially amongst black South Africans. During the apartheid era, social inequality was consolidated. Post-apartheid governments have not been able, or lacked the political will, to turn the tide and create pathways for social improvement. Strong population growth is not met with corresponding rates of economic growth and job creation. Most likely, rural poverty and social inequalities around Kruger NP and other protected areas will increase in the future (Chutel & Kopf, 2018). These social and economic challenges are simply too large for conservation programmes to tackle alone.

8.6.3 The COVID-19 Crisis and Economic Deprivation

On the 15 March 2020, the President of South Africa, Cyril Ramaphosa, declared a national state of disaster (The Presidency RSA, 2020) due to the COVID-19 pandemic. A country-wide lockdown was put in place on 27 March. From 1 June, this lockdown was partially lifted. The crisis is worsening the economic situation in South Africa, partly due to international factors, but mainly because of the national measures to contain COVID-19. At present it is not fully clear which social groups in South Africa are, or will be, worst affected.

On the one hand, lower educated wage earners seem likely to suffer more than those who are more highly qualified. On the other hand, low income households have received government subsidies, which has a stabilizing effect (Arndt & Robinson, 2020, p. 15). South Africa has initiated a social and economic support package worth 500 billion rand (South African Government, 2020). However, the COVID-19 crisis will ingrain basic enablers of wildlife crime, such as deep-rooted poverty in rural areas. The international travel ban will also negatively affect the wildlife tourism industry, which is a key resource for stabilizing rural economies and providing incentives to cater for wildlife conservation. SANDF were enforcing the lock-down which has resulted in reduced rates of capital crime and will probably have resulted in lower levels of rhino poaching. However, criminal networks might take advantage of perceived loopholes, such as park closures, reduced patrol activity and the diversion that COVID-19 has created amongst enforcement officials (WJC, 2020, p. 6).

8.6.4 Types of Co-Management – Makuleke Community

Some policymakers and scholars propose co-sharing forms of land management for rural communities as a way to accomplish greater community support for biodiversity protection. They predict that providing real ownership possibilities will result in a reduction in poaching (Interviews, 2019). To date, the Makuleke community is the only example of a large-scale community-based rural land claim in South Africa that has gone into a form of co-sharing. The Makuleke tribe was forcibly evicted from most of their land in the apartheid era. They retained part of the land, which is located in Limpopo province on the western side of Kruger NP. Some of their lands stretch into the park (Robins & Waal, 2008; Morais et al., 2018). Some conservationists see further potential for co-management east of Kruger NP on the Mozambican side in the Greater Limpopo area (Interviews, 2019-20). While co-management models have the potential to forge

closer ties between communities and conservation areas, the Makuleke example is also highly politicized as it falls into South Africa's land-restitution debate. Plenty of challenges in the practical execution remain. The Makuleke land claim involves a complex patchwork of traditional authorities with more than 20 stakeholder factions claiming to be the rightful landowners. In effect, certain groups, such as male Shangaan cattle owners, are privileged over vulnerable groups (Ramutsindela, 2002; Morais et al., 2018, p. 18).

8.6.5 Contemporary Culture and Environmental Education

The perspectives that humans have on the value of wild animals plays a significant role in the success or failure of conservation and enforcement approaches. In the contemporary culture of many villagers in rural areas, animals are predominately perceived according to their value for consumptive use. The idea of protecting an intact nature as a greater good is not very common amongst rural villagers in South Africa at present. This perception is also shaped by entrenched poverty, which defines priorities and comes with the daily struggle to make a living. This contemporary culture in South Africa poses a burden for initiatives designed to protect wildlife (Interviews, 2019-20). In order to improve strained park-people relationships and influence basic perceptions about wild animals and conservation, NGOs and international organizations are pursuing various programmes and initiatives in the field of environmental education. The NGO Wild and Free organizes soccer tournaments in several of the 'poaching villages' in Mozambique. Together with former poachers, they host 'rhino tournaments' and successfully bring conservation messages to a broad, and primarily young, audience. According to the initiators of the programme, these sports events address a root cause of poaching, which is boredom. These simple programmes, such as soccer training and tournaments, motivate youngsters to engage in a productive relationship with their environment. Other initiatives in environmental education use school modules as entry-points to create positive images of conservation. In this domain, the NGO Wild and Free conducts excursions for school kids to protected areas, such as Kruger NP, to enable them to experience nature firsthand. Most of the youngsters in local villages have never seen a living rhino in its natural habitat (Interviews, 2019). Government bodies, such as the Department of Environment, Forestry and Fisheries (DEFF) also conduct environmental education programmes, such as the 'rhino ambassador programme' with schools in Phalaborwa as well as soccer tournaments for

school kids (DEFF, 2019a).

While these environmental educational programmes have already been seen to be successful at a local level, they only reach a small proportion of the youths in selected villages. However, environmental education is central to protecting the viability of rhinos in the long run, as it influences cultural values (Interviews, 2019-20).

8.7 Capacities for Policing Wildlife Crime

It took a considerable period of time for South Africa to scale-up capacity and investigative expertise to effectively police rhino-related crimes. The process was slow and characterized by drawbacks and institutional lapses (Rademeyer, 2016a). However, more than ten years into the poaching crisis, enforcement institutions and criminal-justice actors have professionalized their capacity to enforce rhino crime.

8.7.1 Delayed Build-Up of Capacities

The South African Police Service (SAPS) is ultimately responsible for policing conservation crime. SAPS has a nationwide presence of 1,125 police stations. The stations are governed according to provincial districts. Each district is led by a provincial commissioner that reports to the national commissioner (SAPS, 2014; SAPS, 2012). The federal structures require greater coordination efforts when it comes to wildlife crimes, which some experts see as a weakness (Interviews, 2019-20).

While commercial poaching and organized crime, as persistent and ongoing forms of crime, require specialized policing skills,[69] South Africa's law enforcement only gradually responded to the emerging poaching threat. Traditionally, wildlife crime has been regarded as a conservation issue that is best left to game rangers to deal with (Rademeyer, 2016a). In 1994 there were already early reports about the rising levels of rhino and elephant poaching. In response, several strategic plans proposed the enhancement of policing skills in the field of conservation-related crimes. These reports and early warnings were largely dismissed by political decision-makers (Maggs & Greeff, 1994) and contrary to the recommendations, expertise in environmental crime was scaled

[69] A police organization needs to strike a balance between generalization and specialization. The facilitation of specialized units within police organizations has several advantages. Specialized units develop expertise, assign responsibility and promote an *esprit de corps*. This leads to a higher degree of operational effectiveness (Burger, 2015; see also Chapter 6.1.1).

down. In 2002, SAPS abolished its Endangered Species Protection Unit (ESPU). ESPU had employed about 30 specialists with expertise ranging from rhino horn smuggling to dumping toxic waste. Some of these detectives and police officers were distributed to local police branches in order to support those units with specialized skills. Others left the police to look for work in the private sector. With the shut-down of ESPU, SAPS gradually lost its expertise in environmental crimes. When the poaching crisis started to accelerate from 2008 onwards, there was no specialized unit or capacity for wildlife crimes in place (Rademeyer, 2016a; Burger, 2015). SAPS had to start from scratch to build up specialized skills that could deal with escalating poaching numbers.

8.7.2 Rhino Crime as a Priority Crime

The National Prosecuting Authority (NPA) labeled rhino crime a priority in 2010 (DEFF, 2011). The South African Police Service listed rhino poaching as a specific priority focus in their strategic annual plan. However, a wide range of crimes is listed in the priority category, such as cable and electricity theft, illegal mining, and the trafficking of precious metals (SAPS, 2012). In an attempt to achieve greater government engagement, some conservation practitioners are stressing the fact that poaching undermines legal and regulated exploitation of natural resources and should be seen as an economic crime as it negatively affects long-term economic opportunities (Interviews, 2019-20).

Wildlife crime is further overshadowed by the staggering general crime situation in South Africa. For 2018/2019,[70] South Africa's crime statistics show 21,022 murders and 41,583 cases of rape. This means that, on average, 57 murders and 114 cases of rape happen each day (SAPS, 2019, p. 5), compared with 1.6 cases of rhino poaching per day.[71]

[70] For a period of twelve months from April 2018 to March 2019.

[71] Relating to the year 2019.

Figure 10: Police Officers Watching a Rhino Crime Scene from a Distance

Source: Smale/South Africa, 2014

A police officer tasked to investigate a fresh rhino crime scene might be called to a murder scene shortly after. Effectively, conservation-related crimes are not high on the agenda of SAPS. In addition to this, the police are not well trained in the area of environmental crimes and have only little insight into the underlying criminal activities of poaching gangs (Rademeyer, 2016a).

8.7.3 The Department of Environment, Forestry and Fisheries

The Department of Environment, Forestry and Fisheries (DEFF)[72] took a leading role in combating rhino crimes and drafting a strategy and policy response to the wildlife crisis. The DEFF has helped to initiate important initiatives and programmes to encounter rhino poaching and also took part in bilateral negotiations (Rademeyer, 2016a, p. 17). However, the DEFF, as an environmental agency, was lacking the appropriate mandate to combat crime. It did not possess the manpower and investigative capacity to deal effectively with

[72] Formerly the Department of Environmental Affairs (DEA). The department was renamed in 2019, incorporating the forestry and fisheries task areas from the Department of Agriculture, Forestry and Fisheries (DAFF).

rhino poaching or organized crime (Rademeyer, 2016a). Furthermore, the DEFF is underfunded, with a budget of less than 1% of the overall national government budget. From this budget, the ministry also has to cover other responsibilities aside from biodiversity protection (Rademeyer, 2016a, p. 17; National Treasury RSA, 2017).

8.7.4 The National Wildlife Crime Reaction Unit

A contribution to the development of expertise in conservation crimes came in 2010, with the establishment of the National Wildlife Crime Reaction Unit (NWCRU). The Unit is coordinated on behalf of the DEFF by the head of SANParks Environmental Crime Investigation Unit. It brings together specialists from various law enforcement agencies and wildlife conservation sectors:

- South African Police Service (SAPS)
- South African National Parks (SANParks)
- National Prosecuting Authority of South Africa (NPA)
- Asset Forfeiture Unit
- INTERPOL

The unit's aim is to coordinate conservation agencies across South Africa in the struggle against wildlife crime with a special focus on rhino poaching. It should bring together expertise and promote cooperation between provinces. The unit is further tasked with increasing interaction with local stakeholders and communities that live close to rhino conservation areas (DEFF, 2011; Milliken & Shaw, 2012). Some sources are critical about the effective service delivery of the National Wildlife Crime Reaction Unit. The level of cooperation across police departments and provinces is still low when it comes to sharing intelligence (EIA, 2017; Rademeyer, 2016a, p. 23; Interviews, 2019; see Chapter 8.10.2).

In 2018, the Wildlife Crime Combating Centre (WC^3) was established, supporting enforcement with intelligence on syndicated poaching. WC^3s engagement is directed towards undermining the resilience of criminal poaching syndicates by reaching higher into criminal networks. The new unit also seeks to improve cooperation with enforcement institutions across different provinces (Interviews, 2019).

The need for greater cooperation follows the observation that poaching gangs frequently operate across provinces. Cases have been reported where a poaching gang, comprised of

three brothers, started in Kruger NP and then moved on to kill rhinos in at least three other provinces. Other cases have been reported in which syndicates received operational support from criminal groups in Mozambique or Zimbabwe (Milliken & Shaw, 2012). Sharing information between provinces helps to identify poaching syndicates and build a case. Each gang has unique features: the rifle they use, the shoes they wear or their anti-tracking techniques (Rademeyer, 2016a).

8.7.5 Rhino DNA Index System (RhODIS) Database

A positive example of the development of specialized expertise to support criminal investigations of rhino cases comes from the University of Pretoria. In order to establish legal precedents for prosecuting poachers and traffickers of rhino horn, the University of Pretoria's Veterinary Genetics Lab (VGL) introduced a Rhinoceros DNA Index System Database (RhODIS) in 2010 (RhODIS, 2020).[73] RhODIS stores the genetic fingerprint of rhinos which is used to support forensic trials. It applies a technology similar to the Combined DNA Indexing System (CODIS), which was initially developed by law enforcement in the United States.

RhODIS has a high degree of accuracy and reliability in criminal proceedings. The underlying methodology compares short tandem repeats (STR) of up to 23 genome sites. The chance of two rhinos having the same STR sequence over all 23 genomes is close to zero. The barcode includes a gender and a species marker to distinguish between black and white rhinos (University of Pretoria, 2018; Harper et al., 2018).

So far, rhino DNA sampling has had some success in supporting criminal investigations and forensic prosecution of poachers and wildlife traffickers, which is demonstrated in Table 16. DNA testing has the advantage of potentially reaching rhino horn traffickers, which helps in the pursuit of those higher up the illicit wildlife trafficking chain. The database might also serve to expand the limited knowledge about illicit smuggling routes. Furthermore, RhODIS can help to differentiate legal from illegal stockpiles, an aspect that is important after the recent ruling of the Constituent Court to allow limited national trade within South Africa (University of Pretoria, 2018).

For the database to enhance its role in combating poaching and illicit trade, it is important that many stakeholders across different range, transit and source countries contribute.

[73] This goes back to the African Elephant Summit, held in Gaborone in 2013, which called for the creation of a network of forensic laboratories that should jointly increase capacity to determine the origin of seized ivory via DNA and isotopic analysis (IUCN, 2013a, p. 5).

SANParks has been cooperating with RhODIS since 2010. In 2012, the South African government passed a regulative order that captured rhinos and horns need to be sampled for the VGL-database. Since 2010, over 5,800 rhino crime cases have been registered at RhODIS and 120–200 forensic reports and criminological assessments have been generated (Harper et al., 2018; University of Pretoria, 2018).

Table 16: Rhino Crime Cases Prosecuted with the Help of RhODIS

Year	RhODIS match result	Poaching site	Sentencing	Nationality
2012	2 horns matched carcass 1 and 1 horn matched carcass 2	Kruger NP, South Africa	29 years and 3 months	Mozambican
2012	2 horns matched carcass 1 and 1 horn matched carcass 2	Waterberg, South Africa	10 years	Zimbabwean
2013	Horn matched carcass	Hoedspruit, South Africa	15 years each	Mozambican and South African
2013	2 horns matched carcass 1 and 1 horn matched carcass 2	Kruger NP, South Africa	14 years	Mozambican
2014	6 horns with 2 horns matched to a carcass	Kruger NP, South Africa	15 months	Vietnamese
2015	The profile from clothing matched carcass	Limpopo, South Africa	8 years	Zimbabwean and Mozambican
2016	3 horns matched 3 carcasses	ORTIA, SA HiP, SA	R800,000 fine or 6 years	Chinese
2016	14 horns with 2 horns matched to a carcass	Etosha National Park, Namibia	14 years	Chinese
2017	Horn matched blood on carpet	OPC, Kenya	11 years	Kenyan

Source: Harper et al., 2018

In order to increase RhODIS's significance, the University of Pretoria conducted 400 trainings for investigators, prosecutors, Environmental Management Inspectors (EMI), veterinarians and wildlife officials on how to collect and store DNA field samples from crime scenes (University of Pretoria, 2018). The Veterinary Genetics Lab also received DNA samples from seizures in Mozambique and Vietnam, which allows for cross-border criminal investigations (DEFF, 2017b). Botswana, Kenya, Namibia and Swaziland have started to contribute to the database (MET, 2014, p. 33). However, the continued and expanded cross-border cooperation is important in order to strengthen RhODIS as a viable tool for law enforcement.

8.8 South Africa's Field Rangers

The presence of field rangers forms a central element in South Africa's anti-poaching and conservation approach. Without the ranger presence on the ground, the rhino population would have been decimated. The primary function of ranger patrols inside protected areas is to slow the pace of illegal killing. This buys time for other conservation methods to be implemented, ideally those that target root causes and enablers of wildlife crime.

Since the advent of the crisis, ranger forces have gradually been built up and further equipped. Due to the increased poaching threat, the ranger's task has changed, so that they now spend 90% of their time on law enforcement and only 10% on other conservation activities (Hübschle, 2017a). This shift to law enforcement means that rangers have less time for traditional conservation tasks.

A constant challenge in South Africa's protected areas is to get more 'boots on the ground'. Kruger NP has proven difficult to conserve, but several public and private actors have contributed to improving the park's protection. The personal attributes of rangers such as perseverance, strength and motivation, are key. Technology can support the effectiveness of ranger patrols but cannot replace them.

A constant challenge is to increase the mobility of rangers to correspond to the flexibility of wildlife offenders. 'The poachers are able to move around. Their requirements are limited. They need a bed to lie down sometimes, they can move around the landscapes quickly, by comparison with SANParks, who are far more formalized, it's a matter of vehicles, helicopters, patrols, everything is far more formalized and far more rigid in the process. When you start making your management far more flexible and able to adjust and react to real-time information, things improve, as in Kruger, such as Skukuza, where they can redirect patrols based on real-time information' (Interview with conservation expert, 2020).

One critical aspect is rangers killing poachers either in self-defence or by acting excessively or even applying illegal practices of 'shoot on sight'. There are no official figures on ranger deaths. However, senior officials at Kruger NP stress that during ranger training a lot of emphasis is put on rules of engagement which should lead to an arrest: 'In our training package we pay a lot of attention to the rules of engagement, it's still a split second decision, it sometimes happens at three to four metres at night' (Interview with SANParks official, 2019).

Another critical aspect relates to wildlife guardians who join the side of poachers. A continuous weakness is that most rangers only receive a low salary with few material

benefits. Working hours continue to be long and working conditions can be tough at times (see Chapter 6.3.2.3).

There have been improvements, foremost by private philanthropists, such as Hemmersbach Anti-Poaching, who contribute to ranger welfare by increasing labour standards and paying fair salaries. These measures have already had tangible success in the local area of implementation (Interviews, 2019).

When assessing the effectiveness of anti-poaching throughout South Africa, the levels of arrests now, compared to the levels at the beginning of the crisis send a positive signal. However, wildlife offenders keep pouring into protected areas. Since 2018 poaching rates have declined and the number of rhinos killed is below 1,000, but the population has also shrunk. In Kruger NP, the number of incursions has remained at the same level – approximately 2,500. It is difficult for scholars to predict how many would-be poachers have been deterred.

With the deep-rooted drivers and enablers in place, even effective anti-poaching operations will not eliminate wildlife crime completely. This corresponds with poaching figures from Serengeti National Park which demonstrate that when the levels of anti-poaching work were low, levels of wildlife crime would soar. When anti-poaching was resumed, wildlife crime did not stop but dropped significantly (Hilborn et al., 2006). Similarly, South Africa's anti-poaching effort is still overwhelmed by the factors that drive wildlife-crime and won't be able to completely stop poaching (Challender et al. 2014).

8.9 The Role of New Technology

Kruger NP can be regarded as an innovation hub. The park has received significant funding and several technologies had been tested in recent years (Koen, 2017, p. 6; see Chapter 8.4.2). Park officials state that basic equipment and moderate but applicable technology increased the effectiveness of ranger patrols. High-end technology only had modest effects (Interviews with park officials, 2019). Unmanned Aerial Systems (drones), in particular, have been hyped as a potential silver bullet (see for example Olivares-Mendez et al., 2013). Kruger NP started using and testing UAVs from 2015 onwards. The results of the testing period were sobering as the UAVs did not detect any poachers during the year-long testing phase. Even when UAVs were equipped with thermal vision, it was not easy to detect humans in the extensive landscapes of the park.

Often there was confusion between animals and humans since the thermal signature was similar. Park management state that UAVs need further development to serve as a viable conservation tool (Martin, 2017a). However, basic technologies, such as SMART-based patrolling, were successfully introduced in Kruger NP and some private reserves in South Africa. While SMART patrolling can have benefits in identifying poaching hot spots, these technologies should not create huge amounts of unstructured data that would be difficult to process for the users (Konrad, 2019, p. 24; Marvin et al. 2016, p. 270). Experience from South Africa illustrates that technology can support rangers in their daily operations, but is not suited for replacing basic foot patrols (Jooste & Ferreira, 2018, p. 51).

8.10 Intelligence

Gathering and using HUMINT emerged as a predominant conservation tool. Intelligence-led conservation promises to use resources efficiently and detect wildlife offenders before they get to the animal. In addition, when a group of poachers is apprehended, suitable poaching weapons can be confiscated and thereby removed from further use. Intelligence can be used to reach individuals higher up in the syndicate ladder, which has the potential to inflict greater harm on criminal syndicates (see also Chapter 4.2.2).

8.10.1 Practical Challenges

A central challenge for intelligence collectors is negative sentiments against conservation authorities in local villages. Creating a network of informants is resource intensive and includes a process of trial and error. The informant faces significant risks. In order to mitigate that risk, informants, who form part of the poaching team, are arrested alongside the poaching team so that no suspicion is aroused (Interviews, 2019).

There are also risks for the enforcement agency. In some cases, the informant works with both sides and only provides selected information to enforcement agencies so that the illicit business is not disrupted (Interview with intelligence officer, 2019).

South Africa's densely populated areas around national parks make intelligence gathering difficult. This is a stark difference to the situation in Namibia where there are only scarcely populated villages around protected areas. In the peri-urban environment around Kruger NP, informants face challenges in picking up on suspicious movement, because there is movement all the time. The anonymity in semi-urban places tends to be greater.

In smaller and scarcely populated villages, on the other hand, a careful observer is able to recognize suspicious movement more easily, e.g. ‘observing a villager leaving the area at 5 am with a bag and a longish item covered in cloth’ (Interview with conservation expert, 2020).

8.10.2 Lack of Coordination

The primary mandate for generating intelligence lies with the South African Police Services Crime Intelligence Unit. At the onset of the poaching crisis, intelligence collectors lacked experience in investigating criminal syndicates. There have been several allegations that the capacity of the unit was too low and that there were cases of corruption amongst crime intelligence officers. In 2015, a portfolio committee stressed the need for SAPS to support this process by enhancing its capacities for intelligence gathering, especially in the villages that surround Kruger NP (Rademeyer, 2016a, Interviews, 2019-20). Enforcement officials from Kruger NP were unsatisfied and rated the performance of the crime intelligence unit as low (Interviews, 2019). This motivated SANParks to gradually built up their own intelligence capacities. Kruger NP enhanced its in-house intelligence capacity by deploying two information analysts and eight intelligence collectors who work with the help of additional paid informants. The collectors are required to obtain actionable intelligence to generate further arrests. They should manage a suspect database and map all persons and suspects behind poaching cases, gather information on their hideouts, routes, timeframes and methods of poaching. They should further identify major end-receivers of rhino horn (Rademeyer, 2016a). Kruger’s development of their own intelligence capacities led to strained working relationships with the crime intelligence unit, leading to the accusation that Kruger NP was interfering in their mandate (Interview, 2020). Several private reserves and their anti-poaching units gradually built up their own network of informants (Interviews, 2019-20). Private anti-poaching companies tend to treat their intelligence as a commercial product (Rademeyer, 2016a) and cooperation between intelligence agencies is limited.

Kruger NP initiated attempts for greater cooperation and signed an agreement with private game reserves on the western boundary to collaborate in anti-poaching operations (DEFF, 2013b, p. 18). However, this has not changed the general approach, and interviewed experts indicate that the various organizations and departments are still working in their own silos (Interviews, 2019).

8.10.3 Intelligence as a Success Factor

Besides the challenges in creating viable networks of informants and sharing relevant information amongst enforcement actors, HUMINT significantly contributed to rising arrest numbers in South Africa. The ratio between arrests made within and adjacent to Kruger NP is an indication of improved intelligence capabilities. In general, arrests outside the park are more frequently based on actionable intelligence and tip-offs than arrests inside the park. In 2016, for the first time, the police and Kruger NP enforcement officials arrested more people outside than inside the park, as a result of intelligence driven operations. This also includes a higher proportion of Tier 3 traders (Interview with SANParks enforcement official, 2019). Senior Kruger NP officials refer to this as 'clearing the park from the outside'. Since 2016, the number of poachers arrested outside the park has further increased. In 2017, 42% (189) of the offenders were arrested inside Kruger NP and 58% (257) outside the park (DEFF, 2019b).

8.11 Dehorning

Private rhino owners apply dehorning more frequently than greater parks and protected areas. John Hume, the biggest private rhino owner in South Africa, has dehorned most of his rhinos (Ferreira, Pfab & Knight, 2014; Interview with private rhino owner, 2017-19). The larger protected areas have refrained from dehorning, primarily for economic reasons. There now seems to be a shift in attitudes amongst relevant ministers and SANParks officials towards dehorning rhinos from greater populations and in larger areas. The Department of Environment, Forestry and Fisheries (DEFF) regards dehorning as an interim security measure and a viable conservation tool. SANParks has recently considered dehorning in high-risk areas (Interview, 2020).

