



A RAPID RESPONSE ASSESSMENT

# THE ENVIRONMENTAL CRIME CRISIS

THREATS TO SUSTAINABLE DEVELOPMENT FROM  
ILLEGAL EXPLOITATION AND TRADE IN WILDLIFE  
AND FOREST RESOURCES



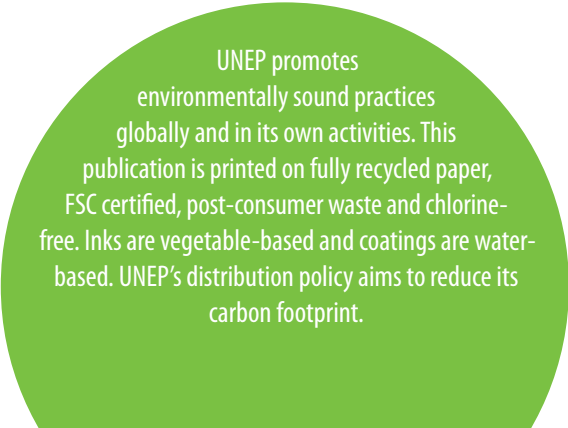
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AND FOREST RESOURCES

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# Preface

Given the alarming pace, level of sophistication, and globalized nature that illegal trade in wildlife has now notoriously achieved, UNEP initiated a Rapid Response Assessment to provide some of the latest data, analysis, and broadest insights into the phenomenon. Tackling illegal wildlife trade demands this examination of the relationship between the environmental resources at stake, their legal and illegal exploitation, the loopholes that exacerbate the situation, the scale and types of crimes committed, and the dynamics of the demand driving the trade.

In the international community, there is now growing recognition that the issue of the illegal wildlife trade has reached significant global proportions. Illegal wildlife trade and environmental crime involve a wide range of flora and fauna across all continents, estimated to be worth USD 70–213 billion annually. This compares to a global official development assistance envelope of about 135 billion USD per annum. The illegal trade in natural resources is depriving developing economies of billions of dollars in lost revenues and lost development opportunities, while benefiting a relatively small criminal fraternity.

This report focuses on the far-reaching consequences of the environmental crime phenomenon we face today. The situation has worsened to the extent that illegal trade in wildlife's impacts are now acknowledged to go well beyond strictly environmental impacts – by seriously undermining economies and livelihoods, good governance, and the rule of law. Even the security and safety of countries and communities is affected: the report highlights how wildlife and forest crime, including charcoal, provides potentially significant threat finance to militias and terrorist groups. Already recognized as a grave issue in DRC and Somalia by the UN Security Council, the assessment reveals that the scale and role of wildlife and forest crime in threat finance calls for much wider policy attention, well beyond those regions.

The consequences are increasingly evident: illegal wildlife trafficking constitutes a barrier to the achievement of both sustainable development and environmental sustainability. As reflected in a range of decisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the UN Office for Drugs and Crime, the UN Commission on Crime Prevention and Criminal Justice, INTERPOL, the UN Security Council, and others, the illegal trade in wildlife and environmental crime are now widely recognized as significant threats on a global scale, to be tackled with urgency. However the responses to date, in terms of impact on the ground, have been too modest, and inadequate to the scale and growth of the threat to wildlife and the environment.

A fuller understanding of the phenomenon of illegal wildlife trade is necessary to design and further strengthen – and accelerate – an effective strategy to successfully tackle the issue at all levels and with all means possible. A global and holistic response needs to be implemented to support national, regional and international efforts by strengthening and synchronizing actions targeting coherent environmental legislation, poverty alleviation and demand reduction.

**Achim Steiner**

UN Under-Secretary General and UNEP Executive Director



**The illegal trade in  
natural resources is  
depriving developing  
economies of billions  
of dollars**

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# Executive summary

Ecosystems play a crucial role and especially for developing economies by supporting revenues, future development opportunities, livelihoods and sustainable harvest sectors relying heavily on natural resources, such as in agriculture, forestry and fisheries. Healthy ecosystems provide the platform upon which future food production and economies are ultimately based.

The opportunities ecosystems provide for future development, however, are threatened by serious and increasingly sophisticated transnational organized environmental crime, undermining development goals and good governance. Transnational organized environmental crime may include illegal logging, poaching and trafficking of a wide range of animals, illegal fisheries, illegal mining and dumping of toxic waste. It is a rapidly rising threat to the environment, to revenues from natural resources, to state security, and to sustainable development. Combined estimates from the OECD, UNODC, UNEP and INTERPOL place the monetary value of all transnational organized environmental crime between 70–213 billion USD annually. This compares to a global ODA of ca. 135 billion USD. Whilst therefore benefiting a relatively small criminal fraternity, the illegal trade in natural resources is otherwise depriving developing economies of billions of dollars in lost revenues and development opportunities.

The illegal trade in wildlife is no longer an emerging issue. The scale and nature of the challenge has been recognized in decisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the UN Commission on Crime Prevention and Criminal Justice, the Economic and Social Council (ECOSOC), the UN Security Council, UN General Assembly, INTERPOL, the World Customs Organisation (WCO) and others, including at national levels. High-level political conferences have also addressed the issue, most notably recently convened in Botswana and Paris (December 2013), London (February 2014), and Dar es Salaam (May 2014). However, the responses in terms of impact on the ground are still behind the scale and development of the threat to wildlife, including forests, as well as increasingly also development goals.

The illegal trade in fauna and flora excluding timber, charcoal and fisheries, has been estimated by different sources to be worth 7–23 billion dollars annually. The trade involves a wide range of species including insects, reptiles, amphibians, fish and mammals. It concerns both live and dead specimens or products thereof, used for pharmaceutical, food, pets, ornamental or traditional medicinal purposes. Illegal harvest and trade includes a range of taxa such as gorillas, chimpanzees,



elephants, tigers, rhinos, Tibetan antelopes, bears, corals, birds, pangolins, reptiles, sturgeon for black caviar, and a wide range of other commercial fisheries species from the high seas and territorial waters. All of these have a significant value not only on the black market, but even more to national economies if managed sustainably. The illegal trade in wildlife operates per definition outside government official regulation and management, and thus represents a significant economic, environmental and security threat that has received relatively little attention in the past.

The possible number of elephants killed in Africa is in the range of 20–25,000 elephants per year out of a population of 420,000–650,000. For the forest elephant, population size has been estimated to decline by ca. 62% between 2002 and 2011. Poached African ivory may represent an end-user

street value in Asia of an estimated USD 165–188 million of raw ivory, in addition to ivory from Asian sources. For rhinos, some 94% of the poaching takes place in Zimbabwe and South Africa, which have the largest remaining populations. Here poaching has increased dramatically from possibly less than 50 in 2007 to over 1,000 in 2013 involving organized syndicates. Rhinos have disappeared entirely from several Asian and African countries in recent years. Rhino horn poached last year is valued around USD 63.8 – 192 million USD, much less at the frontline.

The scale of revenue from the illegal trade in fauna is dwarfed by the income from illegal logging and forest crime. Forest crime, such as illegal logging, has previously been estimated to represent a value of 30–100 billion USD annually or 10–30% of the total global timber trade. An estimated 50–90% of the wood in some individual tropical countries is suspected to come from illegal sources or has been logged illegally. Forest crime appears to take place in four forms: 1) The illegal exploitation of high-value endangered (CITES listed) wood species, including rosewood and mahogany; 2) Illegal logging of timber for sawn wood, building material and furniture; 3) Illegal logging and laundering of wood through plantation and agricultural front companies to supply pulp for the paper industry; and 4) Utilization of the vastly unregulated woodfuel and charcoal trade to conceal illegal logging in and outside protected areas, conduct extensive tax evasion and fraud, and supply fuel through the informal sector.

For pulp and paper production, networks of shell companies and plantations are actively used to by-pass logging moratoriums under the pretext of agricultural or palm- oil investments, used to funnel illegal timber through plantations, or to ship wood and pulp via legal plantations in order to re-classify pulp or wood as legal production, undermining also legal business and production.

These methods effectively bypass many current customs efforts related to the Lacey Act and the EU FLEGT programme to restrict the import of illegal tropical wood to the US and to the EU, respectively. Based on data from EUROSTAT, FAO and the International Tropical Timber Organization (ITTO), the EU and the US annually imports approximately 33.5 million tons of tropical wood in all its forms. It is estimated that 62–86% of all suspected illegal tropical wood entering the EU and US arrives in the form of paper, pulp or wood chips, not as roundwood or sawnwood or furniture products, which have received the most attention in the past.

In Africa 90% of wood consumed is used for woodfuel and charcoal (regional range 49–96%), with an official charcoal production of 30.6 million tons in 2012, worth approximately USD 9.2–24.5 billion annually. The unregulated char-

coal trade alone involves an annual revenue loss of at least USD 1.9 billion to African countries. With current trends in urbanization and the projected population increase of another 1.1 billion people in Sub-Saharan Africa by 2050, the demand for charcoal is expected to at least triple in the coming three decades. This will generate severe impacts like large-scale deforestation, pollution and subsequent health problems in slum areas, especially for women. The increased charcoal demand will also strongly accelerate emissions from both forest loss and emissions of short-lived climate pollutants – black carbon. Internet listings reveal over 1,900 charcoal dealers in Africa alone. At least 300 of these are exporting minimum orders of 10–20 tons of charcoal per shipment. Their minimum daily orders exceed the official total annual exports for some countries. For East, Central and West Africa, the net profits from dealing and taxing unregulated, illicit or illegal charcoal combined is estimated at USD 2.4–9 billion, compared to the USD 2.65 billion worth of street value heroin and cocaine in the region.

Wildlife and forest crime has a serious role in threat finance to organized crime, and non-state armed groups including terrorist groups. Ivory also provides a portion of income raised by militia groups in the DRC and CAR, and is likely a primary source of income to the Lord's Resistance Army (LRA) currently operating in the border triangle of South Sudan, CAR and DRC. Ivory similarly provides a source of income to Sudanese Janjaweed and other horse gangs operating between Sudan, Chad and Niger. However, given the estimated elephant populations and the number of projected killed elephants within the striking range of these militia groups, the likely annual income from ivory to militias in the entire Sub-Saharan range is likely in the order of USD 4.0–12.2 million.

Illicit taxing of charcoal, commonly up to 30% of the value, is conducted on a regular basis by organized criminals, militias and terrorist groups across Africa. Militias in DRC are estimated to make USD 14–50 million annually on road taxes. Al Shabaab's primary income appears to be from informal taxation at roadblock checkpoints and ports. In one roadblock case they have been able to make up to USD 8–18 million per year from charcoal traffic in Somalia's Badhadhe District. Trading in charcoal and taxing the ports have generated an estimated annual total of USD 38–56 million for Al Shabaab. The overall size of the illicit charcoal export from Somalia has been estimated at USD 360–384 million per year. For African countries with ongoing conflicts, including Mali, CAR, DRC, Sudan and Somalia, a conservative estimate is that the militia and terrorist groups in the regions may gain USD 111–289 million USD annually, dependent upon prices, from their involvement in, and taxing of, the illegal or unregulated charcoal trade. More investigation is needed to determine the role of charcoal for threat finance.



## Responses

Illegal trade in forest and wildlife products, as well as the illegal exploitation of natural resources is now widely recognized as a significant threat to both the environment and to sustainable development. This is reflected in a range of decisions from CITES, from the UN Commission on Crime Prevention and Criminal Justice, INTERPOL, UNEP, and the UN Security Council, including on Somalia and DRC.

International enforcement collaboration, such as the International Consortium on Combating Wildlife Crime (ICWC), which includes CITES, UNODC, INTERPOL, the World Bank and WCO, together with increased collaboration amongst agencies, such as with UNEP, and with countries, has created a more effective structure to provide support to countries in the fields of policing, customs, prosecution and the judiciary. These initiatives have revealed important and significant early results.

Poaching for Shahtoosh wool from Tibetan or Chiru antelopes caused a dramatic drop of likely 80–90% or nearly a million Chiru antelopes in China in the 1990–2000s and resulted in a significant environmental, police and military effort to

prevent eradication. It was combined with the establishment of some of the largest protected areas in world. While populations are slowly recovering, they are still very vulnerable and more surveys urgently needed.

Brazil is probably one of the world's leading countries in a wide enforcement effort to reduce illegal deforestation by tackling the full criminal chain and their networks. Deforestation in Brazil's Amazon reached its lowest level in 2012, since monitoring of the forest began in 1988. It went down by 64–78%, depending upon estimates, primarily as a result of a coordinated enforcement approach using satellite imagery and targeted police operations and investigations. This was supported by large-scale efforts through REDD+ and other initiatives to strengthen the participatory processes of indigenous peoples, stake holders and alternative livelihoods. Many parts of the world could learn from the measures and actions undertaken by Brazil.

In Tanzania over 1,100 rangers have received specialized training in the past two years. The training covers tracking of poachers, tactics and wildlife crime scene management, and it has been done under the auspices of INTERPOL and





UNODC, and has resulted in a series of frontline arrests linking suspects to the scene of crime. The training has not only improved rangers' ability to stop and arrest poachers, but it has also supported successful prosecutions and good enforcement ethics based on evidence, prosecution and trial in court. The work they are doing is critical and also dangerous. Over 1,000 rangers are claimed killed worldwide in service to protect wildlife in the last decades.

Improved intelligence sharing among agencies has also enabled INTERPOL to support countries in larger and more effective police operations, leading to larger seizures of illegal timber and wildlife products. In 2013 Operation Lead, under INTERPOL's project LEAF, was conducted in Costa Rica and Venezuela. It resulted in 292,000 cubic meters of wood and wood products seized – equivalent to 19,500 truckloads (worth ca. USD 40 million). Also in 2013, INTERPOL's Operation Wildcat in East Africa involved wildlife enforcement officers, forest authorities, park rangers, police and customs officers from five countries – Mozambique, South Africa, Swaziland, Tanzania and Zimbabwe – resulting in 240 kg of elephant ivory seized and 660 arrests.

On customs, the UNODC-WCO Container Control Programme (CCP) has been successful in targeting sea and dry port container shipments in an increasing number of countries. Seizures include not only counterfeits and drugs, but also wildlife and timber products, such as ivory, rhino horn and rosewood.

An Indonesian case has shown how money-laundering measures can lead to prosecutions for illegal logging. A UNODC training course in 2012 involved Indonesian financial investigative and anti-corruption agencies (PPATK, KPK) ranging from the federal to the local levels. Methods learnt in the course were applied to detect, investigate and prosecute illegal logging. After the course the Financial Investigative Units detected highly suspicious transactions leading to the conviction of a timber-smuggling suspect who was sentenced to eight years of imprisonment with evidence showing how USD 127 million passed through his accounts.

However, the scale and coordination of the efforts must be substantially increased and a widened effort implemented. They must be combined with efforts on good governance, management and consumer awareness to ensure a long-term demand reduction. It is particularly crucial to support the countries directly, as financial resources need to be directed towards efforts with effect on the ground, whether in enforcement, governance or consumer awareness.

The pace, level of sophistication and globalized nature of wildlife and forest crime is beyond the capacity of many countries and individual organizations to address. Of particular relevance is the increasing involvement of transnational organized crime in the illegal trade of wildlife and timber, as well as the significant impact on the environment and development.

Solutions will require a combination of efforts to address both supply and demand reduction, based on deterrence, transparency, legal enforcement, behavioral change and alternative livelihoods. Differentiated strategies for addressing illegal wildlife and timber trafficking must be developed across the relevant value chains (covering source, transit and destination countries)

A coherent effort to fully address the multiple dimensions of environmental crime and its implications for development is needed. This will require both national and international stakeholders to be involved in the process, including environmental, enforcement and development sectors, as well as stakeholders involved in security and peacekeeping missions. Environmental crime provides a serious threat to wildlife, including plant species, ecosystems, their services, climate change and to good governance and sustainable development goals. It requires a multi-faceted response

# Recommendations

- 1 Acknowledge the multiple dimensions of environmental crime** and its serious impact on the environment and sustainable development goals, and help support and balance the appropriate coordination and sharing of information from stakeholders, such as civil society, private sector, indigenous peoples, governments and a wider UN system with the need and recognition of also the role of law enforcement in good environmental governance.
- 2 Implement a comprehensive coordinated UN system and national approach to environmental crime** by helping coordinate efforts on environmental legislation and regulations, poverty alleviation and development support with responses from the enforcement sector to curb environmental crime, as part of a holistic approach to challenge the serious threat to both the environment and sustainable development caused by the continued environmental crime.
- 3 Support UNEP as the global environmental authority to address the serious and rising environmental impacts of environmental crime** and to engage the relevant coordination mechanisms of the UN system to support countries and national, regional and international law enforcement agencies with relevant environmental information to facilitate their efforts to combat the illegal trade in wildlife species and their products, as well as illegal logging and illegal trade in timber.
- 4 Encourage the entire international and bilateral donor community to recognize and address environmental crime as a serious threat to sustainable development** and revenues, and to support national, regional and global efforts for the effective implementation of, compliance with and enforcement of targeted measures to curb illegal trade in wildlife species and their products as well as illegal logging in timber.
- 5 Support immediate, decisive and collective action to narrow the gap between commitments and compliance**, such as the ones expressed in multilateral environmental agreements, through national implementation and enforcement, including the relevant decisions and resolutions taken by their governing bodies intended to combat the illicit trade in wildlife and forest products.
- 6 Identify end-user markets and systematically design, support and implement where appropriate consumer awareness campaigns** focusing on high consumer end-markets. Call upon both Governments and the UN system to effectively work with and engage civil society and the private sector in efforts to identify alternatives to consumer demands for traded wildlife species and forest products.
- 7 Strengthen awareness through certification schemes**, such as e.g. the Forest Stewardship Council (FSC), to facilitate consumer recognition of legal and illegal products. This especially applies to such wood products as paper that currently include the largest share of import-exports of tropical wood, as well as to CITES-listed species and their products. To this end, both voluntary, market and legislative approaches could enhance collaboration between governments, civil society and the private sector.
- 8 Strengthen institutional, legal and regulatory systems to further combat corruption** to effectively address wildlife-related offences and to ensure that legal trade is monitored and managed effectively.
- 9 Strengthen international and development support to the entire enforcement chain**, including frontline, investigator, customs, prosecutors and the judiciary, with particular reference to environmental crime to support legal revenues and sustainable development, and to reduce the impacts on the environment from environmental crime.
- 10 Strengthen support to INTERPOL, UNODC, WCO and CITES, such as through ICCWC as well as individual programmes**, to enable them to support member states and other relevant stakeholders to further identify, develop and implement the most appropriate responses to environmental crime, reflecting and acknowledging the serious threats and effects it has on environmental governance, wildlife, ecosystems and the services it provides.
- 11 Invest in capacity building and technological support to national environment, wildlife and law enforcement agencies** to enable them to further protect key populations of iconic endangered species threatened by poaching, such as but not limited to, rhinos, tigers and the African elephant as a necessary response to safeguard these species from poaching, alongside renewed efforts to strengthening habitat protection and management.
- 12 Strengthen environmental legislation, compliance and awareness and call upon enforcement agencies and countries to reduce the role of illicit trade and taxing of forest and wildlife products for threat finance** to non-state armed groups and terrorism. Strengthen specifically the research on the possible role of trade in wildlife and timber products including charcoal for threat finance and identify gaps in environmental legislation that may facilitate this.



# Introduction

Ecosystems play a crucial role and especially for developing economies by supporting revenues, future development opportunities, livelihoods and sustainable harvest in agriculture, forestry and fisheries. Ecosystems support tourism, valued at 5–10% of national economies.<sup>1</sup> Ecosystems also supply vital services, such as buffering effects of extreme weather such as floods, drought and cyclones, and through provision of safe water supply to cities. They are valued globally at up to USD 72 trillion.<sup>2</sup> Healthy ecosystems provide the platform upon which future food production and economies are ultimately based.<sup>3</sup>

Opportunities, management and future development are also threatened by serious and increasingly sophisticated transnational organized environmental crime, which is undermining development goals and good governance. Transnational organized environmental crime may include illegal logging, poaching and trafficking of wildlife, illegal fisheries, mining and dumping of toxic waste. It is a rapidly rising threat to the environment, to revenues from natural resources, to state security, and to sustainable development. Individual estimates from the OECD, UNEP, INTERPOL and UNODC place the monetary value of different forms of transnational organized environmental crimes to between USD 70–213 billion annually.<sup>4</sup> This compares to a 2013 global ODA of ca. USD 135 billion.<sup>5</sup>

Wildlife crime is no longer an emerging issue. The scale and nature of the challenge has been accepted in decisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)(see decisions and resolutions following COP 16)<sup>6</sup>, the UN Commission on Crime Prevention and Criminal Justice and UNODC,<sup>7</sup> the Economic and Social Council (ECOSOC), the UN Security Council, UN General Assembly, INTERPOL,<sup>8</sup> the World Customs Organisation (WCO) and others, including many significant nations. High-level political conferences have also addressed the issue, most notably recently convened in Botswana and Paris (December 2013), London (February 2014), and Dar-es-Salaam (May 2014). However, the responses in terms of impact on the ground are still behind the scale and development of the threat to wildlife, including forests, as well as increasingly also development goals.

Transnational organized environmental crime involves primarily five key areas:

1. Illegal logging and deforestation
2. Illegal fisheries
3. Illegal mining and trade in minerals including conflict diamonds
4. Illegal dumping and trade in hazardous and toxic waste
5. Illegal trade and poaching of wildlife, including plants



The illegal trade in wildlife is particularly challenging as it involves multiple dimensions, including poverty, governance and is often hidden in legal trade. It also commonly involves the mixing of legal and illegal harvesting of resources. Such harvesting is done using advanced, deliberate and carefully executed systems of laundering of illegally procured wood, charcoal, bushmeat and fish or other wildlife products. Illegal trade in wildlife can involve complex combinations of methods, including trafficking, forgery, bribes, use of



shell companies, violence, and even hacking of government websites to obtain or forge permits. The hacking of websites shows some actors' level of sophistication. The more typical and easier way, however, is simply to bribe corrupt officials so that they issue the necessary and required permits and certificates and other relevant documents. In this way laundering of illegally sourced wood, fish and other wildlife products in the supply chain is commonly practiced. Corruption is a deeply embedded feature of environmental crime, facilitating crime across all levels of the supply chains. Comprehensive anti-corruption measures must be a key feature of the overall effort.

