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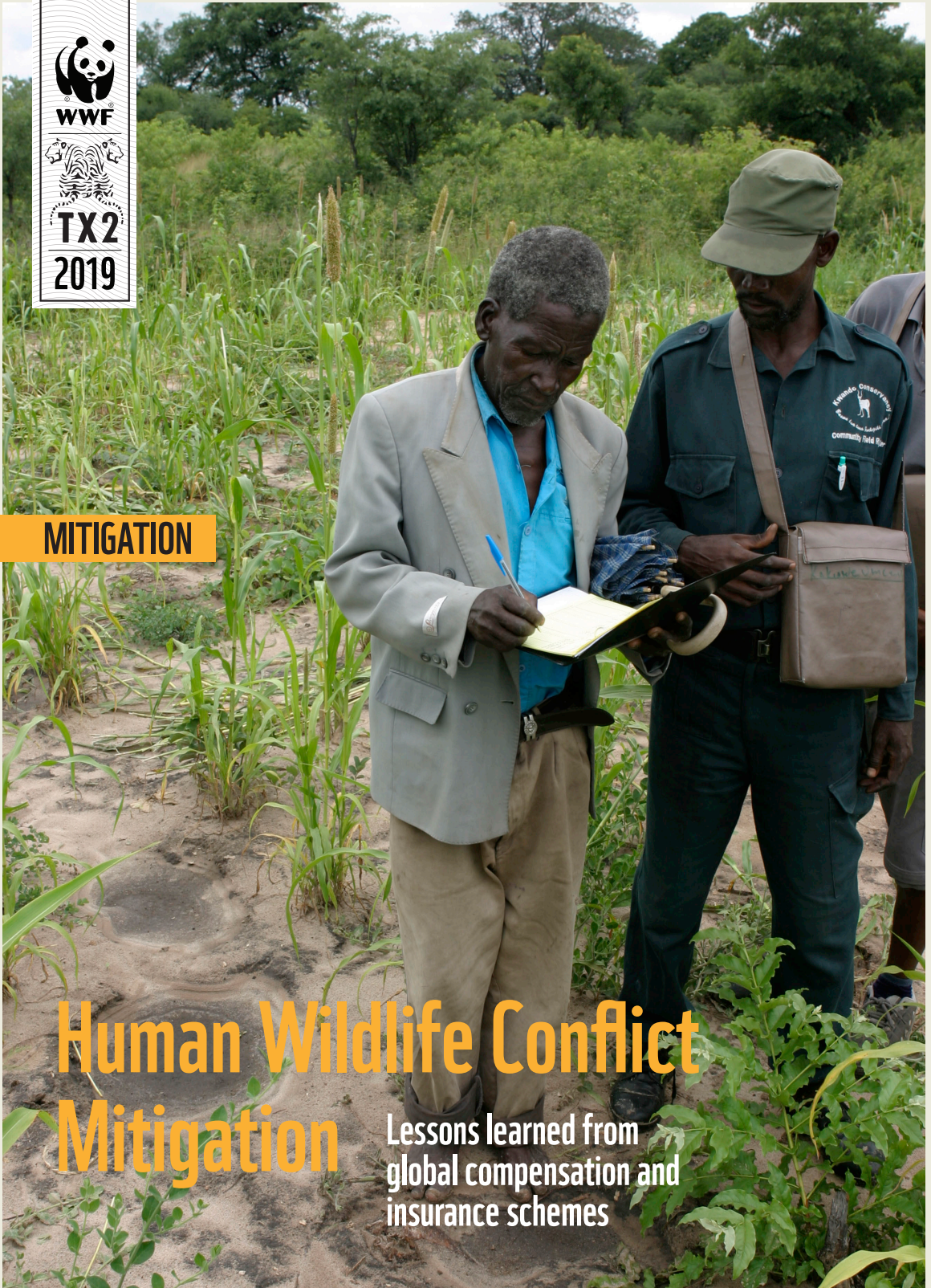
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2019

MITIGATION

Human Wildlife Conflict Mitigation

Lessons learned from global compensation and insurance schemes



Key contributors:

This study was supported by WWF's Tigers Alive, with expert review of the report provided by Paul Steele (Chief Economist, International Institute for Environment and Development). We are also particularly grateful to the following experts and practitioners who gave their time and expertise throughout the research:

Peter Adams, Microinsurance Advisor
Esteban Aguel, Microinsurance Advisor
Herman Aindongo, WWF Namibia
Harendra Singh Bargali, Corbett Foundation India
Onon Bayasgalan, WCS Mongolia
Gabor von Bethlenfalvy, WWF Switzerland
Shiv Raj Bhatta, WWF Nepal
Ajay Bijoor, Nature Conservation Foundation India
Jimmy Borah, Panthera India
Richard Diggle, WWF Namibia
Soumen Dey, WWF India
Sangay Dorji, National Plant Protection Centre Bhutan
Dipankar Ghose, WWF India
David Greer, WWF Africa Great Ape Program
Jyotirmay Jena, WWF India
Harshad Karandikar, University of California Berkeley USA
Sybille Klenzendorf, WWF Germany
Femke Hilderink – Koopmans, WWF Netherlands
Bibhuti Lahakar, Aaranyak India
Phurba Lhendup, WWF Bhutan
Vijay Moktan, WWF Bhutan
Khalid Pasha, WWF Tigers Alive
Lindsay Patterson, University of KwaZulu-Natal South Africa
Olga Perladova, WWF Russia
Yeshey, WWF Bhutan
Gert Polet, WWF Netherlands
Shant Raj, WWF Nepal
Britta Rendlen, WWF Switzerland
Niki Rust, Newcastle University UK
Rishi Kumar Sharma, WWF India
Hussain Shafqat, Trinity College Hartford USA
Sandeep Sharma, Smithsonian Institute USA
Kun Shi, Beijing Forestry University China
Anil Singh, WWF India
Kulbhushansingh Suryawanshi, NCF India
Kanchan Thapa, WWF Nepal
Sandeep Tiwari, Wildlife Trust of India
Natalia Trofimova, WWF Russia
Ugyen Tshering, Ministry of Agriculture and Forests Bhutan
Nasir Uddin, WildTeam Bangladesh
Elleni Vendras, Frankfurt Zoological Society
Matthew Walters, WWF Namibia

Suggested citation:

Leslie, S., Brooks, A., Jayasinghe, N., & Koopmans, F. (2019) Human Wildlife Conflict mitigation: Lessons learned from global compensation and insurance schemes. HWC SAFE Series. WWF Tigers Alive.

Authors:

Sam Leslie, Independent Researcher.
Ashley Brooks, WWF Tigers Alive Initiative, WWF Australia, Sydney.
Nilanga Jayasinghe, Senior Program Officer, Asian Species, WWF USA, Washington.
Femke Hilderink – Koopmans, Advisor Wildlife Conservation, WWF Netherlands, Zeist.

Report prepared by: WWF Tigers Alive.

Published in: 2019 by WWF – World Wide Fund for Nature (Formerly World Wildlife Fund), Gland, Switzerland. Any reproduction in full or in part must mention the title and credit the above-mentioned publisher as the copyright owner.

Front cover: Local farmer Moses Maseku reporting damage in the Conservancy's event book, after his sorghum field had been raided by elephants the night before. Fresh elephant track are still visible. The event book is not only used for gathering statistical data but also serves as a basis for compensation through the Conservancy. Sikaunga, Kwandu Conservancy, East Caprivi, Namibia. Photo: Folke WULF.

Design: millerdesign.co.uk

For more information please contact:

Ashley Brooks, abrooks@wwfnet.org



Mitigation

The Six Elements of conflict exist in all HWC contexts. Actions in each element must be included within any HWC management program for it to be effective. The HWC Mitigation element includes all the tools and techniques to reduce the impacts – financial, psychological, resource, livelihood, production, services etc. – of HWC after an incident occurs. The overarching purpose of mitigation mechanisms is to provide a buffer (e.g. compensation, healthcare, or alternative income sources to fall back on) to people when an event occurs, and to temper people’s responses and maintain tolerance to wildlife.

HWC mitigation takes many forms with the majority being financially focused and can be categorized into three types: economic incentives to increase tolerance to wildlife; alternative livelihoods and income diversification to spread or avoid financial risk; and payments tied to incidents.

Beyond the immediate benefits of mitigation, enhancing mitigative efforts also enhances all the actions in the other elements of conflict. i.e. better mitigation means better overall management and a long-term decrease in HWC: mitigation schemes should always be linked to a behaviour change or preventative action; mitigation will only be effective with robust and trusted data collection which helps to strengthen HWC monitoring frameworks; the enhanced information collected can better contribute to policy development and budgetary allocation; active face to face engagement and follow-up after HWC events – critical to scheme designs – builds empathy and stakeholder trust, and enhances reporting and people’s participation in schemes.

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EXECUTIVE SUMMARY

Compensation and insurance schemes have been widely used as a tool to mitigate the impacts of Human Wildlife Conflict (HWC). When utilized in species conservation programs, mitigation mechanisms aim to offset negative attitudes of those impacted by or fearful of HWC, increase local tolerance, and ultimately reduce the likelihood of retaliatory killings of wildlife. Compensation is defined as: payments tied to incidents and are either fully or partially funded by an external agency. Some partial community funding for payments or scheme administration can also be common. Insurance is defined as: payments tied to incidents and are funded at least partially through premium / membership payments made by policyholders before incidents occur as an agreement that specified damages will be paid for by an insurer should damage occur. Insurance schemes are most commonly voluntary and require policyholders to contribute at least the partial costs of premiums. HWC compensation and insurance schemes have not been comprehensively implemented or adequately evaluated, and improved efforts toward monitoring and impact evaluation must form part of their design in the long term. This review suggests that compensation and insurance schemes are a critical part of any HWC management program and can achieve positive conservation outcomes when tailored to local settings.

This report is the culmination of research into compensation and insurance models in general, with a focus on HWC specifically. The initial review was used to guide a deeper analysis of twelve global case studies where insurance or compensation are utilized as part of a conservation goal relating to a conflict species.

Despite the wide variety of HWC contexts globally, all HWC compensation and insurance schemes share the same basic components (Table 1) that allows for comparison between their design and implementation, as well as collation of the lessons in this report.

Table 1:
Common components
within all compensation
and insurance schemes.