In April 2019, 150–200 rhinos were dehorned in two private reserves in the Greater Kruger Area, Balule Game Reserve and Klaserie National Park.[74] The operation is the largest single dehorning attempt in the Greater Kruger Area to date. The operation was conducted by wildlife professionals with ground teams and helicopter support. DNA samples of dehorned rhinos were taken for the RhODIS database at the University of Pretoria genetics laboratory. The cut-off horns were preserved and placed into secure off-site storage facilities (Chooper, 2019).

[74] Klaserie and Balule belong to the Associated Private Nature Reserves that formed a joint venture with SANParks, referred to as the Great Limpopo Transfrontier Conservation Area (GLTFCA). Under this joint venture a cooperative agreement was signed which foresees the periodic dehorning of rhinos.

The dehorning operation in Balule has resulted in a reduction in poaching and serves as a positive example for further dehorning in other parts of the Greater Kruger Areas. While this thesis has demonstrated that several protective measures cause threat-displacement, this especially applies to dehorning. Dehorning significantly reduces the profits that poachers gain from a rhino kill. It is notable that wildlife offenders shift their attention to parks where rhinos had not been dehorned. So, in the current situation where it is the small farms which are using dehorning, this once again increases the poaching pressure for larger protected areas, foremost among them, Kruger NP. The empirical research further confirms the notion that dehorning needs to be combined with other measures, especially ranger patrols inside protected areas, to reduce poaching rates effectively (see also Chapter 6.7.1).

8.12 The Legal Situation

Efficient law enforcement serves as a success factor and requires harsh legislation when it comes to serious environmental crimes (Knight, 2013). The level of penalties for wildlife offences has increased in recent years. South Africa's National Environmental Management Biodiversity Act (NEMBA) forms a major piece of legislation. According to NEMBA, the penalty upon conviction of a rhino crime can be:

- Imprisonment up to 10 years;
- A fine of up to 10 million rand or up to three times the commercial value of the specimen that was killed; and
- Imprisonment and a fine (DEFF, 2015a).

National legislation is already providing the possibility of imposing lengthy custodial sentences and heavy fines. Depending on the case proceedings, poachers and wildlife traffickers can be prosecuted on the following offences:

1. 'Illegal possession of rhino horn'. The sentence for the illegal possession of rhino horn usually ranges from five to 10 years. Couriers who seek to smuggle rhino horn out of South Africa can be punished with additional fines or custodial sentences for fraud, tax- and customs violations. In some instances, law enforcement officials may confiscate assets (Milliken & Shaw, 2012).

2. 'Trespassing and illegal possession of a firearm'. Poachers who enter the park illegally don't need to commit the killing in order to receive a guilty verdict. The law provides for the possibility of punishing offenders with up to five years imprisonment for trespassing

and an additional sentence for the illegal possession of a firearm.

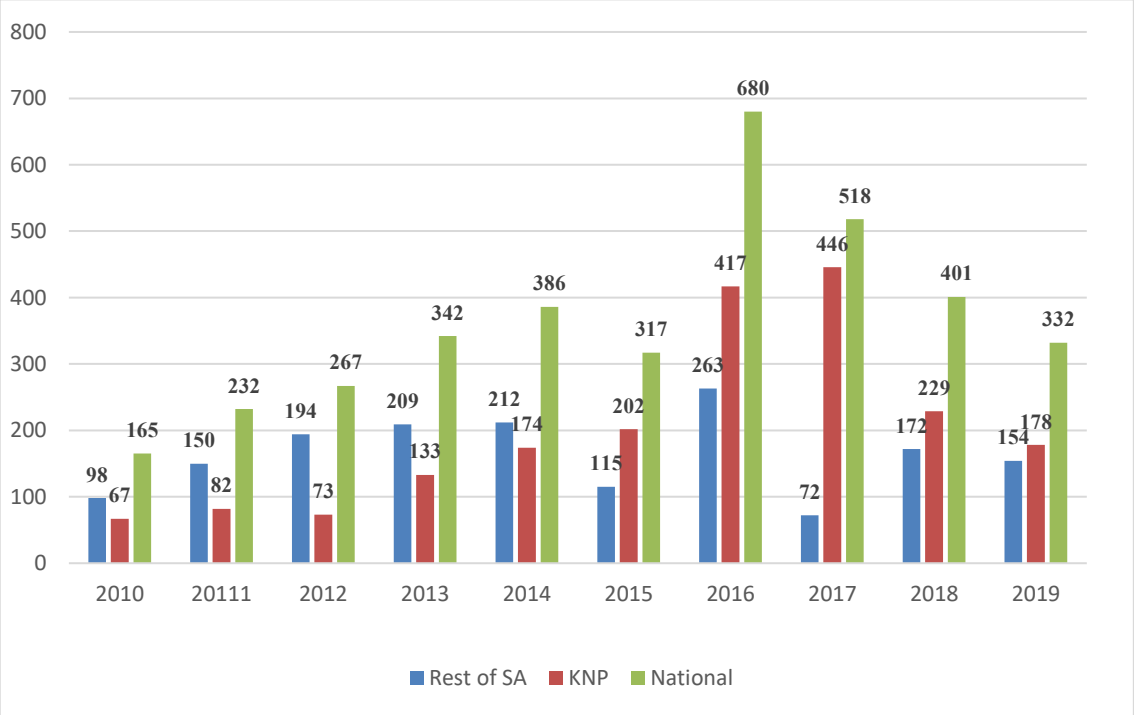
3. 'Illegal killing of a rhino'. The custodial sentence for illegally killing a rhino is 10 years. Sentences for trespassing and illegal possession of a firearm will be added to this (Milliken & Shaw, 2012). In addition, sentences can be higher when offenders face multiple charges. The National Environmental Management and Biodiversity Act allows for 12 additional charges against rhino poachers as well as 11 associated legal acts.

However, the jurisprudence is inconsistent. Nowadays lengthy sentences are handed down in some cases. One example is a conviction of 35 years 3 months in a rhino case on 11 counts under 8 different charges. At the same time, there have been other cases with similar offences where more lenient sentences were handed down (Emslie et al., 2019, p. 20).

8.12.1 Arrest Rate Nationwide

In general, South Africa's arrest rates illustrate an upward trend from the beginning of the poaching crisis in 2010.

Figure 11: Arrests of Suspected Rhino Poachers



Source: DEFF, 2015b; Rademeyer, 2016a, p. 30; DEFF, 2020c

Notably, it took time for arrest rates in Kruger NP to rise. From 2015 onwards, arrests in Kruger were greater than in the rest of the country. It is probable that rising arrest rates in

Kruger NP were a result of increased ranger presence and improved operational capacities (see Chapter 8.4.2). From 2017 onwards, national arrest numbers have slowly been going down. This corresponds with a lower number of rhinos being poached. However, poaching pressure has not reduced. This would indicate that rangers are making fewer arrests, despite the same level of poaching pressure.

However, after the countrywide lockdown that started on 27 March due to the outbreak of COVID-19, the poaching pressure went down significantly (see Chapter 8.13.1). Between January and June 2020, 166 rhinos were killed in South Africa, in comparison with 2019 when 316 animals were killed in the first half of the year. Enforcement officials arrested 38 suspected rhino poachers and confiscated 23 rifles inside Kruger NP. Fifty-seven suspected rhino poachers were arrested, and 18 firearms were confiscated outside the park DEFF (2020b).

8.12.2 Taking Weapons Out of the System

The scarcity of high calibre hunting rifles (the most suitable weapon for rhino poaching) is a limiting factor for offenders. Some individuals rent out weapons to poaching groups. The black-market price for each round of ammunition has risen and is an indication of its scarcity. One round of ammunition goes for 1,000 rand. Apprehended poachers now tend to have less ammunition with them, compared to a few years back (Interview with intelligence officer, 2019).

While there is no comprehensive study that substantially supports this claim, anecdotally, it seems that some criminal groups commit farm burglaries in order to obtain hunting weapons. (Interviews, 2019). In 2017, South Africa had 403 farm attacks and 84 farm murders countrywide. This was a slight increase compared to previous years (Clack & Minnaar, 2018, p. 113). However, farm attacks for the sole purpose of obtaining weapons still seem to be an exception. Still, even when there are other primary criminal motives behind farm attacks and robberies, obtaining weapons can be a by-product. When weapons are bagged, whether that is planned or unplanned, they are likely to end up somewhere in channels for illicit use, including wildlife crime.

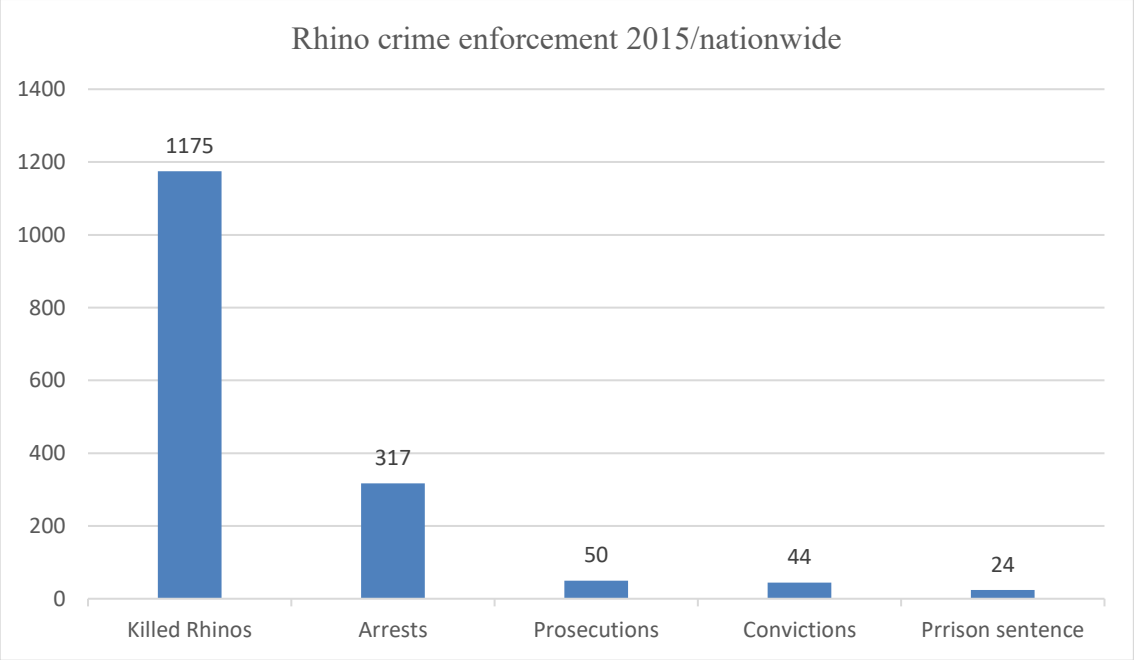
In order to soothe the storm, it is important for enforcement officials to confiscate as many weapons as possible. Especially with a rising arrest rate outside protected areas, and the strategy of Kruger NP officials to ‘clear the park from the outside’ (Interview with SANParks official, 2019), confiscation becomes a central element in an enforcement

system where wildlife offenders frequently get away with lenient sentences.

8.12.3 Prosecution of Conservation Related Crimes

This chapter analyses the prosecution of conservation related crime. South Africa has increased its level of penalties for wildlife crime involving high-value species. However, the legal possibilities are far from being exhausted. The majority of offenders that are apprehended are not effectively prosecuted. Often, there is a significant gap between the legal situation in terms of written laws and its actual criminal prosecution, and a high rate of dismissals and acquittals because of insufficient evidence. Few poachers receive a custodial sentence. These gaps in the criminal prosecution system also strain the work of anti-poaching units, which can hardly develop their full effectiveness if poachers go free after being arrested (Barichievy et al., 2017). Figure 12 provides key data on the law enforcement chain and displays the number of killed rhinos, arrests and imposed prison sentences. While arrest rates show a rising trend, key data of the enforcement chain demonstrates a low rate of convicted offenders.

Figure 12: Rhino Crime Enforcement, 2015



Source: compiled from DEFF, 2016; DEA 2016b; Verwoerd, 2016

South Africa's National Prosecution Agency (NPA) is responsible for prosecuting rhino poachers. The organization announced conviction rates of 88.8% in 2015. However, a

closer look reveals that only a few cases are being prosecuted (Verwoerd, 2016). In order to obtain high conviction rates, the NPA primarily focuses on the cases with the greatest chances of success. Between January 2010 and July 2012 an overall number of 573 people were arrested for poaching-related crimes. Yet in 2012 only 28 of the accused were convicted in 20 cases (Cunliffe-Jones & Rademeyer, 2013). While 1,175 rhinos were killed in 2015, only 48 persons were convicted of rhino-related crimes, the majority (25) for trespassing into protected areas, and only a minority (2) for dealing in horn. However, subsequently, the rate of rhino poaching convictions has risen. In 2018 the National Prosecution Agency brought 92 cases of rhino crime before the courts and obtained 78 convictions, with 135 accused, which represents a conviction rate of 95.1% (DEFF, 2019b).

Table 17: Prosecution of Rhino Crime in 2019

Number of accused sentenced in 2019	**Imprisonment sentence in respect of rhino poaching and trafficking cases**
75	2 to 5 years
32	6 to 10 years
32	11 to 15 years
6	15 years upwards

Source: DEFF, 2020c

In 2019, the number of rhino crime convictions rose to 145, as Table 17 indicates. South Africa has made progress in reaching higher into criminal networks, but challenges remain with too few middlemen and traders being successfully prosecuted. Too often bail is granted to middlemen and traders; this is paid, and they never return to the courtroom.

8.12.4 Targeting Those who Orchestrate Wildlife Crime

There are gaps in the prosecution of wildlife crime. Suspects who are arrested, are those at the lower end of the criminal chain, those who do the actual poaching and earn lower fees. Law enforcement is still failing to deal with the individuals who operate at the higher end of organized crime. Arresting predominantly lower-tier operatives has only a short-lived impact because they can be replaced easily while trafficking networks and their

kingpins continue to operate with little fear of consequences (Nanima, 2016, p. 231; Milliken & Shaw, 2012; Anderson & Jooste, 2014). Nevertheless, South Africa's enforcement approach has improved. During the onset of the poaching crisis, this weakness of South Africa's law enforcement was even more predominant, law enforcement was lacking the capacity and was not focused on moving higher up the illicit wildlife trade chain to target those persons orchestrating the poaching. From a sample of 207 arrests in 2012, 86% (179) were Tier 1 operatives, 5% Tier 2 middlemen (10) and 9% (18) Tier 3 traders (CITES, 2013, p. 5).[75] Policymakers in Sub-Saharan Africa are aware of this prosecutorial dilemma. The SADC anti-poaching strategy aims to increase investigative capacity to not only deal with offenders at the lower end of the chain but those who orchestrate the killing (SADC, 2015). South Africa has enhanced capacities. The newly established Wildlife Crime Combating Centre (WC³) supports intelligence gathering and maps out criminal poaching networks. As a first success, SANParks officials report a higher proportion of traders and kingpins within the cohort of arrested wildlife offenders in 2019 (Interviews, 2019).

Plea bargains and leniency should be used more frequently to obtain valuable information from low-level offenders to build a case against middlemen and criminal syndicate leaders (Anderson & Jooste, 2014). Some advocate for increased sentences for middlemen and syndicate leaders (Rademeyer, 2016b) and propose that offenders who are involved in large trafficking incidents should not be granted bail as they are often able to pay and disappear (Anderson & Jooste, 2014). For high-ranking criminals and syndicate members, lengthy prison sentences are suggested to be more effective than fines on their own, which are often regarded as an affordable tax on earnings (Milliken & Shaw, 2012).

In this regard, South Africa's enforcement needs to explore the possibilities of expanding the capacity to pursue criminals internationally as transportation and distribution of wildlife products take place beyond national South African borders (Biegus & Bueger, 2017). Legal experts propose extradition treaties with key consumer and transit states of rhino horn, such as Vietnam and Mozambique, which would allow for extraterritorial jurisdiction for key members of criminal networks (Nanima, 2016, p. 231).

To support international enforcement efforts, cooperation between police and customs officials needs to be strengthened with advanced trafficking techniques employed.

[75] This figure corresponds with Milliken & Shaw (2012). Out of 170 arrests, 147 were Tier 1 (86%) poachers, 16 were Tier 2 middlemen (9%) and 7 (4%) were Tier 3 and 4 traders and exporters.

Forensic evidence from rhino crime scenes as well as seizures need to be carefully secured and used in order to identify and map out wildlife trafficking networks.

8.12.5 Cross-Border Cooperation

Poaching offences in Mozambique were long regarded as misdemeanours and were only subject to civil sanctions. This changed with the introduction of new conservation legislation with the Conservation Areas Law in 2014. Under the updated penal code, illegal hunting includes prison sentences. Furthermore, an Environmental Police unit has been formed and anti-poaching activities have intensified (Massé, 2017, p. 123). In September 2019 two poachers were convicted in Mozambique. This was the first conviction since the onset of the poaching crisis. The investigations were supported by SANParks Environmental Crime Investigative Unit in Phalaborwa (Jacobs, 2019).

SANParks' anti-poaching strategy encourages cooperation with officials from Limpopo National Park. Enforcement officials from Mozambique and South Africa conducted joint operations. The cooperation also included joint approaches towards communities (DEFF, 2013b, p. 18). In 2014 an MoU was signed between Mozambique and South Africa. The MoU expresses the need to synchronize the law enforcement response between Limpopo NP and Kruger NP (DEFF, 2014). However, once poachers reach the border and cross back into Mozambique from Kruger NP there is no hot pursuit. Although Mozambican enforcement officials will be informed, the delay in the enforcement response usually means that once poachers reach the border, they are safe from law enforcement (De Beer, 2016, p. 57; Interviews, 2019-20).

South Africa has Transfrontier Conservation Areas (TFCAs) with Botswana, Namibia, Lesotho, Mozambique and Swaziland (Vandome & Vines, 2018, p. 16).[76]

Supporting cross-border cooperation is also a preferred strategy of NGOs and other international donor organizations. WWF South Africa, in cooperation with USAID, is currently implementing a five-year project to reduce poaching and wildlife trafficking in the South African and Mozambican landscape of the Greater Limpopo Transfrontier Conservation Area (GLTFCA) (WWF, 2020).

South Africa is also seeking greater cooperation with rhino horn destination countries. An MoU was signed with Vietnam in 2012 to forge closer cooperation in biodiversity

[76] Transfrontier Conservation Areas (TFCA) are different protected areas which cross national borders. While they are managed by the respective authorities and landowners, they are still regarded as one large-scale natural system for overarching conservation policies.

conservation (DEFF, 2012). Another MoU was signed with China in 2013, also for increased cooperation in biodiversity protection.

Due to South Africa's predominant role and experience in rhino conservation, it has great potential to offer expertise to other rhino range states, especially across Africa. South Africa has a vibrant security sector and Kruger NP can be regarded as a testing ground for the application of new technologies. This experience in law enforcement for biodiversity conservation should be harnessed in increased South-South cooperation.

8.13 Resilience of Criminal Networks

Chapter 4.2.1 elaborated on the factors that lead to a high degree of resilience of rhino poaching syndicates. The empirical research supports this notion for the South African case example. Previous chapters have illustrated that lower-tier individuals can be replaced easily. South Africa's surrounding villages have no shortage of suitable would-be offenders for successful poaching operations. The country's law enforcement needs to be able to reach higher up on the syndicate ladder to disrupt or harm organized crime groups significantly. Losing some Tier 1 poachers to enforcement authorities will cause little disruption to the activities of syndicates and organized crime groups.

A strength of poaching networks is their ability to gather local intelligence and knowledge. Moreover, poaching teams in the field display a high degree of flexibility. A rigid top-down control or management structure is often lacking (David et al., 2016, p. 25). The cellular structure of different autonomous groups poses a challenge to law enforcement when cracking down on syndicates. Experts with insight into intelligence reported that there are dozens of somewhat autonomous syndicates (Interviews, 2019). As long as high-priced demand from Asia is coupled with the many enabling factors in South Africa, law enforcement needs to crack down on each syndicate individually. From the enabling factors, the empirical analysis has supported the notion that the strained relationships between rural villages and protected areas are a particular contribution to the resilience of poaching syndicates. Endemic corruption and poverty also remain central drivers.

8.13.1 Effects of COVID-19 on South Africa

The COVID-19 pandemic is affecting wildlife crime in South Africa. On the 15 March 2020, a national state of disaster was declared by President Cyril Ramaphosa. A country-

wide lockdown came into effect on 26 March. The lockdown was partly lifted from 1 June onwards (The Presidency RSA, 2020; South African Government, 2020).

The COVID-19 crisis resulted in economic decline, ingraining basic enablers of wildlife crime, such as deep-rooted poverty in rural areas. To date, it is not fully clear which social groups in South Africa are most affected. On the one hand, lower educated wage earners seem to have suffered more than the higher-qualified. On the other hand, low-income households received government subsidies in South Africa, which has had a stabilizing effect, as these payments continued during the crisis (Arndt & Robinson, 2020, p. 15). South Africa initiated a social and economic support package of 500 billion rand to cushion people from economic hardships, but the negative effects on the economy will be significant. The international travel ban has negatively affected the wildlife tourism industry, reducing income from South Africa's wildlife industries. This puts a further burden on already scarce resources for conservation. Moreover, income from tourism has been a key resource for some of South Africa's rural economies and provided incentives to cater for wildlife conservation.

8.13.1.1 Reduction of Rhino Poaching due to COVID-19

In the short term, rhino poaching in South Africa has gone down. In April 2020, 14 rhinos were killed nationwide, five in Kruger NP. This is a significant reduction compared to the previous year, when 61 rhinos were killed in April 2019 nationwide, 46 in Kruger NP (DEFF, 2020a). According to the Department of Environment, Forestry and Fisheries (DEFF), the sharp decline in rhino crime was caused by the movement restrictions, which disrupted supply-chain actors. Moreover, the closure of international borders and shutdown on air travel reduced the ability of Tier 3 and 4 traders to move illicit contraband (DEFF, 2020a).

The lockdown also resulted in tightened security provisions, that were enforced by the police and the SANDF. The national lockdown also influenced criminal opportunities at specific sites. For example, Kruger NP temporarily closed to tourists which halted 'drop-off incidents', where poachers pose as tourists and use the roads to enter and leave the park (DEFF, 2020a; see also Rademeyer, 2016a).

Reduced rhino poaching numbers correspond to a general reduction of capital crime in South Africa. During the lockdown period, from 29 March to 22 April, 432 cases of murder were reported, which was a significant reduction compared to the same period in the previous year, when 1,542 homicides were registered in South Africa. Besides restrictions

in movement and heightened security, enforcement officials further relate this reduction to the prohibition of alcohol during that period (Singh, 2020).

In Kruger NP, poaching for bushmeat has stayed at approximately the same level after the lockdown (DEFF, 2020a). It is not clear to date how bushmeat poaching has developed in other areas across South Africa. Other sources forecast increasing levels of bushmeat poaching due to increasing food insecurity (Cochrane, 2020).

8.14 Conclusion South Africa

South Africa conserves the greatest rhino population worldwide and faces the highest rate of poaching. From 2007 to 2020, over 8,500 rhinos were killed in South Africa's protected areas, reserves and private parks. The rate of poaching is not sustainable and has led to a population decline. Kruger NP has taken the brunt of the poaching onslaught. Site-based factors contribute to its vulnerability, such as the parks' extensive terrain and open borders to countries with higher poverty, weaker governance and less enforcement.

High-profit margins from the illicit receipts of rhino horn have lured several kinds of actors into the game. The predominant pattern for sourcing horn involves networks of three to five layers or tiers. The base of the poaching-pyramid is made up of impoverished South Africans or Mozambicans, often from rural villages adjacent to parks or protected areas, who trespass in small teams into protected areas to kill rhinos. Tier 1 poachers rely on the strengths that a life of deprivation and poverty has taught them. They are innovative, highly flexible and well versed in gathering intelligence on security provisions and the whereabouts of rhinos. Most Tier 1 participants possess outstanding bushcraft, others have learned shooting and the skills to 'move and hide' in the bush during Mozambique's civil war. High rates of corruption serve as a facilitator. In some cases, enforcement officials provide aiding information or even join the illegal hunt. Apart from a high-powered hunting rifle and a mobile phone to arrange for pick-up, poachers do not tend to rely on high-end technologies.

Within South Africa, the perspective of situational crime prevention applies. Poaching teams are flexible and take site-based factors into consideration when selecting their target. Those reserves that display weaknesses in their enforcement will be targeted first. South Africa's parks and protected areas are in this together. If one reserve increases its security measures, other sites are likely to experience rising poaching pressure due to threat-displacement.