Due to the complexity of the issue of illegal wildlife trade, a diverse response is required in the short and long-term, and from local to international levels. To curb the rise in illegal wildlife trade responses must involve a range of legal measures, enforcement, legislation, regulation, environmental management, consumer- and demand-reduction strategies, and promotion of alternative livelihood opportunities. Fully understanding the phenomenon of illegal wildlife trade requires a broad insight into the relationship between the environmental resources at stake, their legal and illegal exploitation, loopholes, the scale and type of crimes committed, and the dynamics of the demand driving the trade. The resulting

threat finance fuelling conflicts and terrorism is often also an integral element of the supply chain.

Illegal trade in wildlife is depriving developing economies of billions of dollars in lost revenues and development opportunities. Due to the problem's broad scale, a comprehensive approach is required. To curb the rise in environmental crime the response must involve legal responses, enforcement, legislation, regulation, environmental management, consumer- and demand-reduction strategies, and alternative livelihood opportunities. Understanding the phenomenon requires a broad insight into the relationship between the environmental resources at stake, their legal and illegal exploitation, loopholes, as well as the scale and type of crimes committed. The threat finance fuelling conflicts and terrorism is often an integrated part of this picture, and must be taken into account.

Environmental crimes are difficult to define as they involve a range of types of crime of varying gravity. A helpful starting point is the UN Convention Against Transnational Organized Crime (UNTOC), which defines a transnational organized crime as "any serious transnational offence undertaken by three or more people with the aim of material gain". The problem with relying only on this definition is that 'serious crime' is defined as an offence punishable by a maximum prison sentence of

# Major environmental crimes

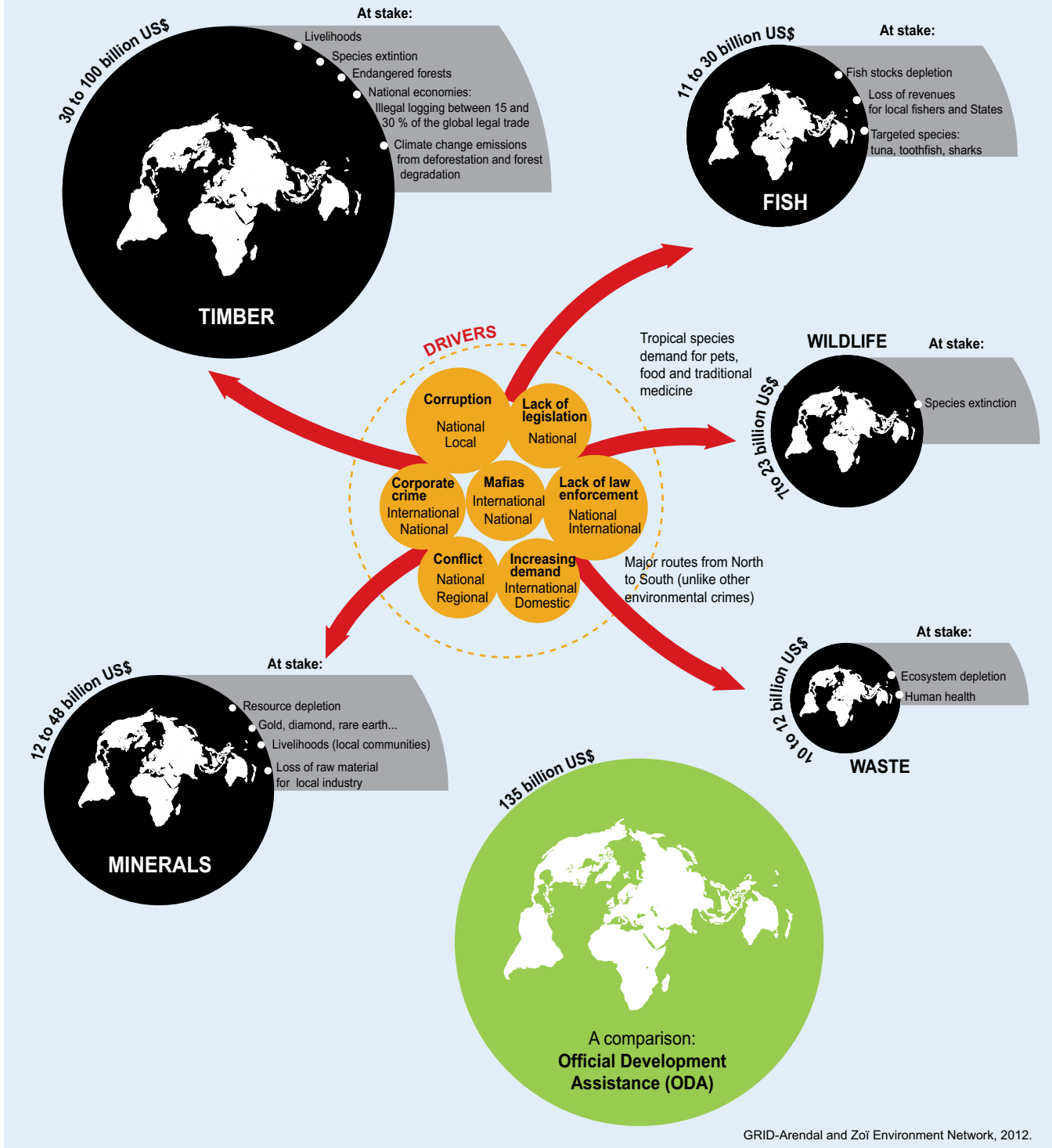
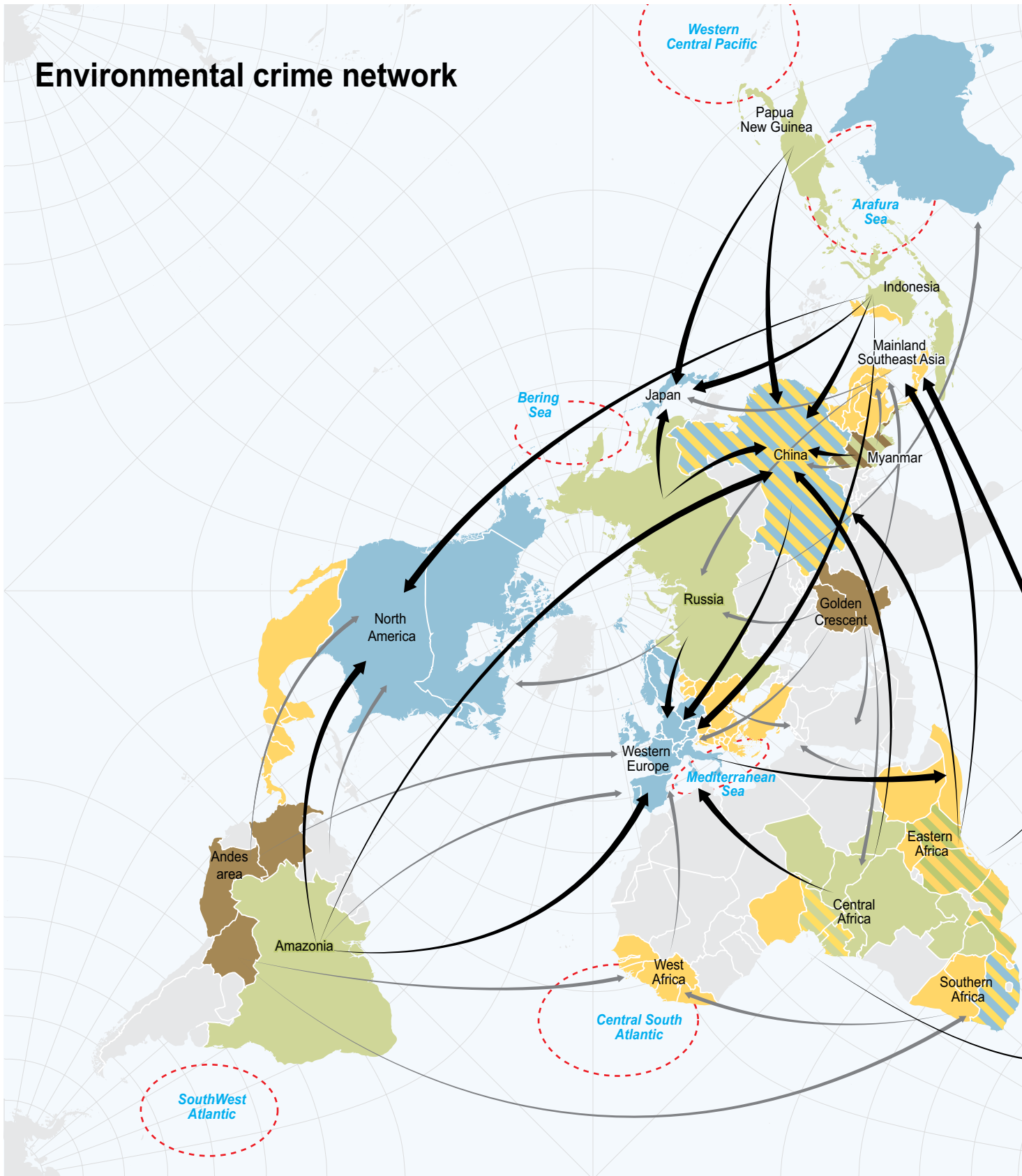








Figure 1. Estimated scale of various forms of transnational environmental crime.<sup>15</sup>

# Environmental crime network





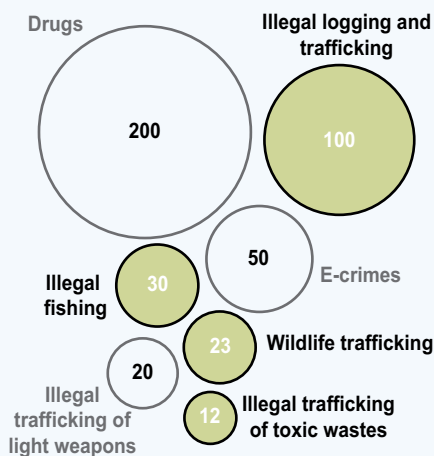
### New and old trafficking routes

-  Environment-related illegal trafficking. Includes wood, wildlife, animal parts (i.e. ivory, rhinoceros horns and fur) and wastes
-  Main illegal, unreported and unregulated fishing areas
-  "Traditional" illegal trafficking. Includes heroin, cocaine and human beings
-  Main destination country
-  Main transit country
-  Country of origin of "traditional" illegal trafficking
-  Main country or region of origin of environmental related illegal trafficking

Sources: UNODC Annual Reports 2010 e 2013; WWF-Australia; Globaltimber.co.uk, Estimates of the percentage of "Illegal Timber" in the imports of wood-based products from selected countries, 2007; TRAFFIC; FAO; World Ocean Review Report 2013; Michigan State University, Human Trafficking Task Force; Greenpeace, The Toxic Ship, 2010; National Geographic press review.

### A growing sector

Annual revenue, higher estimates  
Billion dollars



Sources: TRAFFIC; FAO; UNODC; Global Financial Integrity



at least four years or more. A definitive definition of environmental crime, which is enforceable throughout the transnational crime chain, is therefore urgently needed to ensure a common understanding of the terminology.

Legislation on environmental crimes in many countries is under-developed. Sentencing guidelines typically address petty crimes and do not reflect the very serious nature and involvement of organized crime and the impacts it has on environment, economic and social development of the countries and local communities or populations. They do not take into account the sheer scale of loss of resources, money laundering or threats to state security involved. Existing laws in most countries are already in place to address such serious crimes, but there is a considerable lack of awareness of how environmental crime often falls into other categories of far more serious violations. Often the wrong laws, such as those pertaining to pure environmental violations are applied in court, rather than those addressing the involvement of organized crime, tax fraud, violence, trafficking and even funding of non-state armed groups.

The lack of information regarding the role of environmental crime in threat finance – the financing of criminal networks and non-state armed groups including militias, extremists and terrorism – thus lead to comparatively trivial sentences of only minimal fines and occasionally short-term prison sentences. Insufficient investigation of the role of networks in environmental crime, which in many cases in practice constitutes threat finance, too often leads to failure in prosecution. This gap is being heavily exploited by organized crime to exploit natural resources, expand their illicit business sectors and contribute to conflicts with little or no risk. The low risk of illegal trading in

**Figure 2.** Number of transactions registered in wildlife and plants by CITES.

wildlife or forest products also provides a safe haven or venue to conceal ex pat finance to extremist groups.

In the past decade, CITES, INTERPOL, UNODC (UN Office for Drugs and Crime), and UNEP (UN Environment Programme) have warned against the rise of organized transnational environmental crime. More sophisticated ways to conduct illegal extraction of resources along with more advanced laundering methods of both illegally extracted resources and the proceeds from the illegal trade have been observed,<sup>9</sup> Furthermore, organized crime involved in drugs, trafficking, violence, murder and corruption undermine human- and state security. Criminal actors from other criminal sectors are attracted to environmental crime because of a combination of high profits and low probability of getting caught and convicted. This applies especially with respect to transnational activities, where enforcement has been virtually non-existent until now.<sup>10</sup>

Great concern has been expressed concerning illegal fishery off the coast of West Africa and its impact on local fishermen. The illegal, unreported and unregulated (IUU) fishing off West Africa, comprising between one third and half the catch, is worth USD 1.3 billion per year.<sup>11</sup> Illegal fisheries have been previously discussed for Somalia, with links to piracy.<sup>12</sup> Such fisheries involve major loss of revenues to

the countries. The IUU fishing off Senegal constitute a loss of about USD 300 million in 2012, which is 2 per cent of GDP.<sup>13</sup>

Of even greater concern is the impact of illegal logging on carbon emissions and loss of revenues. Tropical deforestation accounts for 10–15% of global emissions, and nearly 50–90% of the logging is illegal in major tropical countries<sup>14</sup> – with direct threats to emission reductions schemes and programmes such as REDD+ and the UN-REDD Programme.

The substantial rise and extent of transnational organized environmental crime also endangers human- and state security by facilitating and spreading collusive corruption. Loss of revenues for the economic development of many countries impacting upon food security, damage to the environment and the ecosystems vital for the services they provide for the local population, is highly damaging to developing countries, as the largest share of the proceeds leave the countries or go to tax havens or foreign nationals.

### **Scale of environmental crime**

The economic impact of loss of resources and revenues from environmental crime is substantial – especially on illegal logging and fisheries – and probably just as large as or well exceed global ODA (Official Development Assistance) of around USD 135 billion.



**Table 1:** Different forms of environmental crime and their approximate estimated scale. Great uncertainties exist regarding the accuracy of the estimates.<sup>16</sup>

Environmental crime	Annual loss of resources (US\$)	Source or reviews
Illegal logging and trade	30–100 billion	UNEP/INTERPOL 2012 (10–30% of the global trade); OECD 2012
Illegal fisheries	11–30 billion	OECD 2012; MRAG og UBC 2008 (12–32% of the global trade)
Illegal extraction and trade in minerals/ mining	12–48 billion	GFI 2011; GA 2012 (Estimated as only 1–4% by industry of the global trade)
Illegal trade and dumping of hazardous waste	10–12 billion	US 2000; GA 2012
Illegal trade and poaching of plants and other wildlife	7–23 billion	Wyler and Sheik 2008; GFI 2011; OECD 2012
Sum environmental crime and loss from primarily developing countries	Minus 70–minus 213 billion	
Official development assistance (ODA) (2013 estimate)	Ca. 135 billion	









# Wildlife trafficking

The illegal trade in wildlife excluding timber and fisheries has been estimated by different sources to be worth 7–23 billion dollars annually,<sup>17</sup> involving a wide range of species including insects, reptiles, amphibians, fish and mammals. It concerns both live and dead specimens or products thereof. The specimens and products are used for pharmaceutical, ornamental or traditional medicinal purposes. The transnational pet trade in tropical fish, primates and reptiles is also a major beneficiary of illegal harvest and trades. Illegal harvest and trade further includes a range of species from iconic ones like gorillas, chimpanzees and orangutans, elephants, tigers, rhinos, Chiru antelopes and bears to corals, birds, pangolins, reptiles and sturgeon for black caviar. All of these have a significant value not only on the black market, but even more to national economies if managed sustainably. Environmental crime operates per definition outside government regulation and management, and thus represents a significant economic, environmental and not least security threat that has received little attention in the past.

Annually, the international wildlife trade is estimated by CITES to include hundreds of millions of plant and animal specimens. The trade is diverse, ranging from live animals and plants to a vast array of wildlife products derived from them, including food products, exotic leather goods, wooden musical instruments, timber, tourist curios and medicines.

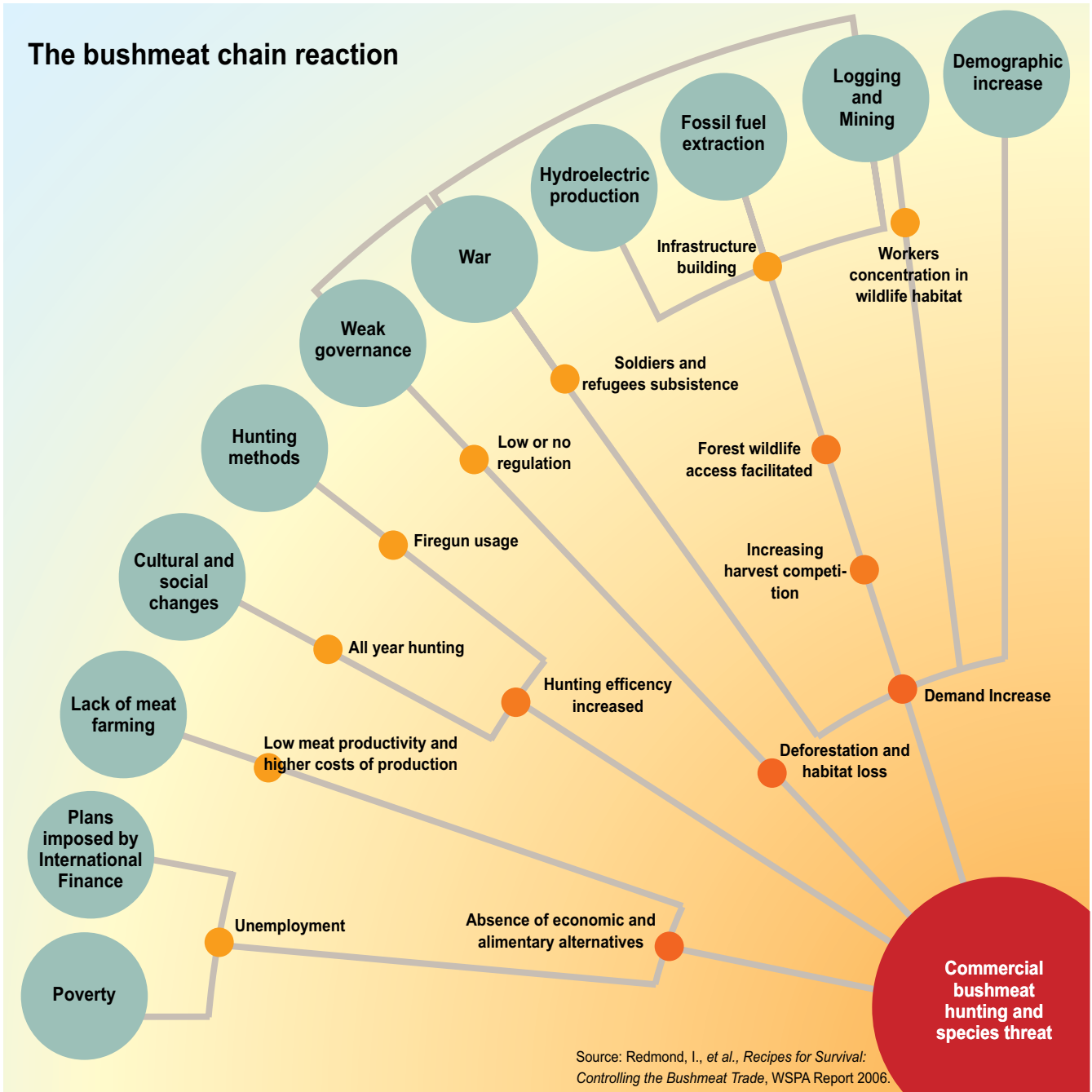
Levels of exploitation of some animal and plant species are high and the trade in them, together with other factors, such as habitat loss, is capable of heavily depleting their populations and even bringing some species close to extinction. Many wildlife species in trade are not endangered, but the existence of an agreement to ensure the sustainability of the trade is important in order to safeguard these resources for the future.

Because the trade in wild animals and plants crosses borders between countries, the effort to regulate it requires international cooperation to safeguard certain species from over-exploitation. CITES, in collaboration with the states, helps provide varying degrees of protection to more than 35,000 species of animals and plants, whether they are traded as live specimens, fur coats or dried herbs. CITES also regulates trade in more marine and timber species following COP 16 decisions in 2013.

Bushmeat hunting – the hunting of wild animals for food – is also a major threat to wildlife populations across the globe, including in protected areas.