Impacted person	This could be the victim/s, or the owner of an asset lost/damaged	Valuation	The pre-determined or agreed monetary or replacement value of the asset to be compensated
Eligible HWC incident	Pre-determined or agreed incidents that are covered by the scheme	Scheme administration	Could be run by communities, private insurance companies, government or a combination of
Covered wildlife species	Only damage/loss from designated species will be covered by the scheme	Scheme funding	The funding source could come from outside the location (e.g. from civil society), government, private sector, or via membership
Reporting	This could be in-person, phone call or SMS	Payment timing	Could be immediately after an incident, or at designated timings throughout the year
Verification agent	These might be rapid response teams, rangers, police, or insurance agents	Payment type	Could be insurance (based on membership) or compensation (based on an agreed scheme or policy)

All schemes can be evaluated against eight criteria for success. The common design and implementation challenges emerging from this research for each criterion are:

Success criteria 1: Quick and accurate verification of damage. Common challenges to this include low levels of reporting, no reporting mechanism, slow response times to verify incidents, inaccurate identification of species involved, fraudulent claims, and a lack of social training for verification agents.

Success criteria 2: Prompt and fair payment. Common challenges include slow payment processes leading to a lack of faith and reason to participate in the scheme, and insufficient payment amounts also leading to lower participation.

Success criteria 3: Sufficient and sustainable funds. Many schemes do not have a clear understanding of the actual cost of HWC, or the intensity or rates of HWC because of a lack of monitoring mechanisms. The result is designed without sufficient funds or members to sustain the scheme in the long term.

Success criteria 4: Site specificity. Many schemes do not have sufficient understanding of the HWC profile to fit the local context. Community surveying to determine risks of retaliatory killing, or even consideration of alternatives to insurance and compensation schemes are often not undertaken.

David Leto, African elephant officer for WWF-Kenya, working with Oloisikut Conservancy rangers to mitigate human wildlife conflict. Oloisikut, Kenya. Photo: Greg Armfield





Polar bear looking for food at oil field, Tobolski oil field, Russia.
Photo: Aleksei Volkov

Success criteria 5: Clear rules and guidelines. Communities targeted by schemes often have low awareness of the scheme’s goals or the implications of participating. Stakeholder participation in design and throughout implementation, in order to facilitate mutual understanding, is often missing.

Success criteria 6: Connection to prevention. Participation in schemes and, therefore, eligibility for compensation or insurance is often not linked back to preventative measures or behaviour change. Eligibility for payments must be conditional on the participant also undertaking certain preventative actions. This is not often an explicit focus of schemes but is vital to long term minimization of HWC.

Success criteria 7: Stakeholder trust. Trust in the scheme and administrators is vital for the scheme’s long-term function and conservation goal. A key indicator of trust in a scheme is the participation rates, which are often much lower than they should be (i.e. relative to those who are impacted by HWC in that area). Transparent, responsive, and fair governance of schemes with grievance processes in place are vital to encourage and maintain participation.

Success criteria 8: Ability to measure success. Many schemes lack clear and measurable objectives and, therefore, struggle to adequately measure progress, assess impact, or adapt to crises.

THE SAFE APPROACH

The SAFE Approach to HWC is results-focussed and delivered through five Strategic Outcomes: **safe person, safe assets, safe wildlife, safe habitat, and effective monitoring**. Using lessons from global transport safety systems, this is a paradigm shift away from existing approaches to human wildlife conflict globally that address only individual aspects of conflict have no way to address the safety of the system into the future. Existing HWC strategies often focus on “resolving” and “mitigating” conflict, though these are either too simplistic or short-sighted, or address only a part of the problem and at only specific times of a conflict event.

The SAFE approach ensures that: a) all six elements of HWC are integrated (refer next section for details), b) that the Strategic Outcomes act as minimum standards for HWC management, and c) that if each of the five Strategic Outcomes are met, then contact between humans and wildlife is minimized, and both can be safe in the event of contact within acceptable limits of tolerance.

A SAFE approach to HWC: provides a **holistic** view of the conflict in its entirety; is **inclusive** in that it encompasses all the interactions between the people, their land, their livelihoods, decision-makers, commercial and government interests, and wildlife; and is **forgiving** as it accommodates human error and the “wildness” of the species involved and that conflict events will never be zero. The Safe System approach has four guiding principles:

1. It recognizes that wildlife are wild and conflict will occur. When conflicts occur, however, the interventions across the system should ensure that the impact of an incident does not exceed the limits of community tolerance and does not result in retaliatory killing.
2. It stresses that individuals, communities, leaders, and the public involved in the design of the system need to accept and share responsibility for the safety of the system, and those that use the system must accept responsibility for complying with the rules and constraints of the system.
3. It aligns conflict management decisions with wider development plans and processes that contribute to economic, human, and environmental goals.
4. It guides interventions to meet the minimum standards and long-term goals, rather than setting specific targets.



Figure 1
The six elements of conflict.

The six elements of conflict and integrated HWC management

The complexity of HWC warrants a coordinated suite of responses. Despite decades of research, piloting, and financial investment, the lack of a fundamental understanding of what drives HWC, and effective management measures at scale remain. This is largely due to HWC being dynamic in space and time and driven by a complex combination of social (including gender, religion, media, finance etc.), ecological, climatic, political, and economic forces. And while these forces change and are spatially distinct, the basic fact is that we know what these forces are.

Actions to minimize conflict globally have taken on many forms. These include the development of community-based insurance/relief schemes, fencing, deterrents, and legal protocols for dealing with dispersing tigers, community education, hotspot mapping, barriers, deterrents, and the use of rapid response teams as first responders following conflict events. Many of these tools have remained unchanged for thousands of years in many communities (e.g. the fence, the shepherd, and the scarecrow). All conflict actions can be grouped into six conflict elements: policy, prevention, mitigation, understanding the conflict, monitoring and response (Figure 1). The lack of impact up till now can be attributed to the fact that HWC actions have been implemented in isolation of each other, have not considered HWC as a system, or project designs have only a singular focus on one element. An integrated approach to HWC means that managers recognize that HWC is a system, and that the six elements must be accounted for in any management program, and none should be implemented in isolation. As an

integrative system, actions and lessons in each element inform and reinforce actions in the other elements, and the fundamental effectiveness of the approach is contingent on actions in *all elements* being implemented concurrently. Actions within some elements will require tested and transferable methodologies (e.g. in barriers or hotspot mapping), while other areas will require detailed protocols, national frameworks, and decision-trees to be developed from scratch.

There are a growing number of studies that assess the effectiveness of activities to help deal with HWC¹⁻⁴. Some studies have also mentioned the importance of co-management in managing HWC⁵⁻⁷. However, managing HWC often requires applying a variety of approaches in parallel to achieve the desired impact⁸. For example, making it illegal to kill an animal involved in the conflict will not prevent animal deaths without government capacity to enforce the law or general community support for its implementation. So, actions to manage HWC need to be looked at as part of an integrated approach rather than in isolation. There are a range of components and actions within each of the six conflict elements (Table 2). All actions may not be appropriate for managing every HWC situation, but they can be a useful reference point for teams considering what combination of approaches to apply.

As part of a broader series of research reports delving into all the elements of conflict, this report focusses on lessons on a single element – Mitigation: reducing the impacts of HWC after it occurs. While this report centres on mitigation, essential linkages with other elements are highlighted where relevant.

Destroyed water pump because of African savanna elephant attack, Torra Conservancy, Kuene region, Namibia.
Photo: Joanna Benn



Table 2:

Definitions of each HWC element and typical components of each.

POLICY

PROTOCOLS, PRINCIPLES, PROVISIONS AND MEASURES UNDERTAKEN BY AUTHORITIES WHICH ARE STIPULATED IN LEGISLATION AND GOVERNMENTAL PLANS

- International and national law
- Wildlife and forest crime policies
- National and local HWC strategies and management plans
- Translocation and response mandates
- Insurance and compensation policies
- International collaboration for transboundary areas
- Spatial plans

PREVENTION

STOPPING OR PREVENTING HWC BEFORE IT OCCURS

- Community education
- Livestock and crop management
- Law enforcement
- Barriers and deterrents
- Safe working environments
- Habitat management
- Land use planning
- Early warning systems
- Removal or translocation of problem animals

MITIGATION

REDUCING THE IMPACTS OF HWC AFTER IT OCCURS

- **Compensation programs***
- **Insurance schemes***
- Alternative livelihoods
- Livelihood diversification
- Benefit sharing

RESPONSE

MEASURES TAKEN TO ALLEVIATE A SPECIFIC OR ONGOING HWC INCIDENT

- Response Teams
- Reporting Mechanisms
- Standard Operating systems
- Removal or translocation of problem animals
- First aid
- Crowd control

UNDERSTANDING THE CONFLICT

RESEARCH INTO ALL ASPECTS OF THE CONFLICT PROFILE

- Hotspot mapping
- Spatial and temporal characteristics
- Social characteristics and community attitudes
- Severity and impact monitoring
- HWC research – social, biological, climatic

MONITORING

MEASURING THE PERFORMANCE AND EFFECTIVENESS OF HWC MANAGEMENT INTERVENTIONS OVER TIME

- Monitoring success
- Feedback
- Information sharing
- Adaptive management

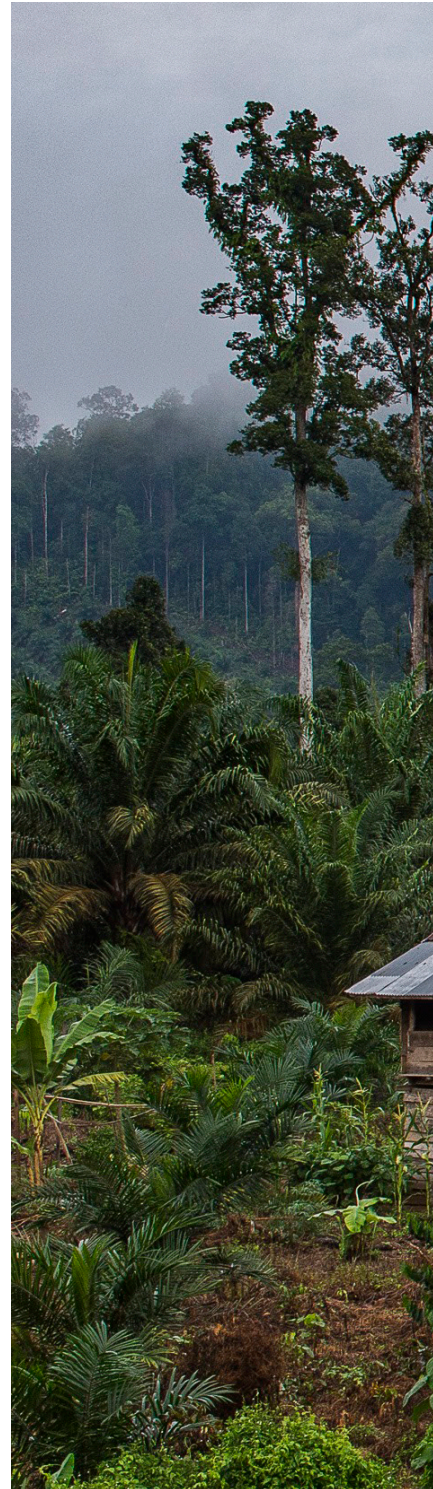
NB: * the subject of this report.