South Africa can now look back on 10 years of experience in dealing with high rhino poaching rates. Enforcement officials and conservation practitioners are well aware that a comprehensive approach is needed, with the aim of bringing down rhino poaching numbers to levels below the 'tipping point' to prevent species extinction.

However, it took time for the country's enforcement and conservation authorities to respond to the crisis and scale-up its capacities for policing wildlife crime. For too long, poaching has been regarded as a conservation issue that was best left to park authorities to deal with. The country had just scaled down its conservation crime expertise when poaching numbers started to escalate. Even though South Africa labelled rhino crime a priority crime in 2010, a dead rhino is regularly overshadowed by the staggering crime rates of other serious crime, including 21,000 cases of capital murder every year. The Department of Environmental Affairs (DEA)[77] took a leading role in rhino conservation matters, however, the environmental agency did not possess the appropriate mandate and was lacking the investigative capacity to deal with crime effectively. SAPS gradually managed to increase its institutional capacity to enforce rhino-crime to a moderate degree. Positively, SANParks serves as an efficient and well-managed National Park System and ranger forces form a central element in the efforts to curb rampant poaching. Trained and equipped to carry out on-site protection, their primary function is to reduce the speed of the onslaught by making it harder for poaching teams to conduct their business. When rangers arrest offenders and confiscate weapons, those who orchestrate wildlife crime have to make arrangements to recruit new members and replace the missing firearms. This creates a window of time to implement other measures, that should tackle core enabling factors of wildlife crime and weaken the currently unbroken resilience of criminal poaching syndicates.

Strained park-people relationships are a primary enabler for the recruitment of Tier 1 individuals and make enforcement of wildlife rime costly on an ongoing basis. Local villagers perceive wildlife conservation as something distant from them. Some see the rhino as a 'white man's business' with ties that go back to apartheid or colonial times. Communities have mostly been excluded from the governance and management of wildlife. There are some benefits that local villagers receive from SANParks or private reserves, mostly in the form of economic benefits, such as employment. However, wildlife crime also provides direct and indirect benefits to communities.

[77] Since June 2019 called the Department of Environment, Forestry and Fisheries (DEFF).

The need to bring communities into a participatory relationship with nature conservation is widely acknowledged across the board by conservationists and criminologists. However, a significant feature of the South African case example is that the communities around protected areas are highly populated and can be characterized as semi-urban. Kruger NP has around two million inhabitants close to its western border. Apart from rather isolated success stories, such as the Makuleke community, the country has not managed to identify approaches that effectively include communities, so it seems that a 'hard boundary' between protected areas and people who live in the vicinity will remain for the foreseeable future. Until this boundary is softened, it would be detrimental for the South African rhino population for park authorities to scale down their protectionist enforcement capacity. Due to the nature of the ranger profession, this protectionist approach comes with militarized features. Nevertheless, armed rangers need to execute their work with the utmost care and mindfulness so as to not further exacerbate the already strained relations with local communities, in particular, by refraining from using excessive violence. Simultaneously, the potential for including communities to act as stewards of wildlife, despite the practical challenges of such approaches, needs to be further explored and harnessed. Some NGOs, such as Wild and Free in Mozambique, have already piloted programmes with positive outcomes, primarily in the area of environmental education.

Intelligence to support anti-poaching has turned out to be an effective tool for soothing the storm. This tool's strength is that poachers can be arrested before they get to the rhino. Preconditions in South Africa are challenging and characterized by communities that are critical of law-enforcement systems, as well as populated areas that make it difficult to identify suspicious activity. However, information collectors from the park authorities and private security providers have managed to create their own networks of informants to gather actionable HUMINT. While this process has been tedious and was characterized by trial and error, it is starting to demonstrate results. Arrest rates outside Kruger NP have surpassed those inside the park. The process of creating systems of informants demonstrates that many of the actions to soothe the storm are decentralized and depend on capacity building of local enforcement actors on the ground. However, the potential in this field is not exhausted. Different intelligence collectors and agencies need to find ways to build trust to share relevant information.

Some conservationists and providers of military equipment have hailed the use of new technologies as a potential game-changer. Kruger NP has served as a testing ground and

innovation hub to introduce and test high-end technologies in the conservation sector. However, these technology transfer initiatives were externally driven and often scattered and inconsistent. The example of Unmanned Aerial Systems demonstrated that high-end technologies can be costly and complicated to handle. They require trained people to apply them. Parks are often not tech-ready to fully utilize high-end technologies. There are a few examples, such as reserves supported by 'Hemmersbach Anti-Poaching', where far-sighted management introduced sophisticated ranger technology only when combined with extensive personal capacity building measures. Basic advancements in ranger equipment and medium-level technologies, such as the ranger-based monitoring application SMART, were amongst the successful technology transfer initiatives that resulted in the increased effectiveness of enforcement actors on the ground.

South Africa's wildlife ownership model influences the country's conservation and enforcement efforts. Private farmers conserve up to 30% of the national rhino population. They bear the rising costs for security provision and can be faced with risks to their personal safety. Several private sector operators have sold off their rhinos. Private rhino custodians should receive a greater level of government support or be provided with the means to generate income to finance their continuation of conservation efforts.

Comparably low and declining elephant poaching numbers indicate, that despite many of the general enablers being the same for both species, the lower end-user price for ivory is a relevant factor. There are reports of declining wholesale prices of ivory on the black market (WJC, 2020, p.6). Furthermore, elephant tusks are bulkier and more difficult to transport which results in increased sourcing and smuggling risks. This demonstrates that decisions to engage in wildlife crime are informed by elements of rational choice. With current levels of enforcement, for most of the poaching groups, the risks around harvesting ivory are not well enough compensated by the potential benefit on the black market.

This is an argument for dehorning rhinos. Experience has shown that dehorning is an effective way to reduce poaching at a specific site. This research has stressed the notion of threat-displacement, which especially applies to dehorning, as criminals shift their attention to those areas where rhinos have not been dehorned. It appears that dehorning can only reach its full potential when simultaneously applied to most of the conservation actors, including larger conservancies. The decision by SANParks to conduct dehorning in high-risk areas is a step in the right direction.

South Africa has increased the level of penalties for wildlife crimes that involve the

killing of high-value species. There is a significant gap between the legal situation in terms of the written law and its actual criminal prosecution. Court processes are characterized by ill-informed judges and a high rate of dismissals and acquittals, often due to insufficient evidence. At the beginning of the poaching crisis, only a fraction of arrested poachers received a custodial sentence. This has slightly improved, with 145 rhino-related convictions by South African courts in 2019. However, South Africa's criminal prosecution system has been unable to break rhino poaching syndicates. The majority of arrests focus on ground-level poachers. When local recruiters and traders are arrested (Tier 2 and 3), they are usually granted bail, which they are able to pay before disappearing. Plea bargains and leniency should be used more frequently to obtain valuable information from low-level offenders to build a case against their higher-tier counterparts, such as middlemen and criminal syndicate leaders. Bail should not be granted to higher-ranking members of criminal rhino poaching syndicates. These loopholes in the criminal prosecution also put a strain on the work of anti-poaching units, which cannot develop their full effectiveness if poachers go free after being arrested.

South Africa is in the process of strengthening transboundary enforcement, which should also be extended to greater global cooperation with rhino horn range, transit and destination countries. For example, the Memorandum of Understanding between South Africa and Vietnam to enable closer cooperation in biodiversity conservation is a step in the right direction. South Africa should seek to enter into extradition agreements on a broad basis so that international traders (Tier 4) find it harder to evade prosecution.

When designing a comprehensive strategy for soothing the storm, policymakers should combine the advantages of top-down and bottom-up approaches. Both the social approach, that focuses on enabling factors in rural communities, and the site-based perspective, that tends to be of a more protectionist nature, are valid and offer some value for conservationists and enforcement officials. The protectionist approach has the disadvantage that it cures the symptoms rather than dealing with root causes of poaching. However, in comparison to many other and softer approaches, it is probably the tool that has saved most rhinos from being killed during the past 10 years. It is a challenge for the designers of policy-measures that it is difficult to single out and measure the specific contributions and underlying effectiveness of each method for combating rhino poaching. South Africa's rhino poaching numbers have declined in the past five years. Part of the reduction in absolute terms is a statistical distortion, as they correspond to lower population numbers and are not based on a reduction in poaching pressure. However, the

reduction in the numbers of rhinos being killed is also a result of advances that South Africa has made in strengthening the enforcement regime around wildlife crime, foremost with the help of professionalized ranger forces in protected areas, the use of intelligence capacities, and a more frequent application of dehorning.

9 Soothing the Storm in Namibia

Namibia is a significant range state for rhinos and elephants. The country conserves a large part of Africa's black rhino population. Namibia follows an incentive-based conservation paradigm and is well known for its Community-based Natural Resources Management (CBNRM) approach (RoN, 2017, p. 18; UNDP, 2014, p. 10). Some features of the Namibian example are similar to South Africa, such as weaknesses in the criminal prosecution system. Other aspects are significantly different, such as the lower population density around protected areas, which allows for more effective community-based approaches in the first place. In regard to positive people-parks relationships, Namibia shares similarities with Nepal.

9.1 Wildlife Crime in Namibia

Wildlife crime is common in Namibia and ranges from small-scale subsistence and commercial meat forms up to poaching of high-value species for international markets.

9.1.1 Rhino and Elephant Poaching

Rhino poaching started to accelerate in Namibia later than in Asia or other countries in Sub-Saharan Africa. Zimbabwe was the first country in Southern Africa to experience a sudden increase in rhino poaching from 2006 to 2008 (see Table 8). This was followed by escalating poaching cases in South Africa from 2009 onwards. Namibia's rhino poaching crisis started in 2014 when between 25 and 61 rhinos were killed.[78] In 2015, approximately 90 rhinos were poached. This was more than during the previous 10-year period combined. Table 18 provides an overview of the development of rhino poaching. It also indicates that the poaching numbers slightly decreased after reaching a peak in 2015.

[78] Unlike South Africa and Nepal, the Namibian Ministry of Environment and Tourism (MET) does not release comprehensive statistics on a regular basis, which is why numbers of killed rhinos differ for some years.

Table 18: Illegally Killed Rhinos in Namibia

06-08	09-10	2011	2012	2013	2014	2015	2016	2017	2018	2019
0	4	1	1	4	≥253 0-61	90-97	61-72	36-55	57-74	41-45

Source: Emslie et al., 2016, p. 2 (2006 to 2015); Poaching Facts, 2020; Smit, 2020

Namibia's rhino population is estimated at 822 white and 1,946 black rhinos (see Chapter 7.1). Harmful to biodiversity conservation is that many of the rhinos killed in Namibia are black rhinos, which are 'critically endangered' under IUCN-status. Out of 201 rhinos, that have been poached since 2011, 92% (184) were black and 8% (17) were white rhinos (Menges, 2016).

Namibia's elephant population is estimated at around 22,700 animals (Chase et al., 2016). Most of the elephants are killed in the Zambezi region in the northeast of the country. The region has a sizable elephant population with 5,000 to 9,100 resident and 30,000 migrating elephants (RoN, 2017, p. 18; O'Connell-Rodwell et al., 2000; Conservation Action Trust, 2018; UNDP, 2014, p.44).

Table 19: Illegally Killed Elephants in Namibia

Year	2013	2014	2015	2016	2017	2018	2019
Elephants poached	38	78	49	101	50	26–27	12

Source: Smith, 2017; Conservation Action Trust, 2018; Smit, 2020

In addition to a low risk of detection in Namibia's north-east, environmental crime experts link the increased elephant poaching figures to road construction projects around Linyanti by Chinese companies (UNDP, 2014, p.44). The general connection between Asian engagement in a region, e.g. via infrastructure projects, and a rise in wildlife crime has been frequently observed. Some experts state that Asian nationals use their presence in the region to form networks to Tier 2 middlemen or to get into direct contact with Tier 1 poachers (Interviews, 2017-20).

9.1.2 Subsistence, Small-Scale and Commercialized Meat Poaching

Subsistence and commercial meat poaching have been prevalent in Namibia for decades. The precise extent is difficult to estimate, and comprehensive studies are lacking. The author has observed, on several occasions, signs of meat-poaching incidents while working at different farms in Namibia, before and during the onset of the rhino poaching crisis. One form of meat-poaching includes the use of basic technologies, such as snares. Others hunt with dogs, preferably for warthogs although larger antelopes can also be hunted with dogs.

Another pattern is a more commercialized form of meat-poaching, which involves a vehicle in combination with a silenced hunting rifle and a spotlight. Poachers of this type target larger animals, predominantly oryx, hartebeest and kudus but also springbok. Using this method, animals can be spotted from many of the public gravel roads in Namibia's countryside that often run next to private farmland. With the help of a spot-light and a silencer, it is often possible to shoot more than one animal from a herd. At the spot where the animal is killed, some poachers hack off the legs and cut off the horns. This ensures that the torso can be transported more easily, and more than one animal can be loaded into one vehicle.

Throughout, there have been incidences where enforcement personnel, such as the army or police, have been involved in larger-scale meat poaching and formed an active part of the hunting team. In one incident in 2017, a minibus with a policeman and two civilians overturned due to speeding and three oryx and one warthog carcass were found in the vehicle (Bause, 2017).

Cattle theft is a related and ongoing challenge for farmers. In some cases, cattle are slaughtered and disassembled inside the farm's boundaries. Often the groups that steal cattle or poach wildlife receive aiding information from someone that works at the farm (Interviews, 2017-20).

In common with the Nepali case, and to a degree the South African example, this research could not establish a link between meat poaching and the illegal killing of rhinos or elephants. These forms of poaching differ significantly in terms of hunting-areas and are usually carried out by different offenders. Still, there might be a development path for some individuals who start with smaller forms of meat poaching, which serves as a training ground for enhancing their hunting skills. Moreover, it reduces the psychological barrier for subsequently moving from meat to rhino poaching if a viable opportunity in the form of a buyer arises.

9.2 Basic Enablers of Wildlife Crime in Namibia

Namibia has several classic enablers of wildlife crime, such as weak socio-economic indicators and deep-seated rural poverty.

9.2.1 Population and Rural Poverty

Namibia is a large country with a surface area of 824,629 km^2 and a relatively small population of about 2.1 to 2.4 million people, resulting in a population density of 2.6 inhabitants per km², with 43% of the population living in urban, and 57% in rural, areas (Government of Namibia, 2019; CIA, 2018). The country has a variety of ethnic groups[79] and a relatively young population. Although counted as an upper-middle-income country, Namibia ranks number seven of the most unequal countries in the world. High youth unemployment and deep-seated poverty are especially prevalent in rural villages. While the social indicators are similar to South Africa and Nepal, Namibia has fewer people living around protected areas, for example, Etosha NP. This is a significant difference to Kruger NP, which has a population of two million people on the western boundary of the park alone (Hübschle, 2019).

9.2.2 Corruption

Namibia has elevated levels of corruption. Complicity with wildlife crime goes high up into government circles. Namibia has made several efforts to address its high corruption levels. In 2014, the Namibian Police (NamPol) conducted an internal investigation into the involvement of government officials in poaching cases in the Kunene and Zambezi regions (RoN, 2017, p. 22). The country has adopted several legal provisions. The Anti-Corruption Act was enacted in 2003 and led to the establishment of an Anti-Corruption Commission (Amoo & Skeffers, 2008). In 2017, Namibia adopted the Whistleblower Protection Act (WPA), which seeks to offer protection to those who disclose mismanagement, fraud or corruption of government officials, including in wildlife crime related cases. To date, the political will and dedicated staff to effectively enforce the anti-corruption legislation have been lacking (Lesser, 2018, p. 80). Some experts stated that conservation-related corruption is greater in Namibia than in South Africa, but comprehensive studies to back up this claim are lacking (Interviews, 2017-20).

[79] 50% Ovambo, 9% Kavango, 7% Damara, 7% Herero, 6.5% mixed, 6% white, 5% Nama, 4% Caprivians, 3% San (Bushmen), 2% Rehoboth Baster and 0.5% Tswana (CIA, 2018).

However, high-profile corruption cases do continue. In January 2020, a senior police officer from the Oshakati region was arrested (he can be assigned to Tier 3). He directed rhino poaching activities in Etosha NP and coordinated the sale of rhino horn to Tier 4 dealers who have an international background. Alongside the senior police officer, several other government officials were arrested. However, while enforcement officials receive public attention and media coverage when arrested, out of 91 suspects arrested in 2019, six were government officials (Denke, 2020). The recent arrest of a senior police officer is also a sign that parts of Namibia's law enforcement are vigilant and are prepared to put the investigative focus on members of their own enforcement agencies.

9.2.3 Negative Sentiments Towards Conservation Authorities

Namibia's colonial past and existing ownership rights are present issues in the public perception. Some community members claim that they have been deprived of their hunting rights and land ownership (RoN, 2017, p. 27). Until Namibia's political independence in 1990, the then white establishment was favoured in ownership rights and had conservation management nearly exclusively under their control. While those ownership structures are persistent to some degree, recent developments have to be taken into account, such as the communal conservancies and the large state-owned protected areas which are managed by Namibia's predominantly African ruling party, SWAPO. On the other hand, numerous private farms are managed and owned by white farmers, who are Namibians and have been in the country for several generations. Negative sentiments towards the establishment are still a factor for conducting wildlife crimes (Kahler & Gore, 2012, p. 115). Even if today's elite consists of both black and white Namibians, the former racial divide and the image of white oppression towards black people still play a role.

9.3 Poaching Pressure and Governance of Wildlife

Forty-four per cent of Namibia's land surface is under some form of conservation management. The Ministry of Environment and Tourism (MET) is the entity responsible for conservation management. There are three different forms of land ownership in Namibia: (1) Protected areas on communal land, (2) state-managed protected areas, and (3) private farms. The form of ownership and governance influences the enforcement approach and has implications for the poaching opportunities at a specific site.

9.3.1 Forms of Land Ownership

Protected areas on communal land play a significant role in Namibia's conservation model. There are 83 registered conservancies covering 19.8% of Namibia's land, with approximately 227,941 people living in these areas. Kunene province in the north-west of the country is the most important region for CBNRM, with 38 registered conservancies, supporting 65,137 people. Kunene is one of two provinces that have rhinos on communal land in Namibia. Most of the income for the conservancies comes from tourism and hunting. There are 42 joint venture lodges on conservancy land (MET & NACSO, 2018). Chapter 9.5 will deal with Namibia's CBNRM in greater detail.

Protected areas managed by the state account for 17% of Namibia's land. The Directorate of Parks and Wildlife Management (DPWM) is part of the MET and manages nine national parks and 14 other protected areas (Berghöfer et al. 2017, p. 83). Most of the rhino poaching cases occur in Etosha National Park. Comparable to Kruger NP in South Africa or Chitwan NP in Nepal, Etosha is Namibia's biggest rhino habitat. Due to its large size and inadequate enforcement capacity, the park is difficult to protect. (UNDP, 2014, p. 27).

Private rhino reserves are also important. Namibia has approximately 400 commercial game farms, varying in size from 3,000 to 10,000 ha. Additionally, the country has about 150 private reserves which cover an area of 760,000 ha (UNDP, 2014, p. 14; Berghöfer et al., 2017, p. 83). Private sector operators continue to experience high poaching pressure and have to organize their anti-poaching response by themselves (see Chapter 9.6).

9.3.2 Differences in Poaching Pressure

The first poaching hotspot was Etosha NP, which is the largest state-managed rhino-conservation area. Up to 2015, 137 black rhinos and 11 white were killed. In addition, Namibia's conservancies were targeted and lost 40 black rhinos. At the beginning of Namibia's poaching surge, private farmers lost proportionally fewer rhinos (6 white, and 7 black rhinos until 2015) (Menges, 2016). However, in 2017 and 2018, poaching on private farms picked up significantly, while it slowed down in the communal conservancies.

Etosha National Park has been targeted throughout. However, poachers exploit vulnerabilities regardless of the forms of land ownership, depending on where they identify a weak spot or where they have insider-knowledge at their disposal that helps them to locate rhinos and avoid detection. 'They move, they do their homework, where it

is the easiest; when you start trimming down, they move elsewhere. I don't think they favour anyone because it happens to be a conservancy or communal area. The weakest link. If you start clamping down on a specific area, they move elsewhere' (Interview with conservation expert, 2017). Still, the conservancies managed to bring down rhino poaching numbers significantly. Both conservancies that have rhinos had not had rhino poaching cases for two years (Interviews, 2020).

9.4 Criminal Rhino Syndicates Operating in Namibia

As with the situation in South Africa, the three to five tier structure serves as a helpful model for the Namibian context. The logic of overarching high end-user prices for illegal wildlife contraband in China and Vietnam sets the general tone and motivates individuals from different countries and backgrounds to forge connections and join the illicit rhino horn value chain. The allocation of responsibilities within criminal groups and rhino syndicates, and special features, such as recruitment patterns, follow a pattern similar to that in South Africa.

9.4.1 Tier 1 (Shooters, Trackers, Porters)

At the base of the poaching pyramid are those individuals who conduct the poaching operation, the trackers, carriers and shooters. They usually come from villages in the vicinity of protected areas. They often lack formal education and are either unemployed or engaged in informal casual work; the majority of them are young men of 18–30 (Naro et al., 2020, p. 5). Geographically, there are local hotspots in Namibia, such as the Okahao area from which many poachers derive (Interviews, 2017-20; Grobler, 2016). This illustrates the relevance of personal acquaintances during the recruitment process.

Naro et al. (2020, p. 5) further include Tier 0 in the wildlife crime pyramid, which represents individuals who aid and support poaching operations, foremost through providing information. This level could include different actors, such as school children, farmers or foreign tourists. In many cases, they might not even be aware of having provided support to wildlife offenders.

9.4.2 Tier 2 and 3 (Middlemen and Traders)

The role of Tier 2 operatives is to identify poaching areas and recruit teams. They usually have a presence in the region, for example by owning a small local shop or drinking establishment (shabeen). This provides them with the opportunity of engaging with potential Tier 1 recruits. Furthermore, by being a 'businessman' in their community they already have some disposable income to recruit and incentivize Tier1 poachers (Naro et al., 2020, p. 5). As in the South African context, Tier 2 recruiters fulfil key functions as locals that could be challenging for 'outsiders'. Language and culture play a crucial role in establishing trust. Thus, the Tier 2 middleman often comes from a similar cultural background, although not necessarily the same tribe or ethnicity. Sometimes Tier 2 operatives form an active part of the hunting-group and trespass with the team into protected areas. Although riskier for the middleman this allows for greater control of the poaching operation.

Level 3 consists mostly of traders who act as the linchpin to bridge the gap between Tier 2 and the consumer country. Level 3 to 4 typically have personal connections to Asia: 'In general, it tends to be a businessman from somewhere, a Namibian, who works with another person closer to the ground, but not within the direct area, who then knows someone that used to live in the area or somebody who has moved into the area but is not necessarily from that area. Then of course at the top, there is some connection to Asia' (Interview with conservation expert, 2018). There is vagueness regarding the demographic and social background of Tier 3 operatives. Conservation experts and the scientific literature only have limited insight into that level. They do agree that Tier 3 traders tend to have a higher education level than Tier 1 operatives (Naro et al., 2020, p. 4). Experts and scholars further state, although there is no credible evidence for this, that sources from wildlife crime in Namibia have been invested into funding terrorist groups within the country or abroad (RoN, 2017, p. 43).

9.4.3 Tier 4 (International Couriers)

The demand for illegal wildlife products was brought to Namibia by an increasing presence of Asian workers in Namibia. According to interviewed experts, it has forged networks between Asian buyers (Tier 3 and 4) and Tier 2 middlemen.

Tier 4 traders already have a strong affiliation with the Asian consumer market. This could potentially be Asians who live in Namibia on a permanent basis and form part of

the Asian diaspora or are in Namibia for a short-term work contract. There are many possible environments that Tier 4 intermediaries could come from. There are plenty of small-scale Chinese shops in Windhoek and throughout Namibia. Tier 4 intermediaries could also be affiliated with larger, more internationalized business ventures. These positions provide a platform with a natural and regular exchange between source and destination countries (RoN, 2017, p. 24).

The Chinese government funds major infrastructure projects in Namibia. In 2012, Chinese companies started a US$105 million road upgrading project in the Kunene province. At the same time, another road construction project started in the north-eastern Zambezi region. The Chinese construction engagement was accompanied by rising local poaching pressure for pangolins and elephants. In the Kunene region, China owns the largest uranium mine and Chinese mining companies obtained 80% of all Exclusive Prospecting Licences (EPLs) (Grobler, 2015). With China's increasing engagement in economic cooperation, some individuals are obtaining favourable immigration treatment (Lesser, 2018, p. 81). Further loopholes emerge when construction companies are active at specific interfaces. One example is the redevelopment of the port in Walvis Bay, where smuggling of rhino horn has been detected (Grobler, 2016).