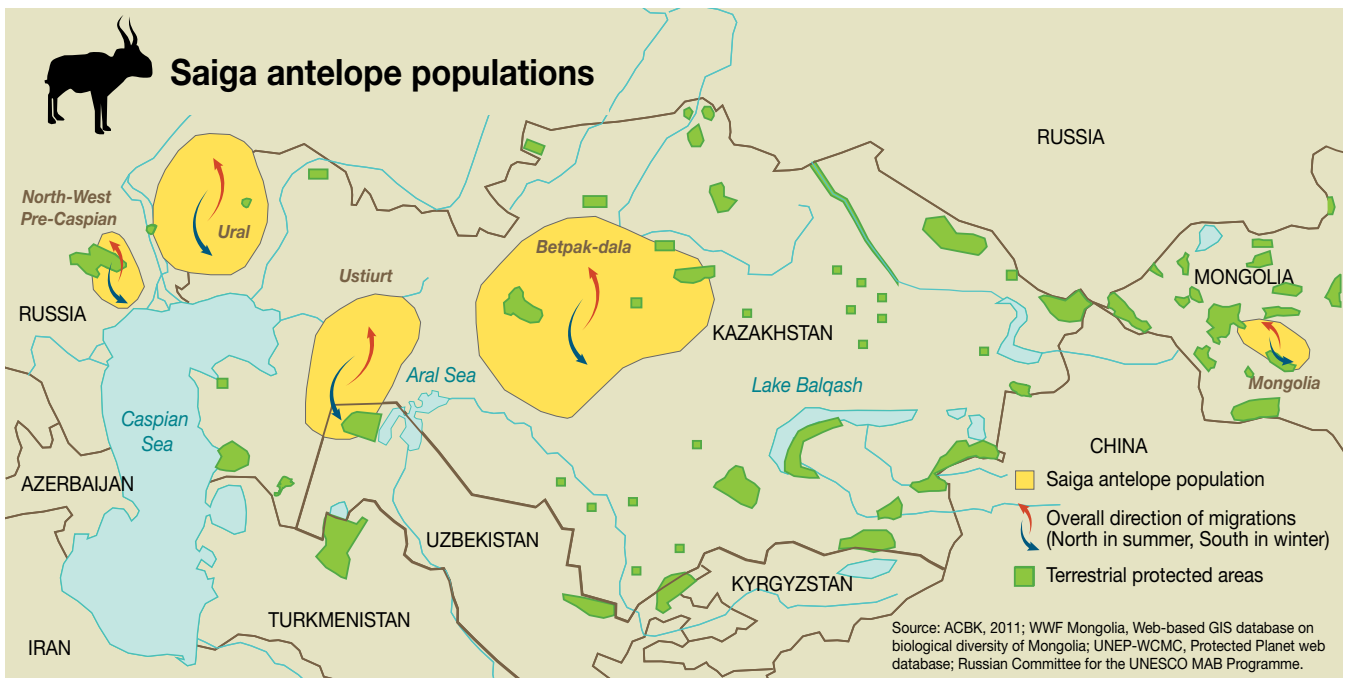


A high number of iconic species like rhinos, tigers, great apes and elephants, to mention a few, are also victims of the illicit trade. But many other species are also being hunted intensively, such as guanacos in Argentina–Chile, and Saiga antelopes in Kazakhstan, where populations crashed following the collapse of the Soviet Union by over 95%.<sup>18</sup>



**Figure 3:** The illicit bushmeat trade involves a series of underlying socio-economic factors, but leads, with rising population densities, to local depletions of wildlife species, and increasingly inside protected areas.





**Figure 4:** Saigas have been hunted since prehistoric times and today poaching remains the primary threat to this critically endangered species. Following the collapse of the Soviet Union, Saiga populations crashed by more than 95% within a decade. While a number of Saiga populations are starting to stabilize, three continue to be in a precarious state (North-West Pre-Caspian, Ural and Ustiurt populations).





The effect of roads, expanding agriculture and livestock, along with increased poaching can also be observed in South America, such as on the wild camelids in the steppe, deserts and Andean foothills of Argentina and Chile. Guanacos (*Lama guanicoe*) and vicunās (*Vicugna vicugna*) have lost 40–75 per cent of their ranges, and probably dropped at least 90 per cent in their numbers over the last centuries (Cajal, 1991; Franklin *et al.*, 1997). Only a fraction, probably less than 3 per cent of the guanaco and some 34 per cent of that of vicunās are in protected areas (Donadio and Buskirk, 2006). Also these species often avoid areas with expanding livestock and have been heavily exposed to poaching.

Source: Cajal, J. L. 1991. An integrated approach to the management of wild camelids in Argentina. In Mares, M. A. & Schmidly, D. J. (eds.), Latin American Mammology. History, Biodiversity and Conservation. University of Oklahoma Press, Norman; Donadio, E. & Buskirk, S. W. 2006. Flight behavior of guanacos and vicunas in areas of western Argentina with and without poaching. *Biological Conservation* 127: 139–145. Franklin, W. L., Bas, F., Bonacic, C. F., Cunazza, C. & Soto N. 1997. Striving to manage Patagonia guanacos for sustained use in the grazing agroecosystems of southern Chile. *Wildlife Soc. Bull.* 25: 65–73







### **Illicit trade in Great apes**

The primary threat to great apes is habitat loss. However, great apes are also trafficked in various ways. In many cases wild capture is opportunistic: farmers capture infant apes after having killed the mother during a crop-raid, or bushmeat hunters shoot or trap adults for food, and then collect the babies to sell. Organized illicit dealers increasingly target great apes as part of a far more sophisticated and systematic trade. They use transnational criminal networks to supply a range of markets, including the tourist entertainment industry, disreputable zoos, and wealthy individuals who want exotic pets as status symbols. Great apes are used to attract tourists to entertainment facilities such as amusement parks and circuses. They are even used in tourist photo sessions on Mediterranean beaches and boxing matches in Asian safari parks.

Even conservative estimates suggest that the illegal trade in great apes is widespread. From 2005 to 2011, a minimum of 643 chimpanzees, 48 bonobos, 98 gorillas and 1,019 orangutans are estimated to have been lost from the wild through illicit activities. These numbers are based on seizures and arrival rates of orphans at sanctuaries in 12 African countries and rehabilitation centres in Indonesia, expert reports, and great ape bushmeat and body parts seized from illegal traders. Based on extrapolations, it is likely that as many as 22,000 wild great apes were lost between 2005 and 2011 related to the illegal trade, with chimpanzees comprising 64 per cent of that number. The annual average loss of approximately 3,000 great apes could have serious consequences for the biodiversity of key regions, given the important role great apes play in maintaining healthy ecosystems. Sadly, law enforcement efforts lag far behind the rates of illegal trade. Only 27 arrests were made in Africa and Asia in connection with great ape trade between 2005 and 2011, and one quarter of the arrests were never prosecuted.

Prices for great apes vary greatly. A poacher may sell a live chimpanzee for USD 50–100, whereas the middleman will resell that same chimpanzee at a mark-up of as much as 400 per cent. Orangutans can fetch USD 1,000 at resale, and gorillas illegally sold to a zoo in Malaysia in 2002 reportedly went for USD 400,000 each. Such prices are extremely rare however, and the poacher who captures a live specimen may lose it to injuries, illness or stress, or have it confiscated if the poacher is arrested. At best, the actual poachers may earn only a fraction of the ultimate sale price of a great ape.<sup>19</sup>







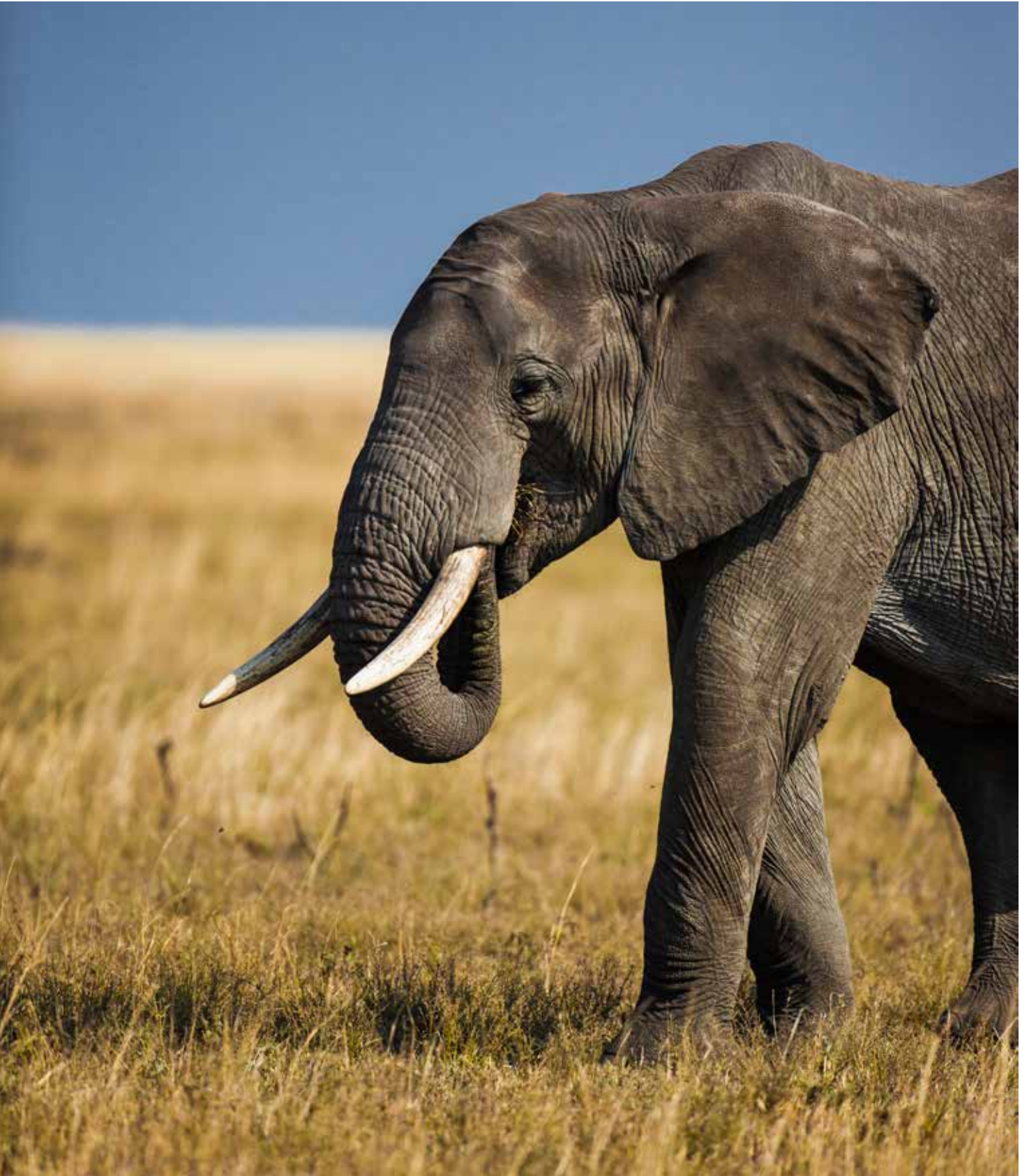
## Ivory

CITES-MIKE (Monitoring the Illegal Killing of Elephants)<sup>20</sup> and subsequent analysis suggests that 15,000 elephants were illegally killed at the 42 monitored MIKE sites in 2012. The Elephant Trade Information System (ETIS), managed by TRAFFIC<sup>21</sup> shows that the overall weight and number of large-scale ivory seizures (more than 500 kg) in 2013 exceeded any previous year in the ETIS data, with the increase either reflecting increased law enforcement effort or increase in the trade. For the forest elephant, population size has been estimated to decline by ca. 62% between 2002 and 2011.<sup>22</sup> Possible range of killed elephants in Africa is likely in the range of 22–25,000 elephants per year.<sup>23</sup> Population size is estimated at 420,000–650,000 elephants.<sup>24</sup>

If we assume that 22–25,000 elephants are killed per year, with 1.8 tusks per elephant and 5.5 kg per tusk (ca. 10 kg per elephant) and a price of 750 USD/kg<sup>25</sup> of raw ivory in Asia the poached African ivory may represent an end-user street value in Asia of an estimated 165–188 million USD, in addition to ivory from Asian sources. Some instances have involved even less.<sup>26</sup>







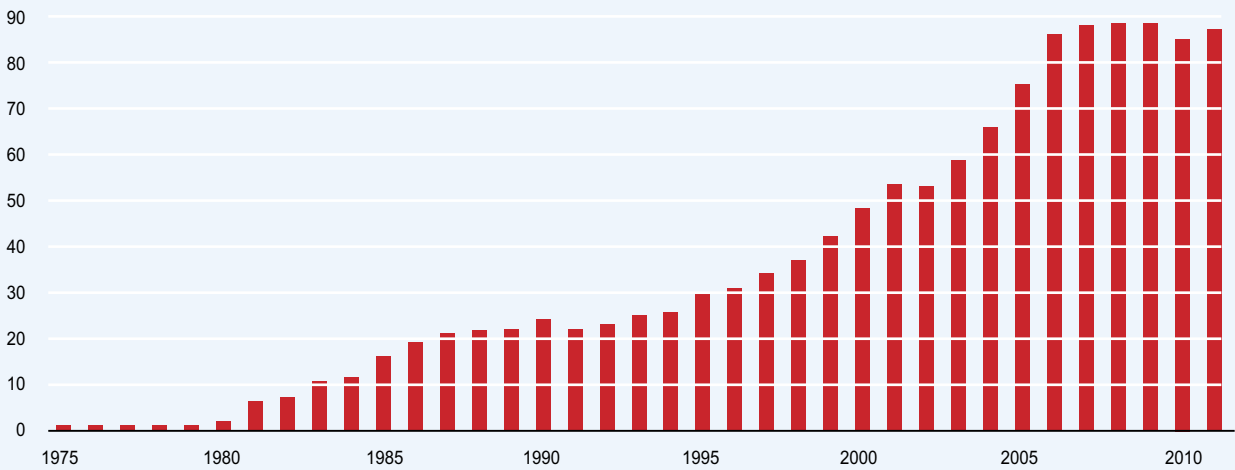




# Illegal wildlife trafficking affects species population

## Wildlife (plants and animals) trafficking recorded transitions

Thousands



Source: CITES trade statistics derived from the CITES Trade Database, UNEP World Conservation Monitoring Centre, Cambridge, UK

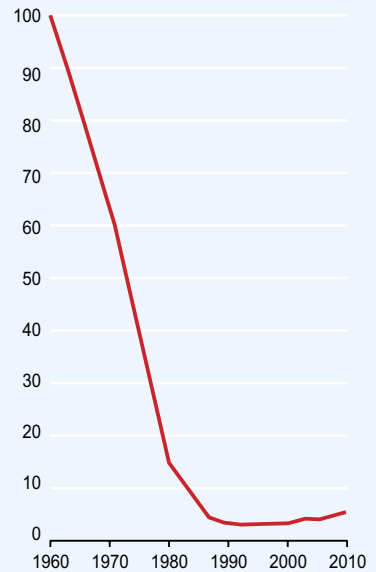
## Rhinoceros horn trafficking



Source: UNODC, The Globalization of Crime, 2010

## Black Rhinoceros, a dramatic loss

Number of Black Rhinos in Africa, thousands



Source: TRAFFIC, The South Africa – Viet Nam Rhino Horn Trade Nexus, 2012

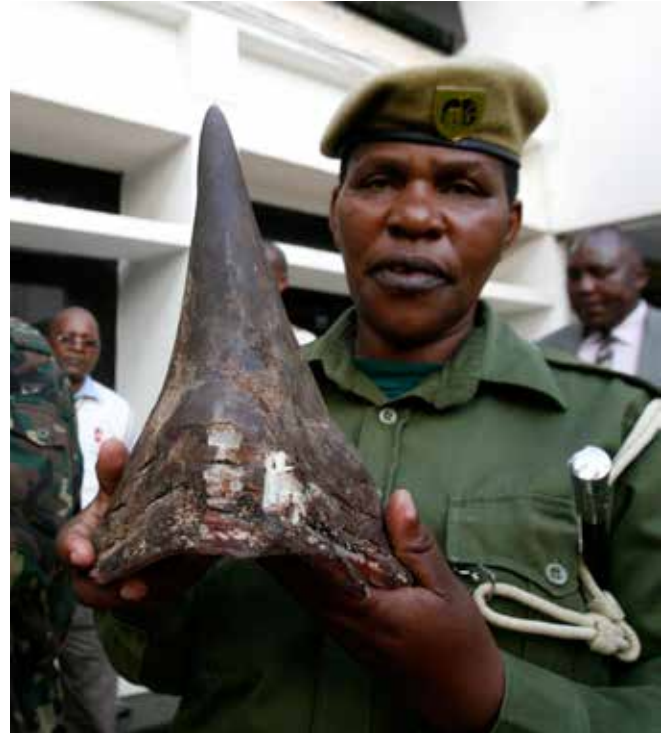
**Figure 5:** Illegal wildlife trafficking affects species population.

## Rhino horn

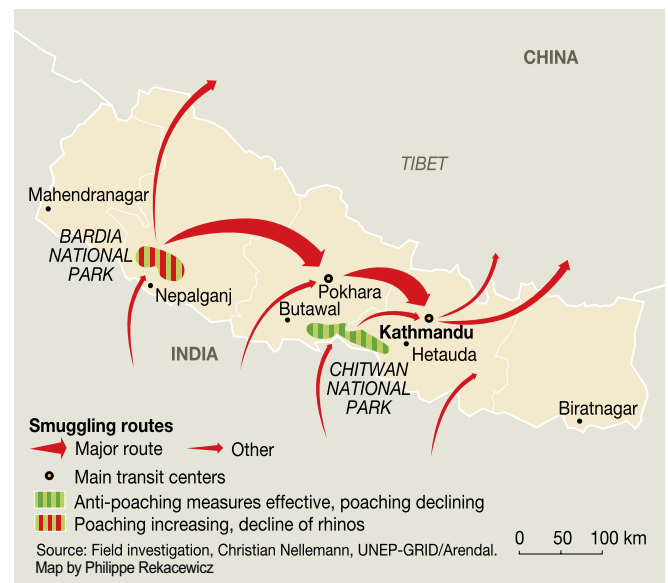
Approximately 94% of rhino poaching takes place in Zimbabwe and South Africa, which have by far the largest remaining populations, and has increased dramatically from possibly less than 50 in 2007 to over 1,000 rhinos poached in 2013, involving organized crime. Population size of black and white rhinos was ca. 4,800 and 20,100 in 2010 respectively, with Asian one-horned rhinoceros numbering ca. 3,600 individuals.<sup>27</sup>

Separatist groups in the 1980s and 1990s killed all of the one-horned rhinoceros in two Indian parks – Laokhowa and Manas.<sup>28</sup>

Between 1994 and 2000, the rhino population size in Nepal increased from 466 to 544 individuals. During the subsequent war, the population dropped to 372 in 2005, and was estimated to 446 individuals in three Terai protected areas of Nepal in 2006.<sup>29</sup> Correspondingly, rhinos were almost eradicated in Maoist controlled Bardia National Park in Nepal during the war there in the 2000s. The peace agreements stipulated removal of military patrols in the park amongst the terms of peace negotiations at several stages.<sup>30</sup> Here, numbers dropped from around 67 (with 18 accounted for by poachers and natural deaths in 2000) to around only 22 remaining in 2008.<sup>31</sup> Rhinos have disappeared entirely from several Asian and African countries in recent years, although overall numbers of rhino in Africa have been increasing. The last rhino in Mozambique was shot in 2013. According to media reports an underpaid ranger was accused of leading poachers to the site for a bribe of USD 80.<sup>32</sup> While that case is uncon-



firmed, the presence of well-paid and well-trained rangers is critical for frontline protection irrespective of international agreements and intentions. Rhino horn poached last year is valued around USD 63.8–192 million street value, and much less at the frontline of poaching.



**Figure 6:** Rhinos were hunted intensively during the war in Nepal in the early to mid 2000s, with catastrophic effects such as in Bardia National park.<sup>33</sup>



### **Poaching of Tigers**

Tigers (*Panthera tigris*), with six remaining sub-species including the Siberian tiger, are classified as endangered by CITES. They inhabit the Siberian taiga, as well as grasslands, jungles and swamps in Asia. The global population in the wild

is estimated to number between 3,000 and 3,900 individuals, down from around 100,000 at the start of the 20th century.

Between 1990 and 1992, China recorded exporting 27 million units of tiger products.<sup>34</sup> In 1993, China banned its



domestic trade in tiger bones and their derivatives to help implement the international tiger trade ban already in place under CITES. China's 1993 ban closed down a significant legal industry in tiger bones and medicines made from tiger bones. However, the demand has increased for tiger products

with other origins including Nepal and India, as well as Siberian tigers. The poaching has resulted in a sharp decline in the tiger population and extinction of 3 of the 9 sub-species. At present they are found in Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Russia, Vietnam and Thailand.