MITIGATION - PAYMENTS TIED TO INCIDENTS

The HWC Mitigation element includes all the tools and techniques to reduce the impacts – financial, psychological, resource, livelihood, production, services etc. – of HWC after an incident occurs. A variety of mechanisms are employed globally in this vein. When utilized as tools to benefit species conservation, mitigation mechanisms aim to offset the decline or loss of tolerance of people who are impacted by HWC incidents, eventually increasing local tolerance for wildlife and reducing retaliatory killings of wildlife. The majority of HWC mitigation mechanisms are financially focused and, from a conservation standpoint, can be broadly divided into three categories: economic incentives to increase tolerance to wildlife; alternative livelihoods and income diversification to spread or avoid financial risk; and payments tied to incidents.

This report provides an in-depth exploration of the “payments tied to incidents” category, and specifically compensation and insurance schemes. The report examines lessons learned and recommendations for their successful design and implementation in the context of SAFE (For a discussion of additional approaches, such as economic incentives to increase tolerance, alternative livelihoods and income diversification, refer Annex Report, Section 1).

Community areas on the fringes of the Rimbang Baling Wildlife Sanctuary, Sumatra Indonesia.
Photo: Ola Jennersten, WWF Sweden





1. INTRODUCTION

The objectives of the report are:

- To review global compensation and insurance schemes and discuss common challenges and solutions;
- To explore case studies against identified criteria for success and discuss lessons and recommendations for the design and implementation HWC insurance and compensation schemes.

1.1 Human Wildlife Conflict – a chronic and growing challenge

Human Wildlife Conflict (HWC) refers to all cases in which interactions between people and wildlife lead to negative impacts to both sides through fear, injury, death, or loss of property or livelihoods (WWF Network HWC Working Group definition, 2015).

Human activities (e.g. land use change, agriculture, animal husbandry, habitat clearing, natural resource collection, recreational activities, and predator or natural prey extirpation, etc.) may have set the stage for conflict. However, from a species conservation standpoint, it is not until people perceive that they are being negatively impacted by wildlife activities that the term HWC is used⁹. The most common HWC incidents are livestock loss; crop loss; human injury and death; and structural/property damage. All of which can be measured through economic, asset or human loss. HWC incidents can also be much less immediate or tangible, and result in disease transmission to livestock (and in some cases humans); perceived competition for resources (e.g. forage for livestock, game species for sport hunting, and for marine resources); or the creation of fear among community members. How people react to these incidents can also lead to local issues of species extinction, exacerbate issues of poverty, social issues, and stakeholder disengagement from broader environmental and development initiatives^{7,10-12}.

HWC occurs wherever overlap of people and wildlife is perceived to pose a threat to human safety, welfare, property, or livelihoods¹³. These conflicts can have a significant impact on species conservation as, historically, human responses to HWC incidents have been the retaliatory killing, or the long-term elimination of the species perceived to threaten lives and livelihoods¹⁴. In addition to the primary threats to iconic endangered species (poaching and habitat loss), HWC is a key contributor of species decline and possible extinction in a given area.

Species that are serial HWC offenders also become a primary focus of communities because their impact is immediate and visual, which can create fear and animosity in ways that more chronic threats to livelihoods (e.g. soil erosion or climate change) do not ^{7,15}.

The long-term reduction in HWC incidents, or HWC management, is critical in the long term as the impacts of conflict can result in species extinction, biodiversity loss, human suffering, conflict between stakeholders, and threats to broader issues of food security, economic development, supply chains and financial investment. The impacts of HWC are extensive and well documented however, ^{13,16-18} and will not be explored in this report.

1.2 The need for global lessons on mitigating HWC

Under the Mitigation Element of HWC, payments tied to incidents covers a variety of mechanisms, including 3rd party funded compensation, insurance, ex-gratia payments, community partnerships, and interim relief schemes. Payments from these schemes are provided to individuals or families for HWC incidents that have resulted in tangible damage, loss, injury or death ¹⁹. These schemes most commonly use monetary payments. However, in some schemes, loss is mitigated through asset replacement such as the provision of replacement sheep to herders following depredation incidents ²⁰. Schemes usually have established criteria that specify which perpetrators (specific wildlife species) and types of incidents are eligible for payments at predetermined rates ¹⁹. Payments are most commonly paid after incidents occur and are verified, but in a few schemes, payments are distributed in advance based on a predicted estimation of HWC incidents and costs likely to be incurred by the recipient over a set period ²¹.

Compensation schemes typically provide local communities with a predetermined monetary amount to cover losses relevant to HWC incidents. Insurance schemes operate in much the same way as compensation, with the key difference being that people pay a premium into a pooled fund from which payments are then distributed following a verified HWC incident.

In many scenarios, law enforcement alone is inadequate for reducing the threat of retaliatory killings. Therefore, HWC compensation and insurance programs are extensively incorporated into conservation projects/programs ²². From the perspective of the conservation sector, scheme success is determined by the reduction of retaliatory killings and increased tolerance of wildlife by local communities. Critically, schemes must link any payment back to the conservation target and behaviour change. This report distinguishes between compensation and insurance as the two key approaches to payments tied to incidents.

Clearing up meanings around “mitigation”.

Mitigation is generally defined as: actions to reduce how harmful, harsh, severe, serious, unpleasant, or painful something is. For the purposes of this report, and aligned with the generic definition, is that the problem has already occurred via an acute event / incident, and the mitigation actions occur or are instigated subsequent to the event.

Discourse around mitigation in the HWC literature, however, is not as clear, and the word is ascribed to a whole suite of meanings covering: broad HWC program management of chronic HWC scenarios; preventive actions (including fencing and deterrents); post event mitigation (such as compensation, insurance or response teams); or long-term government level conflict mitigation (such as policy and budgetary actions).

An all-encompassing definition of ‘mitigation’ is inadequate in understanding conflict contexts and limiting for the purpose of designing appropriate programs to address conflict in the long term. It is instructive and practical to separate preventative, response, and policy measures, for example, from mitigative ones (i.e. reducing the impact of an event after it occurs) so as to make clear where gaps in management lie and to design integrated HWC management programs accordingly. We have therefore purposefully adopted the more focussed meaning of mitigation, which is actions to reduce the impact after an event, and to not conflate its meaning with preventative, policy, research and response actions that are covered individually within other elements of conflict.

Definitions that are focussed on the post-event stage:

- The action of reducing the severity, seriousness, or painfulness of something. Oxford Dictionary
- A reduction in the unpleasantness, seriousness, or painfulness of something. Collins Dictionary
- The formal act of reducing how harmful, unpleasant, or bad something is. Cambridge Dictionary
- The process or result of making something less severe, dangerous, painful, harsh, or damaging. Merriam-Webster Dictionary

Definitions that transcend both pre and post-event and include preventative meanings:

- Business: A systematic reduction in the extent of exposure to a risk and / or the likelihood of its occurrence. businessdictionary.com
- Business: The elimination or reduction of the frequency, magnitude, or severity of exposure to risks, or minimization of the potential impact of a threat or warning. businessdictionary.com
- Legal: ‘mitigating circumstances’ (an attempt to keep the sentence to a minimum due to behaviour prior to or during the event) and in ‘mitigation of damages’ (the duty on the victim of a contract-breaker or a delinquent to keep losses within reason). legal-dictionary.thefreedictionary.com
- Insurance: reducing risk of loss from the occurrence of any undesirable event; minimize degree of any loss or harm. economictimes.indiatimes.com

Definitions that go to higher levels of management, event elimination / resolution, and pre and post-event stages:

- Climate: any action taken to permanently eliminate or reduce the long-term risk and hazards of climate change to human life, property. global-greenhouse-warming.com
- Environmental: strategies, policies, programs, actions, and activities that, over time, will serve to avoid, minimize, or compensate for (by replacing or providing substitute resources) the impacts to or disruption of elements of the human and natural environment. definitions.uslegal.com

Box 1:

A snapshot of compensation and insurance

Compensation and insurance are economic devices aimed at reducing the risk and impact of monetary losses. While both devices may include specific policies requiring an adherence to certain risk reduction behaviour, their primary function is not to alter the probability of adverse events but to mitigate financial loss once the event has occurred.

Compensation programs

One of the most common forms of compensation is disaster relief, a term used to describe actions typically carried out by governments and NGOs to mitigate the impacts of large-scale events such as floods, earthquakes, fires, or industrial accidents ²⁴.

Disaster relief often includes the funding of projects with collective societal benefit (such as repair of public infrastructure), as well as direct compensation payments to victims. Government-run disaster relief schemes typically require that the damage-causing event be officially declared a disaster for compensation payments to be distributed ²⁵.

Compensation programs are a tool for governments to: limit damage from the initial event leading to more widespread negative effects; to show solidarity with citizens; and to placate feelings that the government should have been providing more preventative action ²⁵. For these reasons, most government programs are tied to high profile events with large numbers of negatively impacted people and businesses. However, there are some compensation programs that do address incidents, where the negative impacts are limited to individuals or small groups,

such as compensation programs for victims of crime in some countries ²⁶. Most compensation schemes do aim to compensate as per the true definition “to make an appropriate and usually counterbalancing payment” ²⁷, however, there are schemes that explicitly offer payments below, or at a percentage of, the market value of loss and therefore, are not directly counterbalancing the losses incurred.

Compensation schemes can be delivered by various stakeholders be they governments, NGOs, private sector banks, insurers, or community-based groups, or implemented as partnerships between these groups. For a detailed overview of common challenges with compensation schemes globally, refer Annex Report, Section 2.

The major types of compensation schemes include:

Ex-post schemes: provide payments for losses after an incident has occurred. These are the most common type of scheme and are suited to contexts where it is difficult to predict losses accurately in advance.

Ex-ante schemes: provide payments in advance on incidents based on the estimated value of loss likely to occur. While the approach is considered far more cost effective and time efficient for both managers and stakeholders than ex-post approaches, they are only suitable in conflict contexts where the activities of both wildlife and involved stakeholders are relatively homogenous, constant and predictable.

