Poverty, Poaching and Trafficking:
What are the links?

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Executive Summary

Our rapid review of the academic and grey literature revealed that *the links between poverty, poaching and trafficking are under-researched and poorly understood.* Yet, the assumption that poaching occurs because of poverty is omnipresent, with little 'hard evidence' to support the claim. Despite this, we are confident that *the links are there*, based on the evidence that we gathered. However, our understandings are hampered by a series of factors: trafficking and poaching are overwhelmingly framed as an issue of conservation/biodiversity loss rather than of poverty and development; it is difficult to collect clear and detailed data on poaching precisely because of its illicit nature; and many of the cases we examined are also linked in with conflict zones, making research even more challenging. Nevertheless, our key findings are as follows:

1. Poaching in Sub Saharan African was produced via the historical legacy of colonialism
2. Poverty is directly and indirectly linked to poaching and trafficking of ivory and rhino horn from Sub-Saharan Africa
3. There are different types of poachers, and they require different policy responses
4. Poaching and trafficking of ivory and rhino horn are ultimately driven by wealth and not by poverty *per se*.
5. We need a much better understanding of the relationships between poverty and individual poacher motivation
6. The evidence base for claims around poverty as a driver of ivory and rhino poaching is thin, but that does not mean that poverty is not an important factor
7. There are direct links between conflict zones, illegal killing of wildlife, trafficking and poverty.
8. Trafficking can increase poverty

We then summarise the main policy responses, identifying their strengths and weaknesses. These include:

1. Changing people's behaviour via negative incentives (e.g. monitoring compliance with rules and penalising detected rule breakers), positive incentives and distractions.
2. The development of tourism as a route to poverty reduction.
3. Legalisation of the ivory and rhino horn trade at the international level, including arguments around its potential impact on community based natural resource management schemes.

Finally, we offer a series of short case studies that indicate these complex linkages via an analysis of particular examples.

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SECTION 1

Key findings

Key finding 1

Poaching in Sub Saharan Africa was produced via the historical legacy of colonialism

One of the legacies of colonialism was that legal rights to hunt were removed from Africans in order to protect sport hunting and the safari industry for European colonisers (Adams 2004; Jacoby, 2003; Neumann, 2004). This process of enclosure removed rights to subsistence hunting and further impoverished African communities. This also partly explains why some communities in Sub-Saharan Africa continue to resist and ignore legislation protecting wildlife because they believe they have a right to access and use wildlife as they have done for generations (Duffy, 2010; Neuman, 2001; Carruthers, 1995; Robbins et al. 2009; Bolaane, 2004; Mackenzie, 1988; Norgrove and Hulme, 2006; Adams 2004: 19-24; Roe, 2008b; Garland, 2008; Neumann, 1998; Fischer et al. 2013).

Key finding 2

Poverty is directly and indirectly linked to poaching and trafficking of ivory and rhino horn from Sub-Saharan Africa

This set of issues squarely fits under *Millennium Development Goal 7, Ensure Environmental Sustainability*. The UN states that MDG7 can be achieved via a series of targets, one of which is target 7b: reduce biodiversity loss, achieving by 2010, a significant reduction in the rate of loss[1] (also see Roe et al. 2011; Roe and Elliot (eds) 2010).

In order to respond effectively to the links between poverty, trafficking and poaching in Sub-Saharan Africa, we need to understand how it developed. There is no easy link between poverty and trafficking. Adams et al. (2004) distinguished four key arguments in the conservation-poverty debate:

(a)   Conservation and poverty are separate policy realms
(b)   Conservation should not compromise poverty reduction
(c)   Poverty impedes conservation because poaching and environmental degradation is often pursued by the poor in short-sighted ways. When people become richer they are more amenable to accepting conservation policies. Addressing poverty is therefore a means of directly and indirectly promoting conservation.
(d)   Poverty reduction depends on sustainable resource use. Where livelihoods depend on living resources their sustainable use will promote both the resource and the livelihood associated with it.