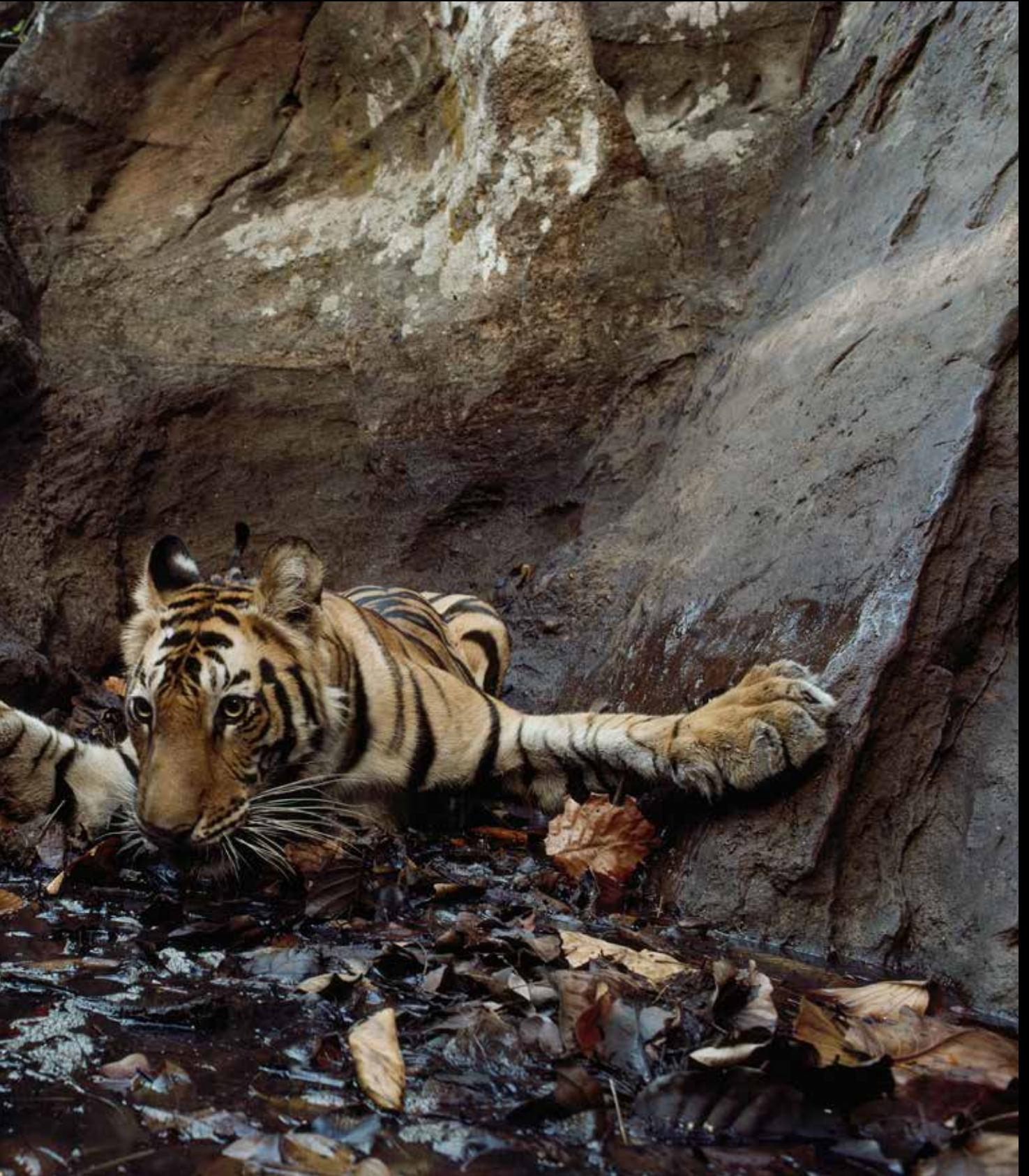
The decline is a result of habitat loss, hunting and poaching for use in traditional medicine. To date, there is no evidence that tiger products have any medical effect, and their use represents superstition and beliefs, as the far majority of "tiger" products contain no tiger products at all. Among other things, it is believed to cure joint and back pains, paralysis and muscular spasms, as well as providing powerful protection. Tiger parts have no scientifically proven medicinal properties. Reported prices vary greatly, from wholesale of around USD 4,000–6,000, with some claiming up to USD 20,000–30,000. The sale of products from the bones of a single wild caught tiger can be in the range of USD 1,250–3,750 per kilogram, with an average of 20 kg of bones per tiger.<sup>35</sup> Other quoted prices have been USD 370–400 for one kilogram of tiger bone, and around USD 200 for eyes (claimed erroneously to fight epilepsy and malaria). A kilogram of powdered humerus bone (erroneously claimed suitable for treating ulcers, rheumatism and typhoid) can be over USD 3,000. For powdered bones in general prices are estimated to be between USD 140–370 per kilogram depending on the size of the bones.<sup>36</sup>

Surveys of 1880 residents from a total of six Chinese cities in 2007<sup>37</sup> revealed that 43% of respondents had consumed some products alleged to contain tiger parts. Of the respondents 88% knew that it was illegal to buy or sell tiger products. People from all income groups used tiger-bone plasters, where the highest demand was among older consumers and women. However, out of seven brands of plasters tested, none contained even a trace of tiger bone.<sup>38</sup> A 2005–2006 survey of 518 traditional medicine stores in China found no plasters listing tigers as an ingredient.<sup>39</sup>

The international community has strongly expressed the need for effective law enforcement action against tiger crime. At the Saint Petersburg Global Tiger Summit in 2010, leaders from the 13 tiger range countries endorsed the Global Tiger Recovery Programme, an action plan to double tiger populations by 2022, strengthen reserves, crack down on poachers and provide financial incentives to maintain a thriving tiger population.<sup>40</sup> INTERPOL has together with the member states provided recommendations for the protection of the species. However, in order to protect the tiger, not only is an international effort required. Frontline protection, consumer awareness and especially habitat protection is imperative. Hence, a broad approach will be required in order to ensure the survival of tigers. For some of the populations, the situation is so acute that immediate frontline protection is critical and urgently needed.







## Sturgeon poaching in the Northern Caspian

Since 1998, international trade in all species of sturgeon has been regulated under CITES owing to concerns over the impact of unsustainable harvesting of and illegal trade in sturgeon populations in the wild. The situation in the Caspian Sea, where most of the world's caviar is produced, became particularly worrying after the dissolution of the USSR, which led to the virtual collapse of existing management and control systems. These northern hemisphere fish stocks can be found in large river systems, lakes, coastal waters and inner seas throughout Azerbaijan, Bulgaria, China, the Islamic Republic of Iran, Kazakhstan, Romania, the Russian Federation, Turkey, Turkmenistan, Ukraine, other European countries and North America. For people around the world, caviar, i.e. unfertilized sturgeon roe, is a delicacy. For the range States, sturgeon is a major source of income and employment, as well as an important element in the local food supply. Current trends in illegal harvest and trade put all these benefits at risk.

The Caspian and Azov seas contain more than 90% of world sturgeon fish stocks. Sturgeon is among the world's most valuable wildlife resources.<sup>41</sup> Commercial stocks in the Caspian Sea basin include the Russian (*Acipenser gueldenstaedtii*) and Persian (*Acipenser persicus*) sturgeon, stellate sturgeon (*Acipenser stellatus*), beluga (*Huso huso*) and sterlet (*Acipenser ruthenus*); Azov basin – stellate sturgeon, beluga and Russian sturgeon – altogether 11 species of sturgeon.<sup>42</sup>

### CASE STUDY

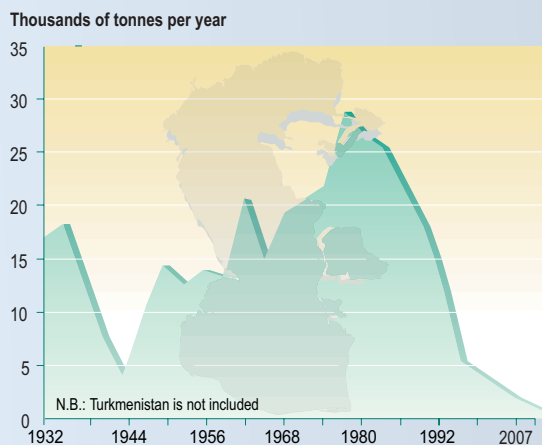
## Sturgeon poaching in Dagestan

In Russia, the sturgeon poaching in the Republic of Dagestan has reached unprecedented proportions, with a significant share of the coastal population engaged in this activity, including through corruption.

Poaching is often done by individuals on motor fishing boats. The monthly “income” of local police and fish inspectors in bribes has been estimated around USD 800 per motor boat. The catch is collected by a “master” who controls the coastal sea fishing and fish processing. However the most damaging poaching is the “commercial” one using trawlers.

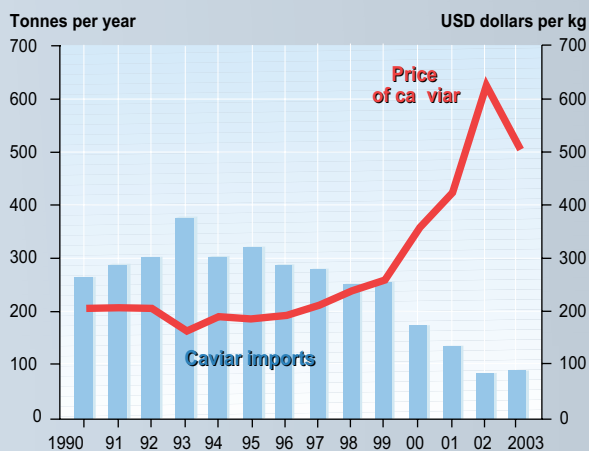
On average, one illegal catch brings around 170,000 roubles (USD 5,000) in profit. This is an extremely high level of earnings in Dagestan, which remains one of the poorest regions in Russia.<sup>47</sup> In the first half of 2010 in the Republic of Dagestan there have been 300 registered criminal cases under Article 256 of the Criminal Code (illegal harvesting of aquatic biological resources) and Article 175 (purchase or sale of property, knowingly obtained through criminal activity). Only 4 criminal cases were registered by the Fisheries Inspection of Dagestan.<sup>48</sup>

### Total sturgeon catch in the Caspian



Source: *Transboundary Diagnostic Analysis for the Caspian Sea*, Caspian Environment Programme, 2002. Updated in 2010 with data from the United Nations Food and Agriculture organization (FAO).

### Caviar imports as reported by three main consumer markets (Japan, European Union and United States)



Graphics by Philippe Rekaewicz  
Source: TRAFFIC, Europe, 5th International Symposium on Sturgeon.

**Figure 7:** The sturgeon – sought for its caviar – has declined dramatically in what is now a heavily illegal trade. To reduce the illicit trade in any wildlife, responses must include frontline protection, customs control, investigation and prosecution of networks and targeted consumer awareness programmes as well as general awareness to the local populations on the threats posed to their local economy, food security and sustainability.



According to the Caspian Research Institute of Fisheries the population of sturgeon in the Caspian Sea in 2004 included: 5 million beluga, 7 million stellate sturgeon, and 36 million sturgeon. However, this data was questioned by CITES, that considers it inflated. Sturgeon stocks in the Far East are considerably smaller.<sup>43</sup>

It is estimated by the office of the Prosecutor General of Kazakhstan, that during the decade from 2002 to 2012 the sturgeon population in the Ural-Caspian region declined by 98 % (from 61 million to 1.3 million). For the last two years alone it has dropped by two million (from 3,3 million in 2010 to 1,3 million in 2012).<sup>44</sup>

According to official statistics, Russia produced around 16 tons of caviar in 2012. This is down by 2 tons (11%) from 2011, and down by 8 tons since 2001 (24 tons). In 2002, Russia banned the sale of sturgeon caviar harvested in the Caspian Sea and Volga due to increased poaching and a drastically declining population of the fish. In 2007, when sturgeon was facing extinction in its native habitat, Russia completely banned wild sturgeon harvesting under the pressure of different international organizations. The ban has been joined by all Caspian littoral states in 2014. From the largest exporter (41 tons in 2001) Russia became an importer of caviar. In 2012 it imported

8,8 tons and exported only 6,2 tons. Today 100% of legally produced sturgeon caviar is harvested in aqua farms. However, according to experts, despite the ban the volume of illegal sturgeon caviar exceeds its legal production 10 times. Estimates show that between 90% and 98% of sturgeon caviar sold on the Russian market comes from poachers.<sup>45</sup> Other experts consider the domestic market even bigger, up to 100–150 tons. Contraband imports come mostly from Armenia.<sup>46</sup>

The low standard of living in some coastal regions of Russia makes the financial rewards from organized crime attractive. The organization of law enforcement, with extremely low staffing, low level of fisheries inspections, and low wages are other contributing factors.

In 2013 347 crimes related to sturgeon poaching were registered in Kazakhstan over a period of 10 months, showing 40% increase compared to 2012. During 2012–13 only 466 of the 991 criminal cases related to sturgeon poaching have been brought to court.

The main measures for conservation of sturgeon in the Northern Caspian are reduction of illegal fishing, introduction of universal labelling system for sturgeon products and reclaiming the water bodies through enforcement.



In Latin America, a range of wildlife is being illegally hunted and traded, including birds, fish, turtles, river dolphins, wild cats and even butterflies.







### Rosewood, mahogany and African cherry<sup>49</sup>

*Prunus africana*, commonly known as the African cherry, is a tree from the mountain areas of tropical mainland Africa and Madagascar. It is harvested for its bark, which has medicinal properties, and timber. In July 2006, a CITES Plants Committee categorized the populations of *Prunus africana* from Burundi, Cameroon, the Democratic Republic of the Congo, Equatorial Guinea, Kenya, Madagascar and the United Republic of Tanzania as ‘of urgent concern’.

The big leaf mahogany (*Swietenia macrophylla*), is a tree endemic to the Neotropics that can grow up to 45 m in height and 2 m in trunk diameter. It is harvested for its highly valued timber to make furniture, panelling or musical instruments, and has been widely planted outside its historical range. Thus Fiji, Bangladesh, India, Indonesia and the Philippines are now major exporters of plantation-grown timber. Meanwhile, however, original wild populations have declined significantly and timber from the Neotropics (specifically logs, sawnwood, veneer sheets and plywood) is currently included in CITES Appendix II. A series of country reports from Bolivia, Brazil, Costa Rica, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, Dominican Republic, as well as between ITTO and CITES address the illegal trade and conservation challenge.

Most plant and tree species tend to have much lower frontline protection than iconic animal species. Forest reserves without charismatic animal species are even more understaffed in terms of frontline protection. In many cases, as is seen in Southeast Asia, Latin America and in Africa,

endangered and rare, but highly valuable wood species are being smuggled. The UNODC-WCO container programme, CITES and well as INTERPOL and UNEP are increasingly addressing this serious, but high value trade.

There is currently a severe lack of investigations and official reporting on the many high-value wood species. Rosewood (*Dalbergia* sp.) in particular is being harvested illegally on a large scale, including in Madagascar and Eastern Africa, as well as in Southeast Asia, and smuggled across borders and traded. The species is distributed in tropical areas of Africa (five species), Latin America (seven species) and Asia (21 species). Of these 33 species, six are listed in CITES: *D. caerensis* (CITES Appendix I), *P. santalinus* and *D. cochinchinensis* (CITES Appendix II), *D. retusa*, *D. stevensonii* and *D. louvelii* (CITES Appendix III), all of which are popular species in the Chinese market.<sup>50</sup>

The Environmental Investigation Agency (EIA) has reported trade in Rosewood as rising, with over USD 3 billion spent on rosewood in Vietnam alone. Unprocessed rosewood has been claimed to fetch over USD 50,000 per m<sup>3</sup>.<sup>51</sup>

Other reports have documented a range of prices.<sup>52</sup> “Collectable” rosewoods, *D. odorifera* and *D. tonkinensis* prairon are allegedly sold at very high market prices (ca. USD 2 million per m<sup>3</sup>). *P. santalinus* also has a long history of use in China, and due to restrictive export policies in India supply is limited, so it has a high market price in China of around USD 150,000 per m<sup>3</sup>. High-end species such as *D. louvelii*, *D. cochinchinensis* and *D. retusa* are very popular for rosewood furniture, fetching prices of around USD 40,000, USD 20,000 and USD 10,000 per m<sup>3</sup>, respectively. Mid-market species are mainly from Southeast Asia and prices are around USD 2,000 to 3,000 per m<sup>3</sup>. Rarity is not the driving force of price determination. Low-end species are mainly from Africa and average prices are below USD 1,500 per m<sup>3</sup>. The market was claimed to be moderate, with steady price increases from 2000 to 2005. The price of high-end rosewood has been rising significantly since 2006. For example, before 2005, *D. odorifera* was available on the ordinary market at a price below USD 15,000 per m<sup>3</sup>. The price rose to over USD 100,000 in 2006, USD 500,000 in 2007 and is now around USD 1.5 million per m<sup>3</sup>. The 2012 price of *D. cochinchinensis*, USD 15,000, was 15 times higher than its price in 2005.

While numbers are unconfirmed, it is in accordance with a general pattern that illicit wood resources are worth considerably higher monetary value than animal products in most cases. Moreover, the trade carries much lower risk, as the wood is often not considered contraband. It is easily mixed with legal products during transport, transported in the open, and there is with virtually no frontline protection or customs risk – but very high profit.



## Exploitation of natural resources during conflicts

Parks, biodiversity hotspots, and other vulnerable habitats are increasingly being exploited by poachers, including a range of militias and other non-state armed groups. These groups raise funds through the exploitation of wildlife resources including ivory, rhinoceros horn, tiger pelts, shahtoosh (wool from the Chiru or Tibetan antelope (*Pantholops hodgsonii*), and timber. Throughout Central and Southern Africa, armed groups capitalize on poaching and timber exploitation to fuel a variety of armed movements. The Sudanese Janjaweed and the Lord's Resistance Army (LRA) poach elephants throughout Central Africa and neighboring countries. Dozens of militia groups kill elephants and hippopotamuses, harvest timber, and produce or tax charcoal, all to finance conflict in the Democratic Republic of Congo and in neighboring countries. The Mozambican National Resistance (RENAMO) has been accused of poaching elephants and rhinos to fund their resurgent insurgency.<sup>53</sup>

Likewise in Asia, exploitation of wildlife supports a number of non-state armed groups. Al Qaeda affiliated local Bangladeshi separatists and other tribal militias in India have been reported to be implicated in the illegal trade in ivory, tiger pelts, and rhino horns in Southeast Asia.<sup>54</sup> Al Qaeda and the Haqqani network have been accused of raising funds through timber exploitation and trade.<sup>55</sup>

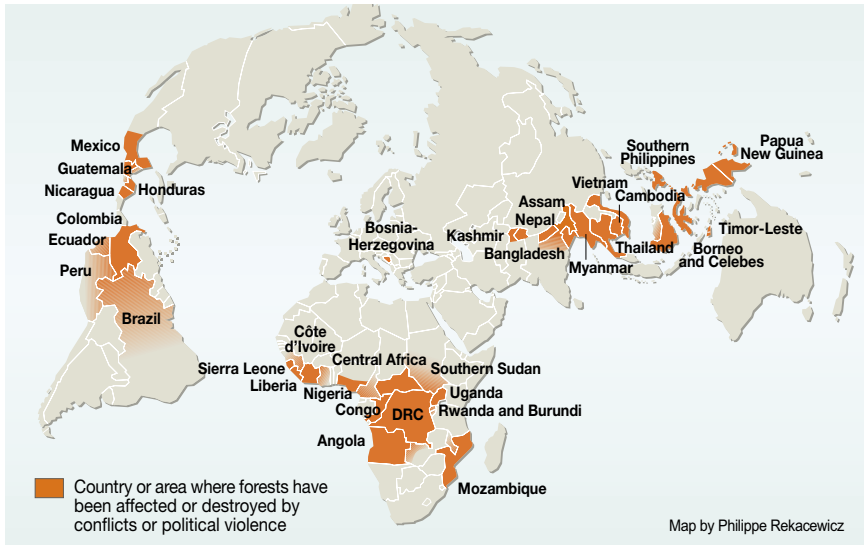
Despite the increased awareness of the connections between wildlife crime and threat finance this is not a new phenomenon. Criminals may also exploit ongoing conflicts, blaming fighting parties for the poaching, or the other way around. Typically, armed militias try to take control over valuable natural resources in their territory and will fiercely oppose anyone interfering or competing. However, the farther other poachers or criminals are from the centre of conflict zones, the more likely is the probability that they will blame the illegal exploitation of natural resources also on fighting parties, especially as terrorists and militias are unlikely to counter the accusations.

As many as 40% of intrastate conflicts over the past sixty years have been linked to natural resources.<sup>56</sup> Of the 34 biodiversity hotspots identified across the world, 80% saw significant conflict during roughly the same period.<sup>57</sup> In the 1970s, over 100,000 elephants were allegedly killed to fund civil wars in Angola and Mozambique.<sup>58</sup> Charles Taylor utilized timber as a key source of funding in all phases of Liberia's civil war.<sup>59</sup> Timber resources helped fund the Khmer Rouge in Cambodia, and played a role in conflicts in Burma, Cote d'Ivoire, and the Democratic Republic of Congo.<sup>60</sup>

Armed groups make money through: direct control of resources such as timber concessions; leasing concessions







**Figure 8:** Around the world, conflicts and wars are taking a toll on forests and on the communities that rely on them for their livelihood. Dense forests can serve as hideouts for insurgent groups or can be a vital source of revenue for warring parties to sustain conflict.<sup>63</sup>

to corporations in return for money, weapons and equipment; taxation of roads and transport through militia-held territory; organized poaching of high-value species such as elephants and rhinos; and opportunistic harvesting of wildlife. For a group like the LRA, with limited opportunities to tax resources, ivory can be an important source of revenue, and perhaps provide one of the only means for the group to survive. In the worst cases, resources become the *raison d'être* for conflict, replacing the complex social, economic, cultural and ethnic factors as the primary reason to continue to fight.<sup>61</sup> Such “resource wars” stem from “armed conflict in which the control and revenue of natural resources are significantly involved in the economy of the conflict and/or the motivations of the belligerents.”<sup>62</sup>

The illegal extraction of natural resources by armed groups militarizes ecologically important and sensitive areas. Among the consequences of this abuse are the reduced potential for conservation, contributing to the permanent destruction of natural resources and keystone species, and the creation of conditions leading to severe human rights abuses. In the short term, large-scale environmental crime threatens human populations located close to valuable wildlife resources. The destruction of natural resources exacerbates inter-communal violence, fuels crime and corruption, and instability. Small arms and light weapons proliferate in areas targeted by armed groups. They are used to kill animals and wildlife rangers and anti-poaching forces, as well as to threaten and harass local community members in the commission of other crimes.<sup>64</sup> Local communities are subject to threats, intimidation, forced labour, child soldier recruitment, human trafficking, sex slavery, mass rapes/sexual exploitation, and murder. In the long term the convergence between armed groups and the transnational criminal networks required to move wildlife products to international

markets breeds corruption,<sup>65</sup> undermines the rule of law, impacts the ability of states to raise revenue through taxation and extraction, and destroys local economies.<sup>66</sup>

Non-state armed groups require funding for operations, raised through some sort of sponsorship and formal relationship or through ‘self-financing,’ often achieved by the exploitation of natural resources.<sup>67</sup> Conflict zones provide the cover of instability for transnational criminal organizations to operate and provide opportunities for collusion with both corrupt state officials and non-state armed groups.<sup>68</sup> The war economies, which emerge in conflict zones, connect transnational criminal organizations, militias, terrorists, and other non-state armed groups into cross-border networks to move valuable resources into international markets. This creates the logic for convergence with terrorist and other non-state armed groups. Neither have any incentive to contribute to conflict resolution or restoring peace, stability, or governance to an area.