Government run schemes: are widespread, however, many have limited effectiveness, plus local perceptions of unfairness have led to higher involvement of NGOs ²⁸.

NGO-community facilitated schemes: common in developing countries, where they have often been implemented because no government programs exist, or the existing programs are perceived as ineffective ²⁸.

Interim relief schemes (IRS): typically led by NGOs, these schemes are common in areas where government-run programs exist, but issues with their administration lead to high levels of stakeholder dissatisfaction due to lengthy delays in payment, or lack of trust in the schemes' fairness. An IRS seeks to provide impacted people with rapid payment, where a third party (e.g. an NGO) bears the immediate financial cost and then claims reimbursement through slower or inefficient government administered compensation processes. This type of scheme aims to provide a base level of response to contain negative attitudes that could lead to retaliatory killing of wildlife in the short time following an incident ²⁹.

Asset replacement schemes: Some schemes utilize asset replacement where any loss incurred is replaced like for like through locally agreed mechanisms. A typical example is community-run replacement herds to compensate for any livestock killed by predators.

Insurance schemes

Insurance is a contract (policy) between an individual or group (policyholder/s)

and an insurer to provide a level of financial protection (indemnification) for assets against potential future risks. The insurer may be a private insurance company, government, or a cooperative group managed by the policyholders themselves ³⁰. To receive protection from future risks, the policyholder pays a premium (once or at regular intervals) to the insurer. The policyholder participates in the scheme either voluntarily, compulsorily under law, or as a condition for their eligibility in receiving other services (e.g. financial institutions often require individuals to purchase home owner's insurance when providing mortgages) ²³.

The cost of a premiums is calculated by actuaries and are dependent: on the full or partial value of the asset being insured; the types of risks being protected against; the insurer's calculations on the likelihood of those risks occurring; the cost of policy administration to the provider; and profit margin when offered by private companies ³¹. The policy will, in almost all cases, define the limit, or cap, to the total amount the insurer guarantees to pay in response to covered risks, regardless of the actual total cost incurred ²³. The more detailed the data available on rates of incidents and their relationships to attributes of different policyholders, the more precise the premium rates can be.

While the price of premiums varies greatly each premium payment's cost will always be a fraction of the maximum value of coverage guaranteed. The policyholder benefits from this because, by paying a lower value in

Box 2: continued

instalments, they are guaranteed a degree of much higher security should they incur losses of substantially greater value than they may be able to retain otherwise. When such a loss occurs, the insurer can pay the policyholder an amount greater than they have paid in, because they are receiving premium payments from numerous policyholders, the majority of whom are not expected to incur losses above the amount collectively paid. This is referred to as pooling risk, and the better the insurer can grow and spread risk across a wide risk pool, the more likely the insurer is to be a viable business ²³.

In some scenarios, legal regulations, data limitations, or the inherent randomness of the risk being insured may mean that all policyholders are charged the same premium rate. However, in many

cases, insurers can determine more specific risk calculations based on a variety of factors, enabling them to offer different premium rates for different policyholders. This can be seen in life insurance policies, where premium rates increase with age (and, therefore, the risk of death) or car insurance where large datasets can more accurately predict risks based on the demographic profile of the policyholder or vehicle type. Premiums may also be reduced if the policyholder commits to preventative actions that reduce risk, or likelihood of an event. For instance, a jewellery store may be eligible for reduced premiums if they hire a security guard ²³. For a more detailed overview of types of insurance and common challenges with insurance schemes globally, refer Annex Report, Section 2.

2. CASE STUDIES IN HWC COMPENSATION AND INSURANCE SCHEMES

2.1 Research methodology

The research involved a combination of online literature review of HWC and compensation and insurance schemes, interviews with practitioners, and analysis of specific global insurance and compensation schemes. The research approach involved:

- Identification of the common elements across all compensation and insurance schemes used to mitigate HWC;
- Research and development of criteria to assess scheme effectiveness;
- Analysis of case studies against identified criteria for success, and discussion of schemes' strengths and weaknesses.

2.2 Common elements across all schemes

The design and implementation modality of HWC mitigation schemes are many and varied and are typically based on complex cultural, religious, economic, political, and biological factors at play in each area. However, while schemes differ significantly, the research identified commonalities across all:

Impacted person: The individual/s impacted by the event. It is this impacted stakeholder/s who would seek compensation/insurance to cover any loss.

Eligible incident: Schemes will define clearly what incidents are covered. The majority of schemes cover wildlife damage to livestock, crops, physical structures, and incidents resulting in human injury or death.

Covered wildlife species: HWC compensation and insurance schemes clearly define what wildlife species damage is covered.

Reporting: All schemes have a reporting mechanism established as part of the design process and is critical to verification and, therefore, the payment process. The mechanism can be anything

from a verbal report in person to a phone call or SMS to the administration or Response Teams.

Verification agent: Incident verification determines if an incident is legitimate and eligible for compensation. Trained personnel – such as Response Teams – undertake the role of verification agent and, in most cases, verification requires physical inspection of the incident site.

Valuation: The compensation value of impacted assets or individuals. Valuation can be determined at the time by verification agents or predetermined as part of the design process. When an incident has impacted an asset, the valuation is most often a percentage of the assets' market value.

Scheme administration: All schemes are designed with detailed administration and governance regimes. This can be by one or more stakeholders – government agencies, NGOs, community groups, and insurance companies. Many of the longest running schemes globally are administered by governments, but schemes with a combination of stakeholders are becoming increasingly common.

Scheme funding: All schemes require funding for both administration costs and compensation payments. In some cases, funding may be paid for entirely by those that administer the scheme, a 3rd party funder with little or no role in scheme administration, or in the case of a non-subsidized insurance scheme, the pooled premiums of policyholders.

Payment timing and type – ex-post vs. ex-ante: Some schemes will disburse funds annually based on season, calendar or financial year. Others will make payouts as soon as possible following an incident. Payment type can be either the commonly-used ex-post (schemes disburse payments after the HWC incident has occurred), or ex-ante (schemes disburse payments in advance of, or in anticipation of loss from HWC incidents based on an estimation of incidents likely to occur).

2.3 Criteria used to evaluate HWC case studies

The research used eight criteria for success* to assess each HWC compensation and insurance scheme for the purpose of this report and these form the framework that the 12 case studies were assessed against:

1. **Quick and accurate verification of damage.** If this is missing, the entire scheme may breakdown. If there is no rapid and trusted mechanism to have a report heard, then verified, then acted on (be it through removing danger, or processing a claim), people begin to lose trust in the scheme, or lose motivation to participate at all. Ultimately longer waiting times, and inaction can foment a loss of tolerance to the wildlife and increase the chances of retaliatory killings. Accurate verification of incidents over time, and the transfer of that information into monitoring frameworks also plays a significant role in understanding the conflict profile, as well as building up a picture of what solutions are working and why. Management decisions must be guided by good information, and that good information comes from the initial speed and accuracy of the data from incident verification.
2. **Prompt and fair payment.** Timely payment can temper the anger of victims and reduce retaliation against wildlife or conservation authorities. The compensation process needs to be transparent, protected against abuse, account for unverifiable losses (e.g. when it is difficult to determine how or how many livestock were killed), and be capable of evaluating differences in the value of different livestock or crops^{32, 71}.
3. **Sufficient and sustainable funds.** Many schemes cease operation prematurely because they run out of funds. This could be due to many factors around the unpredictability of HWC and seasonal or yearly spikes where HWC varies markedly and contingencies have not been put in place. More often than not, the reason for funds running out is that schemes have been designed with insufficient knowledge of the intensity and frequency of HWC, and therefore are unable to accurately estimate what funds are needed to keep pace with HWC incidents and claims, or what the minimum number of members is required to sustain an insurance program. Perfect baseline data is typically unavailable; however, scheme design should recognize that, following inception of an improved monitoring program (linked to the scheme), there may be need for a

* Six of the criteria are derived from the WWF-commissioned evaluation conducted in 2003³², while two additional criteria were added during the present research. The two additional criteria (6. Connection to prevention and 7. Stakeholder trust) were deemed critical factors impacting scheme success. As a result, these were included for the purposes of evaluation of case studies in this report.

design adjustment to account for new knowledge that emerges. Financial sustainability is considered the most critical criteria by the IIED as it affects almost all schemes globally ⁷¹.

4. **Site specificity.** Scheme design must reflect the cultural, religious, political, and ecological realities of the local context. The design process will be critical in understanding what is important to local stakeholders, and how this can be addressed while ensuring financial sustainability and overall conservation aims ³².
5. **Clear rules and guidelines.** Schemes have strong institutional, government and local support when they have clear rules and guidelines for their implementation. Compensation and insurance should be linked to sound management practices and systems that people are readily aware of and trust ³².
6. **Connection to prevention.** Scheme design must ensure participation and eligibility, is linked back to a behaviour change or preventative measure that reduces the likelihood of an event happening. For HWC, this may be that access to compensation may be only permissible if a farmer had put in fences or barriers for crops or was adhering to a grazing or land use plan ⁷¹.
7. **Stakeholder trust.** Ensuring stakeholder trust in schemes is critical because a key goal of HWC compensation and insurance schemes is to influence attitudes and behaviours toward wildlife in the long term. A lack of trust in a scheme can therefore serve to counter the conservation message and goals of the program. Stakeholders are being increasingly seen as pivotal to scheme success through increased active participation in design, administration, and overall HWC management.
8. **Ability to measure success.** Schemes need to have clear and tangible objectives, plus have a monitoring framework to assess progress and change against baselines over time.

2.4 Case studies assessed

As part of this report, 12 HWC compensation and insurance scheme case studies from 11 countries were assessed and researched in-depth (Table 3) (For detailed discussion of each, refer Annex Report Section 4). The case studies selected represent a broad spectrum of designs, administration types, and payment type. Of the 12, nine were related to livestock depredation, and one each to crop, fish and combination schemes. Five schemes were run jointly by government and NGOs and communities, while six were NGO and government only. Six of the schemes were ex-post compensation, three

Tiger biologist, Jimmy Borah, investigates a goat killed by a tiger. Kaziranga National Park, Assam, India. Kaziranga-Karbi Anglong Landscape. Photo: Ola Jennersten, WWF



Table 3:

Case studies assessed for the research.