In order to achieve MDG 7, it is important to explore further the links between wildlife trafficking, poaching and poverty. It is useful to note one of the Key Performance Indicators of MDG 7 is setting aside 10% of land as protected area, which reveals the centrality and importance of such models of conservation. Wildlife conservationists and development

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[1]   http://www.un.org/millenniumgoals/environ.shtml

specialists tend to accept the blunt definitions and stereotypes around poaching (notably the circular argument that poor people poach because they are poor). For example, the International Conservation Caucus Foundation (ICCF), which under pins the International Conservation Caucus, involving one third of the membership of the US Congress, states:

> *'The extreme poverty of many African communities induces their complicity in African-based, Asian-run poaching networks. The demand for ivory has surged to the point that the tusks of a single adult elephant can be worth more than 10 times the average annual income in many African countries'[2].*

The ICCF, along with other governments, NGOs and private sector conservation organisations are increasingly involved in pushing forward a global position that Africa is facing an unprecedented poaching crisis; it is claimed that the crisis is orchestrated by organised criminal networks, but ultimately facilitated by poverty (see recent statements by conservation NGOs including WWF- International, Conservation International. IFAW, Wildlife Conservation Society etc). Conversely, a brief search of Oxfam, Care International and UNDP revealed no documents relating to poaching or trafficking. This means that a complex social question has been largely framed as a question around the impact on wildlife rather than on people. Our literature search revealed that trafficking and poaching are extremely complex and require an understanding of the global networks involved in organising poaching and trafficking, individual motivations, the opportunities afforded local people to poach, the incentives not to engage in poaching and the inter-relationship with conflict zones in Africa.

Key finding 3

There are different types of poachers, and they require different policy responses

Subsistence poachers: typically target small game (e.g. antelope) and hunt to meet food needs. Subsistence poaching is characterised by low technology (e.g. use of traps and snares) and tends to have a minimal impact on wildlife populations (Mackenzie, 1988; Adams, 2004; Fischer et al. 2013: 264; Adams et al. 2009). However, the use of non-selective hunting technologies can be detrimental to species that are both of conservation concern and critical to nature-based tourism including elephant, lion and wild dog (Becker et al. 2013).

Commercial poachers: typically operate within organised groups that target commercially valuable species e.g. rhinos and elephants. Commercial poachers may use different, typically more advanced technologies including firearms, GPS, mobile phones etc. Commercial poaching can have a devastating impact on wildlife populations (e.g. elephant populations in Eastern Africa in the 1980s) (see Leakey 2001; Brockington, Duffy and Igoe, 2008: 77-78; Duffy, 2010: 79-113).

Emerging and hybrid forms of poachers: commercial versus subsistence poachers are two blunt categories. However the boundaries can be blurred at the margins. The rise in commercial hunting for bushmeat, for example, shows how traditional subsistence hunting has been transformed in response to the arrival of logging companies in remote forests, where a workforce has to be fed, or transport links give easier access to urban markets. Redford (1992) coined the phrase 'empty forests' to indicate how commercial hunting depletes forests of fauna, which has a knock-on effect on local access to small game as sources of protein. In a similar vein, poaching as part of a conflict strategy (discussed below) cannot be easily categorised as subsistence or commercial since it blends elements of both

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[2]   http://iccfoundation.us/index.php?option=com_content&view=article&id=445&Itemid=367;
        also see Corson (2010) for further discussion of ICCF.

(Duffy, 2010: 155-187; Brockington, Duffy and Igoe, 2008: 77-78; also see Alvard et al. 1997; Bodmer and Lozano, 2001; Lowassa et al. 2012).

Key finding 4

Poaching and trafficking of ivory and rhino horn are ultimately driven by wealth and not by poverty *per se*

While poverty may encourage people to poach, poverty *per se* is not necessarily the driver or initiator of poaching. Individuals from poor communities would not engage in the poaching of commercially valuable species unless there was demand from wealthier communities (TRAFFIC 2008; IFAW, 2008; Duffy 2010: 155-187). The reasons for poaching tend not to be thoroughly investigated in NGO campaigns because in the past, it was the fact that animals were being poached that was the key driving issue (Peluso 1993: 205-9). A recent IUCN report on elephant meat trade in the Central African region concluded that demand from wealthier communities was a key stimulus for illegal hunting (Stiles, 2011). Wealthy industrial economies remain major legal and illegal importers of wildlife. In 2008 a report by TRAFFIC-ASIA examined the drivers of the illegal wildlife trade, and concluded that the increase in illegal trading of wildlife was directly related to the rise in incomes in the region. The report detailed the complexity of the networks involved in the wildlife trade: it linked local-level rural harvesters, professional hunters, traders, wholesalers and retailers with the final consumers of wildlife, in locations distant from the source of the product. The illegal wildlife trade provides varying levels of economic support to different communities: a source of regular income, a safety net or as profitable business (TRAFFIC, 2008)

Key finding 5

We need a much better understanding of the relationships between poverty and individual poacher motivation