Park rangers and eco-guards protecting wildlife resources face heavily armed, militarily experienced actors who assault park infrastructure, staff, and wildlife, harass and intimidate local populations, and engage in deliberate destruction of the environment. Targeted attacks are known to occur in response to the disruption of illegal activities by park staff including investigations into poaching, illegal charcoal production, and illegal mining activities. Rangers in particular are under threat, with over 1,000 across 35 countries killed in the last decade.<sup>69</sup> Armed groups have been reported to torture and kill park personnel charged with protecting wildlife resources.<sup>70</sup>

Once state and non-state armed groups begin harvesting resources and realizing the profits from exploitation, the resources become a key factor in sustaining and prolonging



#### CASE STUDY

### India: Great One-Horned Rhinoceros

Assam, in India, holds 75% of the world's remaining great one-horned rhinoceroses in three protected areas, Kaziranga, Orang, and Pabitora. Of the three, Kaziranga's rhino population is the largest, with over 2,000 animals. These rhinos represent a remarkable conservation success story. At the turn of the nineteenth century, it was thought less than 50 one-horned rhinoceros remained in India. Kaziranga housed just 12. Today the park, a World Heritage Site and Biodiversity Hotspot, also boasts healthy populations of Royal Bengal tiger, elephant, buffalo, and swamp deer. These animals are all under threat from habitat degradation and loss, road and train traffic accidents, human-animal conflicts, and periodic flooding. Poaching associated with armed militant groups began rising in 2007 with the killing of 18 rhinos.

Two other parks in the region lost their rhinos as the result of conflict-driven poaching in the 1980s and 1990s. Today a multitude of armed groups including tribal separatists, rebels, and Islamist terrorists poach within Kaziranga and in adjacent areas.<sup>86</sup> Almost two dozen militant organizations are active in the region, proliferating arms and impacting security, and creating opportunities for the penetration of transnational organized crime.<sup>87</sup> Harkat-ul-Jihad-al-Islami and Jama'atul Mujahideen Bangladesh, Bangladeshi terror groups affiliated with Al Qaeda, reportedly poach tigers, elephants, and rhino in the park to raise organizational operating funds. The groups have been claimed to be linked with criminal syndicates in

Nepal, Thailand, and China.<sup>88</sup> The Karbi Peoples' Liberation Tigers (KPLT) sponsor and organize hunts, arming poachers with AK-47s to kill rhinos to extract their horns and to battle forest guards.<sup>89</sup> After being apprehended in the act, one member of the Kuki National Liberation Front admitted killing six rhinos.<sup>90</sup> At least 41 rhinos were poached in Kaziranga in 2013, double the number killed the previous year. Most were reportedly killed by AK-47s and .303 rifles used by militant groups.<sup>91</sup>

The horns are traded for weapons and cash to fund militant activities. The involvement of armed militias in poaching elevates the risks associated with guarding the park's animals. Forest guards now openly engage in combat with militant groups, despite their limited equipment, training, and low pay.<sup>92</sup>

Kaziranga officials try to protect the animals through strong anti-poaching initiatives with over 150 security posts throughout the park, deployment of the elite Assam Forest Protection Force, tight local intelligence networks, and rewards to informants. Scores of poachers are arrested each year, and rangers regularly risk their lives pursuing and fighting the militants. However, limited law enforcement, challenges of coordination between forestry officials and the judiciary, suspected corruption within the department<sup>93</sup> as well as poor working conditions, limited training, and lack of equipment for the guards create challenges to anti-poaching efforts.<sup>94</sup>

conflict.<sup>71</sup> Conflicts involving natural resources last longer and have a greater chance of reigniting after resolution than other types of conflicts.<sup>72</sup> When profit motives overtake political goals, resources become a means for predation and accumulation. Under such conditions groups will even work with supposed enemies to exploit resources, regardless of alliances and affiliations.<sup>73</sup> At the same time, contests over control of resources can fragment groups and erode hierarchies, organizational structures, and command and control mechanisms. This often results in a proliferation of armed groups in violent competition.<sup>74</sup> Insurgencies and lucrative war economies may also become linked to transnational criminal networks.<sup>75</sup> These networks stretch into all segments of society and across international borders, implicating foreign political leaders, opposing militaries, businessmen and women, customs and border control agents, and even wildlife conservation professionals in the illegal exploitation of wildlife.<sup>76</sup> The entrenched networks and war economies created during conflict extend to regional and international illicit economies.<sup>77</sup> These groups become invested in the exploitation of resources, only made possible under the cover of conflict and instability.

Once entrenched in war economies groups involved in the illegal extraction of resources lack incentives to negotiate or maintain peace. Self-financed and well connected, these groups are often less vulnerable to external control or pres-

sure.<sup>78</sup> Belligerents who do not want to lose exclusive access to valuable profit-making natural resources undermine peace agreements. They are also often fragmented, making the task of bringing all relevant groups to the negotiating table difficult to surmount.<sup>79</sup> Combatants look to their weapons as essential economic assets after years of resource predation and are often unwilling to surrender them under DDR agreements.<sup>80</sup> In particular, the economic opportunities and rewards in the illicit economy and within war economies often outstrip those available in a post-conflict environment, influencing the decisions of individuals and groups to lay down arms.<sup>81</sup> “War economies destroy local infrastructure and decimate local human, financial, and institutional resources.”<sup>82</sup>

Even after peace agreements are in place, armed groups, cross-border trading networks, and criminals engaged in economic exploitation during conflict tend to continue their self-enrichment activities post-conflict.<sup>83</sup> Former belligerents serve as a ready pool for transnational crime, transforming into what are essentially criminal gangs in order to continue participating in the illicit economy.<sup>84</sup> Building a functioning licit economy in the shadows of large-scale criminal resource extraction is an almost insurmountable challenge, further diminishing chances for long-term peace and stability and thus undermine measures for environmental sustainability of the natural resources harvested.<sup>85</sup>

#### CASE STUDY

### Liberia

Forest covers as much as 45% of Liberia’s land area, making it one of the last remaining countries in West Africa with extensive forest coverage.<sup>95</sup> During the country’s nearly two decades of conflict, the valuable timber extracted from those forests became known as ‘blood timber’ or ‘conflict timber’ by groups such as Global Witness, similar to the term ‘blood diamonds’.<sup>96</sup> The timber is moved from conflict zones to international markets through collusion between militias and transnational criminal networks involved in the timber industry.<sup>97</sup>

Former president of Liberia, Charles Taylor, allegedly utilized funds from the extraction of timber (and other natural resources, most famously diamonds) to take over the country, support the Revolutionary United Front’s violent rebellion in Sierra Leone, and support rebels in western Ivory Coast.<sup>98</sup> During the first civil war from 1989-1996, timber became the primary source of independent funding for his National Patriotic Front of Liberia (NPFL).<sup>99</sup> During the second civil war, Taylor worked closely with international timber trading companies to manage his concessions, making deals to trade timber for weapons, helicopters, uniforms, vehicles, and other equipment

to continue his rebel movement.<sup>100</sup> In countries at war, logging companies may sometimes side with groups controlling forest territories, including rebels and insurgents.<sup>101</sup> Timber companies may act as middle-men with international arms dealers, including the convicted arms trader Victor Bout, in transporting arms and facilitating payments.<sup>102</sup> These arms deals were in direct violation of the 1992 UN Security Council Resolution 788 and subsequent resolutions, which established an arms embargo on Liberia.<sup>103</sup> In some cases, timber companies paid the taxes owed to the Liberian government directly to arms dealers on the government’s behalf in exchange for weapons. In many cases these companies appear to have worked closely with ex-generals and other members of Taylor’s military to run timber concessions, including through recruitments of militias to protect the concessions or support the existing political powers.<sup>104</sup> The timber industry has been estimated to bring in USD 80–100 million dollars per year during much of this period, with less than 10% reaching the tax authorities.<sup>105</sup> These funds allowed for the extension and expansion of the conflict, which resulted in the deaths of over 250,000 people, caused millions to be displaced from their homes, and destroyed the country’s economy.





## CASE STUDY

### Democratic Republic of Congo: Illegal exploitation of natural resources

The DRC is rated by CITES as one of the two most problematic countries in Africa for illegal exploitation of natural resources, from ivory to timber. In some sites in the country, 90% of elephant carcasses discovered had been poached.<sup>106</sup> Ivory is considered to be hunted and traded by militants for weapons, ammunition, food, and other materials required to sustain insurgent movements. The Lord's Resistance Army (LRA), Janjaweed, the Democratic Forces for the Defence of Rwanda (FDLR), Mai-Mai Morgan, and various local armed militias regularly poach elephants and hippos for ivory in the DRC. Many of these same groups are directly implicated in illicit timber, charcoal, gold, and mineral trades and have been connected to serious human rights abuses including mass murder, recruitment of child soldiers, kidnapping, forced labour, sex slavery, mass looting, and displacement. These armed groups hunt elephants by organizing and supplying locals to hunt the animals. Importantly, ivory is a commodity available to lower level fighters who are unable to benefit from more lucrative taxation schemes controlled by militant group leaders.

Garamba National Park is located along the northern border with South Sudan. The LRA and Sudanese poaching gangs use it actively, and local poachers who operate with impunity in the insecure environment, also blame the militias. Most of Garamba is too dangerous to patrol. Park rangers can only conduct foot patrols in the southern third of the park, south of the Garamba River.<sup>107</sup> By 2013 the park's population of 22,000 elephants had decreased by 90% to around 2,000 animals. The park was home to the last wild populations of Northern White Rhinoceros in the world before being poached to extinction in the 2000s by Sudanese poaching gangs, possibly Janjaweed.<sup>108</sup> Travelling in gangs of dozens of hunters and porters, the Sudanese poachers, typically armed with AK-47s, poach elephants in and around the park.<sup>109</sup> The LRA, operating on direct orders from their leader Joseph Kony, hunt elephants in order to trade ivory to transnational criminal groups for guns, ammunitions, food, and other supplies. In 2009, the group attacked the park headquarters, killing 17 of the park's staff.<sup>110</sup> Ugandan forces linked caches of tusks found in the Central African Republic CAR to the LRA.<sup>111</sup>



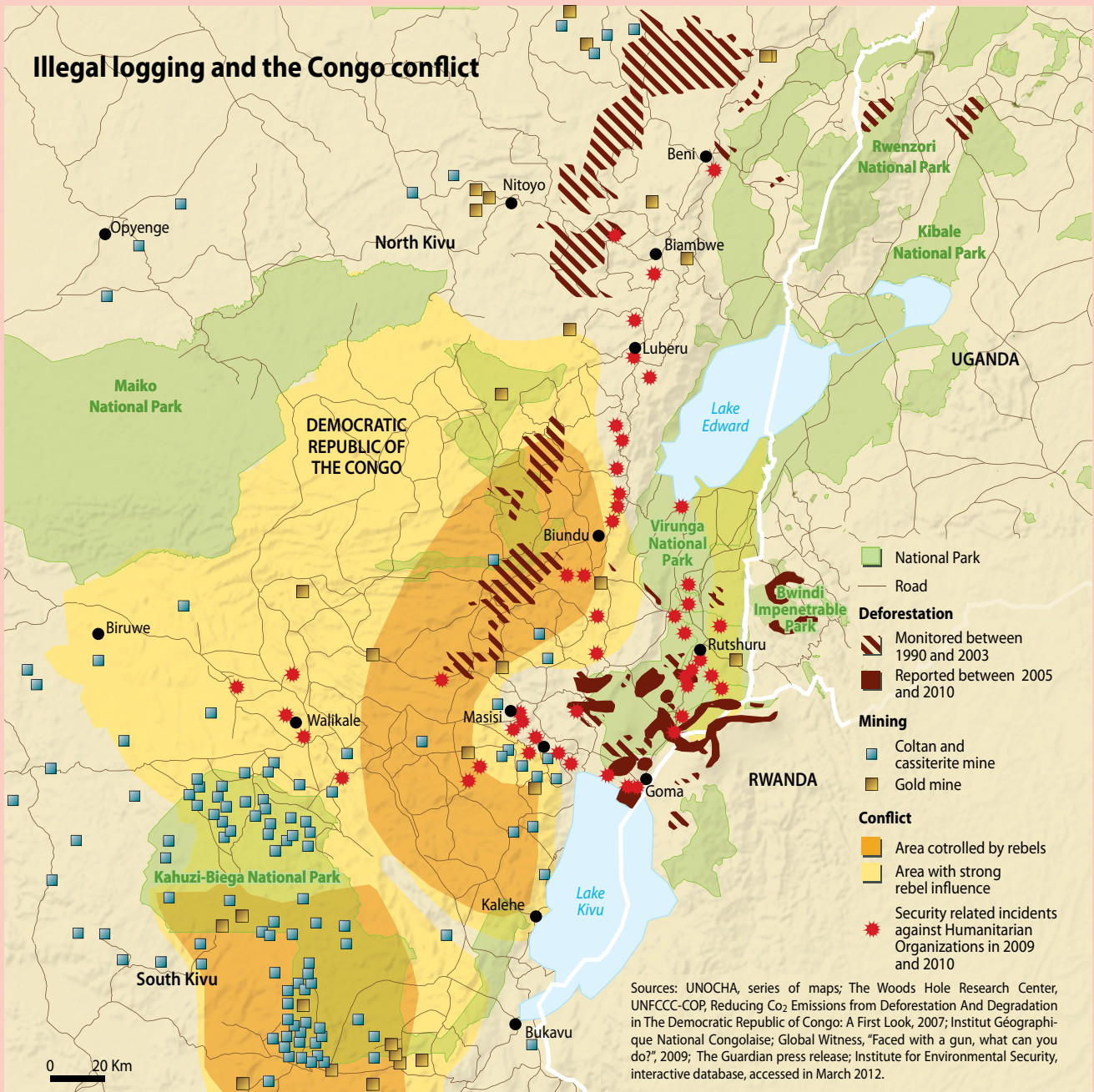




Virunga National Park, on the border with Uganda and Rwanda, was severely impacted by the Rwandan genocide and on-going refugee crisis. It served as the battleground in the Kivu War and continues to support multiple armed groups who exploit the park's forest and wildlife resources. The multitude of military groups operating in this region makes Virunga one of the most dangerous parks in the DRC. The groups include the FDLR, URDC, various Mai-Mai groups, and, until their disbandment in 2013, the M23. The charcoal trade is one of many lucrative illicit trades in the park, which also include timber extraction, gold mining, and marijuana cultivation.<sup>112</sup> Nearly two hundred rangers have been killed in the park since 1996. In 2008, the rangers' headquarters in the park was attacked by National Congress for the Defence of the People (CNDP) militants. One year earlier, militants murdered seven of the park's endangered Mountain gorillas in retaliation for attempts to disrupt illicit production and

trade of charcoal and timber.<sup>113</sup> The FDLR controls portions of the park and regularly conduct operations from the area. Since 2011 the FDLR have been responsible for the deaths of 20 rangers in the park. The latest attack, carried out in January 2014, killed one ranger and injured two others.<sup>114</sup> News reports suggest the attack was revenge for increased patrolling of charcoal production areas.<sup>115</sup> The Okapi Wildlife Reserve lies within the Ituri forest in north-east DRC, near the borders with South Sudan and Uganda. The site is infamous for a particularly destructive attack by Mai-Mai "Morgan" in 2012. Mai-Mai Morgan poaches elephants, mines for gold and other materials in the park, and has committed serious human rights abuses including forced portage, mass rape, kidnapping for ransom, sex slavery, and murder.<sup>116</sup> The group attacked the park headquarters killing at least three people and 14 highly endangered okapi in revenge for rangers' efforts to disrupt their illegal activities in the park.<sup>117</sup>





**Figure 9:** Illegal logging directly fuels many conflicts, as timber is a resource available for conflict profiteers or to finance arms sales. Without public order, militants, guerrillas or military units impose taxes on logging companies or charcoal producers, issue false export permits and control border points. They frequently demand the removal of all vehicle checkpoints and public patrolling of resource-rich areas as part of the peace conditions following new land claims and offensives.







# Forest crime

The scale of revenue from illegal trade in fauna is dwarfed by the income from illegal logging and forest crime. Forest crime, such as illegal logging, has previously been estimated to represent a value of 30–100 billion USD annually or 10–30% of the total global timber trade. An estimated 50–90% of the all the wood in some individual tropical countries is suspected to come from illegal sources or has been logged illegally. Forest crime appears to take place in four forms: 1) illegal exploitation of high-value endangered (CITES listed) wood species, including rosewood and mahogany; 2) illegal logging of timber for sawnwood, building material and furniture; 3) illegal logging and laundering of wood through plantation and agricultural front companies to supply pulp for the paper industry; and 4) utilization of the vastly unregulated woodfuel and charcoal trade to conceal illegal logging in and outside protected areas, conduct extensive tax evasion and fraud, and supply fuel through the informal sector.

## Forest crime

The illegal trade and exploitation in flora, such as illegal logging, has been estimated to represent a value of 30–100 billion USD annually. This equals 10–30% of the total global timber trade.<sup>118</sup> An estimated 50–90% of the wood in some tropical countries is suspected to come from illegal sources or has been logged illegally.<sup>119</sup> In addition to the illegal trade in harvested wild plants for ornamental and medicinal purposes, the illegal trade in flora appears to take place in four main forms:

1. The illegal exploitation of high-value endangered wood species, including rosewood and mahogany (many of which are now CITES listed)
2. Illegal logging of timber for sawnwood, building material and furniture
3. Illegal logging and laundering of wood through plantation and agricultural front companies to supply pulp for the paper industry
4. Utilization of the vastly unregulated woodfuel and charcoal trade to conceal illegal logging in and outside protected areas, conduct extensive tax evasion and fraud, and supply fuel through the informal sector.

Trafficking and smuggling of endangered CITES-listed species such as Rosewood (*Dalbergia* sp.) and some species of Mahogany involve organized crime in both harvesting and in distribution through large trans-oceanic shipments.<sup>120</sup> Most illegally sourced and traded wood is either not considered or recognized as contraband by customs, or falsely declared as legally sourced and traded wood, or mixed inside paper and pulp. Over thirty different ways of conducting illegal logging



and laundering timber are identified. Primary methods include falsification of logging permits, bribes to obtain logging permits (in some instances noted as USD 20–50,000 per permit), logging beyond concessions, hacking government websites to obtain transport permits for higher volumes or transport, laundering illegal timber by establishing roads, ranches, palm oil or forest plantations and mixing with legal timber during transport or in mills. Funnelling large volumes of illegal timber through legal plantations, across borders or through mills, is another effective way to launder logs. In some instances illegal loggers mix illicit timber with 3–30 times the amount of officially processed timber, which also constitutes tax fraud. Many of these illegal operations involve bribes to forest officials, police and military, and even royalties to local village heads.<sup>121</sup>

# Ten ways to conduct illegal logging

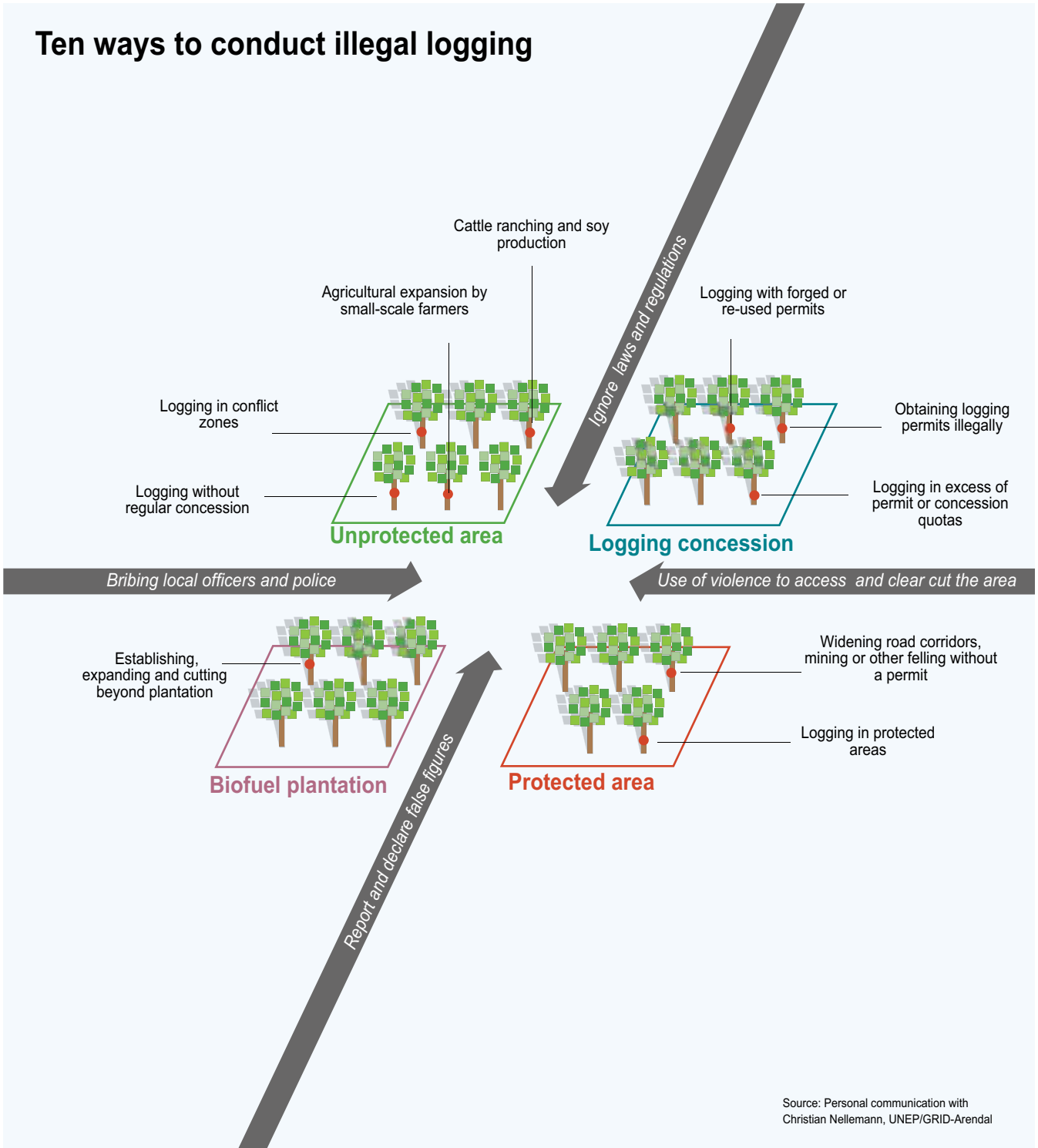
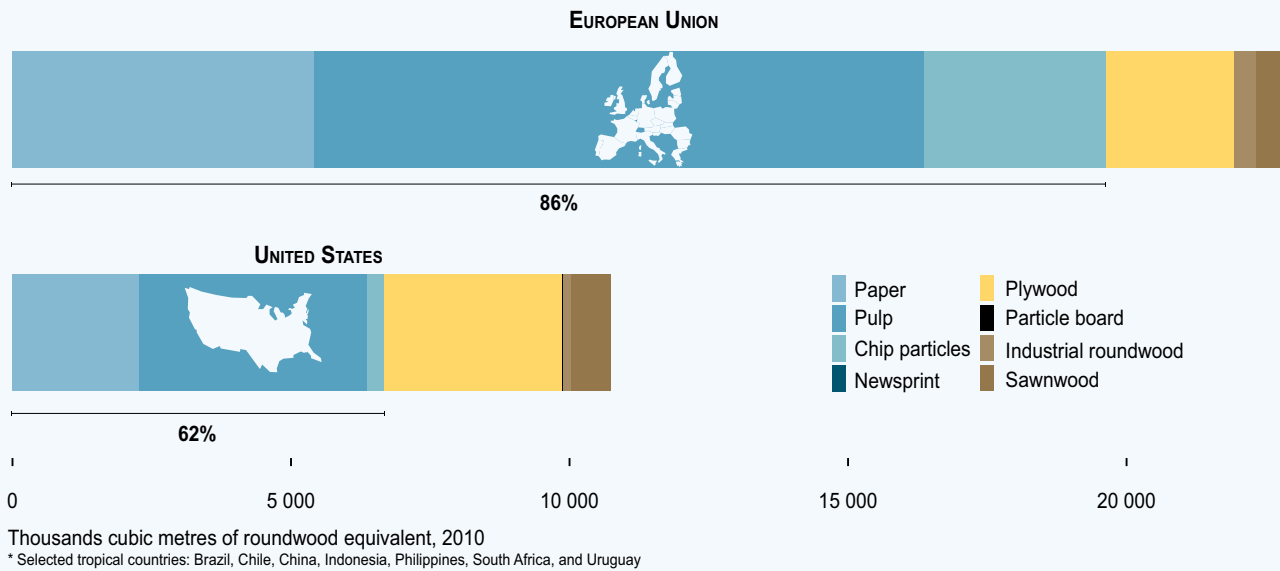


Figure 10: Ten ways to conduct illegal logging.