Impacted person	Eligible HWC incident	Covered wildlife spp.	Reporting	Verification agent	
Case Study 1: Wildlife predator compensation program, Alberta Province, Canada					
Livestock owners	Livestock depredation (cattle, sheep, bison, pigs, goats)	Grizzly and black bear, wolf, mountain lion, & eagles	NA	Fish and Wildlife Officer	
Case Study 2: Human Elephant Conflict: Public Liability Insurance, Yunnan Province, China					
Crop farmers	Crop damage, and incidental damage to rubber trees	Asian elephant	NA	Insurance agents	
Case Study 3: Otters in Saxony, a story of conflict resolution? Saxony State, Germany					
Fish producers	Aquaculture depredation	Eurasian otter	NA	NA	
Case Study 4: Community managed livestock insurance, Spiti, Himachal Pradesh, India					
Herders	Livestock depredation (yak)	Snow leopard, wolf	NA	Insurance committee members	
Case Study 5: Interim Relief Scheme, Corbett Tiger Reserve, Uttarakhand State, India					
Livestock owner	Livestock depredation	Tiger, leopard	NA	Response Team	
Case Study 6: Wolf compensation program, Israel					
Rancher	Livestock depredation (sheep, cattle)	Wolf	NA	Rangers	
Case Study 7: Mbirikani predator compensation fund, Kenya					
Livestock owners	Livestock depredation	Lion, cheetah, leopard, jackal, spotted hyena, other wild felids, cape buffalo, and elephants	NA	Predator scout, Verification officer	
Case Study 8: Human animal conflict self-insurance scheme, Namibia					
Conservancy member	Livestock depredation, crop raiding, structure damage, human death	Lion, cheetah, hyena, crocodile, buffalo, hippopotamus, elephant	NA	Community game guards	
Case Study 9: Community managed livestock insurance scheme, Baltistan region, Pakistan					
Herders	Livestock depredation (Goat)	Snow leopard	NA	Village Insurance Committee	
Case Study 10: Wolverine conservation performance payment, Sweden					
Reindeer herders	Livestock depredation (reindeer)	Wolverine, lynx	NA	Biologists	
Case Study 11: Livestock replacement scheme, Kopetdag Mountains, Turkmenistan					
Livestock owners	Livestock depredation	Central Asian Leopard	NA	Trained community members	
Case Study 12: Wolf damage compensation, Wisconsin State, U.S.A.					
Livestock owners	Livestock depredation, farmed game, and domestic pets	Wolf	NA	Wisconsin Department of Natural Resources staff	

NB: "NA" – information not available at the time of research. Refer to detailed descriptions of case studies in the Annex Report Section 4.

Valuation	Administration	Funding	Timing	Type
Mean sale price by weight	Government & NGO	Government & NGO	Immediately or end of October	Ex-post compensation
Rubber trees valued at US\$2	Private insurance company	Government & Private insurance company	NA	Insurance
NA	Government	Government	NA	Ex-ante compensation
NA	NGO & Communities	Local premium payments plus NGO co-contribution	Once annually	Insurance
% of market value	NGO	NA	NA	Ex-post compensation
100% of loss if protection measures in place; 80% of loss if herd not fully protected	Government & farmers association	Government & farmers association	Once every 6 months	Ex-post compensation
NA	Community	Community	Bi-monthly	Ex-post compensation
Below market value; Set values for livestock per type, crop by type and size, and cost of human funeral	NGO, Community & Government	NGO, Community & Government	Immediately	Ex-post compensation
Market rate of goats	Village Insurance Committee	Premium payments plus subsidy	NA	Insurance
Estimated value of loss caused by a wolverine per year	Government	NA	NA	Ex-ante / performance payment
Equivalent value in sheep	NGO & Government	NGO	Quarterly	Asset replacement
Market value, and veterinarian costs up to \$2,000	Government	State government & public donation	Annual	Ex-post compensation

2.5 Key lessons from case studies analyzed

Case Study 1: Wildlife predator compensation program, Alberta Province, Canada

Findings: The scheme faces numerous challenges that have resulted in low rates of reporting and high levels of stakeholder dissatisfaction due to delays, verification limitations, and loss of trust³³. A source of many issues is that the scheme does not cover loss or damage by coyotes, the species responsible for the highest level of damages³³. Ambiguity around the goals and objectives of the scheme and its potential impact are further compounded by the fact that many of the covered wildlife species can also be legally hunted³⁴. This results in a scenario where farmers may be receiving compensation from the same agency that issues them licenses to kill the species the scheme seeks to mitigate the impacts of.

Case Study 2. Human Elephant Conflict: Public Liability Insurance, Yunnan Province, China

Findings: A focus on meeting compliance of the national policy may have more impact on the scheme's outcomes than any conservation results. The initial conservation goals in the national policy are further diluted by the local prefecture's transference of the program away from its forestry division to a private insurance company. This transfer, which was thought to improve financial efficiency while maintaining compliance, has created additional administrative separations between conservation work and scheme implementation, and sustainability of the program continues to be at risk by shifting financial losses from local government to a private insurer that has implemented the scheme at a significant loss for several years.

Case Study 3: Otters in Saxony, a story of conflict resolution? Saxony State, Germany

Findings: The "otter bonus" is highly supported by producers, with payments benefiting both a struggling industry and maintenance of otter habitat. Researchers have referred to this as a "resolved conflict"³⁵. The administrative cost of this program is projected to be lower than the ex-post approach in part due to historical data collection and long-term contracts drawn up between the producer and state rather than regular inspections of damage³⁵.

Case Study 4: Community managed livestock insurance, Spiti, Himachal Pradesh, India

Findings: Increased interest and buy-in from active local participants in the scheme has resulted in their helping to identify previously unknown risk factors for depredation through

investigation of trends present at incident sites ³⁶. The scheme also enhanced HWC management by stressing the linkages with preventative measures (e.g. corrals and guarding herds and protecting in peak HWC seasons). There have been no recorded cases of retaliatory killing around target villages. The scheme has also served as the model for similar projects implemented in Mongolia, China, and Pakistan ³⁶.

Case Study 5: Interim Relief Scheme (IRS), Corbett Tiger Reserve, Uttarakhand State, India

Findings: Despite the lack of research to provide findings specifically attributable to the scheme, the overall aim of IRS appears to be being met as there has been a drastic reduction in documented retaliatory killings of leopards and tigers within the landscape ³⁷.

Case Study 6: Wolf compensation program, Israel

Findings: The scheme achieved its purpose of arresting local decline of tolerance toward wolves, while working with stakeholders to develop more comprehensive and longer-term solutions. The implementation of the program was able to build enough local learning and understanding on the HWC situation to get to the point where there was consensus that preventative measures would be more cost effective. Since the closure of the scheme, there is widespread use of electric and conventional fences, and trained livestock-guarding dogs.

Case Study 7: Mbirikani predator compensation fund, Kenya

Findings: The fund's design has been replicated in neighboring group ranches. In 2008, Maasailand Preservation Trust expanded the scheme to the Ogulului Group Ranch where records show a similarly significant decline in lion killings to Mbirikani Group Ranch ³⁸. In 2007, the Kuku Group Ranch initiated a scheme with similar procedures in partnership with the NGO, Maasai Wilderness Conservation Trust, which is funded in part by community-based tourism revenue ³⁹. Records from Kuku Group Ranch show similar results, with significant declines in recorded lion killings, but little change in the rate of depredation incidents ³⁹.

Case Study 8. Human animal conflict self-insurance scheme, Namibia

Findings: This scheme was implemented as a pilot project, and since 2013, most of its design has been adopted as part of the national Human Wildlife Self Reliance Scheme. While this scheme has sought to shift funding towards conservancies, only a limited

number of conservancies have so far begun to increase their share of funding as stakeholders commonly hold the view that the national government should bear most HWC costs ⁴⁰. Improvements in M&E and data collection have varied between conservancies, with the most comprehensive data coming from conservancies in the Zambezi region. There, communities have sought to improve preventative actions and utilize ‘event books’ to record HWC incidents. This has allowed for the development of HWC hotspot maps for various species ⁴⁰. While no data is available on changes among stakeholder perceptions of wildlife, within the Zambezi region there is an overall reduction in conflict ⁴⁰.

Case Study 9: Community managed livestock insurance scheme, Baltistan region, Pakistan

Findings: Data on retaliatory killing incidents of snow leopards is incomplete. However, community attitudes toward snow leopards appears to have improved over the life of the program. This may be a combination of micro and macro factors across the area, but population surveys suggest a stable, perhaps growing local snow leopard population ⁴¹.

Case Study 10: Wolverine conservation performance payment, Sweden

Findings: The Swedish government has set a national goal of at least 600 wolverines ⁴². The species range expansion into areas south of the Reindeer Husbandry Area has been met with recommendations to revisit the Conservation Performance Payment program to ensure wolverine conservation efforts adapt to issues outside reindeer producing areas ⁴³.

Case Study 11: Livestock replacement scheme, Kopetdag Mountains, Turkmenistan

Findings: The expansion of the project over time to an increased number of communities, as well as relevant findings from non-scheme specific studies, demonstrate that the scheme was viewed favourably by stakeholders and that leopard populations grew during the scheme’s implementation. When first established, the program involved 22 villages, with 120 livestock herds grazing over 300,000ha ⁴⁴. By 2010, the project had expanded to include 50 villages, with 800-1,000 livestock herds grazing over more than a million hectares ⁴⁴. A total of 223 depredation incidents were reported between 2001 and 2010, and of these, 171 (77% of reports) were approved, and a total of 1,700 sheep were given as compensation ⁴⁴. As the project became more established, the number of false reports declined, and community members claimed they would only seek compensation if cattle or multiple sheep were lost, and an apparent increase in

tolerance for leopards had led to them accepting incidents where single sheep were lost ⁴⁵. The area's leopard population had grown, from 70 in 2001, when the compensation program was implemented to 105 animals in 2008 ^{45,46}. Awareness and education campaigns have been undertaken in the region, and anecdotal evidence shows local people's appreciation for leopards to have risen ⁴⁵.

Case Study 12: Wolf damage compensation, Wisconsin State, USA

Findings: The pressure of special interest groups representing those receiving compensation to block prevention focused eligibility requirements and advocating for both continued compensation and legal permission to kill wolves raises questions as to the scheme's actual conservation focus ⁴⁷. A survey of stakeholders found no change in attitudes towards wolves after receiving compensation ⁴⁸. However, while recipients maintained negative attitudes towards wolves and sought increased legal rights for lethal control, they also strongly supported the compensation payments ⁴⁷. Despite these continued negative perceptions, the state's wolf population has grown over 3,000% since the scheme's inception ⁴⁹. The fact that wolves naturally recolonized the area does, however, suggest that various other changes (i.e. relating to land-use and human behaviour since the wolf population disappeared) have played more significant roles in wolf recovery ^{47,48}.