Tackling poaching requires an understanding of human decision making. The decision to poach or not is decided by an individual, but is shaped by the social, political and economic context in which that individual finds themselves. When making decisions people are influenced by economic considerations, social-psychological factors, and an understanding of how they are expected to behave in society. Conservation and natural resource management interventions frequently attempt to change human behaviour whether it be by encouraging the adoption of agri-environment schemes (Hounsome et al. 2006), reducing poaching in protected areas (Jachmann 2008a) or limiting resource extraction (Gelcich et al. 2005). However, interventions may be most successful when based upon an understanding of factors driving individual decision-making. An understanding of factors driving poaching behaviour can help us to: change people's motivations so livelihood strategies are altered; structure incentive schemes; balance patrols and fines in law enforcement; and predict the effects of individual and collective decision making upon natural resources including elephant and rhino populations (St. John et al. 2013; Ostrom, 2010). This needs to be done in conjunction with tackling underlying social, economic and political reasons for why a person engages in poaching in the first place (Peluso 1993; Duffy, 2010; Jacoby 2003; Ostrom et al. 1999; Dowie, 2009; Adams, 2009; MacKenzie, 1988)

Economic models of human behaviour: economic analyses of human behaviour are traditionally underpinned by a model of rational choice whereby rational decision makers aim to maximize their *utility* – the level of satisfaction received from consuming a good – be it income or a meal of bushmeat (see Ostrom, 2010; Janssen et al. 2010). Such models have been used to investigate the effectiveness of an Integrated Conservation and Development Project (ICDP) designed to reduce poaching from the Serengeti, Tanzania (Barrett and

Arcese 1998). The results indicated that projects depending upon game meat distribution as a mechanism to reduce poaching are unlikely to be sustainable when game meat is a tradable commodity and environmental shocks reduce the productivity of labour invested in agriculture (Barrett and Arcese 1998). Economic models have also been used to understand the role of enforcement efforts in limiting illegal extraction of elephant and rhino (Milner-Gulland and Leader-Williams 1992); and the distribution of labour to bushmeat hunting or agriculture (Damania et al. 2005). (Also see Johannesen (2006).

Factors affecting people's decision making can change in response to personal circumstances, this includes the rate at which individuals discount future events (Edwards-Jones 2006). These dynamics are poorly understood, for example, *it is assumed that the poor, preoccupied with survival in the present, have high discount rates which result in over-exploitation of local resources to fulfill immediate needs* with little or no resources or willingness to invest in the future (Moseley 2001). However, *there is evidence of desperately poor African households choosing long-term gains despite short-term costs.* For example evidence from food security analysts in Africa indicates that the poor often eat less in order to preserve productive capital and chances of producing food in the future (Moseley 2001).

Social psychological factors influencing decision-making: Theories of human behaviour from social psychology highlight interactions of internal (e.g. attitude) and external (e.g. availability of resources) influences on behaviour. For example the theory of planned behaviour (Ajzen 1991) states that a person's behaviour can be predicted by three main factors: their attitude, subjective norms (perceived social pressure), and the degree of control they perceive they have over performing a behaviour (e.g. availability of required knowledge, skills and resources). By quantifying the relative importance of each of these components, interventions aimed at changing behaviour can be designed to target the main influences on individuals (Ajzen and Fishbein 1980). Such theories have rarely been applied to poaching. Where they have been, evidence indicates that a one-size-fits-all solution is unsuitable as the relative importance of factors driving poaching differ by region and levels of affluence (Marchini and MacDonald 2012). People's internalised perceptions of what is 'morally right or wrong' are also likely to influence compliance (Winter and May 2001; Fischer et al. 2013).

Individuals and the importance of social norms: People are embedded within societies where their interactions are mediated by institutions which shape behaviour (Ostrom 2000; Agrawal 2001). Institutions can be formal, based on laws and regulations, or informal, based on social norms or traditional rules (Agrawal 2001). There is evidence that conservation interventions, such as the imposition of rules associated with resource use, can erode social norms and the institutions that enforce them. This can have negative consequences on the resource base and upon human well-being. Consequently, when planning interventions, projects should consider how their actions may influence existing norms and institutions that may be providing some positive natural resource management (Gelcich et al. 2006; Jones et al. 2008). Further, there is evidence that projects failing to understand the specific context of wildlife uses and livelihood practices prior to implementation fail to achieve their objectives. For example, the failure of Zambia's community-based wildlife program (Administrative Management Design for Game Management Areas, ADMADE) in the Munyamadzi Corridor, Luangwa Valley, has been attributed to erroneous assumptions that local residents would be converted to conservation as a matter of economics; and the failure to consider the cultural importance of the role of 'hunter' in lineage affiliations together with use values of wild meats (Marks 2001).