Level 5 refers to the Asian end-consumer of rhino horn products. Although an important level, and important for easing the storm, this thesis primarily focuses on the situation in source countries.

9.4.4 Network Formation and Recruiting

The formation and evolution of criminal networks have an unscheduled element and are characterized by the spontaneous formation of personal ties. The evolution of a poaching cell also contains a high degree of trial and error. Once a criminal rhino poaching group has successfully operated and mapped out loopholes, their patterns and *modus operandi* are likely to be replicated. Key people develop connections and start to form a more closed poaching network. Trust is a valuable commodity in criminal undertakings as it reduces the personal risk for each member. Still, as previous chapters have illustrated, the individuals engaged in each layer derive from different social and economic backgrounds and have different lifestyles. For Naro et al. (2020, p.5) this has the effect that rhino-poaching networks are not bound together by close social ties, but rather by economic interest. It also means that there are possibilities for enforcement to infiltrate some

members of a poaching network as paid informants. For law enforcement, it is easier to disrupt criminal networks during the early stages. Once a network is operational, it is more difficult to crack down on (see also Chapter 4.2.1).

9.4.5 Recruitment and Motivations for Poaching

Local shabeens serve as hotspots for the recruitment of Tier 1 poachers alongside networks of family and acquaintances. Naro et al. (2020, p. 6) have researched the methods of Tier 2 recruiters who lure young men into poaching by establishing dependency. In some ways, it happens automatically, as there is a culture of give and take in rural villages. Alcohol consumption can play a central role. Local shabeens, for example, hand out beverages on credit. Many youngsters haven't got the means to pay their bill and accumulate debt. This dependency is exploited by Tier 2 middlemen, knowing that the underlying cultural rule is to reciprocate benefits that have been provided. Similar patterns can be found in South Africa's and Mozambique's rural villages where young men are equally lured into poaching. Tier 2 recruiters provide gifts like alcohol, meat for braaing, phone credit or simply hand money to youngsters. By this method, middlemen demonstrate the financial benefits of engaging in wildlife crime firsthand and also create a feeling of obligation and dependency (compare Chapter 8.2.7). This obligation is renewed when syndicates pay bail for wildlife offenders who are facing charges (Naro et al., 2020, p. 6), which is also a contributing factor to the high rate of recidivism amongst rhino poachers (Interview, 2017-20).

Naro et al. (2020) further highlight the motivations to engage in rhino poaching. Unemployment, which is mentioned as a core driver of poaching comes with a lack of finances and boredom (Naro et al., 2020). Rhino poaching often comes along with a lifestyle of alcohol abuse.

Naro et al. (2020) also emphasize the challenge of misinformed perceptions by conservationists. There is a gap of understanding from many conservationists about the personal factors and socio-economic stressors that lead individuals to become involved in poaching. The authors propose programmes that focus on vulnerable segments of the population. One effective way is by promoting sport, with links to health campaigns in order to break the 'alcohol-fueled cycle of dependency' (Naro et al., 2020, p.7). Similar to the South African and Mozambican examples, some NGOs, such as Save the Rhino Trust Namibia engage in pro-wildlife community sports programmes to positively shape social values in favour of conservation (see also Chapter 8.6.5).

9.4.6 Wildlife Offenders Coming from Neighbouring Countries

While most of the poachers are Namibian nationals, some also come from neighbouring countries, which is a recurring element in poaching of high-value species in the Global South (see also Chapter 3.3.8).

Table 20 provides an breakdown of the nationality of poaching suspects. The majority (73%) are Namibian nationals. Poachers also derive from neighbouring Angola (9%), Zambia (8%) and Botswana (2%). Unfortunately, the statistics do not distinguish the degree of criminal involvement. It is likely that the Chinese poaching suspects (5%) were higher up in the syndicate structure, so the transnational aspect applies, albeit not to the same degree as in South Africa.

Table 20: Nationality of Poaching Suspects (2014 to 2017)

Angola	Botswana	China	DRC	Zimbabwe	Namibia	Tanzania	Zambia
23	6	13	3	1	180	1	19

Source: Nakale 2017

Geographically, the remote north-east Zambezi region provides opportunities for wildlife offenders from abroad. The porous borders in the narrow Zambezi strip enable easy trespass opportunities for poachers. The rivers also serve as unofficial border crossings, as they are difficult for enforcement officials to patrol. Often, offenders can fall back on personal networks across borders that provide support (RoN, 2017, p.18; UNDP, 2014, 2017, p.44).

The Kavango Zambezi Transfrontier Conservation Area (KAZA) is a large transboundary conservation landscape that borders Angola, Botswana, Namibia, Zambia and Zimbabwe. When poachers come from abroad, they mostly enter via the Namibia-Zambia border. The Namibia-Zimbabwe border is short and does not pose a significant threat. Only a few offenders trespass from Botswana. The Botswana Defence Force strictly patrols the side of the Chobe National Park (MET, 2014, p. 30). This demonstrates that the enforcement approach of the neighbouring country is as much a factor as geographical accessibility. Furthermore, political stability and poverty levels in the neighbouring country can be regarded as an influencing factor for the poaching pressure emanating from countries in the vicinity of Namibia. The civil war in Angola, for example, has led to a proliferation of weapons, that are also being used for poaching in Namibia (MET, 2014, p. 30).

This chapter also demonstrates the need for transboundary cooperation in law enforcement. There are some forms of cooperation and capacity-building initiatives from South Africa and a local cooperation with Botswana (Interviews, 2017-20).

9.5 Community-Based Natural Resource Management

Namibia's Community-Based Natural Resource Management (CBNRM) programme is internationally recognized by conservationists and often cited as a successful case example when illustrating how to include surrounding communities in wildlife management (Berghöfer et al. 2017, p. 86; IUCN et al., 2015; Riehl et al., 2015).

Namibia's CBNRM is based on three areas: (1) natural resource development; (2) institutional development and governance; (3) business, enterprises and livelihoods (MET & NACSO, 2018).

Namibia's CBNRM reaches back to the 1980s when the first conservation trusts were established and started to cooperate with local elders. Single conservancies have taken shape since 1991 (Riehl et al., 2015, p. 3). In 1996 the Nature Conservation Act formally granted rights to communities over natural resources and tourism, and in 1998 the first conservancies were formally registered (MET & NACSO, 2018, p. 84; UNDP, 2014, p. 10).

A conservancy has to be registered with the Ministry of Environmental Affairs and Tourism (MET) and functions as a self-governing entity. The community needs to submit a business plan as a prerequisite, with clear accepted boundaries. Conservancies are supposed to establish their own governance structures that are based on democratic principles. To represent community interest, villagers elect their own body of representatives that should take decisions for the community. The funds that are generated by the conservancy should flow back into the community (MET & NACSO, 2018).

9.5.1 Benefits to Local People

In recent years, the number of registered conservancies has grown quickly. Conservancies significantly differ in their development and earning capacity. Some are located in areas with great potential for tourism or hunting, while others are in remote locations with limited capacity to create benefits. Out of the 84 conservancies, 69 are generating cash or in-kind income (MET & NASO, 2018).

Table 21: Cash income and in-kind benefits

Source of cash income or in-kind benefit	Value in N$	Percentage
Joint Venture Tourism	76,991,547	64.4%
Conservation hunting fees, hunting and own-use game meat	43,148,737	28.9%
Indigenous plant products	5,191,002	3.9%

Source: MET & NACSO, 2018, p. 71

As shown in Table 22, tourism and conservation hunting rank amongst the most important income sources of the conservancies. This corresponds also with the direct benefits through employment, where tourism and conservation hunting create jobs. Indigenous plant harvesting and crafting are also significant (MET & NACSO, 2018, p. 65).

Table 22: Direct Benefits Through Employment

Joint-venture tourism	975 full-time 110 part-time
Conservation hunting	152 full-time 167 part-time
Community management	831
Indigenous plant product harvesters	1,704
Craft producers	445

Source: MET & NACSO, 2018, p. 65

In 2018, 4,348 jobs were created through the conservancies. Taken in relation to the 227,941 inhabitants on communal land, they provide employment to 1.9% of the villagers. While the level of job creation is modest, the overall potential for formal employment in Namibia's rural areas is also limited. Hence, the few jobs created contribute to skills development, that would otherwise often not be possible. They also enable their beneficiaries to work in the wider tourism sector (Boudreaux, 2007, Mufune, 2015).

9.5.2 Costs of Living Close to Wildlife

Human-wildlife conflict remains a relevant topic in the conservancies. Some observers state that the potential of HWC has increased due to both rising population pressure and animal numbers. Conservationists regard an increase of HWC due to rising animal

numbers as a consequence of successful conservation, which needs to be addressed (Interviews, 2017-20).

Table 23: Human-Wildlife Conflicts

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
114	113	134	130	132	111	95	117	95	95	92	106

Source: MET & NACSO, 2018, p. 45

Table 23 shows that the average number of incidents of HWC per conservancy remained fairly level throughout the past 10 years. The actual number of cases will probably be higher because the table only displays those incidents that have been recorded in the event book by the respective conservancy. What the figures do not display, is the increasing level of destruction at communal water points by elephants, especially during the dry season when water is scarce. While communities have to bear the costs of living close to wildlife, they do receive a part of the profits (Schnegg & Kiaka, 2018). However, some individual community members still feel frustrated, because even though their community is benefiting economically from nature conservation they are not reaping any personal benefits (Silva & Mosimane, 2013, p. 42).

9.5.3 Challenges: Governance and Distribution of Benefits

Namibia's CBNRM envisions participatory elements in decision-making and collective benefit sharing. The practical realities do not always match the envisioned concept. Financial mismanagement, corruption and lack of accountability were encountered frequently. Committee members would set aside large parts of funds as loans or running costs, leaving little money for actual community projects. Funds went missing or money could not be accounted for (NACSO, 2010, p.71; MET & NACSO, 2018, p.54; Interviews, 2017-20).[80]

There is high competition for the few formal jobs that are available. Positions are often provided to those who have the right contacts and belong to the leading families of the

[80] The author has had similar experience in Kenya's Lumo Community Wildlife Sanctuary. While, in theory, benefits should be distributed as direct or indirect benefits amongst the community, in practice the community-boards would consume most of the benefits. In this setting it was also common that members of the community boards would rent out the land to Somali herders and keep the profit for themselves. In Kenya's setting of poverty and limited access to resources, those who make it into a position of power, tend to use this as an opportunity to generate income with the help of corruption (Interviews, Kenya & Tanzania, 2018).

community, which is another reason for disappointment being felt by those who are left out, who are often the most vulnerable. Furthermore, community involvement in decision-making is limited with committees often taking decisions on their own, without consulting community members, so real grass-roots participation is lacking at times (Mufune, 2015, p. 133). Community representatives are more accountable towards the government, from whom they receive rights to use wildlife or local NGOs[81] and international donors, from whom they receive capacity-building and institutional support, than to local villagers (Mosimane, 2008).

Even though the distribution of conservancy benefits is susceptible to faults (Riehl et al., 2015), the benchmark to assess the success of CBNRM should not be set too high. In impoverished rural settings, with a subsistence economy, many conservancy members had no prior exposure to handling funds or lacked expertise in establishing checks and balances in order to promote good governance. There may also be a lack of a culture of formally administrating joint business opportunities within local communities (Schiffer, 2004; Interviews, 2017-20). Despite its operational shortfalls, many practitioners regard the mere setup of institutional structures with the collaboration between central actors such as government, tourist authorities and local communities as a success (Anderson & Jooste, 2014; Interviews, 2017-20).

9.5.4 Wildlife Crime in the Conservancies

Namibia's conservancy programme had a positive influence on sustaining wildlife. Many people within the communities developed a sense of ownership and value towards conserving animals on their land (Interviews, 2017-20). One success of the conservancy programme can be seen in rising numbers of plains game, through better management, but also with the help of animals that had been translocated from supporting game reserves (MET & NACSO, 2018, p.40; Mufune, 2015; Weaver et al. 2010).[82] Still, the degree of meat poaching is unclear. Conservancies are reluctant to report cases of subsistence poaching. However, rhino poaching has been reduced to minimal levels on communal land (MET & NACSO, 2018, p.38). Most of the rhinos are currently poached in big national parks, such as Etosha, followed by private farms, with only a few rhinos

[81] NGOs such as WWF or Save the Rhino Trust (SRT) have forged close partnerships with local communities and support capacity-building in order to strengthen the institutional structure of the conservancies.

[82] Between 1999 and 2009, 7,119 animals were translocated to 27 conservancies (NASCO, 2010, p. 55).

killed on communal land (Interviews, 2017-20).

According to the MET, rhino poaching on communal land has reduced as the result of community mobilization, increased patrol efforts, successful awareness programmes and intelligence systems (MET & NACSO, 2018, p.38).

9.5.5 Enforcement Benefits of CBNRM

While CBNRM was unable to prevent rhino poaching on communal land, it still had several positive effects on enforcing wildlife crime. By creating incentives for local villagers to feel and act as stewards of wildlife, the conservancy programme has made law enforcement more cost-efficient. 'Conventional anti-poaching protects something that is not really valued. The conservancies are now harnessing a resource that law enforcement should protect. This perception makes law enforcement more cost effective. Now communities help through their own social systems with law enforcement. They complement each other' (Interview with conservationist, 2017).

This also means that intelligence gathering systems work better: 'Last year (2016) we received proactive intelligence out of the conservancies six to seven times, much more frequently than the years before, about different poaching groups that lead to arrests' (Interview with conservationist, 2017). An international NGO that supports conservancies in the north-west reports that 16 independent poaching gangs were stopped in 18 months (2017–2018). In 11 cases, pre-emptive intelligence that emanated from local communities and their informant networks played a central role in facilitating the arrest (SwissAfrican Foundation, 2018). In another instance, a rhino poacher was captured with the help of the local villagers within 24 hours of the carcass being discovered by a farmer. Moreover, of the rhinos poached in the north-west, none had been on land with benefit-sharing agreements or tourism programmes in place (Muntifering et al.,2017, p.5).

The conservancies have also partially built up their enforcement response. Overall, 26 conservancy rhino rangers from 13 conservancies, have been trained and deployed. In 2014, they conducted 1,013 patrol days that lead to 727 rhino sightings (Muntifering et al., 2017, p.5). The enforcement support that emanated from conservancies also led to innovative tools of patrolling and created synergies between monitoring patrols and tourism. Some conservancies offer the possibility for tourists to do rhino tracking on foot, guided by experienced community-rangers (Interviews, 2017-20).

9.5.6 Positive Outreach Programmes

In Kunene's north-west, NGOs, such as Save the Rhino Trust Namibia, successfully pursue environmental education programmes that aim to influence local perceptions about nature conservation. These NGOs focus especially on those who are likely to be targeted by Tier 2 recruiters: teenagers and young men who are out of school and those in their late twenties and early thirties who went to town, couldn't manage to find permanent employment and have now moved back to their communities, often with few financial resources and limited livelihood prospects (Interview with conservationist, 2017). In the Namibian context, educational awareness programmes have started showing results within rural communities. Positive incentives and conservation messages often have stronger effects than the negative approach of attempting to demonize poachers (Interviews, 2017-20). Awareness raising measures seek to alter prevailing perceptions in Namibia's conservancies: 'Poachers are considered as heroes. We are trying to change that. Now it's the rangers, those that protect the rhinos who are seen as heroes' (Interview with conservationist, 2017).

The outreach programmes in Kunene focus on topics that youngsters have a natural interest in, such as music and sport. Four unique R&B rhino songs have been produced with the help of local music groups. They were composed in several languages to be accessible to different members of society and their respective tribes.[83] The songs portray those who protect nature as heroes and seek to alter the image of conservation. These initiatives have also put a counterweight to some of the contemporary music, such as the subgenre of hip hop 'gangster rap', where artists openly promote images of a 'thug life' and affiliations to various street gangs in their songs. Gangster rap can have negative influences as it carries the subtle message to young men that using violence and committing crime is part of being fearless, which in many of the contemporary gangster rap songs leads to material luxury and an abundance of girlfriends.

NGOs in Kunene use football as a popular method of creating awareness and linking rhino conservation with a positive message. Several soccer tournaments, rhino-cups, are hosted on a regular basis (Interviews, 2017-20).

In addition, there are several non-monetary awards for active rangers. Initiatives like 'photo of the month' or 'patrol of the month' are intended to improve the morale and commitment of community rangers. The SwissAfrican Foundation gave rhino hero

[83] The songs were produced in Damara, Herero, Himba, Oshivambo and English

jackets to community rangers who served more than five years and had 100 confirmed rhino sightings (SwissAfrican Foundation, 2018). These initiatives also seek to create social pressure amongst the broader community. 'You don't want to go to the other side because you will be hammered by peers. We are all in this together looking after these rhinos and now you go and do this?' (Interview with wildlife professional, 2017).

9.5.7 Dehorning

Dehorning rhinos is still seen as a viable tool for soothing poaching pressure when combined with other measures. Dehorning alone was unable to prevent poaching completely. In the conservancies, there have been few cases of dehorned rhinos being poached, however, feedback from an arrested poacher suggests that dehorning does have a site-based effect: 'We didn't poach there, because we heard the rhinos had been dehorned' (Interview, 2017).

9.6 The Situation for Private Farmers

Private farmers in Namibia conserve black and white rhinos. Black rhinos are government property and private sector operators only have custodianship over them.[84] White rhinos can be privately owned. Farmers do not receive support from the state and need to organize and finance rhino protection by themselves. At the onset of the poaching crisis, many private sector operators were caught off-guard by a sudden increase in poaching on their property.

9.6.1 Trial and Error Response

Farmers had to organize some form of security provision for their rhinos. Initially, rhino owners tasked farmworkers to carry out protection. Some rhino guards were allowed to carry a weapon, others were inadequately equipped with a machete.

Many landowners found that these first ad-hoc security measures did not halt poaching at their reserve. As a result, some farmers hired private security firms to protect their animals with better equipped anti-poaching units, many of whom had undergone at least some form of basic training. For landowners, this involves high costs on an ongoing basis, due

[84] The Rhino Custodianship Programme was established in 1993. Black rhinos were relocated by the MET from areas with a high population density to reestablish rhino ranges. Later some rhinos were relocated from communal areas and private reserves (MET, 2014, p. 18).

to the high personnel costs. A landowner with a small population of four rhinos had to pay 61,000 rand per month for anti-poaching services (Interview with private rhino owner, 2017-20). Furthermore, even having armed guards patrolling, did not stop rhinos being killed. Overall, the private response to the poaching crisis was characterized by trial and error.

While the cooperation between owners of private property and law enforcement agencies is characterized by distrust, farmers frequently exchange best practices about rhino protection within their community of farmers in a specific regional area. This also includes the organization of joint anti-poaching units, which operate in the geographical area of several farms (Interviews, 2017-20).

Like in South Africa, rhino conservation has increasingly become a security risk for private sector operators. Besides facing the danger of armed people trespassing onto their property, legally obtained rhino horns, e.g. through dehorning, have become a liability. Out of security concerns, banks have become reluctant to store rhino horn in their safes. In some cases, rhino horn has been stolen out of safes. There have also been burglaries that targeted farm owners, with the primary intention of stealing rhino horn.

9.6.2 Sound Working Relationships, Intelligence and Dehorning

Personal experience at private farms and anecdotal evidence suggests that criminals tend to map-out the situation of the farm in advance. A preferred and effective way to obtain useful information on the whereabouts of rhinos and the local security provisions is by corrupting individual farmworkers or other people who move in and out of the property. Information given to wildlife offenders from the inside significantly reduces the risk of being apprehended (Ball et al., 2020, p. 98). Hence, a key factor for the success of private rhino farmers, was their ability to eradicate collaboration between reserve personnel and poachers. This is a challenging task. Dissatisfied employees as well as ex-employees are more likely to steal from the farmer or assist poachers (Ball et al., 2020, p. 98).

Establishing a sound working relationship between the landowner and reserve personnel is key. This also includes the remuneration package that farmworkers receive. In order to increase loyalty, it can be useful to pay slightly higher salaries or provide other bonuses, such as extra meat-rations. However, there are no general rules when it comes to establishing trusting working relationships. On the one hand, farmers valued and trusted employees that had been working on the premises for many years. On the other hand,

long-term employees had gained a dominant position amongst their colleagues and possessed in-depth knowledge about the farm and its security loopholes, which was used in some cases to collaborate with rhino poachers.

Many private sector operators realized the importance of intelligence and developed their own methods of gathering information. This encompassed unconventional measures. One farm placed an informant amongst farmworkers, after the suspicion arose that there was some form of collaboration with rhino poachers. Usually, farmers have some farmworkers that they trust more than others and additionally use as an informant. After poaching incidents, farmworkers frequently had to undergo lie detector tests, which also sends mixed signals to staff.

On several occasions, private sector operators supported law enforcement. In one case, a private farmer caught poachers red-handed and provided wide-ranging evidence to enforcement officials. This farmer voiced frustration that the accused wildlife offenders were released on bail shortly after, and their cases were eventually dismissed. Gaps in the criminal investigation and prosecution created distrust between farmers and enforcement officials. It remains a task to promote cooperation between private sector operators and law enforcement, which also includes a give-and-take relationship. Although dehorning is a viable method for reducing poaching at a specific site and is economically viable for smaller areas, some farmers were still reluctant to dehorn, because in their view 'rhinos without a horn look stupid' and they felt it would reduce the viewing experience of tourists (Interview, 2017).

9.7 Policing Wildlife Crime in Namibia

As with many countries in the Global South, policing wildlife is not high on the agenda of enforcement officials. Some organizations promote the notion that poaching is an 'economic crime', in order to obtain greater buy-in and political support (Interviews, 2017-20).

9.7.1 Namibia's Legal Framework

Namibia's constitution addresses habitat conservation and biological diversity (Namibian Constitution, 1990).[85] Article 95 enshrines the constitutional obligation to take proactive

[85] The State shall actively promote and maintain the welfare of the people by adopting, *inter alia*, policies aimed at the following: (l): 'maintenance of ecosystems, essential ecological processes and biological

steps to protect biodiversity. Parallel to other African and Asian rhino range states, the level of penalties for wildlife crime has increased in recent years. In 1986 and 1990 the Ordinance was amended (MET, 2014, p. 93). In 2016, the penalty provision of the Ordinance was amended once more and came into effect in June 2017.

The **Nature Conservation Ordinance 4 of 1975 (NCO)** distinguishes between three protective categories:
(1) **Specially Protected Game** elephants, rhinoceroses[86]
(2) **Protected Game**, such as leopards, lions, cheetahs
(3) **Huntable Game**, buffalo, kudu, oryx

The Nature Conservation Amendment Act from 2017 increased penalties for wildlife crime. The severity of punishment for illegal hunting in national parks, private commercial farms, and on communal land depends on the protected status of the targeted species.
(1) In the case of *rhino and elephant poaching*, a fine not exceeding N$25 million or up to twenty-five years imprisonment or both.
(2) Penalties for illegally hunting *specially protected game,* other than rhino and elephant, a fine not exceeding N$10 million or up to ten years imprisonment or both.
(3) In the case of hunting *protected game*, N$500,000 or up to five years imprisonment or both (Lesser, 2018, p. 72; MET, 2014, p. 93).
For repeat offenders, in the case of subsequent convictions for illegally hunting rhinos or elephants or other *specially protected game*, the maximum fine can go up to N$50 million with a custodial sentence of up to 40 years. For subsequent convictions of killing *protected game*, a fine of N$ one million or imprisonment of up to ten years, or both, can be given (Lesser, 2018, p. 72). The Nature Conservation Ordinance also establishes the possibility of affirmative defence in the case of human-wildlife conflict. However, the killing needs to be in defence of human life or to prevent immediate harm to livestock.
In the past, possession offences traditionally carried significantly lower penalties than hunting offences, which meant that Namibia's regulatory framework focused on

diversity of Namibia and utilisation of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future; in particular, the Government shall provide measures against the dumping or recycling of foreign nuclear and toxic waste on Namibian territory.'

[86] Specially protected game in Schedule 3 of the Ordinance also includes other animals such as mountain zebra and giraffes.

penalization rather than on crime prevention (Lesser, 2018, p.). In 2017, Namibia increased the penalties for possession offences, such as the illegal possession of wildlife products from N$20,000 to N$15 million together with a maximum custodial sentence of 15 years. Subsequently, the penalties for illegally trading wildlife products, which previously had a maximum fine of N$200,000 rose to a maximum of N$25 million, and the potential imprisonment increased to 25 years (Lesser, 2018, p.). For the illegal killing of wildlife species, the judge has the option to choose between a fine or a custodial sentence. Often the general public is unaware whether a poacher has been sentenced to a fine or a prison sentence. This confusion and lack of transparency can undermine the deterrent effect (Lesser, 2018, p. 74).