African elephant drinking from tank, Kruger National Park, South Africa.
Photo: Nature Picture Library



3. COMMON CHALLENGES AND RECOMMENDATIONS FOR ENHANCING HWC COMPENSATION AND INSURANCE SCHEMES

The complexity of what compensation and insurance schemes set out to achieve and the variation of local contexts, means that success always relates back to site-specific design. Many of the challenges and recommendations captured in the review are interlinked, however for structure they are separated below according to the criteria for success.

3.1 Quick, accurate verification of damage

The chain of events from the HWC incident, from reporting to verifying it, is the central and critical component underpinning any scheme. The verification process is critical for two primary reasons: it is the central mechanism for decision-making in delivering the payments of a scheme; and verification agents are usually the first to respond to incidents and interact with impacted stakeholders. Therefore, the speed at which verification agents respond to a call, the way they conduct themselves with the victims, and the professionalism of their investigation and follow-up bears significant influence over how stakeholders more broadly react to incidents (e.g. retaliatory killings) and their perceptions of schemes and conservation programs over time. Common challenges with the verification process are low levels of reporting, slow response times, inaccurate verification, and weak people-skills of agents.

Levels of reporting

Challenge: no reports are made. If no incident reports are made, then incidents cannot be verified, and a scheme cannot function. Apart from opt-in insurance programs, the act of reporting an incident is also the action through which the impacted stakeholder chooses to participate in a scheme. Active participation is a critical challenge, regardless of how well other elements of a scheme have been designed, as the scheme cannot work if stakeholders are unwilling or unable to participate. Factors related to low rates of reporting include: lack of awareness of the scheme;

mistrust in a scheme's ability to disburse payments; the cost of reporting (e.g. if it is via phone or SMS); perceptions that payments will not sufficiently account for time required to participate in the process; poor understanding of local laws and related fear that incidents occurred while the person was violating a law (e.g. their engagement in activities such as herding within a protected area); or overall general distrust of relevant authorities involved in processing claims ^{33,50-53}.

Recommendation: Stakeholders must have the means and the reason to participate in reporting HWC. First, scheme administrators should investigate opportunities to adapt reporting mechanisms to local realities, provide incentives (e.g. free phone or SMS-based reporting), or streamline claim processing in cases where low reporting levels are due to cost (e.g. phone calls) or the process consumes too much time (due to distance or paperwork). Second, there is a direct link between stakeholder trust and participation in reporting, thus administrators must maintain high standards of governance to ensure the entire process from the incident, to verification, to payment is clear, rapid, fair and reliable. Only then will stakeholders see the benefits of reporting.

Response to reported incidents

Challenge: evidence has disappeared. An impact of slow response is weak verification. Much of the evidence used to verify incidents (e.g. marks left on carcasses or scat presence at damaged crops) can quickly deteriorate or be disturbed. Incidents therefore require both rapid reporting by victims and rapid response by verifying agents ³². There are two overarching reasons for slow responses: 1) the local HWC context and 2) the limitations of the verification agents in that area.

The local HWC context can limit immediacy in reporting. For instance, in India (Case Study 5), dense human populations, small herd sizes, and limited foraging areas create conditions where livestock owners can more quickly notice missing animals and evidence of depredation ²⁹. By contrast, in Canada, Sweden, and the USA (Case Studies 1, 10 & 12), many livestock owners have herds grazing over vast areas, which can delay the realization of livestock depredation and discovery of evidence.

Multiple factors relating to the verification agents will also determine their ability to respond quickly. These are, having: a sufficient number of trained members; adequate transport facilities and equipment; and a vested interest in reducing HWC in the long term (i.e. the agents are locals). In India (Case Study 4) the verification agents are not only local people, they are also

policyholders in the insurance scheme, while in Kenya (Case Study 7) the verification agents are widely dispersed trained scouts that are able to respond rapidly and document evidence before it deteriorates.

Recommendation: To account for challenges in locating evidence or time taken to verify an incident, some schemes adapt by allowing payouts for pre-registered stock, or those that go missing near confirmed HWC hotspots ^{33,54,55}. In order to facilitate rapid reporting of incidents, other schemes limit eligibility for compensation to those that are reported within a defined period of time (e.g. within 48 hours) ²⁹. To address any short comings of verification agents, programs should ensure there are enough members available to effectively respond to HWC incidents, especially during periods of high conflict, they have sufficient skills, specialist equipment, access to a means of transportation that enables them to reach HWC incidents quickly, and be recruited from the local area ⁵⁶.

Identification of species involved in HWC incidents

Challenge: no physical evidence. A common reason for inaccurate verification is when it seems that a predator is responsible for missing stock, but no physical evidence can be found. This scenario typically plays out where unattended livestock graze over large areas, or when calves are missing inexplicably. Upon verification, there is weak or no physical evidence of predator attacks. In these cases, there is often inaccurate identification, or an assumption of the species involved in the incident.

Recommendation: Scheme administrators should adapt design to match the realities of the local context to ensure the scheme continues and remains relevant for local people. In Canada (Case Study 1), claims lacking sufficient evidence were eligible for 50% compensation if verified incidents occurred within known hotspots or within designated periods of time after a conflict species was present. Similarly, in the USA (Case Study 12), missing calves from areas with previous incidents were eligible if they were registered and tagged beforehand. Another design option was utilized in Kenya (Case Study 7) with a two-tiered verification process: First, verification scouts rapidly respond to incidents and make an initial assessment. If it is confirmed that an eligible HWC incident has occurred, then verification agents will be called to attend and make a more detailed investigation.

Challenge: uncertainty of who the culprit is. Different species involved in HWC incidents leave behind varied evidence of involvement, and even where the same asset is damaged, some species create more easily attributable evidence than others. Schemes often only cover specified wildlife species, which can create challenges for verification in areas where incidents involve both covered and non-covered species that leave similar signs of damage. A common stakeholder complaint regarding schemes is that verification requires too high a burden of proof to be met to receive payments ³³. In crop damage schemes, it is often difficult to differentiate incidents caused by poorly kept livestock versus wild herbivore species ⁵⁷. Similarly, in predator conflict contexts, such as where wolves share landscapes with other large canids (e.g. coyotes, jackals, and feral dogs), the number of canids and the damage they inflict is significantly higher than wolves. However, as their populations are not threatened, the damage they cause is not eligible for compensation ³³. Such ambiguities can create perverse incentives for stakeholders to attribute all damage to covered species, thereby overinflating incident statistics, and can ultimately shift perceptions of risk toward that species and lead to a loss of tolerance ⁵⁸.

Recommendation: Simplifying schemes by adding more species, or lowering thresholds of proof, are more cost-effective than investing in more thorough verification processes and systems with little impact on local attitudes ^{51,59,60}. Including at least partial compensation for damage caused by more common, non-covered species, will reduce the focus on the scheme's species of primary attention and relieve general conflict overall. In Kenya (Case Study 7), a scheme was established to reduce threats to highly persecuted lions ⁶¹. However, to reduce the risk of an increased focus on lions over species such as hyaenas (which caused significantly higher damage), partial compensation was provided for incidents caused by all predators ³⁸.

Interactions between verification agents and stakeholders

Challenge: verification agents are disliked. Verification agents are often at the frontline of scheme management, if not the overall conservation program in the eyes of stakeholders. They are often the first to interact with emotional and agitated stakeholders who have just been impacted by HWC and, therefore, there is a need for these agents to conduct themselves in a sensitive manner when engaging with the stakeholders to verify the cases. In the majority of schemes reviewed, most interactions between schemes administrators and stakeholders occurs during the verification process. Perceptions

of verification staff as rude or dismissive of victims' situations is a common complaint ⁶².

Recommendation: As victims of wildlife damage can be in an emotional state, verification agents must have the sensitivity and social skills to engage with them in a manner that is pleasant and strives to build better relationships between stakeholders and management. Verification staff should receive social training to engage with stakeholders in a productive manner. A verification process that creates strong relationships will not only assist compensation and insurance schemes to achieve overall goals but can be utilized as an important communication mechanism for administrators to track community attitudes, tolerance to wildlife, and monitor any emerging trends (e.g. conflict hotspots) and adapt design.

3.2 Prompt and fair payment

Timing, fairness, and reliability of payments

Challenge: payments are slow, too small, and the process is not understood. Many schemes suffer from slow payment processing. In India (Case Study 5), processing times have shown recent improvements, but claimants in the past had to wait between six and 18 months for payment disbursement ^{29,50,63}. In Kenya, a scheme covering African elephant damage, had average waiting times of four years ⁶⁴. The longer payments are delayed, the chances of communities losing support for such a scheme and seeking to actively remove the wildlife themselves, increases.

In addition, the amount of money paid out as compensation varies widely by scheme. In cases of compensation for assets (e.g. livestock or crops), amounts are usually set at a percentage of estimated value. The valuation of crops is more complex and subject to change throughout the growing season—both in terms of commodity prices and what the eventual yields would have been had the wildlife damage not occurred. These complexities can lead to disparities between stakeholders' and authorities' perceptions of actual value lost ^{53,62}.

Recommendation: The disbursement of payments in response to, or anticipation of, wildlife damage is a central action of all compensation and insurance schemes. Issues related to payments are among the most debated and least agreed upon. Issues around value and disbursement processes are most effective when adapted to the local context, but three key payment attributes are common in all contexts:

Timely: payments must be distributed within a timeframe that reduces motivation to commit retaliatory killing of wildlife. In India, an existing government-run scheme often required long and uncertain waiting periods for payments ²⁹. In response, an NGO implemented an Interim Relief Scheme (Case Study 5) that offered rapid response and payment for incidents. These payments were significantly below the market value of loss, however, management believed that rapid response was more critical than higher but late payments. The scheme has successfully distributed rapid payments for over 20 years, has improved stakeholder perceptions of the scheme, government has adopted the approach, and almost no retaliatory killings have been reported since inception ^{29,37}.

Many schemes cover damage to agricultural assets, which are usually produced and sold seasonally. If payments are rapid, then the impacted stakeholder could recover their value before they would have sold the items had the incident not taken place. In cases where payments are not timely, this can still be acceptable or even preferred if stakeholders understand how the scheme's design benefits from a delayed process. On the community managed livestock insurance program in India (Case Study 4), premiums are kept in accounts where they earn interest, and payments are disbursed only once year. In years with low HWC incidents, following disbursement of all compensation payments, any surplus funds are then allocated to community projects at the discretion of community members for the benefit of the entire community ³⁶.