Key finding 6

The evidence base for claims around poverty as a driver of ivory and rhino poaching is thin, but that does not mean that poverty is not an important factor

Little attention has been given to studying the drivers of illegal natural resource extraction by gathering data directly from the public, which includes potential rule-breakers. This is largely due to the difficulties associated with studying illegal activities, with rule breakers unwilling to identify themselves for fear of punishment (Gavin et al. 2010; St. John et al. 2010).

In the only study of its kind to date, Burn et al. (2011) explore country level drivers and spatial distribution of elephant poaching using data from the database Monitoring the Illegal Killing of Elephants (MIKE) set up by the 10th CoP of CITES in 1997. MIKE holds site-level carcass encounter data reported mainly through anti-poaching patrols. Data analysed were site by year totals of 6,337 carcasses from 66 MIKE sites in 36 range states in Africa and Asia between 2002 and 2009. Results indicate that sites with forest cover, such as those within Central Africa, experience higher levels of poaching than savannah sites, presumably because detection by enforcement officials is less likely in such habitats so poachers have greater freedom of movement Burn et al. (2011). However, it may be that states with forests have weaker enforcement capacity. At the country level, *drivers of illegal killing that emerged from the analysis were poor governance and low levels of human development* (Burn et al. 2011). Stiles (2011) reported that the main reasons for elephant poaching given by those who participate in hunting were lack of law enforcement and poverty. Similar findings have been reported by others for African elephants and black rhinoceroses (Smith et al. 2003). Burn et al. (2011) highlight the fact that:

> '…we [the authors] are only just beginning to make inroads into understanding the plethora of potential impacts – social, political, economic and ecological, and the causal pathways between them – on elephant poaching and illicit ivory trade' (Burn et al. 2011).

Key finding 7

There are direct links between conflict zones, illegal killing of wildlife, trafficking and poverty

Poorer communities in conflict areas lose the value of wildlife to organised militia and rebel groups who use ivory and rhino horn to fund their operations. Furthermore, it prevents the development of tourism because tourists are put off by the risks associated with a combination of conflict zones and poaching. Tourism is difficult to develop in areas of on-going conflict because of the risks to international tourists and the lack of facilities. This is a major challenge for communities aiming to capture tourist value of wildlife in CAR, Sudan, DRC and the Rwanda-Uganda-DRC border areas (Lombard, 2012). The rise in poaching in Central African Republic and its relationships to regional security issues (Chad, Cameroon, CAR and Gabon) was detailed in a report by UN Secretary General, Ban Ki Moon (UN, 2013). Zakouma National Park in Chad has also suffered poaching by rebel groups to fund cross border wars; Garamba National Park (DRC) was used as a base by the Lord's Resistance Army (LRA) in 2012 and it used ivory poaching to underpin and finance operations; leader of the LRA, Joseph Kony, was based there in 2012 (UN, 2013).[3] However, the claim that new ivory wars are organised by Janjaweed militia and LRA has been seriously questioned – Lombard suggests these are simplistic and 'easy labels' used by Governments in the region to entice in external help or to demonise poachers as

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[3]   http://www.african-parks.org/;   http://www.cnn.com/2013/06/05/world/africa/kony-elephant-poaching; Christy, B. 'Blood Ivory' *National Geographic*, October 2012; Keith Somerville, African Arguments Series (Royal African Society) Ivory Wars: How Poaching in Central Africa Fuels the LRA and Janjaweed, 14.01.13, http://africanarguments.org/2013/01/14/the-ivory-wars-how-poaching-in-central-africa-fuels-the-lra-and-janjaweed-%E2%80%93-by-keith-somerville/

'outsiders'.[4] Other national parks have been used in the past to train militia, rebel movements; one of the best documented cases is the use of Kruger National Park by the South African Defence Force to train Renamo rebels in the 1980s (Duffy 1997). Poaching has been used as a financial underpinning for conflicts across Sub-Saharan Africa, including Uganda in the 1970s and 1980s (Norgrove and Hulme, 2006), Angola and Mozambique in the 1980s (Reeve and Ellis, 1995; Ellis, 1994; Duffy, 1999; Cochrane, 2008), and the Great Lakes region since 1996 (Benz and Benz, 2011). For further discussion of the links between wildlife and conflict see Milburn, 2012; Humphries and Smith, 2012; Duffy 2010:113-174).

As conflicts produce large scale population displacements and refugee camps, refugees and Internally Displaced People (IDPs) can turn to poaching to feed themselves (bushmeat) or to earn cash income (via poaching commercially valuable goods). A study by TRAFFIC East/Southern Africa found that rations provided in refugee camps in Tanzania encouraged people in the camps to hunt illegally to meet protein needs (see Jambiya, Milledge and Mtango, 2007).