While this chapter has demonstrated an increase in the possible penalties for wildlife crime, it is too early to assess the effects that the changes in the legal provisions may have on wildlife crime.

9.7.2 Enhancing Capacities to Police Wildlife Crime

The development of capacity to police wildlife crime only started gradually, after the country experienced a drastic increase in poaching numbers in 2015. Wildlife practitioners and the Namibian Association of CBNRM Support Organisations (NACSO) had warned as early as 2010 that rhino poaching would swoop over to Namibia (NACSO, 2010, p. 80). Those warnings were largely ignored by the relevant authorities and central state bodies. At the onset of the poaching crisis in 2014, the official classification of the poaching risk was rated ‘low to very low’. The head of NamPols Protected Resources Unit (PRU) stated in 2015 ‘We thought we were safe. We thought it would never happen here’ (RoN, 2017, p. 18).

Since 2015, enforcement agencies have gradually scaled up their capacities to respond to growing wildlife crime threats. One example is the Waterberg Wildlife and Law Enforcement Training Centre which was inaugurated in 2017. The centre is mandated to enhance the skills of enforcement officials, foremost rangers and wardens, but also the Namibian Police Force (NamPol) and the staff from the Ministry of Defence, in their abilities to tackle wildlife crime (Interviews, 2017-20).

9.7.3 Cooperation between Enforcement and Conservation Authorities

Namibia's enforcement agencies are chronically underfunded (RoN, 2017, p.10). The Protected Resource Unit (PRU) is responsible for handling wildlife crime. The unit is understaffed, with only three investigating officers (Grobler, 2016).

There is a lack of cooperation between different enforcement actors and investigating agencies do not work hand in hand with prosecuting agencies. In Namibia's flagship conservation area, Etosha NP, distrust led to a lack of cooperation between the Namibian Police Force (NamPol) on the one side and the wildlife authorities and field rangers under the auspices of the Ministry of Environment and Tourism on the other (Lesser, 2018, p. 82). A strained working relationship between NamPol and conservancies was also reported by interviewees. However, respondents also acknowledged, that this working relationship has improved over time. Conservation experts stated that it is easy to forge working relationships because Namibia is only sparsely populated (Interviews, 2017-20). In general, the country made slight advances in the policing of wildlife crime, which is also indicated in rising arrest numbers (Table 24).

Table 24: Suspected Poachers Arrested in Namibia

2015	2016	2017	2018
96	82	not available	120

Source: Poaching Facts, 2020; Nakale, 2019

Namibia also relies on HUMINT to acquire actionable intelligence through a network of informants. The reward for vital tip-offs that lead to the arrest of a rhino or elephant poacher has increased from 30,000 to 60,000 rand (Tjihenuna, 2016). For other species, such as pangolin or buffalo, informants receive a tip-off fee of up to 10,000 rand (Nakale, 2019). However, the lack of cooperation between different agencies and organizations especially relates to intelligence, which is rarely shared between different actors. Everyone is working in their own silo (Interviews, 2017-20).

9.7.4 Weaknesses in the Criminal Prosecution

Namibia's courts perceive wildlife crime as a low priority. The court system is characterized by structural inefficiencies with long-lasting proceedings. There are only a few court decisions that deal with poaching. Jurisprudence often takes place in local

magistrate's courts. Only when appealed do cases find their way into the high court (MET, 2014, p. 91). The criminal prosecution is a weakness in Namibia's wildlife response and is characterized by low conviction rates. Out of 200 wildlife crime cases, only five were successful in handing down convictions (Grobler, 2016).

Investigating officers and prosecutors often experience gaps when it comes to handling wildlife crime cases (MET, 2014, p. 91). Namibia has no central record of prosecutions of general crime and poaching related crime cases. If a magistrate is giving judgment on a wildlife crime case, it is difficult for them to find information regarding the criminal prosecution of similar court cases, which hampers comparative jurisprudence (Lesser, 2018, p. 83).

The majority of cases are postponed for over a year. Bail is often granted in wildlife crime cases and is set between 5,000 and 10,000 rand (Grobler, 2016). If the prosecutor is unskilled, the sentence will be minimal.

A particular challenge is reaching higher into the criminal networks. Law enforcement and prosecutors need to pursue lines of inquiry, which should also include plea bargaining, to get to middlemen and kingpins that sponsor and orchestrate syndicated poaching (Lesser, 2018, p.80). Furthermore, the criminal investigation needs enhanced capacity in conducting financial investigations (Lesser, 2008, p. 81). It is counted as progress that law enforcement now evaluates the mobile phones of ground-level poachers to identify syndicate-associated recruiters and possible traders (Interview with wildlife professional, 2018). However, arrested poachers are looked after by their colleagues, which includes the provision of skilled lawyers. It is demoralizing to rangers when, after making an arrest, the suspect is released on a low bail and is able to disappear (Interviews, 2017-20).

9.7.5 COVID-19 in Namibia

Namibia is currently being affected by the COVID-19 pandemic. A partial lockdown was initiated on 21 March 2020 for the Erongo and Khomas regions. From 4 May onwards, the measures were partially lifted. Namibia has only had a few cases of infection, however, the lull in tourist numbers is strongly affecting Namibia's economy. Many of the communal conservancies rely heavily on income due to tourism and international hunting clients (Compare chapter 9.5.1). Anti-poaching activities have not been reduced during

the partial lockdown in Namibia, however, some private farmers are experiencing an increase in bushmeat poaching. While the COVID-19 crisis has not led to rising levels of poaching of high-level wildlife in the short run, it is entrenching basic enablers of wildlife crime (Interviews, 2020).

9.8 Conclusion Namibia

Namibia is a viable range state for critically endangered black rhinos, but the country was not spared from the poaching crisis for long. In 2015, Namibia lost 90 rhinos, which surpassed the numbers for the previous ten years combined.

Namibia shares several classic enablers of wildlife crime with South Africa. Deep-seated rural poverty, weak policing of wildlife-related crime and high corruption rates. The demand for illegal wildlife products was brought to Namibia by increasing economic engagement with public agencies and private businessmen from East Asia.

Positive for the operability of Namibia's conservation and enforcement approach is a low population density in the vicinity of protected areas. This makes it easier to forge networks in Namibia and to distribute benefits in community-based approaches. The country can also fall back on a long tradition of CBNRM. A viable collaboration between NGOs and official organizations has evolved.

The three- to five-tier model is helpful for describing the composition of criminal groups and rhino poaching syndicates. The syndicates are primarily bound together by economic interest and members of the different tiers come from different socio-economic backgrounds. The methods of recruiting people from impoverished villages for the lowest tier are similar to the South African context. In public places, such as local shabeens, young men are lured into poaching by a cycle of alcohol-fueled dependency (Naro et al., 2020). This demonstrates that bottom-up approaches to reducing wildlife crime need to address the social situation of young men in rural villages. These approaches don't have to come at a high cost. Some environmental NGOs, such as Save the Rhino Trust Namibia successfully engage in pro-wildlife community sports programmes. And dehorning has proved to be a viable measure for reducing poaching pressure.

The Namibian example further demonstrates that the form of land ownership has implications for the level of wildlife crime, as the criminal environment and the responses differ. Great state-owned protected areas, such as Etosha NP, have proven to be difficult to protect due to their huge terrain. They also have a hard boundary towards the

surrounding villages. Still, compared to the vicinities of Kruger NP in South Africa or Chitwan's NP in Nepal, there is a significantly lower population density in areas around Etosha NP.

Private rhino custodians face equally high-poaching pressure. Lacking state support, private farm owners need to organize and finance rhino protection by themselves. This privatization of conservation in private reserves is characterized by trial and error. Protective capacities have been greatly enhanced but private sector operators continue to lose rhinos, as criminals find new loopholes. Capacity-building is also promoted via close cooperation and mutual support between different rhino owners, foremost by sharing best practices, but also by financing joint anti-poaching units that operate across areas.

Rhinos on communal land were also targeted during the onset of Namibia's poaching crisis. However, these cases have been reduced to minimal levels during the last two years. Reasons for the reduction include increased patrol efforts, effective intelligence systems and community mobilization. Part of the process of building up the capacities of self-governed communities is that they need to be able to make errors, e.g. losing a few rhinos.

Community improvement initiatives demonstrate plenty of challenges in their daily execution. Benefits are often not distributed equally. While local elites tend to profit, vulnerable groups are usually left out. The COVID-19 pandemic is further threatening the income situation of the conservancies. Nevertheless, even with shortcomings in the implementation of community-based programmes, which seem to be characteristic for the African context, conservancies create at least some direct and indirect benefits in an impoverished setting. This has already improved the attitudes of villagers towards conservation goals. Enforcement officials are receiving more community-support, e.g. via tip-offs about potential offenders, which makes law enforcement more cost-efficient.

Policing wildlife offences is not high on the agenda and Namibia's enforcement agencies are chronically underfunded. The development of formal enforcement capacities to police wildlife crime only started after the sudden rise in poaching rates. There is still potential to improve coordination amongst enforcement officials of different agencies. The legal penalties have increased, but to date, the law has not been fully applied. The court system is characterized by structural inefficiencies with a long duration of proceedings. Few cases deal with wildlife crime and the local magistrate is often not well accustomed to the relevant legislation. This is compounded by shortcomings in the capacity to investigate

wildlife crime. Investigating agencies do not work hand-in-hand with prosecuting agencies. A particular challenge is reaching higher into criminal networks. When Tier 2 operatives and traders are arrested, they receive bail and then leave the country.

The Namibian example also demonstrates the need for trans-boundary law enforcement. Some of the offenders trespass in from neighbouring countries, often those that have poorer socio-economic indicators and weaker governance structures.

10 Soothing the Storm in Nepal

This chapter analyses Nepal's rhino conservation and enforcement approach. While rampant rhino poaching continues to take place in South Africa and Namibia, Nepal has successfully achieved 'zero poaching'. The last case of rhino poaching took place in April 2017 in the buffer zone of Chitwan National Park (WWF, 2018c).

Nepal's success in conserving high-value species is recognized internationally. In 2014, the country received a Secretary-General's Certificate of Commendation from CITES to value Nepal's conservation model (CITES, 2014).

The country follows a multifaceted approach, with rigorous enforcement on the one hand and wide-ranging community-based programmes on the other hand. The Nepalese military is known to conduct strict patrols inside the rhino conservation areas. The comprehensive community-based approaches in the buffer zones enjoy the vivid participation of civil society. Although located on a different continent, Nepal shares similarities with South Africa and Namibia when it comes to traditional enablers of wildlife crime. Nepal is amongst the least developed countries, characterized by rural poverty and high social inequality, as well as poor governance and endemic corruption.

In contrast to South Africa, park-people relationships are in favour of supporting wildlife. Nepal doesn't carry the burden of a colonial past, and a significant strength and explaining factor for favourable park-people relationships derives from Nepal's prevailing culture and religion, which puts a high emphasis on valuing and protecting animals and their natural habitats. The case of Nepal will demonstrate successful enforcement approaches while highlighting the important role of culture and religion in either fuelling or easing wildlife crime.

10.1 Nepal's Wildlife

Nepal has great geographical and climatic variations. Twenty-three per cent of the country's land mass is committed to biodiversity conservation (Sharma, 2012, p. 11).[87] The country has several protected areas at high altitude, and also large mammal conservation areas in the lower region, the Terai Arc Landscape (TAL), which will be relevant for this research. Three parks in the Terai Arc conserve greater one-horned

[87] Nepal has 10 national parks, 12 buffer zones, 6 conservation areas and 3 wildlife reserves.

rhinos.[88] Chitwan National Park (Chitwan NP) is the biggest rhino conservation area, followed by Bardia National Park and Suklaphanta Wildlife Reserve (Subedi et al., 2017, p. 356).

Table 25: Rhino Population Nepal 1950–2015

Year	**50**	**55**	**60**	**65**	**70**	**75**	**80**	**88**	**94**	**00**	**05**	**08**	**11**	**15**
Rhinos	800	400	300	100	108	147	310	358	484	612	408	435	534	645
CNP	n.a.								446	544	372	408	503	608

Source: Dhakal, 2015

This research will focus on the situation in Chitwan NP, which is within the Terai Arc Landscape and conserves 90% of Nepal's rhino population (608 animals). Chitwan NP is located in south-central Nepal. The park was established in 1973, covering an area of 544 km² and was subsequently extended to its current size of 953 km² (Lamichhane, 2019, p. 30). The area has also successfully supported the recovery of other large mammal species, such as the Bengal tiger. Chitwan NP is surrounded by a 750 km² buffer zone, which plays an important role in Nepal's conservation approach.

Nepal conserves a small population of wild elephants of between 109 and 142 animals (DNPWC, 2008; Pradhan et al. 2011, p. 87). Elephants are not poached because of their ivory, but retaliatory killings by villagers due to human-elephant conflicts (HECs) happen on a yearly basis. Over a 10-year period, 16 elephants were killed, and six animals were seriously injured, as a result of HEC (Neupane et al., 2014, p. 4). Newer figures report that two to three elephants are killed every year due to HEC (Kumar Mandal, 2019). The killing of elephants demonstrates the high potential for human-wildlife conflict in Nepal, which is a burden to conservation approaches (also compare Chapter 3.3.4).

[88] Nepal has a wide abundance of biodiversity with several threatened species. Besides greater one-horned rhinoceroses, tigers and wild elephants, Nepal has many other endangered species such as snow leopards, red panda, pangolin, Ganges river dolphins among others (SAWEN, 2015).

10.2 Forms of Wildlife Crime in Nepal

Wildlife crime in Nepal can be divided into small-scale subsistence poaching and commercial poaching of high-value mammals such as rhino, tiger and other animals whose body-parts are destined for international markets.

10.2.1 Subsistence Poaching

Subsistence poaching on a small scale, such as illegal fishing or illegal harvesting of thatch is common and has been observed by the author during his field visit to Chitwan NP multiple times. Authorities turn a blind eye to small-scale subsistence poaching and administer only minimal sentences if any. Figure 13 captures an incident, where villagers illegally harvested thatch out of season and crossed a road close by a checkpoint. The official in charge shouted in local language: 'Can't you at least cross the street further down (not right in front of the officials)?'. In the case of illegal fishing, enforcement officials confiscate the fishing rods, and in some cases keep the offenders under arrest for two days (Interviews, 2018).

With regard to the illegal offtake of larger mammals, like wild boar or spotted deer, the interviewed experts came up with different assessments. Some responded that there was nearly no poaching of smaller mammals, while other sources suggest a certain, albeit low level of illegal killing of simba deer, spotted deer and wild boars (PHG, 2017, p. 10; Interviews, 2018). These mammals are killed with dogs, snares or other homemade weapons. The meat is either consumed by the family or traded in small quantities at local markets. Army officials are reported to purchase locally traded bushmeat as well (Bhattarai et al., 2016, p. 7). This displays the prevailing 'legal' understanding of enforcement officials, who tend to attach little importance to local meat hunting while perceiving the killing of high-value animals for international markets as a serious crime (Interviews, 2018).

Figure 13: Villagers Illegally Harvest Thatch

Source: Smale (2018)

The exact level of subsistence poaching cannot be quantified, but from interview contributions and also from the personal experience of the author, illegal fishing and illegal harvesting of fodder and thatch seem to be widespread, while the illegal killing of mammals for bushmeat seems to be at a lower level than in South Africa or Namibia.

10.2.2 Rhino Poaching

Rhino poaching in Nepal started to accelerate in the year 2000 when nine rhinos were killed. During the height of the rhino poaching crisis (2001–2006), the illegal off-take was higher than the rhino growth rate.[89] In relation to the country's smaller rhino population, the poaching rate was higher than during South Africa's peak of rhino poaching in 2014. The poaching hotspot was Chitwan NP, primarily because this area conserves the largest portion of the population. Bardia NP was also heavily targeted and lost all their rhinos, which had previously been translocated from Babai valley (PHG,

[89] The gross rate for the greater one-horned rhinos is estimated to be between 3.88% (Government of Nepal, 2006, p. 16) and 5.6% per annum for Chitwan NP (Emslie et al., 2016, p. 14).

2017, p. 4).

Table 26: Illegally Killed Rhinos in Nepal

Year	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
	9	15	38	22	11	15	19	2	7	11	9	1	1	0	1	0	0	1	0	0

Source: Poaching Facts, 2020; Martin et al., 2013; Dudley, 2017

10.2.3 Nepal as a Transit Country

Nepal is considered an important transit country for the illicit wildlife trade. Both borders, those to China in the north and to India in the south are thought to be used to smuggle illegal wildlife products (Kandel, 2013, p. 3; Shakya, 2004). Overall, the borders with India and China stretch for about 1,700 km (PHG, 2017, p. 4).

Most of the illegal horn that is sourced in India passes through Nepal into China. A trade route that is said to be frequently used goes from India's Assam province via Siliguri or Kakarbhita to Kathmandu and then on to Tibet. From there, illegal wildlife contraband moves into China. Only a smaller fraction is believed to be smuggled via the India-Myanmar border (Milliken et al., 2009, p. 15). Besides rhino horn, a variety of other illicit wildlife products are smuggled, such as tiger bones, elephant tusks, the gall bladders of bears, pangolin scales, leopard skins, body parts of blue sheep, and otter paws (Kandel, 2013, p. 4).

10.2.4 Threat Displacement

Experts suggest a connection between the poaching cases within Nepal's national borders, that is, syndicates and groups operate across different provinces. Some experts also see reciprocal threat displacement between Nepal and India. 'If there is less poaching in India, we will have an increase in Nepal and vice versa' (Interview with conservation officer, 2018). In India, most of the poaching takes place in Assam's Kaziranga National Park in the north-east, which conserves 82.5% of the rhino population (Emslie et al., 2016, p. 14).

Table 27: Rhinos Poached in India

Year	06	07	08	09	10	11	12	13	14	15	16	17
	4	20	11	17	7	15	26	41	35	24	21	13

Source: WPSI, 2018

South Africa and Namibia also experience the problem of threat displacement between the two countries. The question arises as to whether there is a threat displacement between African and Asian rhino populations. When regarded from a larger time horizon, there is a countercyclical trend, which could be interpreted as a threat displacement. Asian rhinos were predominantly being killed in Nepal until 2010. With the clear drop of poaching in Asia, cases in Sub-Saharan Africa accelerated from 2007 onwards. While a threat displacement between Asia and Africa is likely, it is not a clear-cut case. For example, poaching in India was still high in 2015. Considerations of the threat of displacement also depend on the Asian market. When the consumer base for rhino horn is limited, it is possible that horn from Africa satisfies the global demand and reduces the poaching pressure on Asian rhinos. From the perspective of threat displacement, it is less costly in terms of risks, efforts and rewards to poach rhinos in Africa compared to Asia. In particular, the higher rewards of African rhino's bigger horns, as elaborated in the next chapter, is supposedly a crucial factor.

10.3 The Structure of Criminal Rhino Syndicates

For the Nepalese example, interviewed experts describe a two- to four-tier structure. Similar to the syndicates and criminal groups in South Africa, Tier 1 participants trespass into protected areas to conduct the killing (rhinos have also frequently been killed in the buffer zones around the park). And, as in South Africa, Tier 1 poachers usually have a local affiliation and knowledge about the area they target. They often live in the buffer zone and frequently come from economically deprived backgrounds or are socially marginalized, e.g. by coming from a low caste. (Interviews, 2018; Acharya, 2006).

The middlemen (Tier 2) often come from outside the local village or buffer zone, possibly from a smaller town (Acharya, 2006). Middle-sized towns, such as Bharatpur, occasionally serve as illegal wildlife trade centres, while Kathmandu is the main hub

(PHG, 2017, p. 4). Tier 3 members will act as international couriers, usually to China or Vietnam. In a state of zero poaching these networks are in 'sleeping mode' and only partly active, which makes it difficult to research them, the expert assessments are therefore based on past observations. According to Jung Kunwar (2018),[90] 'middlemen are not finding the loopholes, at the moment they are in a hiding situation, still, they are making a plan' (Interview with enforcement officer, 2018).

10.3.1 Poaching Patterns

Rhinos in Nepal have been killed using a variety of different methods. In the early years, poachers used pit traps and, on some occasions, snares, poison or even spears (Jung Kunwar, 2016, p. 117). Out of 18 poached animals in 1992, one was shot, while the majority were killed in pit traps (Martin & Vigne, 1996, p. 19). Pit traps and ditches have the disadvantage that poachers need to wait for a long period of time and hence run the risk of being apprehended by enforcement personnel (Jung Kunwar, 2016, p. 117). This hunting method also demonstrates the local connection of Tier 1 operatives to the area they hunt in.

The former chief warden Jung Kunwar (2016, p. 117) points out that poachers who were accustomed to killing animals with basic methods showed a reluctance to use modern technologies. He describes an incident where one poacher, who was accustomed to firing homemade guns, was provided with an automatic weapon by a middleman. This individual returned the automatic gun shortly after, stating it was too complicated to use. The poaching methods changed over time until rhinos were predominantly being killed with guns. Still, wildlife offenders in Nepal can vary their methods of killing and 'use whatever they feel comfortable with' (Interview with conservation expert, 2018). The application of hunting practices that are based on local and traditional knowledge indicates that Tier 1 poachers often come from rural settings, where this traditional knowledge can be acquired.

Poaching patterns change seasonally. According to enforcement officials, the months of March, April and May have a greater occurrence of poaching, while during monsoon (June to August) poaching is reduced due to the rain and floods, which makes hunting more difficult (Interviews, 2018). However, when rhinos are flooded out to different and

[90] Former assistant warden and head of the Anti-Poaching Operation Unit from Chitwan National Park.

less protected areas, it can increase the risk for those displaced animals.

Subedi & Subedi (2017, p. 17) analysed the regional poaching patterns in Chitwan NP. Rhinos have frequently been killed close to their preferred habitat of grasslands and rivers, which provide 60% of the rhino's preferred diet (Government of Nepal, 2006, p. 13). Distance from guard posts and anti-poaching camps increases the likelihood of poaching (Subedi & Subedi, 2017, p. 17). Still, poachers are not trespassing deep into the park. Poaching was found to occur close to roads (an average of 792 m) as well as close to local villages (4–6 km), where 45% of the incidents occurred (Subedi & Subedi, 2017, p. 17).

A challenge for anti-poaching in buffer zones, as in Namibia's conservancies, is that generally more people are allowed to legally move through this area, which makes it difficult for patrol staff to differentiate between locals and offenders. Sometimes poachers disguise themselves as residents of the buffer zone wanting to harvest thatch or collect firewood (Acharya, 2006).

10.3.2 Connections between Subsistence and Commercial Poaching

The empirical research could not establish clear links between subsistence and commercialized rhino poaching. None of the interviewed experts saw a connection in terms of overlapping networks. This corresponds with the perceived awareness of wrongdoing amongst the general public, which also echoes enforcement practices for wildlife crime in Nepal. While small-scale offences, such as illegal fishing or harvesting thatch without a permit, are frequently ignored and to a degree tolerated by enforcement officials, rhino poaching is regarded as serious wrongdoing and responded to accordingly. This contradicts the idea of the broken window theory, which argues that a slippery slope occurs when minor criminal offences go unpunished (Wilson & Kelling 1982). However, the missing link between subsistence and rhino poaching can also be attributed to a lack of Tier 2 recruiters, who not targeting and hiring small-scale poachers in the current situation of zero poaching. Despite the lack of active recruitment, it cannot be ruled out that killing animals for meat may serve as a training ground for the subsequent poaching of high-profile wildlife. The notorious poacher Bam Bahadur, who has killed 17 rhinos, learned to shoot at an early age by killing monkeys in his village (Jung Kunwar, 2016, p. 37). Hence, the more villagers engage in subsistence poaching, the greater the pool of would-be offenders who already possess basic experience. However, it needs an external

impulse to hire a subsistence poacher. This is an indication that rhino poaching is market-driven, hence a subsistence poacher does not automatically turn to rhinos without an incentive from the outside.

Some interviewees saw links between the poaching of different high-value species, foremost tiger and rhino with a countercyclical relationship. In 1992 black market prices for rhino horn were rising. According to Martin & Vigne (1996, p. 19), this caused tiger poaching to drop as tiger poachers switched to the more lucrative rhino species.[91] Some conservationists indicated that in a state of zero rhino poaching, illegal tiger killings will also be close to zero (Interviews, 2018), which is supported by two arguments: it is more difficult to hunt a tiger as it requires more time in a protected area to track down the elusive animal and furthermore, the black-market price for tiger body-parts is significantly lower than for rhino horn.

10.4 Enablers of Wildlife Crime

Nepal is not regarded as a destination country of illicit wildlife products. Similar to South Africa and Namibia, demand from East Asia continues to be the central driver (Baral & Heinen, 2005, p. 6). This chapter describes factors that promote wildlife crime. Besides classic enablers, the trend of globalization, which comes along with improved communication and transportation methods, has further promoted high-level wildlife crime in Nepal (SAWEN, 2015, p. 3).