Reliable: the payment process should be well understood and trusted. After experiencing an incident, impacted stakeholders should feel confident that payment will occur as designed. The importance of reliable payments is that when a stakeholder experiences an incident, a reliable scheme will reduce negative reactions even before officials respond or payments are disbursed. When an event occurs, a reliable scheme can prevent the escalation of negative emotions tied to longer term financial impacts.

Fair: stakeholders should feel that the extent of damage will be assessed accurately and that the resulting payment is of sufficient value to reduce feelings that their financial security requires lethal control of the wildlife. The two primary methods for calculating payment amounts are described below. Regardless of the method taken, the *agreement* between administrators and stakeholders on process and set values is more important than getting the most accurate market figures (For further details on ascribing market value, refer Annex Report Section 3):

Actual value of loss: *this is the market value per unit lost or damaged. While establishing this value is difficult with agricultural commodities which fluctuate in value due to their age/stage of growth, production and market forces 65, countries will have agreed frameworks and commodity market indices they use to determine actual costs.*

Proportional value of loss: *this is a value of the loss which is below the market rate and is deliberately utilized so the stakeholder bares some cost. This is to incentivize stakeholders to put in place preventative measures (or change behaviour) to reduce likelihood of future similar incident, or to dis-incentivize poor behaviour (moral hazard, Box 4) which could still result in compensation.*

3.3 Sufficient and sustainable funds

Planning for long term financial sustainability of schemes

Challenge: the money runs out. Schemes require funds, often in perpetuity. Consideration of where these funds will come from in the long-term must be factored into design from the outset. Sustainable funding has been identified by the IIED as the biggest challenge for schemes as it is almost universally faced by all schemes ⁷¹. The sudden or unexpected end of a scheme or reduction in performance due to improper funding can have significant negative results locally ³². Schemes that are designed as temporary measures should clearly communicate that to stakeholders.

Recommendation: Factoring in funding sources and sustainability requires an understanding of the conflict, the testing of different scheme designs under different conflict scenarios and factoring in annual payouts and administration costs. While designs with high levels of self-funding such as community managed insurance schemes (Case Studies 4 and 9), managers should test a variety of scenarios during scheme design using HWC incident intensity and frequency data, hotspot trends, along with victim, perpetrator and incident pattern information. These can be coupled with costs of assets lost, market rates of targeted assets, and the different types of guidelines or regulations that could affect costs. For opt-in insurance schemes, better understanding of the rates of HWC, and estimated losses will give a clearer estimate of what minimum amount needs to be within the insurance pool, and this will also determine the minimum participation levels, but also help to guide implementation of preventative measures that will reduce risk. In Nepal, the Achmea Insurance company conducted an analysis of the premium required by communities to cover HWC

risks from crop depredation by elephants in one area. The premium was so high that it was seen as prohibitive, so it was decided to first lower the overall risk through community-based preventative measures such as electric fencing ⁶⁶. For insurance-based schemes, actuarial analysis could be tested to calculate the cost of a single rate premium, as well as premiums adjusted to different known risk factors. Willingness to pay surveys could also be carried out to determine if subsidized premiums are also needed to ensure minimum participation ⁶².

3.4 Site specificity

Designing schemes to reflect local context

Challenge: scheme does not match local HWC profile. One of the core tenets of mitigation schemes is to provide a buffer – actual or psychological – to victims as quickly as possible following an event: to mitigate perceived risk and actual cost of the event; to maintain tolerance for the wildlife; and ultimately to reduce the likelihood that communities take management into their own hands and seek to remove the perpetrator from the area.

In addition, schemes are often designed based on replicating one designed for another site, with no verification of local context (i.e. HWC levels, type of risk people face, income/wealth levels, financial loss from damage etc.). If the scheme design does not meet local conditions, it could lead to unmet expectations by stakeholders and loss of trust in the system.

Recommendation: When considering how best to incorporate mitigation schemes into HWC programs, it is important to explore and consider the degree to which risk from retaliatory killings poses a threat to the conservation goal. In many places, the actual number/rate of retaliatory killing is either zero, too low to impact wildlife, or unknown. Improved data collection and quantification of retaliatory killings must be explored, as alternatives to insurance and compensation may be more relevant in low risk contexts. Where retaliatory killings do not appear to present a significant threat, other mitigation methods and economic incentives may provide a more efficient use of resources toward maintaining tolerance, safeguarding livelihoods, and improving relationships, while also focusing payments toward things that enhance coexistence rather than on areas of conflict and damage ⁶⁷. All such measures should be based on the local context and measures implemented to adapt to the specific situations.

Box 2:

Unintended social consequences of mitigation schemes

Consideration during the planning phase should be given to the potential for unintended consequences of schemes. Lessons from global programs suggest that stakeholders' views of their own responsibilities and institutional obligations regarding wildlife, can shift once external entities begin offering monetary payments in response to the actions of local wildlife.

Increased involvement by external groups regarding wildlife issues may result in, "it's your animal" syndrome, where stakeholders increasingly perceive all issues relating to wildlife to be the responsibility of governments and conservation groups⁵⁷. Once a scheme is established, communities may quickly adopt the view of compensation as a right, and possibly reduce preventative efforts^{32,58}. This shift in how local people perceive the breakdown of responsibility for wildlife management may create barriers to future management actions that seek local commitment to conservation work and behaviour change.

Stakeholders should be involved in the design and implementation of any scheme from the start, and initiatives should be included to increase ownership and responsibility. For example, combining the schemes with incentive programs around adding value from wildlife to livelihoods (e.g. tourism activities or wildlife certified products). Also, clear rules can help define expectations of stakeholders. For example, only providing compensation when certain prevention measures have been implemented by stakeholders.

3.5 Clear rules and guidelines

Awareness of scheme goals

Challenge: no-one knows about the scheme or the goal is unclear. Compensation and insurance schemes are most able to succeed when the stakeholders understand and support the conservation goals of the schemes. Many schemes show discrepancies between the purpose of the scheme and locals' attitudes toward the conservation target itself. Low scheme awareness and high levels of distrust were primary factors affecting a wolf depredation insurance scheme that experienced drops in participation and increased retaliatory killings⁵¹. In another case, many livestock owners surveyed across several schemes in the USA felt they should be both compensated for losses *and* allowed to kill the predator species, raising questions of schemes' effectiveness in improving tolerance⁶⁸.

In some cases, mitigation programs are implemented where HWC has resulted in human-human conflict. While conservation organizations may be heavily involved in the implementation of these schemes, government agencies carrying out the scheme are

more interested in resolving conflict between stakeholders, as opposed to working towards a conservation goal^{47,55,58}. Many design and context challenges are often the result of this confusion. In Wisconsin, USA (Case Study 12), legislation requires the state's conservation agency to commit a portion of its budget to pay for compensation, while also restricting the agency from being able to adapt the scheme's regulations to promote preventative measures to reduce HWC⁴⁷. In other scenarios, compensation is offered to stakeholders who still retain the right to kill the species causing compensated damages⁶⁸. In Alberta, Canada (Case Study 1), the provincial government offers compensation for wolf damage, while municipal governments incentivize the killing of wolves through bounty programs³⁴. In this scenario, stakeholders are able to receive compensation for HWC damage while also receiving payments to carry out retaliatory killings.

It is likely that some schemes have failed to establish clear conservation aims, simply because many officials involved in the process are not focused on such priorities. In many scenarios, goals are not clearly defined because of a lack of agreement between stakeholder groups, with conservation-focused stakeholders hoping that the program will nevertheless result in positive conservation outcomes. This mindset fails to recognize that these schemes, when left without focus, are merely financial mechanisms that transfer money from one party to another following wildlife damage. While this may result in reduced motivation to kill wildlife, there is nothing inherent about the mechanism's ability to influence human attitudes or actions.

Recommendation: The impact of a scheme is maximized when managers and stakeholders agree on the goals. There should be an agreement between these parties that the scheme is offered as an alternative to killing wildlife and as a way to protect their livelihoods (other solutions would be preventative measures). Key indicators that can be regularly checked with stakeholders are: their awareness of the scheme; their understanding of and acceptance of the conservation goals of the scheme; whether they view participation in the scheme as a worthwhile activity; and if they understand and are willing to follow the scheme's rules and procedures.

3.6 Connection to prevention

Links between mitigation and prevention

Challenge: scheme is considered a charitable financing plan. Effective schemes in any sector have compensation or insurance mechanisms linked to behaviour change or prevention

to increase tolerance, coexistence and to reduce the number of claims. One of the criticisms of schemes that utilize external funding for compensation is that they remove incentives for stakeholders to take preventative actions against the risks³². This presents a risk to the overall goals of conflict management and the financial sustainability of schemes. The lack of entrenching mitigation with prevention could result in stakeholders becoming complacent in the belief that they would be compensated for losses anyway, or worse, create perverse incentives. For instance, a farmer may realize the benefit of allowing wildlife to damage assets if he/she felt such damage would be eligible for compensation at values based on average harvest price. In allowing wildlife to damage their assets, farmers could in theory increase the return on investment as no further production costs will be required. If damages occur early enough, a farmer could even replant and increase the season's earning potential.

Many schemes address this threat of moral hazard (Box 3) by simply setting all rates below market value. While this prevents a stakeholder from profiting from negligence, the scheme still provides a level of financial security without directly promoting preventative action. This approach is also limited in that all individuals receive the same reduced payment regardless of their negligence or prevention.

Recommendation: Designing schemes where eligibility for compensation is conditional on a preventative or behavioural action makes sense from a funding sustainability stand point, but also means that the risk – HWC – is gradually minimized in the long term.

Successful schemes will ultimately be those that can sustain themselves financially regardless of fluctuating incident rates, while positively influencing local tolerance for wildlife. The most effective and financially sustainable scheme is one that is able to sustain itself, maintain local tolerance, and over the long-term reduces overall incidents through its own preventive mechanisms. As the effectiveness of the wider HWC program in an area are felt over time (i.e. reduced number, frequency, and intensity of incidents), compensation schemes gradually reduce in importance and take a back seat to the broader HWC program.

Box 3: Moral hazard.

A common criticism of compensation programs is that by transferring risk to a third party, recipients may reduce their own preventative effort, leading to increased incidents, strained budgets, and an overall rise in conflict³². Keeping payments below market rate may maintain incentives for preventative action, and schemes should include requirements for claimants to practice a minimal level of preventative effort^{32,67}. However, if stakeholders feel requirements for preventative measures are unreasonable, conflict between claimants and scheme administrators could increase and participation rates may fall⁵⁸.