Key finding 8

Trafficking can increase poverty

> *'The trade in wildlife and wildlife products, both domestic and international, also generates cash income and employment in biodiversity rich countries and can represent an important contribution to their GDP. When this trade is legal, sustainable and effectively managed it can provide benefits for local communities— and when it is poorly managed and largely illegal, the benefits to local communities are lost' (Roe, 2008a: 1).*

Organised crime and transnational trading networks capture the main value of ivory and rhino horn. Poorer people would not engage in poaching were it not for wider networks able to transport ivory and rhino horn out of source countries to end-user markets. It is this dynamic where we can point to a link to poverty and trafficking since it is the networks (transport, organised crime, use of diplomatic bag) that are able to capture the real value of ivory and rhino horn. Poachers receive a comparatively small amount of the value, and wider local communities lose all potential value (see section on CBNRM/Campfire below) (Duffy, 1999; Robbins, 2000; Bonner 1993; Ellis 1994; Reeve and Ellis 1995). The global wildlife trade is estimated to be worth US$300 billion per year, and much of the value is lost to communities who live with wildlife; and so harnessing the wildlife trade can form a key part of poverty reduction strategies (Roe, 2008a: 1; also see Roe et al. 2011).

Corruption and collusion by parks agencies, government officials, and private sector businesses allow ivory and rhino horn to be trafficked from source countries in Africa to end user markets in Asia. This further impoverishes populations because the value of these commodities is captured by corrupt individuals rather than the country as a whole. The role of corruption and organised crime in rhino and ivory trafficking is so significant that Interpol launched Operation Worthy in 2012 to combat trafficking and poaching in Africa (as part of Project Wisdom, to tackle ivory and rhino horn poaching funded by DEFRA and IFAW).[5] In 2007 EIA claimed that organised gangs were moving into environmental crime, because it was low risk but high value. They have lobbied the UN Convention Against Transnational

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[4]   Lombard. L. (2012) The Tangled Brokering of Militarized Conservation in Central Africa, paper presented at the American Association of Anthropologists; Lombard, L. 'Ivory Wars' *New York Times* 20.09.12.

[5]   http://www.interpol.int/News-and-media/News-media-releases/2012/PR049

Organized Crime and the United Nations Office on Drugs and Crime (UNODC) to take wildlife crime seriously and treat it as on a par with drugs and arms trafficking.[6]

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[6]   Gangs moving into environment crime', *The Daily Telegraph*, 06.06.07.

SECTION 2
Policy responses

Changing individual's behaviours

Interventions typically combine approaches from three broad categories (St. John et al. 2013):

Negative incentives: typically enforcement designed to deter illegal activities such as poaching, but also includes campaigns to alter public opinion making activities socially costly (e.g. campaigns against fur).

Positive incentives: money or benefits in kind are given to communities or individuals for behaving in a certain way, e.g. refraining from illegal resource extraction.

Distractions: alternative options, for example improved crop yields, are offered to reduce the comparative attractiveness of illegal activities.

Negative incentives – enforcement

Evidence indicates that reducing effort devoted to enforcement within protected areas leads to increased levels of poaching. Fifty years of records from Serengeti, Tanzania show that the rapid decline in enforcement in 1977 resulted in large increases in poaching and the decline of many species. From the mid-1980s expanded budgets allowed for increased anti-poaching patrols, as a result, poaching was greatly reduced and populations of buffalo, elephants, and rhinoceros showed signs of recovery (Hilborn et al. 2006).

Enforcement is financially costly, consequently enforcement at a levels adequate to protect elephant and rhino are prohibitively expensive for most African range States. Techniques for optimising enforcement strategies are therefore required. To this end, studies from Luangwa Valley, Zambia model the influence of sentencing structure on poacher decision-making and how anti-poaching resource allocation relates to poaching rates (Case Study 1, Zambia). Further, evidence from Ghana (Case Study 2, Ghana) indicates that market raids (Martin 2010) and monitoring enforcement-staff performance can contribute to reduced poaching as a result of improved staff performance (Jachmann 2008b).

However, enforcement is not only financially costly it can also be costly in terms of local relations. Enforcement can erode trust between conservation authorities and local people by restricting access to resources that have an irreplaceable role in the lives of local people (Infield 2001). Indeed, evidence indicates that trust and legitimacy between protected area staff and local people are key factors related to voluntary compliance where general agreement with regulations does not necessarily exist (Stern 2008).