10.4.1 The Price of Rhino Horn

The demand for rhino horn from East Asia continues to be the main driver of wildlife crime. There are different accounts of the price paid to Tier 1 operatives. According to Martin & Martin (2006, p. 64), the shooter receives 20,000 rupees (€150) for a horn of an average weight of 700 grams and the other group members receive between 10,000 and 15,000 rupees (€77–€160).

Jung Kunwar (2016, p. 37) estimates the black-market price for rhino horn from information obtained from arrested poachers and dealers. Tier 2 middlemen pay US$826

[91] It is difficult to obtain reliable data on tiger poaching. In contrast to rhino poaching usually no carcass is left on a tiger crime scene, as most of the body-parts of the animals are used, from the skin to the bones. Using seizure data might be one possibility to estimate tiger poaching rates, however, they face the disadvantage of low detection rates due to weak border controls.

to US$964 per 100 grams. This means that a rhino horn of 700 g would bring US$5,782 to US$6,748 on the black market. This is significantly less than in South Africa or Namibia, but it needs to be compared with the purchasing power. Furthermore, these are older figures, from the height of Nepal's rhino crisis from 2003 to 2006. The horn from Asian rhinos is, on average, significantly smaller. For the greater one-horned rhino it is between 400 grams to 1.5 kg, with an average weight of 850 grams (Interview with conservation expert, 2018). This is also a relevant factor for the overall lower poaching pressure in Asia.

The average weight of a set of (African) white rhino horns is 5.88 kg (Pienaar et al., 1991). This means that nearly seven Asian rhinos have to be killed to bag the same amount of horn as from one African rhino.[92]

Moreover, there is a significant gap between the price that is paid to the shooter compared to the trading price closer to the end-user. In a specific incident, a middleman who was arrested intended to trade a horn of 700 g for 446,000 rupees. This specific individual was deeply involved in trading rhino horn and estimated the price at this level around US$4,250 to US$5,700 per horn (Jung Kunwar, 2016). Another transaction between Tier 2 and Tier 3 was recorded for a price of US$26,000 for a horn (Jung Kunwar, 2016, p. 126).

10.4.2 Political Instability

Political instability is regarded as a significant enabler of wildlife crime in the Nepali example. A major peak in rhino poaching occurred from 1996 to 2006 during the Nepalese civil war. The conflict began in 1996 between the Communist Party of Nepal and the by then formal government. The civil war ended in 2006 with the Comprehensive Peace Accord between the two parties, ending the Nepalese monarchy and establishing the Peoples Republic. The conflict claimed over 13,000 lives and displaced 200,000 people (Nepal et al., 2011, p. 888). During the conflict, efforts and resources were shifted away from conservation activities, while the Royal Nepalese Army was focused on fighting Maoist insurgents (Interviews, 2018; Subedi et al., 2017, p. 352; Dudley, 2017; Martin & Martin; 2006).

In 2001, army posts inside the protected areas were reduced from 112 to 34 (Baral & Heinen, 2005, p. 6). Thirty-three posts in Chitwan NP had been merged into seven (Jung

[92] 5.88 kg divided by 850 grams = 6.91

Kunwar, 2016, p. 2). To date, there is no proof that rebels were actively involved in poaching to finance their activities. This stands in contrast to some other countries, especially in Africa, such as in Chad's Zakouma National Park, where large scale poaching was conducted at the hands of the rebels (Duffy & St John, 2013; see also Chapter 3.2.7).

Also detrimental to nature conservation was the warfare strategy of rebels during the civil war. They deliberately destroyed government structures, especially at a local and district level close to protected areas. Protected areas were considered to be one retreat location for rebels. As of 2003, 22 district offices, 39 area offices and 217 range posts had been attacked or destroyed by insurgents. The fighting also caused human casualties amongst unarmed park officials inside protected areas. Rebels accidentally killed staff of the Suklaphanta WR and Parsa WR during ambushes that were primarily directed at the army. Conservation leaders of the Annapurna Conservation Area Project were also killed (Baral & Heinen, 2005).

The political unrest also negatively affected macro-economic indicators, such as economic growth and rural employment, which reduced the opportunity costs of poaching (Baral & Heinen, 2005; Poudyal et al. 2009). Furthermore, park entry revenues dropped by 40% to 60% (Baral & Heinen, 2005, p. 7), reducing the funds that could be channelled to local communities in the buffer zones. The Nepali example demonstrates the feedback loops that civil conflict has on core enablers of wildlife crime, such as poverty and unemployment, but also on the basic support structure of conservation activities. The peak in poaching during the civil war when patrol presence and activity was reduced also demonstrates the necessity of conducting ranger-based enforcement patrols inside protected areas.

10.4.3 Corruption

Corruption is widespread and endemic at several levels of government and is regarded as a key enabler of wildlife crime in Nepal (Subedi, 2005, Interviews, 2018). Jung Kunwar (2016, p. 11) describes his personal experience during a case of attempted bribery, following the arrest of a rhino horn dealer. Jung Kunwar was approached by the brother-in-law of the suspect and was offered US$13,770. Moreover, Jung Kunwar (2016, p. 112) witnessed corruption and bribery in the court system when judges were handling wildlife crime related court cases. Truex (2011) research on social norms in Nepal suggests that people deem large-scale bribery as unacceptable. On the other hand, small-scale

corruption was considered as somehow acceptable.

When it comes to reducing wildlife crime related corruption, Nepal's media has helped to increase transparency and oversight of the relevant government agencies, such as the Department of National Parks and Wildlife (Martin et al., 2013). According to Martin et al. (2013, p. 72), as a consequence of increased oversight, employees of the department are largely committed to conserving wildlife with only limited corruption rates.

10.4.4 Poverty and Unemployment

Poverty and unemployment are key factors that motivate Tier 1 participants to engage in poaching high-value species. The country has a relatively young population with approximately 60% below 30 years of age (MoPE, 2017, p. 20). There are approximately more than 100 castes and ethnic groups in Nepal (MoPE, 2017, p. 99). About 65% of the population is involved in subsistence farming (CBC, 2012). Tier 2 middlemen target people from poor and deprived backgrounds, often from lower castes (Acharya, 2006). Nepal is amongst the most underdeveloped countries in the world with widespread poverty. The country ranks 167 of 192 in terms of GDP per capita which was US$1,090 in 2019 (World Bank Group, 2019). Poverty is especially prevalent in the buffer zones around Chitwan NP (Sedhai, 2015). Poudyal et al. (2009) point out that low economic growth in the source country Nepal reduces opportunity costs for engaging in wildlife crime, while at the same time high economic growth in East Asian destination countries increases demand for illegal wildlife contraband.

10.4.5 Proliferation of Weapons

The proliferation of weapons, especially in the aftermath of armed conflicts, serves as an enabler of wildlife crime. In contrast to South Africa, this aspect was not voiced as a central concern by Nepalese enforcement authorities. It is also unclear how many illegal weapons are currently in Nepal. After the conflict, in 2007, Former Maoist rebels surrendered armaments, including 3,475 weapons, to the United Nations (Bogati, 2018, p. 45).

The weapons that remained are primarily of a smaller calibre, particularly handguns, so they are not well suited for killing rhinos (Bogati, 2018, p. 45). This is a difference to Namibia and South Africa, where illegal large calibre hunting weapons can be found more

frequently on the black market. Hunting game is more common in South Africa and Namibia and the fact that farmers legally own hunting rifles increases the chances of these weapons being acquired by criminals, e.g. through farm robberies. Bogati (2018) further states that Nepal's post-conflict violence rate is lower than that in countries in Central Africa.

10.5 Park-People Relationships in Nepal

Nepal's community-based approach is a central asset in reducing wildlife crime. The National Parks and Wildlife Conservation Act (1973) was amended in 1993 and foresees the channelling of 30% to 50% of the park revenues to supporting the development of local communities in the buffer zones around protected areas. Nepal's protected areas with rhino populations extend over an area of 220,500 km², while the surrounding buffer zones are nearly four times the size, amounting to 825,050 km².[93] Over half of the area is usable for wildlife habitat and wild animals cross in and out of the buffer zones frequently (Interviews, 2018).

Table 28: Size of Protected Rhino Habitats and Buffer Zones

Protected Area	Park (km²)	Buffer Zone (km²)
Chitwan NP	93,200	750,000
Bardia NP	96,800	50,700
Suklaphanta WR	30,500	24,350
Total	220,500	825,050

Source: Bhusal, 2012, p. 35

Currently, 45,000 households in 12 municipalities are living inside the buffer zones (Lamichhane, 2019, p. 30). These areas are managed by the community through a sound institutional structure, which includes Buffer Zone Management Committees and User Groups. The harvesting inside buffer zones is regulated by the communities through their administrative structures and committees. Locals are allowed to periodically collect

[93] In the process of the establishment and extension of Nepal's protected areas, there have also been resettlements of local people. Chitwan NP was extended in 1977, at which time 20,000 villagers were resettled. During a further extension in 1999–2002, 1,700 households were relocated from the buffer zone of Rapti river (Lamichhane, 2019, p. 30; Dudley, 2017). However, these resettlements have not caused uproar or resentment, as did similar resettlements in Mozambique's Limpopo NP.

firewood and fodder as well as cutting grass and reed at certain times (Interviews, 2018). In general, the communities express positive feedback. Interviewed villagers consider the buffer zone programme to be a vehicle that benefits them socially and economically (Budhathoki, 2004, p. 338). Local communities have developed a sense of ownership about the park and wildlife conservation generally (Lamichhane, 2019, p. 19).[94] Villagers were also aware of the positive effects of tourism in villages surrounding rhino conservation areas, such as Sauraha close to Chitwan NP.

The entry-board to Sauraha, which lies at the edge of Chitwan NP, displays an overview of the touristic accommodations that are close by (Figure 14) . The choice of the hotel names are an indication of the prominent role that wildlife plays for the tourism sector in the Chitwan area. Hotel-names frequently take reference to wildlife and nature, such as 'hotel rhino land', 'tiger camp' or 'hotel wildlife camp'.

Local ownership of small tourism businesses tends to strengthen positive attitudes in the municipality towards natural resource conservation (Nyaupane & Poudel, 2011; Interviews, 2018).

Figure 14: Entry-Board to Sauraha Village

Source: Smale (2019)

[94] There were only few reports pointing out that locals inside the buffer zones were unaware of the benefits and conservation aims of Nepal's community-based programs (Müller-Böker & Kollmair, 2000).

However, although the governance structures of the communities Buffer Zone Management were regarded as positive and functional, the distribution of benefits was uneven. Similar to Namibia's communal conservancies, distribution arrangements were not designed to benefit poor households. In particular, indigenous communities, such as members of the Tharus, Botes and Majhi were deprived of hunting rights and harvesting possibilities inside the park and not compensated accordingly (Raj Joshi, 2019).
Members of the Buffer Zone Management were usually from higher castes. They tended to disperse the major proportion of the benefits to affiliates of higher castes while dismissing vulnerable groups (Martin & Martin; 2006, p. 68). This is problematic because Tier 1 poachers are primarily recruited from the deprived parts of society and lower castes. Despite shortcomings in the execution, Nepal's community-based approach has progressed relationships between park authorities and local communities (Budhathoki, 2004, p. 338). Locally based strategies that address communities generate positive yields for enforcement as they ease central motivations to commit wildlife crime. Hence, community-approaches should complement top-down perspectives (Karanth, & Nepal, 2012).

10.5.1 Human-Wildlife Conflict

The potential for human-wildlife conflict is high, especially in Nepal's buffer zones. Rhinos prefer floodplain grasslands[95] and frequently cross into buffer zones, close to rivers, such as Rapti, Narayani, Reu or Dhungre (Government of Nepal, 2006, p. 13). These places are visited by local villagers when they collect thatch or grass. Ten per cent of Chitwan's rhino population resides outside of the park in the buffer zone (Subedi et al., 2017, p. 356). Experts consistently predict that HWC will increase in the near future as a result of recovering tiger, rhino and leopard populations (Interviews, 2018; Sapkota et al., 2014, p. 238). Recovering animal populations are met by a growing human population in the Terai area. Large parts of the land are cultivated. Wildlife faces the risk that habitats will be converted into human settlements or agricultural land in the near future (Shrestha, 2007, p. 10). The potential for HWC in Nepal is greater than in South Africa or Namibia, where many protected areas are fenced, which separates wildlife from human villages. There are some exceptions in Namibia on communal land.
When looking at the different forms of HWC, crop damage and property destruction are

[95] Sixty per cent of the rhinos' diet consists of grass.

amongst the predominant causes. In the year 2016/2017, 22 people lost their lives.

Table 29: Human-Wildlife Conflict in the Terai area in 2016/17

Crop damage	Property damage	Injured	Human Casualties
277	271	43	22

Source: DNPWC, 2018

Most of the human casualties (13) have taken place in and around Chitwan NP. Bardia NP has fewer human rhino conflicts (five casualties) as there are both fewer rhinos and fewer people living in the vicinity of the park. Suklaphanta Wildlife reserve and Koshi Tappu Wildlife Reserve had only one casualty each (DNPWC, 2018; Interview with an official from the DNPWC, 2018).

Table 30: Causes of HWC by Animal

Elephant	Rhino	Leopard	Wild boar Crocodile	Tiger
68%	13%	11%	5%	3%

Source: DNPWC, 2018

Elephants continue to be the main reason for HWCs, predominantly in the form of crop damage, followed by rhinos and leopards.

10.5.2 Mitigating Human-Wildlife Conflict

150 km of electrical fences have been erected in key areas around Chitwan NP, as a key measure to mitigate HWC. These fences have served as an effective tool and reduced crop damage by 78% and livestock depredation by 30%–60%. They also lowered human mortality rates caused by animals (Sapkota et al., 2014). Fences especially serve to reduce human-rhino conflicts, while they are less effective against human-elephant conflicts, as elephants sometimes destroy fences. However, due to poor maintenance, only a quarter of the electric fences are operational (Hudu et al., 2017, p. 9). Community forests with a solid revenue generation have demonstrated a better maintenance of their fences (Hudu et al., 2017, p. 14). An indirect measure to deal with HWC are compensation schemes, regulated in the Wildlife Damage Relief Support Guideline 2069 BS. Compensation is only available for damage inside the buffer zones, not inside the PAs. In 2017, the Department of National Parks and Wildlife Conservation (DNPWC) doubled the level of

compensatory payments. According to the new guideline values, the family of a person killed in a wildlife attack will be compensated with up to one million rupees and a person who suffers serious injuries will be compensated with 200,000 rupees, and with minor injuries 20,000 rupees. Damage to crops will be compensated with up to 20,000 rupees (Mandal, 2017). There are still challenges in the practical implementation of compensation schemes. Respondents complain that the process for compensation is lengthy and cumbersome (Interviews, 2018).

10.6 Cultural and Religious Factors

Efforts to promote positive attitudes towards nature conservation are embedded in the prevalent perspective that society holds over nature. In this regard Nepal's predominant religions, Hinduism and Buddhism, shape social values and beliefs. About 81% of the population are Hindu followed by 9% Buddhist, 4% Muslim and 1% Christian (MoPE, 2017, p. 98).

In Hinduism and Buddhism, animals are regarded as sacred and close to humans. Various gods and goddesses that take the shape of plants or animals such as elephants, tigers, birds or cows and are worshipped. Local folklore sensitizes people at an early age to have a positive attitude towards nature (Sharma, 2012, p. 15; Lamichhane, 2019, p. 21; DNPWC, 2017, p. 4). Specific animals such as the cow hold a sacred place in Nepal's society and are not allowed to be slaughtered. The concept of *dharma* in traditional Nepalese society is part of a value system that proposes a correct lifestyle in harmony with nature (Lamichhane, 2019, p. 21). This stands in opposition to a western cosmology of 'man's mastery of nature', which follows a perspective where humans dominate the environment, and humans and the environment are seen as separate entities (Bruun & Kalland, 2014, p. 1).

A study from Thapa (2013, p. 546) supports the notion that violent attitudes towards and behaviour against animals are uncommon in Nepal. During a household survey (N=299), which was conducted in the buffer zones, villagers were asked if they would consider killing animals that threatened to eat their crops. Ninety per cent of respondents said they would abstain from the retaliatory killing of wildlife. Likewise, the respondents of the study expressed a positive attitude towards wildlife (95.3%). Only 4% of the responders stated that they disliked wild animals. Nepal's prevailing religious and cultural beliefs also lead to social pressure on wildlife offenders. Positive attitudes towards wildlife and sound park-people relationships further help enforcement authorities, e.g. by establishing

networks of informants to gather HUMINT on wildlife crime.

While the positive attitudes of community-members towards nature conservation are a significant asset in soothing the storm, Ingles (1995) points out that social and cultural beliefs are not fixed and are prone to change due to the increasing influence of modern lifestyles. The same goes for a growing urban population, which runs the risk of being detached from nature. However, new technologies, such as social media can also enforce values and attitudes in favour of nature and convey positive conservation messages.

10.6.1 Civic and Media engagement

While there is already a favourable starting position due to cultural and religious values in favour of animal conservation, Nepal's media, as well as civic engagement, plays a supportive role to further promote environmental education. Journalists cooperate with wildlife authorities and publish conservation stories (Martin et al., 2013, p. 72). Radio channels air conservation-related programmes in Tharu and other Nepali languages. Awareness-campaigns tend to find broad support by young Nepalese. Some campaigns are innovative, such as street dramas, house-to-house visits, sports events with conservation messages or simple posters and pamphlets. Other awareness measures are specifically designed for vulnerable target groups. Some campaigns reach out to indigenous groups and people from lower castes, as they are often targeted by kingpins and others who orchestrate wildlife crime (Mahatara et al. 2018, p. 29). There are also cases of direct blaming and shaming. Former chief warden Kamal Jung Kunwar has published a book,[96] which includes the names of those involved in the illegal killing and trade. In Nepali culture 'loss of face' has a great social significance.

10.6.2 Enforcement Support of Local Communities

A specific feature of the Nepalese case is the broad civic engagement, which emerged naturally from within the society and was not donor driven. Many villagers are involved in voluntary conservation activities, such as the formation of community-based anti-poaching units (CBAPU). In 2015, 58 CBAPUs were formed in Nepal's buffer zones. The CBAPUs support law enforcement and seek to address human-wildlife conflict. Members of the units also assist in the relocation of problem animals, often with their

[96] *Four Years for the Rhino. An Experience of Anti-Poaching Operations* by Kamal Jung Kunwar, 2016.

designed tool of ‘rapid response teams’. The CBAPUs also support awareness-building amongst community-members. (Acharya, 2016, p. 8).

Moreover, Nepal’s youth is involved in conservation-related matters. In 2003, the Anti-poaching Youth Awareness Committee was formed. There is active engagement on several social media platforms, where activities, opinions and perspectives in favour of conservation efforts are expressed. CBAPUs are celebrated every year on March 3rd, along with World Wildlife Day; in Chitwan, 4,000 young people attended the festivities (WWF, 2015a).

At regular intervals, CBAPUs conduct foot patrols inside the buffer zones, community forests and parts of the park, usually in groups and alongside enforcement personnel, but also accompanied by army personnel and park staff. CBAPU members use GPS based Information Systems during the patrol to mark places of high alert, e.g. where animal traps have been found and removed.

The effect of CBAPU patrols is not primarily in apprehending wildlife offenders, although the patrols led to the successful removal of some animal traps and reportedly chased away three groups of poachers in different instances. When members of CBAPUs were asked about their perceived contribution, the majority mentioned awareness raising as a primary factor. Moreover, creating dialogue platforms to bring different enforcement and conservation actors together, was perceived to be a valid contribution by CBAPU members (Bhatta et al., 2018; Paudel, 2018).

10.7 Nepal’s Enforcement Response

The following chapter analyses Nepal’s enforcement approach. Strict patrolling inside protected areas and viable intelligence gathering systems were amongst the primary factors for the successful reduction of rhino poaching. Positive feedback loops also resulted from good park-people relations.

10.7.1 The Legal Situation

According to the National Parks and Wildlife Conservation Act (NPWCA, 1973) hunting is banned and only allowed with a relevant permit from the Department of National Parks and Wildlife Conservation (Section 11). Although the National Parks and Wildlife Conservation Regulations define several kinds of hunting-permits, no such permits have been issued by the department since 1980 (Bhattarai et al., 2016, p. 2)

One exception is the Dhorpatan Hunting Reserve in the Dhaulagiri Himal of western Nepal, where legal hunting is allowed. The area covers 1,325 km^2 and the quota for the yearly off-take is strictly regulated. There are some national, but mainly international, hunting clients who pay high fees for their hunts, which are led by experienced hunting guides (Aryal et al., 2015; Bhattarai et al., 2016, p. 2).

Hunting in forests outside protected areas is prohibited by the Forests Act (1993) and for farmers it is illegal to kill wildlife, even if they destroy or feed on their crops. Only hunting in private forests was not regulated by the law, but there are only a few private forests in Nepal (Bhattarai et al., 2016, p. 2).

Section 26 (6) of the NPWCA lays out the legal punishment for illegal hunting:

- For animals other than protected species the Act foresees fines up to 10,000 rupees, imprisonment of up to two years, or both.
- For the illegal killing of protected species, such as rhinos or tigers, penalties range between 500,000 and one million rupees and imprisonment of between five and 15 years (Bhattarai et al., 2016, p. 2).

10.7.2 Capacity Building for Wildlife Law Enforcement

Nepal's government is committed to biodiversity conservation. The National Parks Wildlife Conservation Act (NPWC Act) of 1973 provided the foundation for the establishment of protected areas, foremost Chitwan NP (Kandel, 2013, p. 5). Subsequently, the Nepalese government put political programmes into place and established agencies to promote wildlife conservation and enforcement. In 1975, Nepal signed the CITES convention and became a member-state in 1995. The country joined the Convention on Biological Diversity (CBD) in 1992. Nepal has passed several species conservation acts, such as the Rhino Conservation Action Plan (2006–2010), among others (Kandel, 2013, p. 7).[97]

Capacity-building for other high-value species, foremost the Bengal tiger, had positive spill-over effects for rhino conservation. The species live in the same habitat and methods of poaching and the illegal trading of their body parts are similar. The National Tiger Conservation Committee (NTCC) was formed in 2010 under the chairmanship of the Prime Minister to coordinate enforcement approaches and increase their effectiveness

[97] Additionally, the Snow leopard Conservation Action Plan (2004–2014), the Tiger Conservation Action Plan (2008–2012) and the Elephant Conservation Action Plan (2010–2019).

(Karki et al., 2011, p. 59). Hence, rhino conservation profited from tiger poaching through the build-up of capacities, which started over a decade earlier in Nepal. This is a difference to the beginning of the rhino poaching crisis in South Africa and Namibia. Enforcement capacities had been reduced shortly before the onset of the crisis in South Africa, although elephant conservation in South Africa, which started in 2004, has benefited from earlier capacity-building efforts to protect rhinos. The clear stance of the Nepalese government against wildlife crime can also be seen in the public burning of 4,000 illegal wildlife products seized in Chitwan in May 2017. Amongst other illegal wildlife products, 357 rhino horns, 67 tiger skins and 418 leopard skins were burned (Dasgupta, 2017).

10.7.3 Specialized Bodies to Enforce Wildlife Crime

The National Wildlife Crime Control Coordination Committee (NWCCCC) was formed in 2010 in order to support a coherent policy approach to tackling wildlife crime. The committee should serve to coordinate relevant ministers and political actors. The NWCCCC is under the chairmanship of the Minister for Forests and Soil Conservation and comprises senior officials from the relevant ministries and departments as well as senior security officials and representatives from other enforcement organizations.[98] The opening meeting of the NWCCCC was chaired by the Prime Minister, in order to provide political leverage to the committee (PHG, 2017, p. 3; Martin et al. 2013, p. 68). A central political guidance that the NWCCCC expressed was to urge enforcement agencies to target middlemen and traders, as well as exposing smuggling routes (Martin et al. 2013, p. 69). To coordinate the enforcement approach at a district and local level, the Wildlife Crime Control Bureau (WCCB) was formed. The WCCB is supervised by the NWCCCC. WCCBs multidisciplinary approach serves to promote cooperation amongst relevant agencies at a local level. The body should also function as a platform to discuss pertinent issues of wildlife crime (Kandel, 2013, p. 25). Nationwide there were 22 WCCBs in 24 districts in 2017 (PHG, 2017, p. 3).

[98]Other members of the NWCCCC include the Chief of the Nepalese army, the Inspector General of the Police, the Chief of the National Intelligence Department and the Director General of the Department of National Parks and Wildlife Conservation (PHG, 2017, p.7).