3.7 Stakeholder trust

Stakeholder participation

Challenge: low participation in scheme design leads to low awareness, mistrust, and lack of interest. Voluntary schemes are vulnerable to low stakeholder participation rates - especially schemes that provide new or unfamiliar forms of coverage³⁰. Enrolment in all schemes reviewed in this report were voluntary, except for the Yunnan, China example (Case Study 2) where participants were enrolled without cost⁶⁹. Schemes that had high stakeholder participation were those that had high perceived conservation outcomes. In the case studies reviewed, there was a correlation between positive local feedback on schemes and high participation rates. The design process is an opportunity to promote understanding between policymakers, administrators, experts, and those impacted by conflict seeking to find common goals where possible and working towards acceptable compromise^{36,55}.

To get around low participation rates, governments often utilize compulsory insurance schemes to address the issue of participation in contexts where public liability risk is high (e.g. in the transport sector), and there is a need to reduce overall premium costs for vulnerable road users. Getting a similar outcome for HWC insurance will likely face challenges, except where they are subsidized at 100%, which is an expensive strategy used by some governments to shift the method of financial security from inefficient disaster relief to annual insurance³⁰. However, even where government-sponsored schemes have included high subsidies, other factors such as low awareness, mistrust, or lack of interest, contribute more to scheme failure⁵¹.

Recommendation: Ensure stakeholders are actively involved at all stages of implementation of the scheme and develop ways to continually provide information to stakeholders. Where conservation organizations offer sufficient financial support through other mitigation efforts (e.g. alternative livelihoods, income diversification, impact investment, market access and training initiatives), as well as support to preventative measures (e.g. barriers, deterrents, education and early warning systems) there may be leverage in requiring compulsory participation in schemes.

3.8 Measuring success

Measurable objectives

Challenge: scheme lacks tangible goals and objectives, and ways to track progress. Clear and measurable goals and objectives are the cornerstone of effective management action planning, however, HWC compensation and insurance schemes are typically deficient in this area ³². A review of literature on more than 130 HWC compensation and insurance schemes found that less than 5% defined success as related to the goals of each scheme ²². Without clear and tangible goals and objectives, mitigation schemes lack the ability to monitor their effectiveness and progress over time but are also unable to adapt to changing or complex local circumstances.

Recommendation: The long-term conservation goals of schemes must be clear and agreed by stakeholders, and the links back to financial security offered by the scheme must also be clear. For instance, the scheme is in place to support a conservation outcome tied to a gradual decrease in HWC incidents through behaviour change, not as a charitable financing plan. Other indicators to consider in monitoring frameworks of the scheme are: financial sustainability; participation rates; adaptation to changing contexts; long-term implementation; and government uptake of the scheme. Monitoring of these indicators should be a mandatory aspect of scheme management.

Rhino patrol ranger for Kenyan Wildlife Service, standing in a watch tower. Nairobi National Park, Kenya.
Photo: Greg Armfield



4 STRENGTHENING RELATIONSHIPS BETWEEN THE CONSERVATION AND INSURANCE SECTOR

Governments, development agencies, insurance companies, and the microfinance sector have developed many policies aimed at assisting smallholder farmers in low income countries. For the agricultural sector, each product type has dealt with the challenges of insuring agricultural assets using different novel approaches. While many of these policy types may not be directly applicable to the types of risk present in HWC scenarios (e.g. they include coverage for natural disasters or disease), they provide insight into alternative ways to calculate risk and loss. Furthermore, increased coverage of agricultural assets, even under policies which do not cover HWC damage, may be beneficial for HWC management in that area, and increased familiarity with the agricultural insurance sector is of value to conservation practitioners who work in partnership with farming communities.

4.1 The benefits of the insurance sector to conservation

- 1. Existing coverage of insurance schemes across sites must be explored, and relationships with the insurance sector established:** The initial process of determining a scenario's suitability for HWC compensation or insurance schemes requires both the investigation of the nature of conflict present but also an evaluation of managers' capacity to implement a scheme confidently. HWC insurance schemes are attractive alternatives to externally-funded compensation because, when properly designed and managed, the financial commitments required by partner organizations will lessen overtime. In the case of community-run schemes, partner organizations will be able to transfer the majority of administration responsibilities as well. In landscapes lacking an existing insurance culture, conservation organizations with limited resources may decide they lack the capacity to lead such efforts. However, the insurance sector has sought to rapidly expand into new markets, including low-income, rural, smallholder farming areas who are often involved in HWC

scenarios. Conservation practitioners should be aware of growth and change of the insurance markets serving the stakeholders within the landscapes they work in. Building relationships with the insurance sector now can increase the likelihood that future policies are structured with consideration of conservation aims.

- 2. Improved understanding of actual risk in order to reduce disproportionate negative responses to wildlife:** Wildlife damage is often the subject of more anger and frustration among stakeholders than impacts from climate, disasters and disease (which in many places present higher and more chronic risks to lives and livelihoods than wildlife). Negative attitudes held towards damage-causing species and subsequent retaliatory killings are often a result of complex cultural and socio-economic factors. In some scenarios, the perceived risk of wildlife, may in part receive disproportionate attention because they represent the only risk factor the farmer has any ability to reduce. Aside from providing support to reduce vulnerability to chronic risks posed by climate, disaster and disease, improving the understanding of the actual risks from HWC through enhanced data collection, management, monitoring and local education, is critical to reducing disproportionate negative perceptions of wildlife.
- 3. Better understanding of risk and how to quantify it:** The management of HWC along all six of the SAFE elements requires an understanding of risk. The insurance sector has established the most extensive means of measuring, predicting, and reducing risk, yet many HWC managers are unfamiliar with the sector, its methods, and concepts.

4.2 The benefits of the conservation sector to insurance

- 1. Subsidy provision:** Conservation organizations may be able to offer financial help to subsidize stakeholder participation in insurance schemes. Some schemes have proposed, but have not yet implemented, covering elephant damage by sourcing subsidies through park entrance fees⁶² or voluntary payments from urban dwelling policy-holders⁷⁰.
- 2. Data collection and monitoring frameworks already being implemented at sites can assist in improved risk analysis:** The establishment of agricultural insurance requires an analysis of risk, asset values, and other data. Many insurance companies may lack familiarity of HWC, and many schemes would apply to areas with small populations and few insurable

assets. The cost of risk and conducting market analysis for new policies and consumer populations is a common barrier to the expansion of insurance to new markets. Additionally, once a private insurer has carried out this research and advertised policies with eligibility requirements and premium rates, competitors can easily replicate this information and offer competitive policies without development costs³⁰. In many countries, this disincentive to be the first to market has been reduced through government-funded research; in the agricultural sector, extension services often provide extensive data publicly, which levels the playing field to develop insurance policies. Conservation organizations often have extensive data on HWC or are in the process of improving data collection over significant periods of time. Through partnerships formed with clear understandings that schemes will include conservation aims, conservation organizations can provide partnering insurers with information and insights into HWC incident risk and local populations.

3. **Use existing project presence to enhance accessibility of schemes into an area:** Agricultural areas in developing countries are often spread over large areas, far from urban centres where insurance professionals are likely to live and not easily reachable due to poor infrastructure. The cost of administering an insurance program in such areas will need to be factored into premiums. Depending on existing procedures, conservation staff may already be actively responding to and collecting data from HWC incident sites. Under a conservation-focused partnership, conservation organizations could take on much of the field-based tasks related to scheme administration, which reduces overall costs.
4. **Well-established community relations can help in awareness campaigns to increase understanding of insurance and foster higher participation:** Many farmers in lower income countries have limited understanding of insurance. Studies have shown that farmers often underestimate the severity of impact from previous, catastrophic events, or overestimate risks from less severe events³⁰, while overestimating wildlife damage¹¹. Additionally, general unfamiliarity with the concept of insurance or cultural perceptions of it being a luxury item of little utility can lead to lower participation than the threshold of pooled risk and viability of the project. Conservation organizations with well-established community relations can help in the administration of awareness campaigns to increase understanding of insurance concepts among stakeholders, which can increase participation in not only HWC related schemes but also those addressing

more common risks with greater overall damage. The improved financial security provided by the indemnification of a broader suite of risks (i.e. in addition to HWC), can give stakeholders a more accurate perception of the relative risk of HWC, and ultimately can reduce overall stress and motivation for retaliatory killings, while providing insurers with new customers.



Nangkana Magale has adopted conservation agriculture practices to grow her ground nuts. Eastern Pan Handle, Botswana.
Photo: James Morgan

5 CONCLUDING REMARKS

Compensation and insurance are a critical and essential part of the broader suite of tools (encompassed across the 6 Elements) to manage and minimize conflict – and must be part of any program or strategy on the ground. If designed and implemented according to the wealth of lessons detailed in this report and integrated with actions in the other five elements of conflict, HWC compensation and insurance schemes can play a significant role in species recovery by reducing the likelihood of retaliatory killing. This report aims to provide guidance on aspects to consider when establishing or improving schemes. One major conclusion is that the best results can be expected when stakeholder involvement is high, leading to good understanding and trust, where schemes are tailored to the local context, and when a scheme is coupled with management interventions aimed at reducing HWC in the long term.

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The SAFE Approach

The SAFE Approach – developed by Tigers Alive – takes lessons from the transport safety sector in seeking to make people and their assets, and wildlife and their habitats safe. It does this by identifying and eliminating the risk factors that contribute to human wildlife conflict. In the long term the focus on safety of each part of the system can lead to a gradual decrease in incidents and therefore contribute to maintaining tolerance for wildlife locally.

WWF Tigers Alive is an initiative of WWF that supports tiger range countries achieve their commitments under the Global Tiger Recovery Program to double the number of tigers by 2022.


WWF is one of the world’s largest and most experienced independent conservation organizations, with over 5 million supporters and a global network active in more than 100 countries. WWF’s mission is to stop the degradation of the planet’s natural environment and to build a future in which humans live in harmony with nature, by: conserving the world’s biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

The designation of geographical entities in this report and the presentation of material, do not imply the expression of any opinion whatsoever on the part of WWF concerning the legal status of any country, territory, or area, or its authorities, or concerning the delimitation of its frontiers or boundaries.

THE SAFE APPROACH TO HUMAN WILDLIFE CONFLICT MANAGEMENT

SAFE is a holistic and modern approach to an age-old challenge. It integrates the ancient tools within each of the Six Elements of conflict to gradually increase the safety of people and their assets, and wildlife and their habitat, in an area overtime.



	<p>Why we are here To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature. wwf.panda.org</p>
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 WWF International Secretariat, Rue Mauverney 28, 1196 Gland, Switzerland.