Increased levels of military-style enforcement could increase poverty and alienate local communities. An increasingly common response is to suggest the need for greater levels of enforcement; this goes beyond more traditional understandings of negative incentives designed to encourage individuals not to engage in illegal behaviours via use of fines, imprisonment and public awareness campaigns (Terborgh, 1999; Oates, 1999; Hutton, Adams and Murombedzi, 2005; Leakey, 2001); even UN Secretary General Ban Ki Moon

has claimed that a more militarised approach is needed (UN, 2013). The claim that Africa is facing a new poaching war lends weight to this argument. Greater enforcement can be via greater use of arms, shoot to kill, expansion of ranger numbers, contracting anti-poaching out to the private sector, more use of new technologies (drones, camera traps, thermal imaging) greater use of fines, prosecutions etc. It is clear that greater levels of enforcement by states, NGOs or private sector operators may produce 'quick wins' in the short term. However, the danger is that such heavy handed tactics will be counter-productive and alienate local communities in the longer term (Hutton, Adams and Murombedzi, 2005; Duffy forthcoming; Roe et al. 2010; Neumann 2004; Butt, 2012; Lunstrum, 2013; Peluso, 1993; Dressler at al, 2010). Further, in the case of the rhino wars in the Zambezi Valley in the 1990s, local communities claimed they were 'caught in the crossfire' between organised poachers and parks agencies; they were in the area collecting grass, wild food plants or hunting small game and were mistaken for commercial rhino hunters (Duffy, 2010: 103; Bonner, 1993); in the Liwonde National park in Malawi, South African private military company personnel were used to train the park rangers; and later parks staff were implicated in over 300 deaths, 325 disappearances, 250 rapes and numerous instances of torture between 1998-2000 in the Liwonde National Park alone (Neumann, 2004: 830).

Positive incentives – integrating local people into the management of natural resources

Since the 1980's efforts aiming to integrate local people in conservation efforts have gained wide support (see for example Integrated Conservation and Development Projects (ICDP) and Community Based Natural Resource Management). Strategies for achieving participation have usually focused on economic links between people in communities and protected areas. For example, the potential income to be made from alternative livelihood strategies including safari tourism, trophy hunting, or sale of products (Barrett and Arcese 1995). However, *most of Africa's protected areas do not contribute significantly to reducing poverty* (Infield and Namara 2001). Barriers to realising economic potential include international trade restrictions under the Convention on International Trade in Endangered Species (CITES)[7], access to markets, and the isolated nature of many sites from infrastructure sufficient to support international tourism. For a review of issues associated with ICDPs see Hughes and Flintan (2001).

The focus on economic incentives results from the theory that market forces will protect the environment. However, despite a range of initiatives and considerable donor investment *it has proved difficult to provide tangible benefits from conservation to local communities in Africa* largely because most protected areas do not create sufficient revenue to off-set the costs to communities of maintaining them (Emerton 1998; Newmark and Hough 2000; Norton-Griffiths and Southey 1995). In addition, evidence indicates that alternative livelihoods can become additional so whilst household well-being may increase, illegal natural resources extraction may continue (Ferraro and Kramer 1997; also see Janssen et al. 2010; Ostrom, 2010).

Decentralisation of natural resource management has also increased in popularity since the mid-1980s. There is some evidence that higher shares of potential revenue are collected under systems of decentralised forest management (Danish Centre of Forest Landscape and Planning 2007). However, elite capture has proven to be problematic. For example, benefits arising from the decentralisation of forests in Cameroon are typically captured by bureaucrats and state officials (Case Study 3, Cameroon) (Larson and Soto 2008). Also see example of Campfire in Zimbabwe (discussed under 'Legalisation' section, as well as Buscher and Dressler, 2012; Dressler et al. 2010).

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[7] There is insufficient information and/or widespread disagreement about both conservation and livelihood impacts of trade bans (Roe et al. 2002).

Distractions – offering alternatives to illegal poaching

By paying a premium on agricultural crops, an ICDP in Ghana aimed to reduce the amount of time hunter-farmers allocated to hunting by making agriculture more profitable. However, rather than reducing the pressure on bushmeat species Damania et al. (2005) suggest that hunter-farmers would invest some of their increased income in new, more efficient, hunting gear enabling them to target more economically valuable species. As a result the impact of increasing the profitability of agriculture on reducing illegal hunting was ambiguous (Damania et al. 2005).

Evidence from ICDPs highlights the importance of conditionality. Evidence from the Serengeti-Mara ecosystem emphasises the critical importance of linking the transfer of benefits to measurable conservation goals. For example, where the aim is to stop poaching within a protected area, benefits should ideally only be received by people who do not poach otherwise the scheme does not create an incentive to alter behaviour from poaching to other legal activities that contribute to household well-being (Johannesen 2006; Dressler et al. 2010).