10.7.4 Relocation of Rhinos

With growing and stable rhino populations, Nepal intends to establish other rhino populations in addition to those in the current habitats (WWF, 2018b). Prior to 2003, 87 rhinos were relocated from Chitwan NP to Bardia NP and Suklaphanta Wildlife Reserve (Government of Nepal, 2006, p. 14). The relocation programmes can be regarded as a strategy to mitigate the risks of species extinction, as the animals are now scattered in different reserves. If one park is heavily targeted by poachers, other populations will secure the survival of the national population. However, it also increases the risk of wildlife crime, as the territory requiring protection is larger. During the peak of Nepal's poaching crisis, the majority of rhinos that had been translocated to Bardia NP, were killed (PHG, 2017, p. 4). This demonstrates the need for conservation actors to first gather experience in scaling up protective capacities on the ground, before introducing new local populations. However, the relocation and the scaling up of security measures is a simultaneous process. Conservation and enforcement agencies need real risk scenarios, including poaching pressure, to effectively develop their capacities.

10.7.5 Nepal's Network of Informants

A central factor in reducing poaching in Nepal was the establishment of intelligence gathering systems, primarily via the collection of HUMINT. Networks of informants provided valuable information to support intelligence-led enforcement by park authorities and police officials.

When Nepal was struck by high poaching rates in 2000, park authorities first needed to develop these networks to support intelligence gathering. The creation of a trusted network of informants in and around villages close to protected areas was a time-consuming process that included trial and error. Besides getting trusted informants on board, park authorities needed to establish internal structures to deal with intelligence effectively (Jung Kunwar, 2016; Martin & Martin; 2006, p. 65).

Chitwan NP started with five informants in 2003 and the network subsequently grew to 40–50 in 2007. Currently, there are approximately 20–30 informants (Interview with enforcement official, 2018).[99] In Nepal, several environmental NGOs are active in the field of intelligence gathering. WWF Nepal, the International Trust for Nature

[99] Martin & Martin (2005, p. 65) and Martin et al. (2013, p. 72) provide slightly different numbers. According to the authors Chitwan National Park increased the number of informers from seven (2003) to 20 (2012).

Conservation and the King Mahendra Trust for Nature Conservation support intelligence gathering. They offer training to selected informants but also manage some informant networks themselves and provide direct payments to their members (Interviews, 2018; see also: Martin & Martin, 2006, p. 65; Martin et al., 2013, p. 72).

Informants receive a monthly payment and a one-off disbursement if they pass on information that leads to the arrest and/or the successful prosecution of a wildlife offender. The organizations treat their payments to informants as classified. The Greater One-horned Rhinoceros Conservation Action Plan for Nepal states that 50,000 rupees (US$700) is paid for a successful tip-off by an informant (Government of Nepal, 2006, p. 23). According to Martin et al. (2013, p. 72), monthly payments ranged from 3,000–8,000 rupees in 2012. The DNPWC quantifies the monthly payments as being between 5,000 and 15,000 rupees. The authority has developed an internal guideline that defines the framework for payments.

Intelligence was especially useful during the height of the poaching crisis in 2003 and led to the majority of arrests. A key success factor of Nepal's intelligence system was that enforcement agencies and park-management actors focused on identifying and arresting higher-ranking criminals from early on. In some cases, whole networks were tracked down and their members arrested. When poachers from the lowest tier were apprehended, they were interrogated to provide information about their trading contacts and syndicate-associated recruiters (Tier 2). Jung Kunwar (2016, p. 18) describes cases, where Tier 2 horn dealers had been offered immunity from prosecution if they provided information and evidence that would lead to the prosecution of a Tier 3 trader (Jung Kunwar, 2016, p. 18).

There are indications that Nepalese enforcement officials applied physical violence during the interrogation of arrested wildlife offenders. Former chief warden Jung Kunwar's book provides a detailed account of anti-poaching operations and describes the interrogation of captured poachers and traders, including indications of physical violence that was applied during the interrogation-process. Human rights activists claim that excessive and violent enforcement practices have been used in Nepal. In one incident a suspected rhino poacher died in custody (Raj Joshi, 2019). However, while this research regards interrogation techniques that include physical violence with great scepticism, interviewed experts across the board in Nepal did not regard oppression by law enforcement or human-rights abuses as a matter of concern.

According to the former Chief Warden Jung Kunwar (Interview, 2018), the interrogation

techniques contributed to gaining information on the whereabouts of other members of a poaching cell and helped to efficiently break criminal rhino syndicates.

During the height of the crisis, 150 poachers were arrested, most of them outside the park (Interview with enforcement official, 2018). There are certain factors and favourable circumstances that contributed to the success of Nepal's intelligence network: it had political backup and motivated enforcement officials in key positions;[100] they relentlessly strived to get higher up the syndicate structure in order to arrest – if possible – most of the high-ranking members of a poaching cell; and local communities had a supportive culture towards wildlife conservation. This last point is a significant difference to the case examples from Sub-Saharan Africa, which are characterized by strained park-people relationships and villagers who would rather support offenders than enforcement officials (see Chapter 8.5.2).

While Nepal's intelligence system has been tested and continuously professionalized during times of rampant poaching, it is unclear how effective it is today. In a state of zero poaching, key indicators on the actual state of the informant systems are lacking, e.g. actionable intelligence leading to arrests.

The feedback of receiving either useful or useless information serves as a key stimulus for the evolution and continued selection towards establishing and maintaining an effective network of informers. In a state of zero poaching, enforcement agencies need to maintain their capacities without the valuable feedback that crime provides.

10.7.6 Army Patrols inside Protected Areas

Strict patrols inside Nepal's protected areas are regarded by most of the interviewed experts as a key success factor that contributed to soothing the storm. A central argument that points to the necessity of enforcement personnel inside Nepal's rhino conservation areas is the surge in poaching during the civil war, when patrolling activity was reduced (Mahatara et al. 2018, p. 27). Other studies point out the local effects of anti-poaching forces, with rhinos more likely to be killed when they were at a greater distance from active guard posts (Subedi & Subedi, 2017, p. 17).

The Royal Nepalese Army is mandated to undertake anti-poaching operations inside

[100] Chief Warden Kumar Jung Kunwar contributed to reducing rhino poaching at the height of the poaching crisis. He is a controversial figure to some, however, he pursued cracking down on rhino poaching syndicates with ambition and success. Hence, Jung Kunwar serves as an example of an individual whose dedicated actions influenced the macro-level of a country's enforcement approach (Interviews, 2018).

protected areas. According to Martin et al. (2013, p. 72), there were 850 active army personnel together with 268 park staff in Chitwan NP in 2012. An additional unit of 350 soldiers was stationed at the border west of the park. This works out to a ranger density of 1.2 people per km². The ranger density is greater than in South Africa's Kruger NP, although Nepal's protected areas in the Terai have dense vegetation and are more difficult to control. Some interviewees, with practical insight into enforcement, stated that approximately 7,000 soldiers (from 90,000 active soldiers) are deployed for anti-poaching (Interviews, 2018). However, the number of soldiers on active patrol will be significantly lower than those stationed in the region.

There is diverging information about active posts inside Chitwan NP. Some sources state that the army is located on 31 bases and 32 different posts, with a further 63 mobile posts (WWF, 2018a). Compared to earlier years, the Nepalese army has intensified its presence inside the protected areas. In 2009, only 32 posts were permanently occupied inside the park. The greater presence has increased the overall confidence and motivation of the soldiers and the extension of the army's mandate has had a great effect. Soldiers are now allowed to follow suspects outside the park areas (Martin et al., 2013, p. 69; interviews, 2018). Besides the mere presence and mandate of enforcement staff, effective patrol leadership plays a key role. During the first poaching wave in 1992, there were several camps that didn't lose any rhinos at all. Martin & Vigne (1996, p. 20) relate this to effective managers and hard-working district forest officers who were able to motivate their fellow rangers.

10.7.6.1 Patrolling and Technology

The Nepalese army has developed a variety of methods to patrol protected areas. The Rhino Conservation Action Plan proposed a greater use of intensive sweep operations, whcih are considered to be an effective and successful patrolling tool (Koen, 2017, p. 29; Martin & Martin, 2006, p. 65). Elephants are helpful in the conduct of anti-poaching operations in the dense vegetation. They are fast, have an excellent sense of smell and good eyesight. The army possesses approximately 50 elephants in Chitwan.

Two to three elephants are used during one patrol, carrying two soldiers each. In larger sweep operations a minimum of 10 elephants is used to cover a greater area (Interviews, 2018). From 2007 to 2014 the army conducted 225 larger sweeping operations in hot-spot areas (Mahatara et al. 2018, p. 29). Furthermore, vehicle and bicycle patrols are used

in areas that are accessible by road, such as community forests. Patrol staff focus primarily on high-risk areas (WWF, 2018a). The army patrolled over 292,000 km^2 in 2014 (Government of Nepal, 2015, p. 4). In Chitwan NP, the army has established and trained a sniffer dog unit with dogs from India (Acharya, 2016, p. 9). The army uses some Unmanned Aerial Systems in Chitwan and Bardia NP (WWF, 2018a), but due to the dense vegetation UAVs have only a limited benefit (Interviews, 2018). Similar to the experience in South Africa and Namibia, UAVs for nature conservation have proven to be costly and difficult to handle in Nepal (May 2015). Basic technologies, such as smartphones in combination with the SMART application have provided greater benefits to patrol staff at major rhino sites. A limiting factor of the SMART application is restricted usage due to limited internet coverage (Ortolani, 2016; May, 2015). The capacity-building process is supported by international organizations and NGOs. The Zoological Society of London (ZSL), for example, trained enforcement personnel to use SMART technology in 2014 (Ortolani, 2016). Similarly to the experiences in South Africa and Namibia, technology has not been a game-changer, but can provide aid and support to patrol-staff on the ground.

Chitwan is perceived by the army personnel as a hardship post. Many soldiers don't like being stationed in a remote area far away from their families. Active army personnel have to follow a rotation cycle of two to three years for each battalion in the park (Interviews, 2018). In the past, the deployment inside the PAs was risky for soldiers. Ninety-two soldiers have been killed in anti-poaching operations since 1961 (Government of Nepal, 2015, p. 4), many of them during the Maoist insurgency. Today the risk of deadly encounters is significantly lower. Explicit aggregated figures about killed enforcement personnel during recent years have not been published. One soldier was killed in 2015 when poachers opened fire at a checkpoint (Interview with enforcement official, 2018).

10.7.7 Rigorous Anti-Poaching

The government does not disclose figures on poachers that have been killed in the park. Specifics on their operations are not disclosed either. As a result, it is unclear how rigorous the military pursuit of wildlife offenders is, especially those that kill high-value species, such as rhinos or tigers. Also, in the current state of zero poaching, enforcement staff inside and outside the protected areas will only have few encounters with rhino poachers, if any. Thus, the question of whether the enforcement officials (mostly the

army) are adhering to human rights standards, is partly theoretical. According to park officials, one poacher was killed in recent years by enforcement officials. During the height of the poaching crisis (2000–2004) 'some poachers' were killed and 'some committed suicide' in prison (Interview with park official, 2018). However, relevant to deterrence is not only the actual degree of the army's sophistication and toughness but also how they are perceived. Most of the interviewed experts state that the army is perceived as being effective, and to a degree ruthless, when it comes to high-value species protection (Interviews, 2018).

10.7.7.1 Enforcement-related Corruption

During their deployment, the soldiers reside in army camps inside the protected areas. Nepal's army personnel are deployed nationwide. Often, they come from places other than villages near the park. This is a difference to rangers from South Africa and enforcement staff in many of Namibia's protected areas. In those contexts, the enforcement officials are often residents of nearby villages and have close social ties to their peers in the community. This means that rangers from nearby villages run a higher risk of bribery attempts by poachers. In Namibia and South Africa, many of the informal shabeens are spaces of encounter, where rangers would come into contact with poachers and middlemen during a night out drinking. The chance of being offered bribes for complicity is significantly higher in a setting where enforcement personnel and offenders share the same living space. It is a positive factor that the Nepalese army has little personal interaction with local villagers. This also reflects the experience of the author during his field visit. In Nepal, army personnel behaved distantly and were unapproachable to strangers and local villagers.

10.8 Criminal Prosecution

The Central Investigation Bureau (CIB) is committed to investigating wildlife crimes. The CIB was established in 2010 with the aim of exploring crimes of national interest, transnational and organizational crime. The CIB is operating on seven pillars, one cell (pillar four) is designated to combating wildlife crime. There is good cooperation between the CIB, the Forest Department and the Department of National Parks and Wildlife (Martin et al., 2013, p. 69). Inside protected areas, the park office will handle the crime

scene and secure evidence, as the police lack a direct mandate to do so. If the park office needs support from the police, they can ask them to assist in handling the crime scene (Interviews, 2018). Outside protected areas, such as in the buffer zones, the collection of evidence is conducted by the district's forests officer.

The collection of evidence is supposed to take place in a timely manner. The evidence needs to be submitted to the court within 25 days. If a major wildlife crime happens inside the protected area, the responsibility for evidence collection falls to the chief warden and evidence gathering can be completed within a 45-day timeframe. The reason for the longer time span within protected areas is that parts of the park take more time to reach, as they are only accessible by foot or elephant (Interviews, 2018).

10.8.1 Competencies of the Chief Warden

Up to 2015, the chief warden possessed comprehensive judiciary power and had full law enforcement authority. The chief warden was able to hand down sentences for wildlife crime in his jurisdiction in a quick and simple manner. His judicial authority entailed a broad range of powers from making arrests, investigating cases and filing charges, up to delivering verdicts. Prison-related punishment could be up to 15 years and entail a fine of up to 10,000 rupees. Although defendants had the legal right to appeal these penalties before the Appellate Court, the chances of effectively overturning a given sentence were rather slim (Martin et al., 2013, p. 69; interviews, 2018). The extended judicial authority of the chief warden was subject to criticism, as some felt that too many powers were vested in a single person (Paudel et al., 2012, p. 98). The competencies of the chief warden were reduced in 2015. The chief warden can nowadays only hand down sentences that are below one year of imprisonment, while rhino-poaching cases have to be submitted through the district court proceedings (PHG, 2017, p. 20; interviews, 2018).

This new arrangement strengthens the role of the formal court system and contributes to the balance of power, however, cases might now be prolonged, and sentences reduced (Interviews, 2018). Interviewees stated that district court judges tend to be more lenient when prosecuting high-value poaching cases. Providing the chief warden with extra-judicial powers depends on the person in charge. When Kamal Jung Kunwar was in charge (2003–2007), it helped to impose swift sentences in a timely manner and acted as a deterrent for potential offenders (Interviews, 2018).

10.8.2 Arrested Wildlife Offenders

During the height of the poaching crisis, between 2007 and 2015, overall, 259 rhino poachers and traders were arrested. Enforcement officials directed their investigations towards mapping out other members of poaching cells, with a special focus on identifying middlemen and traders. In 2012, an entire chain of poachers and traders were arrested, 15 men and two women (Mahatara et al., 2018, p. 27).

Table 31: Arrested Rhino Poachers and Traders

2007	2008	2009	2010	2011	2012	2013	2014	2015	07-15
36	14	36	39	51	42	2	37	2	259

Source: Mahatara et al., 2018, p. 28

Nepal successfully handled high-profile cases, which had a signalling effect. In 2015 Nepal's most wanted poacher, Rajkumar Praja, was arrested in Malaysia with the help of INTERPOL.[101] Praja's criminal group was involved in the killing of 19 rhinos. Before his arrest in Malaysia, Praja had evaded Nepalese authorities and was sentenced *in absentia* to 15 years imprisonment and a fine of 100,000 rupees. While there were a high number of arrests during the height of the poaching crisis, some voiced accusations of political patronage that lead to the premature release of convicted rhino poachers (Das Shrestha, 2013). The actual degree and comprehensiveness of law enforcement cannot be conclusively assessed, however, the authorities in Nepal seemed to have more dedication to and success in arresting and prosecuting the upper members of poaching groups, compared to the Sub-Saharan examples.

10.8.3 The Effects of COVID-19 on Wildlife Crime in Nepal

A countrywide lockdown came into effect on 24 March and ended on 14 June 2020. Nepal temporarily closed the borders with China and India. The COVID-19 crisis has resulted in the loss of livelihoods and a decline in tourist revenues, entrenching socio-economic factors that drive people to commit wildlife crime. The surrounding communities receive 30%–50% of buffer zone income, however, these sources have been greatly diminished. There has been an increase of bushmeat poaching in Nepal. These include cases of

[101] INTERPOL's arrest of Praha was part of operation Infra Terra, which focused on 139 fugitives who committed wildlife crimes from wildlife trafficking and illegal fishing to trading illicit ivory and rhino horn (INTERPOL, 2015).

poached Himalayan musk deer (Saeed et al., 2020). In Parsa National Park, poachers exchanged fire with patrolling soldiers, killing one suspected offender. In some areas, that are usually frequently visited by tourists, it is now easier to set up animal traps (Saeed et al., 2020). While the COVID-19 crisis is deepening social and economic drivers of wildlife crime, no rhino has yet been killed.

However, in April 2020, India's Kaziranga NP saw its first poaching case in thirteen months. Poachers were supposedly motivated by the less stringent security measures and intelligence gathering (Ravi, 2020). As a result of the crisis, Nepal has postponed conservation related activities, such as a rhino monitoring programme, which should have started in early 2020 (Neupane, 2020).

10.9 South-South Cooperation

Nepal has recognized the need for cross-border cooperation to strengthen transboundary law enforcement. Nepal is a transit county for wildlife products and in some cases, poachers are entering from neighbouring countries (Chapter 10.2.3). In 2012, an Indian national was arrested in relation to the only rhino poaching case in Nepal that year (Martin et al., 2013, p. 69).

In 2010, Nepal signed a Memorandum of Understanding (MoU) with China to promote wildlife conservation between the two countries. The MoU also foresees increased cooperation to reduce the illegal wildlife trade (Karki et al., 2011, p. 59). Nepal, China and India hold regular coordination meetings that go down to field levels (Government of Nepal, 2006, p. 27). The cross-border cooperation with India has improved. In 2010, Nepal and India signed an MoU to tackle the illegal wildlife trade. The cooperation between Nepal and India has also intensified on an operational level. During a flood in 2017, 11 rhinos were displaced the Valmiki Tiger Reserve in India. Indian authorities allowed and supported the relocation of these animals to Chitwan NP. During a seizure of eight tiger skins in Nepal, the authorities used and shared camera trap images from India to conclude that the tigers had been killed in India (Interviews, 2018).

An expression of intensified regional cooperation is the association between South Asian member countries[102] to fight wildlife crime. The so-called South Asia Wildlife Enforcement Network (SAWEN) was established in 2010. Its secretariat is located in

[102] Currently, there are eight member countries: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.

Kathmandu. SAWENS goals are to:

- harmonize conservation laws and policies between countries; encourage member countries to implement their National Action Plans
- monitor trends in poaching and the illegal wildlife trade
- strengthen the institutional response to combating wildlife crime via capacity building and technical support
- share best practices (SAWEN, 2015, p. 10).

Besides regular meetings of SAWEN members, the secretariat conducts trainings and supports exchange platforms of enforcement actors, such as the Symposium Towards Zero Poaching which was held in 2015 with representatives from 13 Asian countries (Government of Nepal, 2015).

10.10 Conclusion Nepal

Nepal suffered one of the world's highest poaching rates up to 2010. The country has successfully managed to soothe the storm for the present moment. For the fourth consecutive year, zero poaching has been achieved.

The initial circumstances were not that favourable for conservation. Nepal fulfils many of the classic enabling conditions for wildlife crime. Unabated demand from nearby East Asian markets; buffer zones that are characterized by deep-seated poverty; limited prospects for upward mobility, especially for people from lower castes; people and wildlife living in close proximity, including a high potential for human-wildlife conflict; protected areas that are difficult to patrol due to dense vegetation and size; leaky borders to India and China that let wildlife contraband flow unhindered; a history of civil war that has entrenched conditions for wildlife crime, as well as widespread corruption among state officials. However, despite these challenging circumstances the country managed to turn the tide. Various approaches and factors have contributed to its conservation success. Nepal dedicated resources from early on to develop capacities to counter the illegal killing of high-value species. The poaching of tigers peaked before rhino poaching numbers escalated. This had positive synergistic effects for the upcoming rhino poaching storm, as capacities and tools to tackle conservation crime had already been developed.

Nepal's contemporary culture is possibly the biggest underlying factor in achieving zero poaching. Hinduism and Buddhism partly shape the views and perspectives that Nepali

people hold about nature. This is a significant difference to the South African and Namibian examples.

A central factor in Nepal's success can be found in the country's intelligence support. Although the initial creation of an informant network faced challenges, it now enjoys the broad support of local communities that tend to provide aid and support to park authorities and enforcement officials. HUMINT is collected by networks of informants from villages in the buffer zones. Additionally, enforcement officials followed up and obtained information from captured wildlife offenders.

Positive park-people relationships are also a result of Nepal's well-functioning community-based programmes. Local communities in the buffer zones receive 30%–40% of the park's entry-fees. Somewhat inclusive governance structures in rural villages seek to address conservation issues. While inhabitants of local communities tend to value the tangible and intangible benefits that result from protected areas, the benefits of conservation have a purely symbolic quality for the majority of villagers. Unfortunately, the COVID-19 crisis has led to a massive decline in park income. However, the prevailing cultural perceptions of most local people lead to conservation efforts and protected areas being perceived as a positive contributor to economic and social development.

Another success-factor is the rigorous enforcement by the Nepalese army inside PAs, with a mandate that also expands into the buffer zones. With Nepalese soldiers deriving from other regions of the country there are fewer opportunities to become acquainted with, and corrupted by, locally active offenders from the surrounding villages. The enforcement system clearly distinguishes between small-scale poaching, which occurs frequently and to which a blind eye is generally turned, and commercialized poaching of rhinos which is met by dedicated and sometimes ruthless enforcement personnel. Some see the Nepalese law enforcement response operating on the brink of human rights violations. However, due to a public opinion in favour of wildlife protection, the role and contribution of the park authorities, the police and the Nepalese army are met with acceptance, if not with support. This stands in contrast to the situation in South African and Mozambican villages, where the inhabitants are rather frustrated by rigorous enforcement practices.

Legal peculiarities, such as the comprehensive judicial powers of the Chief Warden have also contributed to Nepal's conservation success. The extra-judicial competencies led to quick jurisdiction and tougher sentences for poaching offences during the height of the poaching crisis.

Nepal's enforcement system also displays loopholes, foremost through corrupt judges and enforcement officials. Some offenders have successfully managed to evade sentences by paying bribes to enforcement officials.

Still, the functioning elements of the enforcement system outweigh their weaknesses. The high arrest numbers during the peak of the poaching crisis, which also targeted the higher-ranking members of criminal syndicates, support the assumption that enforcement for rhino related crimes has reached a critical mass. Together with a vigilant and outspoken civil society, it is sending signalling effects that deter would-be poachers and traders from entering the still lucrative business of wildlife crime. The Nepalese example also demonstrates that cracking down on syndicates can lead to a new equilibrium of zero poaching. It is far more difficult to crack down on criminal syndicates once they are operational.

From a global perspective, Nepal might have profited from the surge of rhino poaching in African range states, which can also be regarded as threat displacement. With relatively strong enforcement measures in Nepal as well as local communities that are difficult for wildlife offenders to infiltrate, Tier 3 and 4 traders have turned their attention to African range states and created new networks to recruit middlemen and ground-level poachers. Also, the smaller horn size of the greater one-horned rhinos acts as a significant price cap and reduces the financial reward for each bagged horn. Nearly seven Asian greater one-horned rhinos have to be killed to obtain the amount of horn available on one African white rhino.

Nepal successfully built capacities to reduce wildlife crime. The country's conservation and enforcement approach combines top-down and bottom-up elements. However, while long stretches of zero poaching may lead to Nepal being regarded as a poster child for successful conservation and enforcement, it comes with the challenge that when poaching pressure is absent, feedback loops to continuously improve capacities and enforcement practices are likewise lacking. Nepalese enforcement and conservation agencies need to secure ways to remain alert and maintain a protective edge to effectively enforce wildlife crime in the future.

11 Conclusion

Demand from East Asia has set off a poaching storm across protected areas in Africa and Asia. Poaching syndicates operate under favourable conditions. Their engagement is typically divided into three to five levels or tiers, with locals from impoverished communities at the bottom of the poaching pyramid (Tier 1). While the forms of rhino crimes are similar across South Africa, Namibia and Nepal, each empirical case example displays a unique interplay of regional circumstances, wildlife-crime enablers and a country-specific conservation and enforcement response. The efforts of the three analysed countries to address the illegal killing of high-value species demonstrate different results. Nepal managed to achieve zero poaching during the last four years. Namibia reduced the illegal killing and lost approximately 45 rhinos in 2019. Their rhino populations are slightly increasing. South Africa's poaching storm is still unsustainable, with slightly decreasing populations. However, the country has brought down poaching numbers form over 1,000 rhinos per year to 594 rhinos in 2019. The COVID-19 pandemic has led to a further reduction in rhino poaching.