## Wood and wood products from tropical countries\* to Europe and United States



**Figure 11:** Wood and wood products from tropical countries to Europe and United States.

For pulp and paper production, networks of shell companies and plantations are actively used to by-pass logging moratoriums under the pretext of agricultural or palm-oil investments. Holding companies in tax havens and shell companies are actively used to deliberately and systematically bypass logging moratoriums for alleged plantation development and hide the real ownership of plantations to avoid prosecution. Often these plantations or agricultural development are never established, or they are declared bankrupt following clearing. This results in significant loss of revenue to governments. Perpetrators use legal loopholes to conduct tax avoidance, or simply commit straightforward illegal tax evasion. Plantations are also used as cover for larger networks of forest logging roads. The road networks are used to funnel illegal timber through plantations, or to ship wood and pulp via legal plantations in order to re-classify pulp or wood as legal production.<sup>122</sup>

China is now the world's largest consumer of tropical timber (ITTO 2011), and increasing. Significant efforts are made in China to establish plantations, however China's wood industry depends on imports for almost 50% of its timber supply. Sourcing of materials for this large and growing market is crucial to the long-term sustainability of the industry in China and of forest resources and wood industries around the globe.<sup>124</sup>

The scope of illegal logging can be deduced from assessing the amount of tropical wood out of all the wood products imported to the EU and US. About 33.5 million m<sup>3</sup> round wood equivalent (RWE), or 9–25%, originates in tropical countries, where illegal logging is widespread.

According to data from EUROSTAT, FAO and ITTO for 2010, EU imports 133–385 million m<sup>3</sup> RWE of wood products including paper and pulp. The US imports about 72 million m<sup>3</sup>. About 59 per cent of the imports to the EU and the US are paper and pulp.

About 60 million tons of paper and pulp (RWE of 186 million m<sup>3</sup>) was imported to the US and the EU combined in 2010. EU imports 2/3 of the paper, and US and EU import the same amount of pulp. 15% of this is sourced in tropical countries. Paper and pulp are interesting products from a transnational organized crime perspective because once it has been processed it takes scientific analysis of fibre samples to determine its origins, in contrast to roundwood where species and origins can more easily be identified. This makes laundering of parts of the supply chain effective, and retracing of the product impractical and expensive. The wood used to produce paper and pulp is often mostly or partly declared falsely as plantation wood.<sup>125</sup>

## Logging and palm oil conglomerate sentenced to pay USD 205 million in Indonesia's largest tax evasion case

In the biggest tax evasion case in Indonesian history, the Indonesian Supreme Court in December 2012 ruled that the forestry, rubber and palm oil plantation conglomerate Royal Eagle International had to pay USD 205 million in owed taxes, and fines. The tax evasion totaled USD 112 million, and the remaining USD 93 million constituted a fine. The company paid the owed taxes, but refused to pay the fine. The Indonesian Attorney General's Office had to threaten asset seizures, including 165,000 hectares of plantation land in Riau and North Sumatra, before the company yielded and paid the fine.

Court documents show how palm oil subsidiary Asian Agri was operating. The company used transfer pricing, selling vast amounts of palm oil at artificially low prices to fictitious off shore affiliates, including at the British Virgin Islands. These affiliates in turn sold the goods to real buyers. In the process the company avoided higher

taxes in Indonesia. In two specific cases described by the court documents 3,500 tons of palm oil was sold to fictitious companies, and then on to real ones, netting a profit of more than USD 180,000. The case also involved manufacture of fake invoices and hedging contracts. Asian Agri is a sister company of paper and pulp giant APRIL, which is one of the five largest paper and pulp companies in Asia/Pacific.

While the perpetrators of illegal logging vary across different regions, in South East Asia large industrial conglomerates involved in timber and palm oil production largely drive the illegal logging. A common situation is that these companies have run out of legal production forest, or that they are clearing forest to expand palm oil plantations. The double income source that timber and new plantations provide makes it difficult to combat illegal logging in this area.<sup>123</sup>

Asia produced 212 million tons of paper and pulp in 2012.<sup>126</sup> About 29% of roundwood officially imported in Asia is tropical.<sup>127</sup>

It is estimated that the combined production capacity of the five largest paper and pulp conglomerates is about 63 million tons pulp and paper.<sup>128</sup> At a typical 84% productivity, these companies would have produced 53 million tons, or 24% of the total paper and pulp produced in Asia.<sup>129</sup> UNODC has estimated that 30–40% of wood-based exports, valued at USD 17 billion, from the region in 2010 originated in illegal sources. This is also corroborated by other sources.<sup>130</sup> Out of these USD 17 billion, about 6 billion are paper and pulp products, and 11 billion are timber products.

China's paper and pulp mills had in 2010 a total capacity of about 58 million tons of pulp, and 82 million tons of paper (106 million tons of paper and paperboard in 2012 according to FAOSTAT).<sup>131</sup> This equates to a roundwood equivalent of 220 million m<sup>3</sup> for pulp and 204 million m<sup>3</sup> for paper.<sup>132</sup> About 84% of production capacity is typically utilized.<sup>133</sup> According to FAO statistics, in 2010 China produced 143 million m<sup>3</sup> of industrial roundwood, and imported 42 million m<sup>3</sup>. 19% of the imports were tropical.<sup>134</sup> A significant share is explained by use of recycled paper and non-wood pulp sources. However, analysis suggests that there are still major discrepancies between the total pulp consumption (from all sources) and the produced and exported amount of paper.<sup>134</sup> Furthermore there are also major discrepancies between FAO estimates and those from the industry, with particular regard to official exports and consumption of pulp.<sup>134</sup>

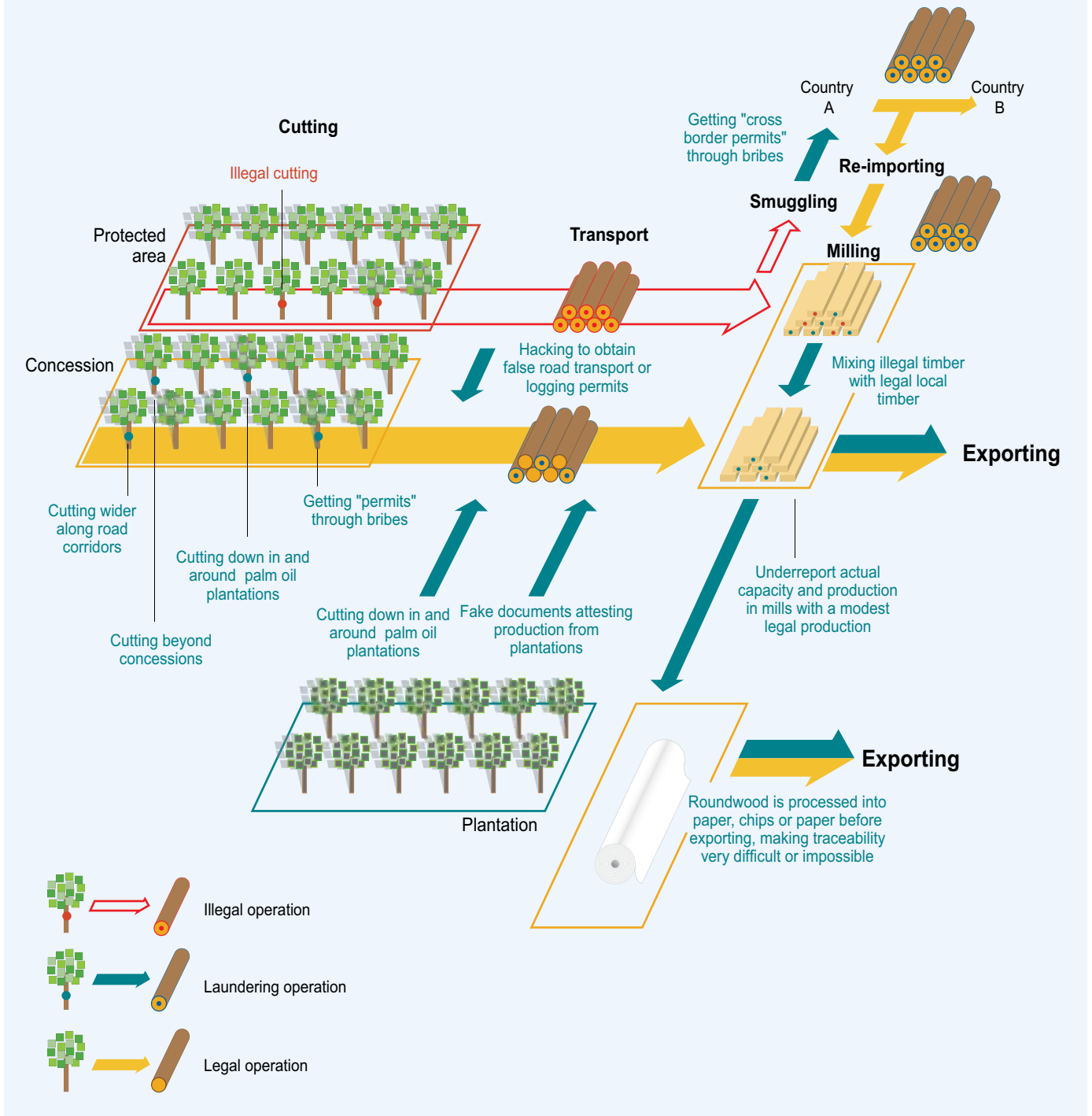
The production of paper, wood chips and pulp is done mainly in Brazil, Indonesia, Chile, Japan, Thailand, China and South Korea. This includes large shares of wood originating across the Amazon and Southeast Asia, of which 50–90% is considered illegal.<sup>135</sup> The value of illegal logging has been estimated by UNEP to be in the range of USD 40–100 billion.<sup>136</sup> Illegality refers to both the process of logging in areas that are protected, and to the trade in illegal forest products.

The trade in illegal forest products is integrated in the formal legitimate trade, using the latter's logistical channels. Large-scale corruption is the glue that binds the legal and the illegal trade closer together. UNODC in particular note the importance of free-trade ports like Singapore and Hong Kong, effectively becoming consolidation hubs for illegal and legal forest products.<sup>137</sup>

These methods effectively by-pass many current customs efforts related to the United States of America's Lacey Act and the European Union's FLEGT<sup>138</sup> programme to restrict the import of illegal tropical wood to the US and to the EU respectively. Based on data from EUROSTAT, FAO and the ITTO, the EU and the US annually import approximately 33.5 million tons of tropical wood in all its forms. It is estimated that 62–86% of all suspected illegal tropical wood entering the EU and US arrives in the form of paper, pulp or wood chips, not as round-wood or sawn-wood or furniture products,<sup>139</sup> which have received the most attention in the past. Often these processed products are then mixed with legal products to hide the origin, with substantial profits and competition benefits, depressing the prices and incomes for sustainable industries. Such practices form a special challenge to certification schemes and consumer awareness.



# Illegal logging and log laundering



**Figure 12:** Mixing of legal with illegal wood, including in pulp, chips and paper is the far most common way to hide the import of illegally procured timber.







## The special challenge of illegal trade in wood-fuel and charcoal

Official estimates by the FAO suggest that just under half of tropical wood consumption in Asia (range 36–98%), and in Latin America (range 8–85%) is used for woodfuel.<sup>140</sup> The remaining half in both regions is divided into sawnwood and pulp for the paper industry, and other products. Charcoal and pulp are particularly subject to exploitation by criminals.

In Africa 90% of wood consumed is estimated used for woodfuel and charcoal (East Africa 94%, North Africa 96%, Central Africa 87%, South Africa 49%, West Africa 92%).<sup>141</sup> In Asia woodfuel is 70% of all wood, and in the world 53%.<sup>142</sup> Africa has an official charcoal production of 30.6 million tons in 2012, worth approximately USD 6.1–24.5 billion annually at the point of sale.<sup>143</sup> The total export number for Africa is only 1.4 percent of production.<sup>144</sup> Such a low figure is unrealistically small, considering the key importance of charcoal in African local energy consumption, and its related widespread trade. The relative export percentages of other products indicate how unusually small the official charcoal export figures are. Industrial roundwood export is 5% of production, sawnwood is 28%, and paper and pulp combined is 16%. Indeed, the official exports of charcoal from most African countries amount only to a few truck-loads annually cross-border.



### Kenyan Police Corporal celebrated by Kenyan Forest Service and Kenyan Wildlife Service for integrity and services to conservation

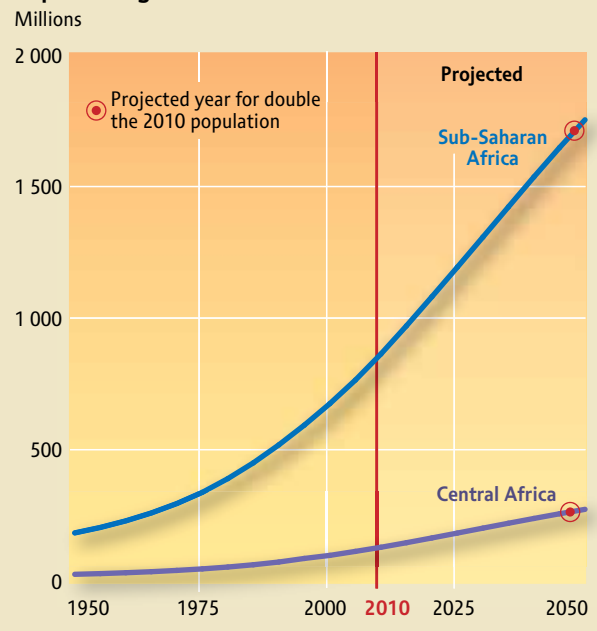
Corporal David Chumo is a police officer at Ntulele Police Station in Narok County, Kenya, who has declined repeated offers of bribes from traffickers of wildlife and charcoal. Chumo has instead of taking bribes made a series of arrests for wildlife and forest crimes.

Chumo's arrests include that of a trafficker carrying 840 kg of giraffe meat in January 2013; a charcoal transport in July 2013; and five people ferrying charcoal in September 2013. These arrests came after Kenya Wildlife Service celebrated Chumo for turning down a bribe and instead arresting a trafficker of 6 tons of giraffe meat from the Masai Mara Game Reserve.

Personally passionate about the disappearance of clean water and environmental degradation's effect in its own right, and negative impact on tourism, Chumo wants to be an example to inspire others: "I want to leave a legacy of patriotism in the force. I want to hear that people want to emulate me. This is what gives me the passion."

Standardmedia.co.ke 16 April 2014

### Population growth in Sub-Saharan and Central Africa



**Figure 13:** Current population projections by UN's Population Division suggest an increase from the current ca. 0.9 billion to 2.1 billion people by 2050 in Sub-Saharan Africa. The UN further estimates the urbanization for Sub-Saharan Africa, currently at 38 percent, to increase to 56.5 percent in 2050.

The unregulated charcoal trade alone is estimated to involve a direct loss of revenues of 1.9 billion USD to African countries annually.<sup>145</sup> With current urbanization trends, households are switching from wood fuel to the affordable, convenient and readily accessible charcoal. Wood fuel and charcoal account for up to 90% of the household energy consumption in some countries, according to FAO.

FAO calculated Tropical Africa's<sup>146</sup> wood fuel consumption to about 502 million m<sup>3</sup> in 1996, with an average increase of 7% every five years. While the increase of wood fuel consumption is large, the charcoal consumption increases twice as fast. In terms of woodfuel this equals about 636 million m<sup>3</sup> in 2014, and 1,057 million m<sup>3</sup> in 2050.

In Kenya charcoal provides energy for 82% of urban, and 34% of rural households.<sup>147</sup> The annual consumption is 1–1.6 million tons<sup>148</sup> for 40 million citizens, with 25% urbanization. In Kenya there are thus about 18.4 million consumers who use 70 kg charcoal each per year. In Madagascar 85% of the population rely on charcoal, and with a population of 22.3 million people and a charcoal production of 1.19 million tons per year, they consume 63 kg per consumer per year. On average charcoal consumers then consume about 66.5 kg/year. With the strong projected population growth and urbanization in Africa the relative use of charcoal as well as the absolute tonnage consumed will grow dramatically. If only 65% of Africans are charcoal consumers of an average of 66.5 kg each in 2050, they will consume 90.8 million tons of charcoal. Furthermore, according to one study, for every single percentage of increased urbanization, the demand for charcoal increases by 14 per cent.<sup>149</sup> Based on these two projections the demand for charcoal can be expected to increase at least to between 79–90 million tons in 2050 unless an equally accessible and practical energy source should emerge. This requires 474–540 million m<sup>3</sup> in roundwood equivalent.

This massive demand for charcoal will lead to severe impacts such as large-scale deforestation, pollution and subsequent health problems in slum areas, especially for women. Increased charcoal demand will also strongly accelerate emissions from both forest loss and emissions of short-lived climate pollutants in the form of black carbon. The production and trade in charcoal involves both an important income source for poor rural producers, and an inexpensive and highly demanded energy source for the urban poor. Charcoal as a product has a legal status that varies widely between jurisdictions in and between countries. The trade ranges from regulated, through unregulated, illicit, and to illegal, and in some instances to comprise a conflict-fuelling currency.<sup>150</sup>

### **The illegal and unregulated charcoal trade**

In Africa, official estimates by FAO put charcoal production at 30.6 million tons in 2012, worth approximately

USD 9.2–24.5 billion annually. While the official exports from most African countries amount only to a few truckloads annually, available evidence suggests that a greater numbers of trucks are used to gather charcoal bags near protected areas at night, as well as across border points as directly observed by team members of the Rapid Response Unit first hand in East Africa, such as in Tanzania, and previously between Uganda and DRC, but also elsewhere in Africa. Analysis of satellite imagery reveals massive illegal logging in many protected



areas, such as in conflict zones of DRC, or in North-eastern Madagascar, where vessels load and export charcoal or timber, including rosewood. Internet listings reveal over 1,900 charcoal dealers in Africa alone, at least 300 officially exporting minimum orders of 10–20 tons of charcoal per shipment. The actual number is likely to be many times higher, and minimum daily orders for many individual exporters exceed the official total annual exports from some countries. For East, Central and West Africa, the net profits from dealing

and taxing unregulated, illicit or illegal charcoal combined is estimated at a range of 2.4–9 billion USD,<sup>151</sup> compared to an estimated (European) combined street value of heroin in the East African market and cocaine in the west African market, worth USD 2.65 billion.<sup>152</sup> This indicates a vast illicit, unregulated trade in charcoal, involving illegal logging often in protected areas, large-scale deforestation, involvement of organized dealers and trans boundary shipments, including to other continents.