Based on the lessons learned about the importance of conditionality, payments for ecosystem services (PES) has been proposed as a promising alternative (Pagiola 2008). PES can be described as a voluntary transaction in which a provider of a service receives benefit from a buyer, conditional upon that service being provided at a required standard (Engel et al. 2008). Large-scale PES schemes have been established in a number of countries with strong institutional frameworks capable of facilitating monitoring, enforcement and outside validation of service providers (for examples: Pagiola 2008; Dobbs & Pretty 2008). However, weak institutional frameworks and lack of clear natural resource and land tenure rights typify much of sub-Saharan Africa, which means there are no straightforward links between PES and poverty reduction (Agrawal et al. 2008; Corbera, Brown and Badger, 2007). While other critics fundamentally question the underlying principles of PES, arguing that it serves to further embed a neoliberal approach to the environment, which is ultimately counterproductive (Buscher et al. 2012)

Tourism as a route to poverty reduction

Tourism is often promoted as the answer to poverty reduction via e.g. employment opportunities, community run lodges, and handicrafts to allow poorer communities to capture the value of wildlife (Ashley, Roe and Goodwin, 2001; Meyer, 2008; Spenceley and Meyer, 2012). In a recent report to CITES, Head of UNEP, Achim Steiner claimed that trafficking and poaching robbed local communities of the chance to develop tourism, and therefore threatened livelihoods (UNEP, CITES, IUCN, TRAFFIC (2013).[8] However, this link is too simplistic. Communities are often unable to develop tourism initiatives because they are located in areas with low levels of wildlife, inadequate transport links and facilities to service international tourism markets. Furthermore, there is good evidence of how tourism initiatives are subject to elite capture at the community level, national level (government officials, private businesses) and the international scale (by large tour operators) (Fletcher, 2011; Mbaiwa et al. 2008; Neves, 2010; Adams and Infield, 2003; Duffy 2010; Southgate, 2003; Honey, 1999; Sandbrook, 2008; Murombedzi, 2001).

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[8]   www.cites.org/eng/news/pr/2013/20130306_ivory.ph

Legalisation of the ivory and rhino horn trade

A number of Southern African states (South Africa, Namibia, Zambia, Zimbabwe) have argued that legalisation of trade needs to be considered. As with the debate on the trade in narcotics, the argument is made that legalisation will take profits away from organised crime, traffickers and poaching rings; legalisation could ensure that profits from wildlife trading will flow to states and local communities to alleviate poverty and reinvest in conservation. This was a key underpinning argument for the development of community oriented conservation and poverty reduction initiatives; the best known is Campfire in Zimbabwe (see Abernsperg-Traun, M., C. O'Criodain and D. Roe (eds), 2011). The rationale was that local communities should have full control of wildlife resources in their area to sell as sport hunting trophies, sources of ivory and rhino horn on the international market or to use wildlife as a source of protein. The revenue would then be used to alleviate poverty. If returns were spent locally, at the ward level, and if village populations were small, then the value of wildlife could be remarkable and make a significant difference to people's lives. In two villages in particular, Mahenye and Masoka, Murphree has documented substantial improvements (Murphree, 2001; Murphree, 2005). However, Campfire was increasingly criticised as top down and failing to disburse promised benefits to communities. Equally the global level ivory and rhino horn trade bans under CITES prevented capture of the full value of wildlife (Hulme and Murphree (eds) 2001; Duffy, 2013; Ribot, 2004; Murombedzi, 1999; Dzingirai, 2003; Manjengwa and Anstey (eds) 2009; Murphree, 1995; South and Wyatt, 2011).

Conservation oriented NGOs such as WWF, IFAW and EIA have argued that the on-going debates around legalisation of ivory and rhino horn via CITES could provide an incentive to poach. Expectation of future management policies can affect commodity prices thus influencing incentives to poach (Keane et al. 2008). Kremer and Morcom (2000) suggested that anticipated future scarcity of elephant ivory, whether the result of foreseen increases in anti-poaching efforts, extinction, or trade bans, would increase current market prices and thus poaching and argued that if governments could commit to tough anti-poaching efforts incentives to poach may be reduced. However, Bulte et al. (2003) argue that the CITES ban on the trade in ivory may actually create incentives for governments to harvest their elephant populations to extinction if the prices for stored ivory are sufficiently high and if extinction is expected to precipitate the lifting of the trade ban (Keane et al. 2008).

Case Studies 1 Luangwa Valley, Zambia

Case Study 1: Enforcement and elephants, Luangwa Valley, Zambia – sentencing strategies

Stimulated by high ivory prices, high levels of poaching in the 1970's and 1980's threatened the African elephant (*Loxodonta africana)* with extinction prompting debate on how illegal hunting should be controlled in elephants' range states where government resources are limited (Keane et al. 2008).