The national enforcement approach comprises of basic, recurring elements. They reach from target hardening and closing loopholes in the criminal prosecution to addressing social stressors in rural communities. As each national response is unique, this research has presented single case examples in their entirety, however, the analysis also reveals certain policy options that are well suited to soothing the storm across the board as well as recurring weaknesses and loopholes that facilitate syndicated poaching in rhino range states.

Soothing the Storm: A Story of Capacity-Building

When a country is caught in a poaching storm, enforcement capacities to counter that threat need to be developed. The assessment of public and private efforts to soothe the storm is to a large degree an analysis of capacity-building. Biodiversity protection is not high on the political agenda in the Global South. Capacities that deal with environmental crime are only developed to a rudimentary degree, and budgets for conservation and biodiversity protection are scarce. National governments have to deal with other pressing social and economic challenges. In South Africa, rhino poaching is overshadowed by extremely high rates of capital crime.

Besides the availability of resources, capacity-building takes time. South Africa and Namibia had a bumpy start and reacted belatedly, only after poaching numbers sharply

increased. Nevertheless, both countries managed to ramp up conservation and enforcement capacities during the last decade. Likewise, Nepal was caught off-guard by escalating rhino poaching figures during a time of civil war. Besides showing greater determination in addressing wildlife crime, Nepal was in a better position to ramp up enforcement capacities. The country profited from the synergistic effects of the tiger poaching crisis which had peaked before rhino crime escalated. This demonstrates that capacities to protect one species help in guarding other species that live in the same habitats and are being hunted and traded under similar conditions. Likewise, the approach to countering the emerging elephant poaching problem in South Africa and Namibia, from 2014 onwards, was supported by the enforcement capacities that had been developed to protect rhinos.

While each country promotes a specific environmental governance framework and enforcement regime, capacity-building takes place at a local level. This process is characterized by countless efforts of local actors and guided by trial and error. In some regional examples, individual actors make a difference in the struggle against wildlife crime, often by demonstrating high levels of personal commitment and pursuing an effective approach that is embedded in the contextual local structures and cultural values. This might be the vigorous engagement of Nepal's chief warden Kamal Jung Kunwar during the height of the poaching crisis, or compassionate philanthropic support provided by Ralph Koczwara's Hemmersbach Anti-Poaching in South Africa.

Local enforcement capacities need to be innovative as they are in a process of constant competition with offenders who regularly change their *modus operandi* to achieve a proactive position. Due to the nature of threat displacement, poachers will especially target those areas that display weaknesses.

Poaching pressure provides direct and honest feedback upon the actual state of protective capacities at a specific site. It helps to improve conservation and enforcement capacities. However, when poaching pressure is absent, such as in Nepal's current state of zero poaching, the feedback and stimuli to constantly strengthen the protective edge are lacking too.

Ranger Forces: The First Retaining Wall

When a country is hit by a perfect storm, retaining walls need to be established quickly. The central and most immediate task is to employ wildlife guardians in the field who carry out on-site protection. Their primary function is to reduce the speed of the onslaught

by making it harder for would-be offenders to get to the rhino. Even though ranger forces are only curing the symptoms of endemic wildlife crime, they are probably the factor that has saved most of the rhinos to date. Without ranger forces on the ground, the populations in Africa and Asia would have already been decimated. Anti-poaching ranger patrols are a tool that serves to buy time to implement measures that deal with the root causes of poaching.

South Africa and Namibia increased the numbers of, and trained and equipped, wildlife guardians. However, some areas still demonstrate low ranger performance due to a lack of training and equipment. Moreover, complicity with wildlife offenders continues to be a weakness. The ranger profession needs to be upgraded in terms of material and immaterial benefits, but also in terms of status. While the deployment of soldiers in Kruger NP at the eastern border was rather a fruitless task, Nepal successfully deployed army-personnel in key rhino habitats. Nepalese soldiers conduct strict patrolling and display higher standards of morale and a sense of duty.

Intelligence: Combating Wildlife Offenders with Their Own Strength

Gathering intelligence with the help of strong networks of informants in rural villages turned out to be a practical tool for biodiversity protection in both the Asian and African cases. The ability of local villagers to observe and gather information is a rich reservoir that should be harnessed accordingly. Using HUMINT is combating poachers with their own strength, as wildlife offenders display a great deal of talent in mapping out places and infiltrating local actors. Intelligence gathering systems are challenging to establish, but once they are functional, they show good results and facilitate arrests inside and outside protected areas. South Africa is a relevant case example with rising arrest rates outside of Kruger NP. HUMINT has the advantage that poachers can be apprehended before they conduct the crime. Moreover, it helps to confiscate high-calibre hunting rifles, which are scarce on the black-market. Of the three cases, Nepal has exploited intelligence led enforcement most comprehensively to date. This has facilitated a much higher reach into the criminal networks. South Africa and Namibia could benefit from further utilizing and harnessing the potential of intelligence-led conservation by improving collaboration between national agencies and also private sector actors that source intelligence.

The Central Role of Incremental Innovations

To date, the contribution of high-end technology in soothing the storm has been limited.

Drones were once hailed as a silver bullet, but they proved to be costly and cumbersome to handle. Technology transfer initiatives in Africa's protected areas were scattered and mostly driven externally. Implementing NGOs or other external organizations often only had limited project durations. Moreover, protected areas and park authorities need to be tech-ready for a successful technology transfer.

Enforcement personnel and wildlife offenders in the Global South find themselves in a competitive process to expand their strength in order to achieve a proactive position. This is done primarily by developing elementary capacities rather than applying high-end technologies or pursuing radical innovations. Thus, the application of rudimentary technologies has proven to yield greater results for enforcement personnel. The skill to track humans and rhinos, or the ability to infiltrate local communities to gather intelligence, are amongst those incremental innovations that wildlife rangers, but also offenders, seek to professionalize in order to stay ahead of the game.

Local Communities: A Possible Game Changer in 30–50 years

Policymakers, criminal-justice actors and conservation practitioners in South Africa, Namibia and Nepal are recognizing the need to include local communities as a central part of a sustainable conservation model. A major challenge to a widespread application of inclusive conservation programmes is posed by the limited potential to generate value from protected areas. Community-based approaches cannot be drafted on the drawing board as they are highly context-specific. Some of the relevant framework conditions are human population densities around protected areas and the contemporary culture that shapes how local people view nature.

South Africa's Kruger National Park conserves the world's largest rhino population but is a prime example of adverse conditions. In effect, the park's enforcement is modelled after strict target hardening features and can be characterized as having a 'hard edge' towards surrounding villages, with a total population of more than two million people. Kruger's militarized approach is not down to a lack of willingness by SANParks to reach out to and include local villages but results from a lack of viable options.

The empirical case examples have also revealed regional examples with more favourable conditions. Namibia's communal conservancies have developed local environmental governance structures in the past 30 years. Lower populations in the catchment area of the conservancies make it easier to create personal ties and distribute the benefits that conservancies are able to offer. The current COVID-19 pandemic is jeopardizing the

sources of income, foremost among them tourism. Namibia's community conservancies are still susceptible to faults and rhinos have been poached on communal land. However, communal areas demonstrate better enforcement results in relation to rhino crimes than protected areas or private reserves. CBNRM makes law enforcement cheaper, mostly as a result of villagers working alongside enforcement agencies and the values they represent rather than against them.

Additionally, the roll-out of community-based approaches offers valuable entry-points for environmental NGOs and international actors. The NGOs Rhino Trust International in Namibia and Wild and Free in South Africa and Mozambique apply smart programmes, that are specifically tailored to relevant target groups, especially young men from local, impoverished 'poaching villages'. With the help of simple environmental education measures and social initiatives, these NGOs support young men to break out of a cycle of alcohol-fuelled dependency that could lead them to engage in rhino crime. However, while initiatives by NGOs and other external actors serve as positive pilots, they have so far failed to achieve widespread impact.

The Nepalese case example illustrates that one of the greatest assets in soothing the storm is a favourable contemporary culture towards nature conservation. This is supported by sound environmental governance structures in Nepal's buffer zones which strengthen local villages as stakeholders of wild habitats. Community-based conservation has the advantage of addressing root causes of illegal exploitation of wildlife. Scholars and practitioners can only take wild guesses on the length of time that may be required for the effective roll-out of community-based programmes at a specific site, however, it is clear that the process is labour and time intensive. It is possible that individual projects could have a time horizon of more than 30 years.

Loopholes in the Judicial System

Penalty provisions for the illegal killing of high-value species have been tightened and there have been efforts to harmonize environmental law between countries. However, even when harsh and stringent laws are in place, there is a tendency from police and judiciary officials to dismiss wildlife crimes. Criminal-justice actors in some cases fail to take decisive action even if poachers and members of criminal syndicates are known to them. Enforcement agencies tend to concentrate on low-level criminals while failing to arrest key members of criminal enterprises or those higher in the illicit trade chain that are the driving force between operations and make most of the profits. Offenders who are

involved in large trafficking incidents should not be granted bail as they are often able to pay the bail and then leave the country. However, plea bargains and leniency should be used to obtain valuable information from low-level offenders to build a case against middlemen and criminal syndicate leaders. Nepal has taken more decisive action. During the height of their poaching crisis, the chief warden of Nepal's greatest rhino conservation area was equipped with extra-judicial powers. While this can be problematic for a division of powers in a state under the rule of law, it served to establish a quick and effective jurisprudence during a time of rampant rhino crimes.

Transnational Cooperation

A recurring feature amongst the case examples was poaching pressure that emanated from neighbouring countries, especially when those countries have relatively weaker socio-economic indicators and poor governance structures. South Africa's Kruger NP is particularly affected by poachers trespassing from Mozambique. Range states acknowledge the need for transboundary law enforcement. South Africa, Namibia and Mozambique have started to coordinate efforts through the SADC platform, and Nepal is collaborating with its neighbours via the SAWEN network.

Source countries of rhino horn can harness potential when they engage in South-South cooperation. Each country has assets to support national and transboundary capacity-building. South Africa has a vibrant security sector and can contribute with experience in enhancing ranger capacities. Namibia can look back on fruitful expertise in building governance structures around the management of communal conservancies. Nepal is strong in a broad variety of areas, from intelligence-led conservation to widespread engagement of civil-society for rhino conservation.

Reducing Demand and Legalizing Horn

This research has looked at combating wildlife crime under conditions of continued Asian demand. Nevertheless, reducing international demand for illegal wildlife products would effectively ease the storm. The COVID-19 pandemic has effectively lowered demand for the present moment and international traders are facing challenges in moving contraband across borders. Also, Tier 5 consumers are more difficult to reach at present. China has proposed the banning of local wildlife markets in order to reduce the risk of zoonotic diseases. However, this does not apply to traditional Chinese medicine and rhino horn. It is likely that criminal actors will resume their activity when the first dust of the current

pandemic settles.

Legalizing rhino horn for international markets could offer a viable alternative. Certainly, there are risks and imponderables involved, but also great potential. With a legal market, communities could periodically dehorn their rhinos to source income for much needed conservation projects and the support of basic local infrastructure and livelihood projects.

Situational Crime Prevention and Threat Displacement

Besides specific tools and enforcement areas, as evaluated in previous sub-chapters, this thesis has identified recurring systematic aspects that need to be considered in a comprehensive policy approach to soothing the storm.

Many of the measures that conservation and enforcement actors apply follow the logic of situational crime prevention, foremost by using target hardening techniques. These measures demonstrate success at a local level, but they also displace crime. Especially within national borders wildlife offenders display a high degree of mobility and target the weak spots. Threat displacement also takes place between neighbouring countries, and with time-lags, globally between Asia's and Africa's rhino populations. It remains unknown to what degree target hardening reduces the overall level of rhino poaching and how much it only displaces crime.

Within national borders, criminal opportunities are influenced by a variety of factors, such as forms of land-governance, the size of the terrain and surrounding communities. National governments in South Africa and Namibia should strengthen those actors that display weaknesses in their enforcement approach. Significant resources have gone into government-owned areas, such as Kruger NP in South Africa. Private landowners are currently receiving little government support for conservation and on-site enforcement measures. Their contribution to the survival of the rhino species is currently not acknowledged in proportion to their efforts.

Dehorning is the conservation-tool that is most strongly affected by threat displacement. In order to reap the potential benefits of dehorning, a country-wide application is needed. In South Africa, state agencies have recently changed their policy-approach towards dehorning and some of the larger conservation areas have conducted dehorning procedures. Ironically, nature also makes use of situational crime prevention. Greater numbers of elephants in Mozambique are born without tusks. Nepal's rhinos face lower poaching pressure in a global perspective due to their smaller horns.

Breaking the Resilience of Criminal Poaching Syndicates

Conservation practitioners and criminal-justice actors can exploit various possibilities when disrupting the current criminogenic environment that is supportive of the longevity of syndicated rhino poaching. Social programmes for young men in impoverished villages seek to disrupt recruitment of new poachers. Reducing corruption risks intends to limit the syndicates' ability to act. A broad variety of factors and levels that play into the hands of syndicates need to be addressed.

However, targeting central players ranks amongst the most effective policy approaches. Higher-tier operatives are not easy to replace. They tend to be more risk-averse and there would be a greater level of deterrence if effective enforcement regimes were in place. Tier 1 participants, in contrast, come from a harsher environment and don't have much to lose anyway. Despite the sizable number of poachers that are killed in Africa's protected areas, poaching pressure continues unabated.

Nepal serves as a positive example where enforcement officials relentlessly continued to reach higher into criminal networks. Entire criminal networks have been taken out of work. While this is still a weak spot in South Africa and Namibia, both countries are undertaking efforts to sharpen their criminal investigation and prosecution capacity.

Parallel to this, the resilience of poaching networks should be reduced by targeting the profits of criminal groups. This also requires close cooperation between the customs of range, transit and destination countries of illegal wildlife products, which has only developed to a rudimentary level to date.

Zero-Poaching and Shutter Criminal Syndicates

Nepal is a prime example of the possibility of achieving zero poaching after experiencing soaring rhino deaths, and in particular, demonstrates that a nation does not need to get all elements of its conservation and enforcement approach right. The country achieved zero rhino poaching despite deep-seated rural poverty, staggering corruption and porous national borders. However, Nepal's enforcement approach is built on a strong foundation, foremost a favourable culture towards wildlife and conservation. Positive feedback loops result from effective enforcement and conservation policies. Amongst these are viable benefit-sharing programmes with local communities, rigorous on-site protection and effective intelligence gathering.

The Nepalese example also displays a dynamic element. The country cracked down on several rhino poaching syndicates in their entirety. A state of zero poaching can be an

equilibrium when law enforcement has cracked down on a critical mass of syndicates and criminal groups. This can serve as a threshold to prevent the emergence of new poaching networks. It also implies that once criminal networks are operational, it takes intensified effort for enforcement agencies to shut them down as criminal actors develop the experience and resilience to operate and survive even under less than optimal conditions.

Bottom-Up Versus Top-Down

When evaluating different policies and approaches to soothing the storm, an area of tension exists in relation to the effectiveness of each measure and its required time-horizon for implementation. Those measures that promise high sustainability, as they deal with root causes of environmental crime, are foremost softer, bottom-up measures. Community-based conservation or environmental education programmes change the criminogenic environment, as well as the contemporary culture, to the disadvantage of criminal syndicates. Development policies that reduce deep-seated rural poverty and social inequality also reduce core enablers of wildlife crime. These approaches come with the disadvantage that they require a long timeframe for their effective implementation, and unfortunately, some of the framework conditions are likely to deteriorate in the future. The COVID-19 pandemic will likely worsen economic and social indicators in rural villages. Conservationists and a rather small enforcement community are reaching their limits when dealing with basic enablers of wildlife crime, such as poverty and social inequality.

However, there are those methods that primarily cure the symptoms of rhino poaching, such as employing field rangers in the field or reducing rewards by dehorning. Many of these target hardening measures belong to the logic of top-down approaches and can be implemented in a foreseeable timeframe. However, regulatory approaches are being overwhelmed by the deep-rooted drivers of wildlife crime.

Top-down and bottom-up approaches are highly dependent on each other. Without top-down enforcement at key poaching sites, rhinos would have probably vanished in many reserves. This would render environmental education initiatives obsolete. On the other hand, when socially driven bottom-up approaches in surrounding communities are lacking, enforcement can continue to spend millions on protecting rhinos without seeing a long-term reduction in poaching pressure. Care should be taken to ensure that these approaches don't affect each other negatively. Enforcement actors should be careful not to further undermine strained park-people relations. 'Shoot on sight' is not a viable tool

to soothe the storm as it aggravates the social situation in rural communities. However, current scholarly contributions that portray 'green militarization' as a central contributing element to rhino poaching are exaggerating. Amongst the many factors that lead young men to engage in rhino crime, frustration about militarized enforcement inside protected areas plays a minor role.

Comprehensive Approach: Reciprocal Effect, Interdependencies

The different methods, that are used to soothe the storm complement each other. Policymakers and policy implementers need to balance and combine them in a comprehensive and broad-based approach. Different areas of a national enforcement and conservation approaches can positively or negatively affect each other. One example of positive synergies are favourable park-people relations that support law enforcement agencies to identify poachers. When enforcement officials manage a crime scene professionally and secure admissible evidence, it helps downstream actors of the criminal justice system to hand down effective penalties. Moreover, enforcement need to recognize the symbiotic relationship between environmental crime and other forms of crime, such as financial crime, corruption and transnational organized crime.

A Way Forward: Make it a Success Story

Nepal has managed to soothe the storm for the present moment.

The COVID-19 crisis has further reduced rhino poaching in South Africa and Namibia in the short run, due to the lock-down and increased presence of military and police. However, due to enhanced poverty, it will increase the motivation of the economically deprived to engage in wildlife crime in the long run. The current lull might only be temporary as criminal networks are known to be agile and might resume their activities once the first dust has settled.

South Africa and Namibia need to continue on the path of a broad-based capacity-development to effectively police wildlife crime. Dehorning on a massive scale would be advisable, combined with an expanded presence of rangers. Both countries should continue to harness intelligence and professionalize their criminal prosecution with a special focus on breaking the resilience of poaching syndicates. A wide range of actors, including development cooperation and philanthropic support, is needed for continued support at the policy-level and on the ground. Capacity-building is a stony path. It is unlikely that South Africa and Namibia will effectively close enforcement loopholes in

the foreseeable future. Both countries will probably struggle with rhino poaching in the near future of five to 10 years, and possibly longer.

However, even when challenges remain, conservation and enforcement actors in Nepal and Namibia, but also in South Africa, are turning the tide and find themselves to have the upper hand in the protection of rhinos. White and black rhinos in southern Africa, as well as greater one-horned rhinos in South Asia, will not die out in the foreseeable future. This stands in contrast to many countries with weaker governance and poor socio-economic indicators, such in central Africa, that have already depleted most of their wildlife.

Every crisis bears opportunities. The current poaching crisis involving flagship species should serve to create momentum and policy-support to fundamentally rethink and restructure park-people relationships. Natural habitats and their wildlife economies need to create sustainable value opportunities while preserving the ecological integrity of national parks and protected areas. Environmental education programmes should seek to influence the contemporary culture towards wildlife. Besides flagship species, the spotlight should be broadened to include many of the smaller animals that are increasingly being hunted for bushmeat. Changing the contemporary culture of how people see wildlife will take decades. It will also depend on economic development for the marginalized and those who currently have few prospects of upward-mobility.

Population pressure and growing poverty in Africa's rural areas will not make it easier to restructure park-people relationships. Political leaders might decide to convert protected areas into land for intensive human use. Efforts to soothe the rhino poaching storm could help ease the biggest threat for wildlife in the long-term: the loss of habitat due to the ever-sprawling growth in the number of humans. Natural habitats need to be embedded as an integral part of a society and a country. Wildlife economies need to be diversified beyond tourism. Creating structures in favour of wildlife will give conservationists and enforcement officials the upper hand in 30 to 50 years.

In retrospect, a poaching storm that does not deplete a species but increases sustainable conservation capacities could be a boon for wildlife. Until then, there is still a long way to go.

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13 Annex

Table 32: Interviews Namibia

Dates of the field research:
From the [redacted] and the [redacted]

	Name	Organisation	Date	Place
1	[redacted]	[redacted]	[redacted]	[redacted]
2	[redacted]	[redacted]	[redacted]	[redacted]
3	[redacted]	[redacted]	[redacted]	[redacted]
4	[redacted]	[redacted]	[redacted]	[redacted]
5	[redacted]	[redacted]	[redacted]	[redacted]
6	[redacted]	[redacted]	[redacted]	[redacted]
7	[redacted]	[redacted]	[redacted]	[redacted]
8	[redacted]	[redacted]	[redacted]	[redacted]
9	[redacted]	[redacted]	[redacted]	[redacted]
10	[redacted]	[redacted]	[redacted]	[redacted]
11	[redacted]	[redacted]	[redacted]	[redacted]
12	[redacted]	[redacted]	[redacted]	[redacted]
13	[redacted]	[redacted]	[redacted]	[redacted]
14	[redacted]	[redacted]	[redacted]	[redacted]
15	[redacted]	[redacted]	[redacted]	[redacted]
16	[redacted]	[redacted]	[redacted]	[redacted]
17	[redacted]	[redacted]	[redacted]	[redacted]

18	[redacted]	[redacted]	[redacted]	[redacted]
19	[redacted]	[redacted]	[redacted]	[redacted]
20	[redacted]	[redacted]	[redacted]	[redacted]
21	[redacted]	[redacted]	[redacted]	[redacted]

Table 33: Interviews Nepal

Dates of the field research: [redacted]

	Name	Organisation	Date	Place
1	[redacted]	[redacted]	[redacted]	[redacted]
2	[redacted]	[redacted]	[redacted]	[redacted]
3	[redacted]	[redacted]	[redacted]	[redacted]
4	[redacted]	[redacted]	[redacted]	[redacted]
5	[redacted]	[redacted]	[redacted]	[redacted]
6	[redacted]	[redacted]	[redacted]	[redacted]
7	[redacted]	[redacted]	[redacted]	[redacted]
8	[redacted]	[redacted]	[redacted]	[redacted]
9	[redacted]	[redacted]	[redacted]	[redacted]
10	[redacted]	[redacted]	[redacted]	[redacted]
11	[redacted]	[redacted]	[redacted]	[redacted]
12	[redacted]	[redacted]	[redacted]	[redacted]
13	[redacted]	[redacted]	[redacted]	[redacted]
14	[redacted]	[redacted]	[redacted]	[redacted]

15	[redacted]	[redacted]	[redacted]	[redacted]
16	[redacted]	[redacted]	[redacted]	[redacted]
17	[redacted]	[redacted]	[redacted]	[redacted]
18	[redacted]	[redacted]	[redacted]	[redacted]
19	[redacted]	[redacted]	[redacted]	[redacted]
20	[redacted]	[redacted]	[redacted]	[redacted]
21	[redacted]	[redacted]	[redacted]	[redacted]

Table 34: Interviews South Africa (and Mozambique)

Dates of the field research: [redacted]; in Mozambique from [redacted]

	Name	Organisation	Date	Place
1	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]
2	[redacted]	[redacted]	[redacted]	[redacted]
3	[redacted]	[redacted]	[redacted]	[redacted]
4	[redacted]	[redacted]	[redacted]	[redacted]
5	[redacted]	[redacted]	[redacted]	[redacted]
6	[redacted]	[redacted]	[redacted]	[redacted]
7	[redacted]	[redacted]	[redacted]	[redacted]
8	[redacted]	[redacted]	[redacted]	[redacted]
9	[redacted]	[redacted]	[redacted]	[redacted]
10	[redacted]	[redacted]	[redacted]	[redacted]

11	[redacted]	[redacted]	[redacted]	[redacted]
12	[redacted]	[redacted]	[redacted]	[redacted]
13	[redacted]	[redacted]	[redacted]	[redacted]
14	[redacted]	[redacted]	[redacted]	[redacted]
15	[redacted]	[redacted]	[redacted]	[redacted]
16	[redacted]	[redacted]	[redacted]	[redacted]
17	[redacted]	[redacted]	[redacted]	[redacted]

Note on anonymization:
For the purpose of publication and in order to protect the privacy and security of the interviewed experts, identifying information in this annex has been anonymized. This includes names, institutional affiliations, locations, and dates of interviews. The anonymization does not affect the methodological integrity, empirical basis, or conclusions of the study.