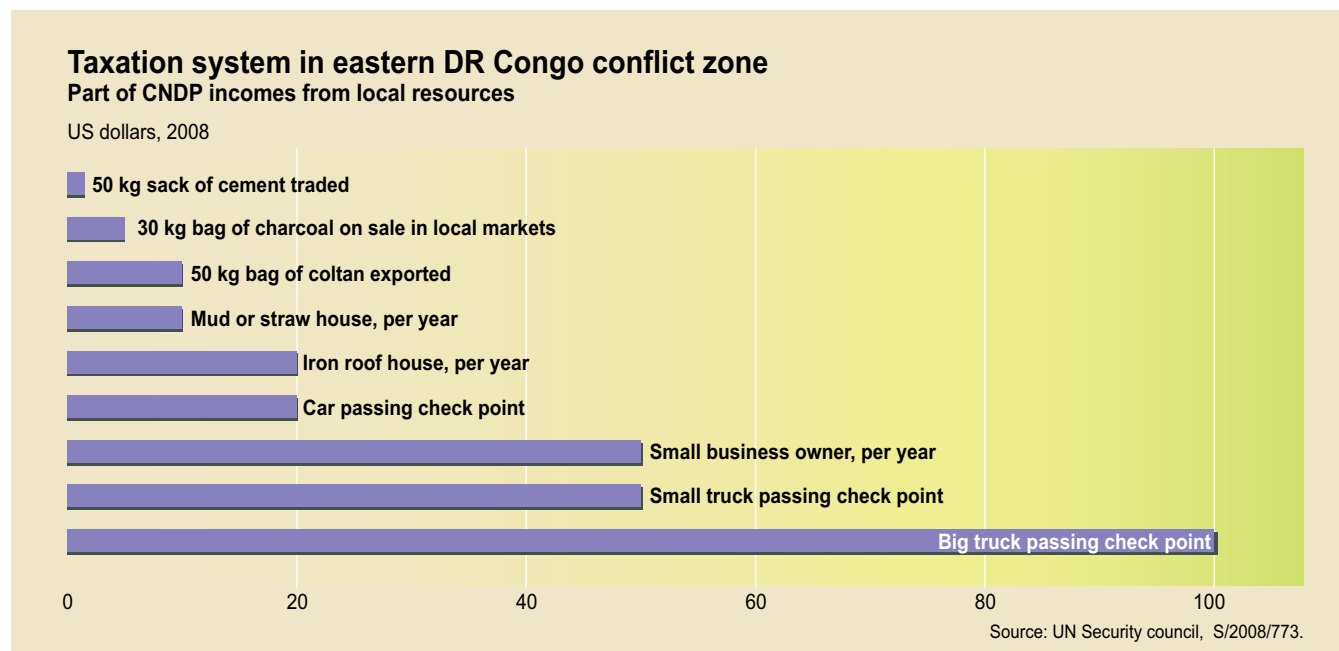
# Role of illegal wood and wildlife trade for threat finance

The illegal charcoal trade alone involves a direct loss of revenues of USD 1.9 billion to African countries annually. And this revenue often funds criminal networks. Furthermore, with current urbanization trends, households are switching from woodfuel to the affordable and readily accessible charcoal. This, in turn, without any regulation at all, represents a major threat of further evolution of organized crime involved in the illicit charcoal business. The favourable charcoal market conditions and the absence of regulation of the trade in practice constitute an open invitation for non-state armed groups to take control of the trade, which is enabling them with a substantial purchasing power.

Overall, militias across the continent create incomes through the trafficking and particularly control of the road network, ports, strategic trade points and border crossings with anything from common commodities to high-value products, of which common goods like charcoal remain of particular importance for incomes to both high and low levels militias.

Prices on ivory are based on both cited reports and reports from rangers and Anti-poaching Units gathered informally during

interviews as part of the trainings conducted under UNODC and INTERPOL (ca. 39 APU commanders or staff members interviewed informally from Tanzania, Zambia, Uganda, Kenya, Mozambique during training sessions 2011–2013). The prices are typically in the range of USD 150–400 per kg. These prices are far lower than quoted in the end-market in Asia, such as around USD 750 per kg of raw ivory in China.<sup>153</sup> There are examples of frontline poachers being paid USD 70 per kg. Quoted ranges are from USD 70–550 with a median of USD 150–400 per kg raw ivory.



**Figure 14:** Militias, as here from DRC, put considerable emphasis upon controlling entrance roads to cities and the road network, as well as ports, in order to tax any good passing. Here, charcoal, being the primary energy supply to cities and thus abundant in large volumes, automatically becomes a significant source of income to militias.





## Income to non-state armed groups

In order to understand how much non-state armed groups can make, it is imperative to look at not the total number of killed elephants in Africa, but how elephants are distributed within the operational range and the striking range of militias or terrorist groups.

Southern Africa continues to hold the majority of Africa's elephants, with close to 52% (270,000 elephants) of the known elephants on the continent. Eastern Africa holds 28% (130,000) and Central Africa 16% (16,000) (forest elephant population 20–60,000). In West Africa, less than 2% (7,100 elephants) of the continent's known elephants are spread out over the remaining 13 elephant range states. The numbers are gained using the category "definite" from the elephant database.<sup>154</sup>

This means that more than 90% of the "definite" population is located in east and the south – mostly beyond any conflict zone. Considering countries with on-going conflicts in West, Central and northern parts of Eastern Africa, approximately 19,000 elephants are present inside or very near war zones. Additionally, within a 500-km strike range from conflict zones we can find an estimated 21,000 elephants in the Katavi, Ugalla and Moyowosi game reserves in eastern and southern Tanzania; another 38,000 in Congo, and some 35,000 in Gabon, although many in the southwest. Here the 'definite' and the 'probable' categories are used. We can assume that parks in parts of south-western Tanzania are within reach. Poaching levels are very high there, including by heavily armed poachers. Further, by including northern Gabon and parts of Congo, we get an additional ca. 19,000 in or near conflict zones, and another ca. 100,000 elephants in a 500 km perimeter or slightly beyond.

In 2012, poachers on horseback, reportedly Sudanese horse militias, killed several hundred elephants in Cameroon in a matter of a few months. In February 2013, the Gabonese Government announced the loss of at least half of the elephants in Minkebe National Park. As many as 11,000 individuals may have been killed between 2004 and 2012, an average of 1,200 per year in that park alone. The levels of poaching are highest in central Africa, eastern parts of western Africa, as well as in southern Tanzania and Northern Mozambique (The Niassa corridor). The volume of the trade, the large individual shipments, and the high value of wildlife products point to the clear involvement of transnational organized crime. Ivory also provides a portion of income raised by militia groups in the DRC and CAR, and is likely a primary source of income to the Lord's Resistance Army currently operating in the border triangle of South Sudan, CAR and DRC, directly overlapping and targeting elephants in Garamba and northern DRC and into CAR. Contacts, attacks and chance encounters with LRA overlap closely with elephant distribution range. Lack of control of the road network for taxing also suggests that ivory may be one of the few sources of income available to the

LRA. Ivory similarly provides a source of income to Sudanese Janjaweed and other horse gangs operating between Sudan, Chad and Niger – striking over 600 km from their primary home range.

PIKE numbers (the number of illegally killed elephants found divided by the total number of elephant carcasses encountered) for Central Africa is 70–80% (varying within countries) indicating high levels of poaching. The percentage of the total elephant populations of illegally killed elephants ranges from up to 15% per year in the worst hit areas, with reports of even higher proportions.<sup>155</sup> A theoretical calculation, although speculative and with significant uncertainty, can nonetheless provide an indication of the possible scale. These numbers are not supported by official data, although anecdotal reports and unsystematic field observations support the estimates. The estimate of scale is calculated using the following assumptions:

- Ca. 19,000 elephants are located within or very near conflict zones in countries with civil wars or significant unrest and armed non-state groups
- Ca. 100,000 elephants are seasonally located within a 500-km striking range of these countries or zones (some uncertainty as some populations are beyond)
- Up to a maximum 15% of elephant populations are killed annually in or very near conflict zones (ca. 2,850 elephants)
- Ca. 5% of populations are killed annually in a 500-km perimeter (ca. 5,000 elephants)
- 90% of killed elephants are killed by non-state armed groups in or near conflict zones (ca. 2,565 elephants)
- 10% of killed elephants are killed by non-state armed groups in the perimeter of the striking range (ca. 500 elephants)
- This gives a total of 2,565–3,065 elephants potentially killed by non-state armed groups or ca. 13% of the totally estimated killed elephants in Africa.

The actual number of killed elephants in Africa remains unknown, so does the proportion killed by non-state armed groups such as militias in, near or within the striking range of militias. With a price range of USD 150–400 per kg and 10 kg of ivory per elephant on average, the gross value of ivory to non-state armed groups amounts to ca. 2,565–3,065 killed elephants per year or 25.7–30.65 tons of ivory, valued at USD 150–400 per kg, giving a possible range of ivory as threat finance to non-state armed groups of ca. USD 3.9–12.3 million, dependent upon their ability to strike at elephant populations at greater distances.

Media and NGO reports<sup>156</sup> suggesting that Al Shabaab was shipping out 30.6 tons of ivory or corresponding to ivory from 3,600 elephants per year out of southern Somalia are therefore likely highly unreliable. To do so, they would have to gather all or nearly all ivory from killed elephants from west, central and eastern Africa and bring it to one port in southern

# Sub-Saharan Africa conflicts and the elephant range

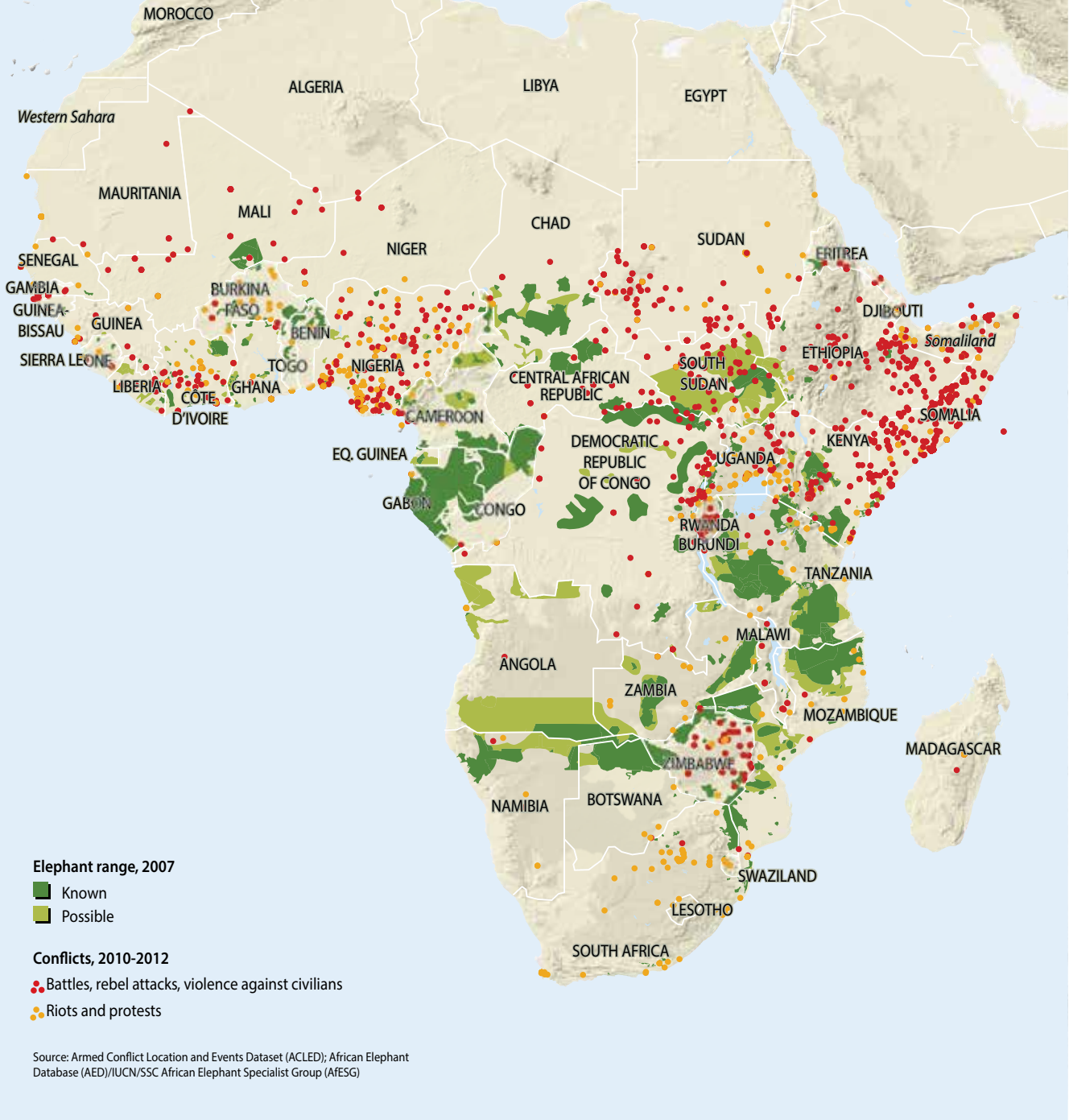


Figure 15: African elephants threatened by conflict.

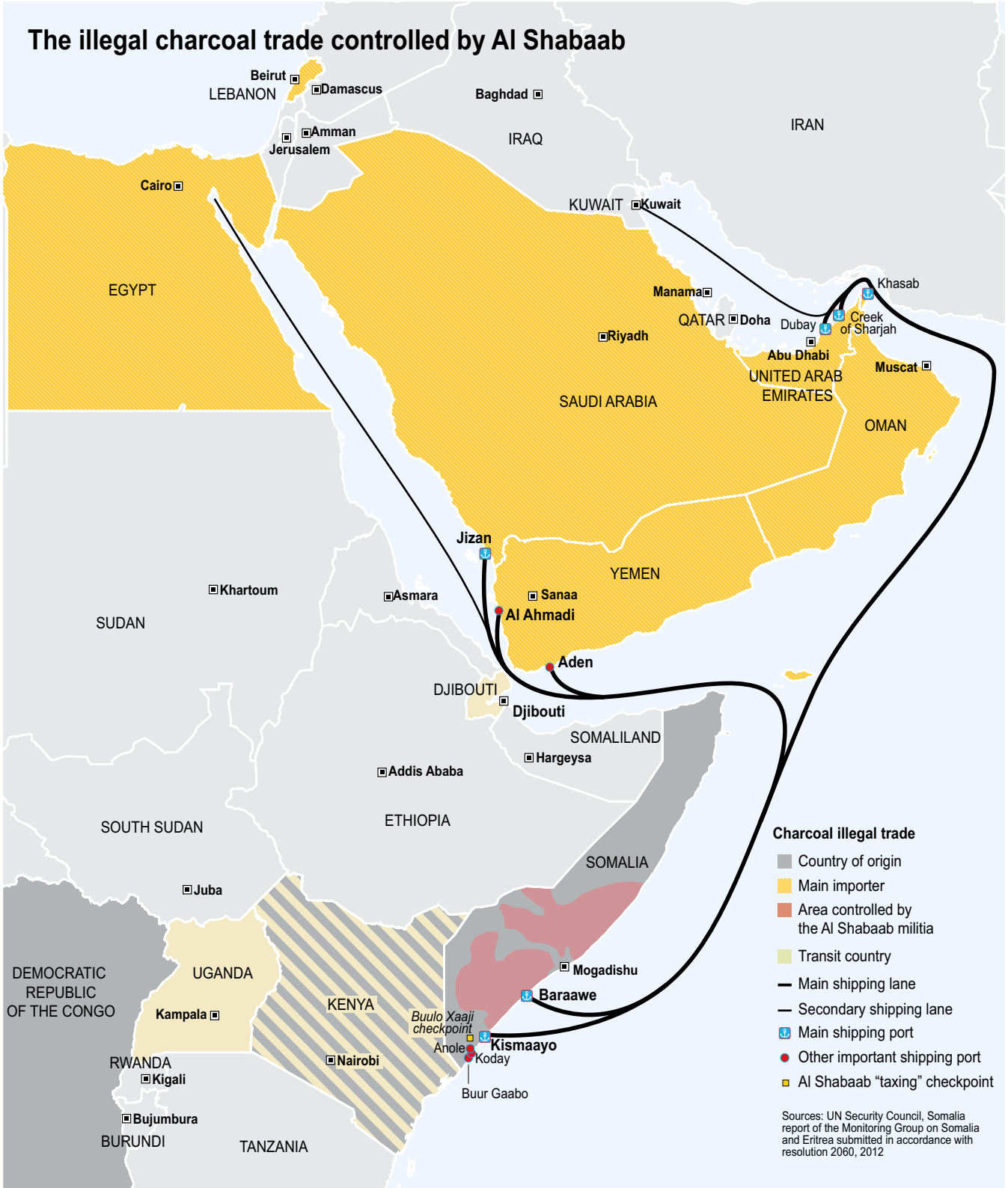


Figure 16: The illegal charcoal trade controlled by Al Shabaab.



Somalia. So far this route has not featured in any reporting as an ivory smuggling route. Both the Rapid Response team, as well as the Group of experts for Eritrea and Somalia reporting to the UNSC, have to date failed to establish such a connection in official reporting. Al Shabaab's main income appears to be from charcoal, and taxing of other commodities, as well as possibly ex-pat finance.

### Charcoal and its role for threat finance

Illicit taxing of charcoal, commonly up to 30% of the value at the point of sale, is conducted on a regular basis by organized criminals, militias and terrorist groups across Africa. Militias in DRC are estimated to make 14–50 million USD annually on road taxes (2001 figures, see UNSC, 2001 and UNEP-INTERPOL, 2012). Al Shabaab's primary income appears to be from their involvement in the charcoal trade and informal taxation at roadblock checkpoints and ports. At a single roadblock they have been able to make up to USD 8–18 million per year for taxing passing charcoal traffic in Badhaadhe District, Lower Juba Region.<sup>157</sup> The charcoal export from Kismayo and Baraawe Ports in particular has increased since the UN Security Council-instituted charcoal export ban. Al Shabaab retains about one third of the income, which alone constitutes about USD 38–56 million. The overall size of the illicit charcoal export from Somalia has been estimated at USD 360–384 million per year.<sup>158</sup>

For the militias in Kivu and Al Shabaab in Somalia the range of income from charcoal is thus 60–124 million USD annually from charcoal and taxes alone. This is based on estimates from reports to the UNSC. African countries with on-going conflicts include Mali, CAR, DRC, Sudan and Somalia. All of these countries consume large amounts of charcoal. Their annual joint official charcoal production is ca. 4.52 million tons of wood charcoal. Conservatively estimated the militia and terrorist groups, given the official FAOSTAT numbers of charcoal production and an estimated tax income to militias of 30% and involvement in 30% of the trade, can easily make 111–289 million USD annually. This of course depends somewhat on consumer prices in the region (range USD 275–700 per ton, prices derived from local traders and official listings), their involvement in taxing, and the extent of their control of the illegal or unregulated charcoal trade. More investigation is needed to ascertain the scale and precise role of charcoal for threat finance.

The charcoal trade will likely triple in the coming decades with rising demand. The rise in the charcoal trade will trigger a dramatic increase in deforestation in Africa with subsequent impacts on forest-related water resources, land degradation and loss of ecosystem services. It will also significantly raise the threat finance to non-state armed groups if left unchecked. By having networks and shell companies involved in the charcoal trade, militias or terrorist groups can also ensure an income outside their areas of operation, thus making incomes independent of the success of their armed campaigns, enabling them to regroup and resurface again and again after apparent



military defeat. Unlike illegal drugs, piracy, ransom, counterfeit and wildlife crime the unregulated and at times illicit charcoal trade represents a safe and convenient source of income that can be exploited by organized crime and non-state armed groups alike, far beyond their geographic areas of control. This mixing of legal, illicit and illegal trade is symptomatic of parts of the wildlife and illicit wood trade and requires a particular coordinated response beyond that of environmental or enforcement agencies in isolation.

There is a risk that this trade can easily be further fuelled and organized also outside of Somalia. The domestic and transnational trade in charcoal from Madagascar, Mozambique, Tanzania, Uganda and Kenya is worth at least 1.7 billion USD annually. Charcoal trade may also be a possible source of income for Boko Haram although this remains uncertain at this stage. Furthermore, the scale of the finance from charcoal enables non-state armed groups to purchase advanced arms and training, including ground to air portable man-pads and guided weapon systems from military stocks. The level of finance also enables them to undertake larger and more complicated military operations, taking control of road networks, border crossings and larger road, river and port infrastructure, where taxing of goods and in particular charcoal provide a significant source of income.

Furthermore, it enables them to establish dealer networks also in foreign countries including in the Gulf and the Middle East, or to arms suppliers. By having networks and shell companies involved in the charcoal trade, militias or terrorist groups can ensure an income independent of military success on the battlefield, enabling them to regroup and resurface again and again after apparent military defeat.

In addition, there is also a significant involvement of organized crime in large-scale logging.

# Wood charcoal production in Africa

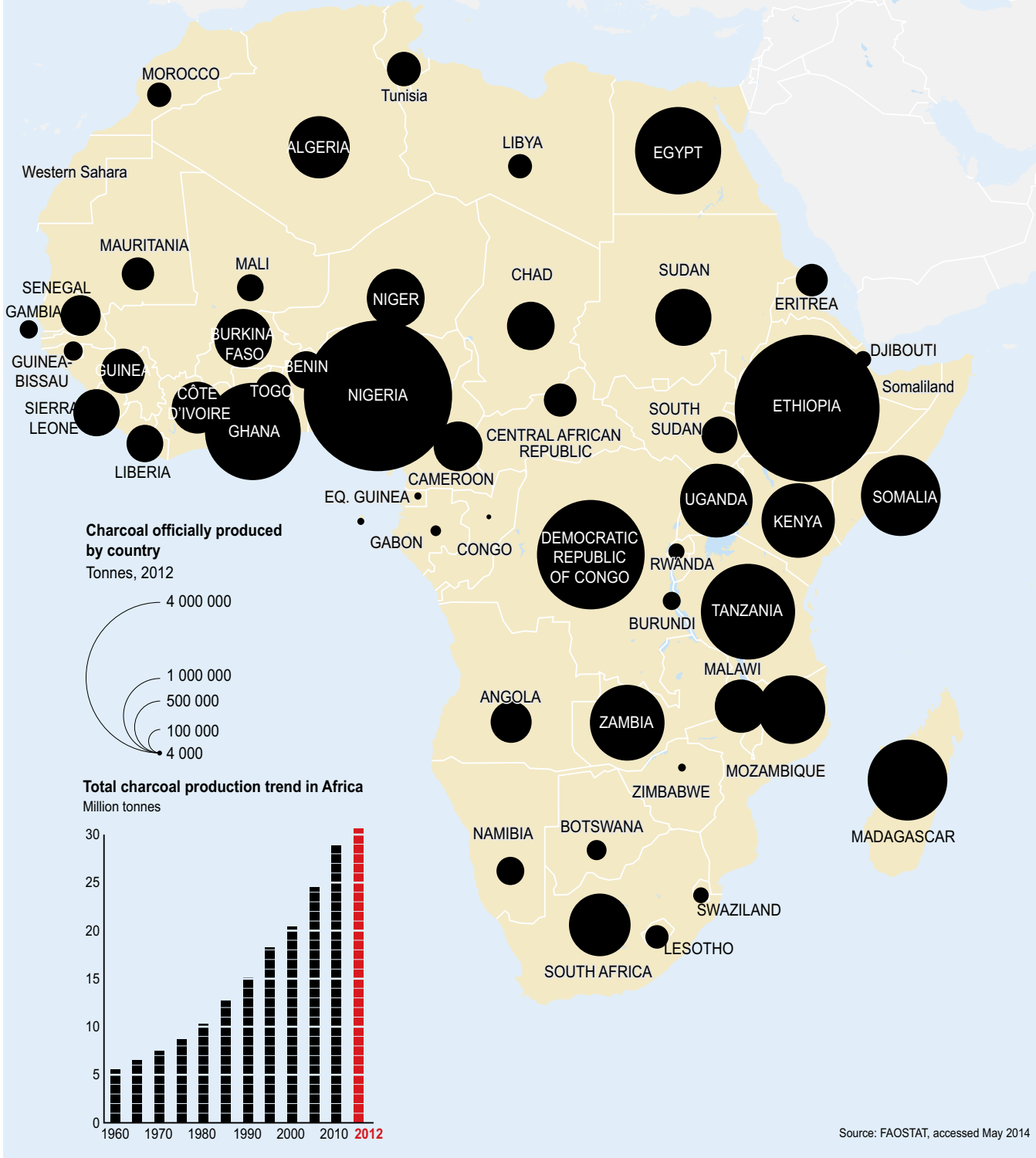


Figure 17: Wood charcoal production in Africa.