From 1972 to mid-1980's the elephant population of Luangwa Valley, Zambia lost c. 75% of its 100,000 population and despite sufficient investment 1979, anti-poaching patrols failed to prevent further decline (Leader-Williams and Albon 1988). Evidence suggests that whilst anti-poaching patrols were well-motivated, they were insufficiently numerous to control hunting across the area (Leader-Williams et al. 1990). Models have been used to study the interaction between law enforcement and economic incentives for poaching elephants and rhino in Luangwa Valley between 1970 and 1985 (Milner-Gulland and Leader-Williams 1992). Exploring how sentencing strategies affected the decisions of poachers in relation to changes in detection rate, penalty and economic variables were explored. Results indicated that *varying penalties in accordance with the number of trophies possessed by a poacher was in theory a more effective tool against poaching than a fixed penalty.* However, the probability of capture remained significant in the poacher's decision to hunt (Milner-Gulland and Leader-Williams 1992).

Enforcement and elephants, Luangwa Valley, Zambia – resource allocation

Jachmann and Billiouw (1997) investigated the relationship between elephant poaching and resource allocation by the Luangwa Integrated Resource Development Project (LIRDP) to law enforcement in terms of budget and human resources between 1988 and 1995. The LIRDP covered the South Luangwa National Park (9050 Km^2) and the Lupande Game Management Area (4950 km^2) within which 14 scout camps were located. Enforcement activities included foot-patrols by groups of six to ten scouts each lasting for around 10 days, and following-up on intelligence supplied by informers from outside the project area. Cash rewards were paid to scouts or porters supporting the scout team for information that lead to an arrest or confiscation of firearms or trophies.

Results indicate that fluctuations in the number of elephants killed during this period could be attributed solely to a steeply increased enforcement budget which increased the density of scouts and porters per km^2 in addition to the number of effective patrol and investigation days with no need to invoke any influence in the 1990 CITES ban on trade in ivory. However, *the number of cash rewards paid was the most influential factor associated with fluctuations in levels of elephant poaching* observed across the study period (Jachmann and Billiouw 1997). Jachmann and Billiouw (1997) highlight the positive influence of improved morale amongst scouts generated by the payment of bonuses and support of porters who, in addition to their role as porters provide additional man-power during conflict situations with poachers.

Case Studies 2 Enforcement and elephants, Ghana

> **Case Study 2: Enforcement and elephants, Ghana – monitoring staff performance**
> Monitoring the performance of enforcement staff can play an important role in reducing illegal activities in protected areas. *Poaching was reduced by 72% in four of the six protected areas where staff performance was evaluated and used for adaptive management.* Staff performance improved firstly because management became aware of poor performance and responded accordingly and secondly because enforcement staff became aware of how well staff performed in other protected areas stimulating enhanced motivation and competition between sites to be the best (i.e. the site with the least illegal activity) (Jachmann 2008b). The impact of monitoring staff performance and feeding the results into an adaptive management strategy effectively doubled the number of days enforcement staff spent on patrol, this dramatically reduced the number of elephants killed (Martin 2010).
>
> **Raiding markets**
> In 2008 shops in Accra identified as stocking the largest quantities of ivory for sale where raided by the Ghana Police and Wildlife Division. Several hundred kilos of ivory curios were seized and the shop owners and assistants arrested for dealing in endangered wildlife products without a license. Visiting the area in 2010 Martin (2010) reported a considerable decline in the quantity of ivory openly on display for sale and that retailers were well aware that selling ivory was illegal. These findings were attributed to the 2008 police raids. Despite this, items were made available in a clandestine manner indicating the existence of a black market (Martin 2010). Whilst the considerable decline in the number of ivory curios openly on display would appear to reflect a considerable step in the right direction, the size of the black market in ivory products is unknown.

Case Studies 3 Decentralisation, Cameroon

> **Case Study 3: Decentralisation of natural resources, Cameroon**
> Cameroon's programme of natural resource management decentralisation includes the transfer of a portion of forestry fees to local governments and communities, the transfer of forest ownership rights to local governments, and the establishment of community forests in areas where communities have traditional rights (Larson and Soto 2008). The application process for establishing community forests is highly complex and requires the establishment of management committees. Generally, these committees are set up, in collusion with bureaucrats, in ways that promote elite capture, conflict, and corruption, the result being the emergence of a class of nouveaux riches. Whilst co-management agreements may increase participation of some local actors, they may further marginalise local communities and resource users (Larson and Soto 2008).

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