# The charcoal supply chain

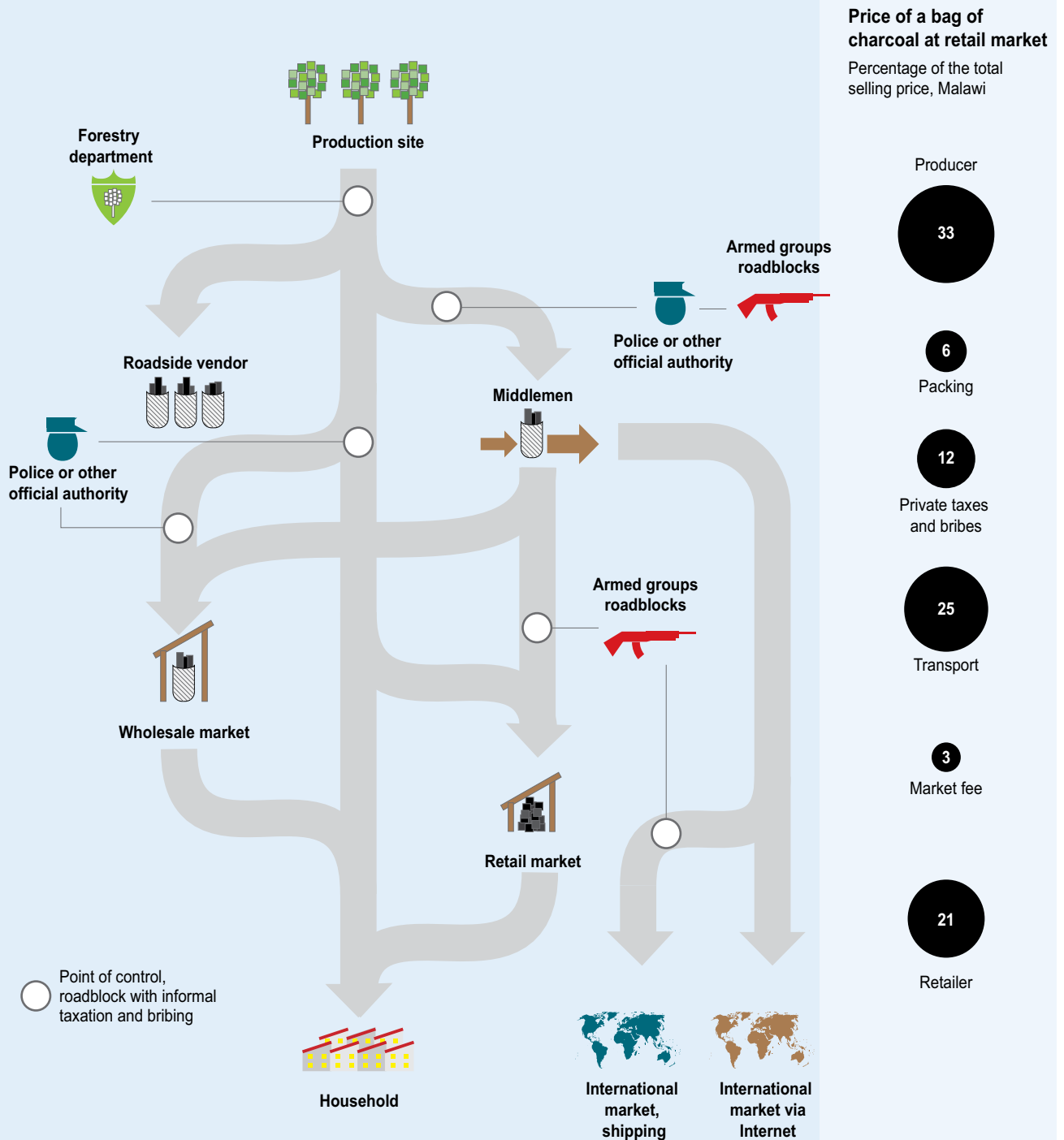
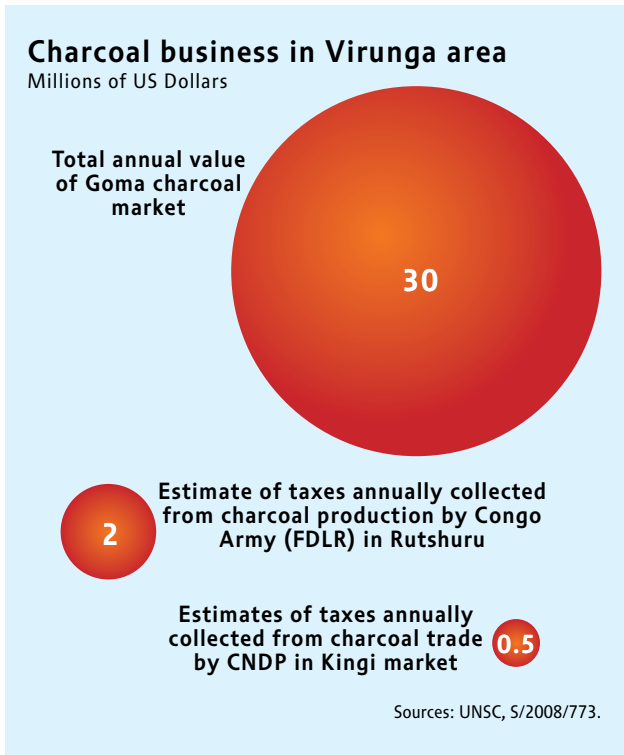
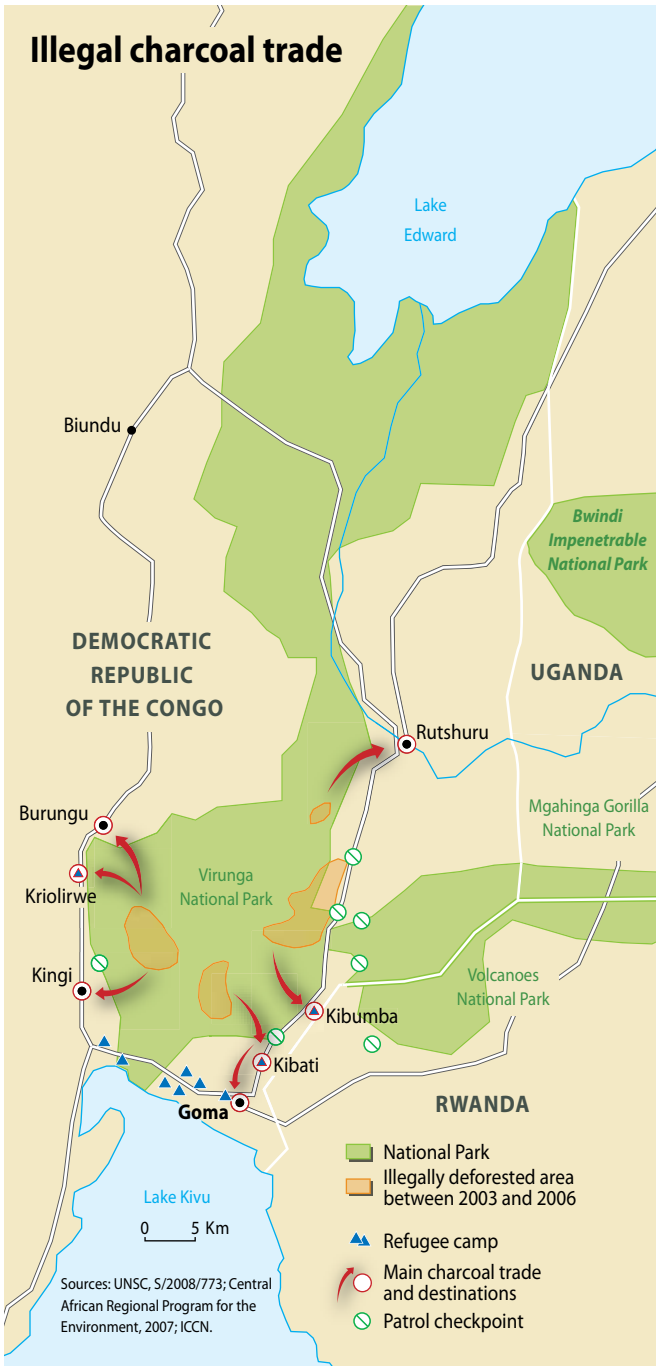


Figure 18: The charcoal supply chain.



**Figure 19a-b:** The illicit charcoal trade in eastern DRC, but also into Uganda, Rwanda and Tanzania, is a significant threat to protected areas, forests and also a significant income to criminals and militias.







# Responses

**Illegal trade in forest and wildlife products, as well as the illegal exploitation of natural resources is now widely recognized as a significant threat to the environment, human well-being, food security as well as to sustainable development. This is reflected in a range of decisions from CITES, from the UN Commission on Crime Prevention and Criminal Justice, INTERPOL, UNEP, and the UN Security Council, including on Somalia and DRC.**

Up until now, enforcement measures to reduce transnational environmental organized crime have been modest. Investigative capacity has been lacking or inadequate, and funding for protection of resources limited. Prosecution and sentences for environmental crime often reflect petty crimes or minor offences, and too often they are limited to low-level impoverished criminals. However, the illegal trade in forest and wildlife products also often violates tax laws, anti money laundering laws, and it may include involvement in organized crime, violence, trafficking and even funding of non-state armed groups. Considering wildlife crime under these laws may sometimes provide a far more effective, serious and appropriate entry point of investigation and subsequent evaluation for prosecution.

## Consumer awareness

Among very important and effective responses to addressing illegal wildlife trade are demand reduction schemes by consumers. Although there have been some successes in demand reduction for illegally traded wildlife products, such responses require behavioural change outcomes, effected through greater awareness and understanding at the consumer end, including how wildlife and wood products are laundered through legal supply chains. Indeed, effective responses should involve a range of measures from demand reduction through socio-economic efforts, certification schemes and consumer awareness, more effective management, good governance and alternative livelihoods. These need to be coupled with enforcement, including frontline protection, customs, strengthened legislation, policing and judiciary efforts.

Consumer awareness and reducing demand is a long-term critical component that requires much further attention. Surveys of 1880 residents from a total of six Chinese cities in 2007,<sup>159</sup> revealed that that 43% of respondents had consumed some product alleged to contain tiger parts. Within this group, 71% said that they preferred wild products over farmed ones, with predominant products used were tiger bone plasters (38%) and tiger bone wine (6.4%). Of the respondents 88% knew that it was illegal to buy or sell tiger products, and 93% agreed that a ban in trade of tiger parts was necessary to conserve wild tigers. People from all income groups used tiger-bone plasters, with the highest demand among older consumers and women.



Out of seven brands of plasters tested, none contained even traces of tiger bone,<sup>160</sup> and a 2005–2006 survey of 518 traditional medicine stores in China, no plasters listing tigers as an ingredient were found.<sup>161</sup> Only 3% of the consumers believed that the products they purchased were fakes. Another 12% believed the products were real, while 85% were unsure whether the products used actually contained tiger ingredients.<sup>162</sup>

Consumer awareness programmes are therefore extremely important, and this applies not only to tiger parts, but also to the entire range of wildlife products, in order to close down the demand side. Correspondingly, consumer awareness is highly important in relation to the use of not only visible wood products such as furniture, panels and timber, but even more so regarding purchase of paper, which is where the majority of illegally harvested wood is laundered.



### Successes and progress

There are a number of successful recent developments in combating transnational organized environmental crime from both the international community as well as from individual countries, including from Latin America, Africa and Asia that can be expanded, emulated, adapted and built upon. Some significant examples are given below, but they represent only a small portion of many on-going successful initiatives from the international community, NGOs and governments.

Poaching for Shahtoosh wool caused a dramatic drop of likely 80–90% or nearly a million Tibetan or Chiru antelopes in China in the 1990–2000s. This resulted in a significant police and military effort to prevent eradication. It was combined with the establishment of some of the largest protected areas in the world. Thus improved management and successful awareness campaigns combined with strict enforcement efforts to save the Tibetan antelope from extinction. Populations are slowly recovering, although they are still very vulnerable and more monitoring and surveys are urgently needed.

Brazil is probably one of the world's leading countries in a wide enforcement effort to reduce illegal deforestation by tackling the full criminal chain and their networks. Deforestation in Brazil's Amazon reached its lowest level in 2012, since monitoring of the forest began in 1988. It went down by 64–78%, dependent upon estimate, primarily as a result of a coordinated enforcement approach using near-real time

satellite imagery and targeted police operations and investigations. The effort included frontline protection and investigations, as well as prosecutions of ringleaders and networks. Here enforcement efforts have been the primary cause of the observed reduction in illegal logging. But importantly, the campaign is being supported by large-scale efforts through REDD+ and other initiatives to strengthen the participatory processes of indigenous peoples, stake holders and alternative livelihoods. The ratio has probably been ca. 90% civilian and 10% enforcement effort. Unfortunately, in most cases elsewhere in the world, authorities have not prioritized comparably robust enforcement efforts. Joining these two types of efforts is crucial for combating environmental crime.

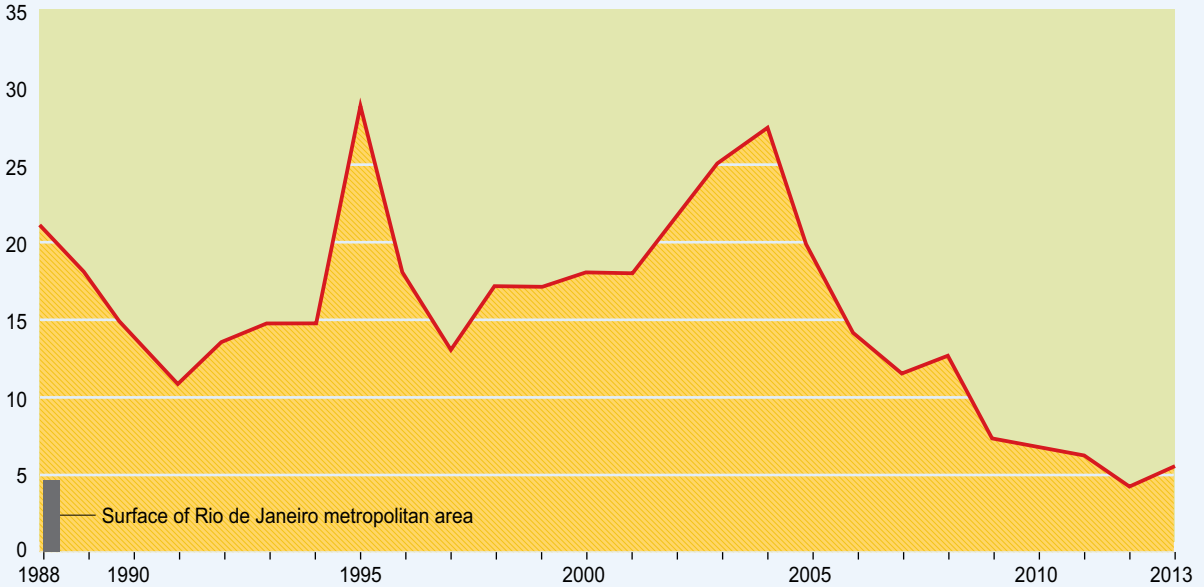
Other important efforts include strengthening frontline protection such as the recently initiated and on-going large-scale training of rangers in East Africa. In Tanzania especially, over 1,100 rangers have received specialized training in the past two years. The training covers tracking of poachers, tactics and wildlife crime scene management. It has been done under the auspices of INTERPOL and UNODC and has resulted in a series of frontline arrests linking suspects to the scene of crime. The training is improving not only rangers' ability to stop and arrest poachers, but it also supports successful prosecutions and good enforcement ethics based on evidence, prosecution and trial in court. Such efforts invest in a long-term capacity and do not just provide short-term operations or enforcement efforts. These capacity-building efforts need



# Brazilian Amazon: Law enforcement operations cause 76% reduction in deforestation

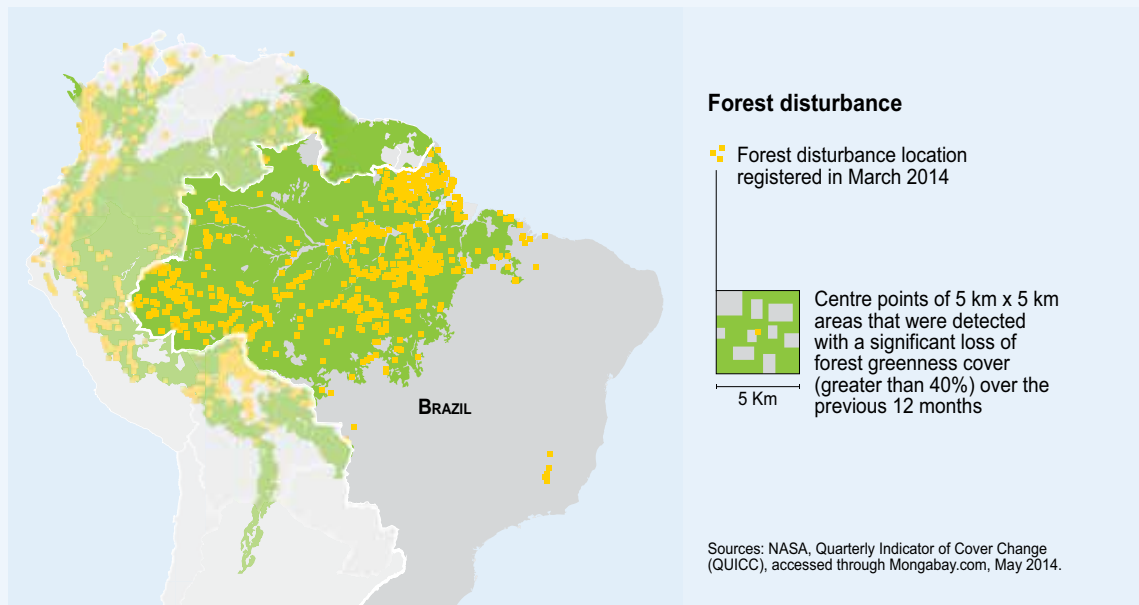
## Deforestation in the Brazilian Amazon, 1988-2013

Thousand square kilometres



Sources: Mongabay.com, May 2014.

## More still needs to be done



**Figure 20:** Brazil managed to reduce deforestation in Brazil primarily through a targeted and strict enforcement effort using satellite images to detect recent logging, followed by direct action by SWAT teams and investigators also of companies and networks, dropping deforestation by 64–78%,



to be continuously funded for the enforcement chain to be able to cope with developments in the sophisticated illegal trade. An effective response to environmental crime must therefore include both good governance and enforcement efforts, both in the short and long-term. Governments and the international community must develop a permanent capacity to discourage, prevent and safeguard against crime, while building sustainable livelihoods. One-dimensional approaches, whether enforcement or socio-economic, cannot in isolation succeed against environmental crime, because it is a combined problem that comprises poverty, social and environmental issues, organized crime and even armed groups.

In many areas in Africa, Latin America and Asia, there are still very few rangers in place. They often have low salaries. Transportation is usually lacking to enforce thousands of square kilometres of protected areas. They are increasingly faced with armed poachers, even militias. Over 1,000 rangers are claimed killed in service to protect wildlife in the last decades. More than two hundred have been killed in the Virungas alone. Here the world's last remaining mountain gorillas live. The rangers were killed because they interfered with the illegal charcoal business in the area. Salaries, training and increasing the presence of frontline rangers all require continuous and focused development support. Such investments will also reduce negative impacts on tourism and the welfare of the local population. It is imperative that donors and development funds support existing law-enforcement programmes and ranger and police academies in developing countries, as well as build basic enforcement presence. All these programmes and efforts strongly suffer from under-funding. Rushed implementation of advanced technology like cameras, sensors or aerial un-manned drones without documenting their effect in anti-poaching is unlikely to prove a substitute for well-trained and well-paid rangers, police, customs officers, investigators and judicial collaboration, along with community programmes and alternative livelihoods. Furthermore, any use of expensive technology is useless if no

rangers are available to conduct follow-ups. Basic tracking and enforcement skills are still the most effective way to search and arrest poachers, but these fundamental methods require actual field presence, training and payment of rangers.

On customs, the UNODC-WCO Container Control Programme (CCP) has been successful in targeting sea and dry port container shipments in an increasing number of countries. Seizures include not only counterfeits and drugs, but also wildlife and timber products. On 23 and 29 January 2014 for example, two containers were seized in Lome, Togo. They contained 3,8 tonnes of ivory and 266 teak logs. The seizures also led to arrests. INTERPOL with support from various bilateral partners and UNODC and WCO, were able to alert authorities in Malaysia, Vietnam and China of this and other shipments in transit.

International enforcement collaboration, such as the International Consortium on Combating Wildlife Crime (ICWC) which includes CITES, UNODC, INTERPOL, the World Bank and WCO, together with increased collaboration amongst agencies and countries, has created a more effective structure to provide support to countries in the fields of policing, customs, prosecution and the judiciary. Improved sharing of intelligence among agencies has also enabled INTERPOL to support countries in larger and more effective police operations, leading to larger seizures of illegal timber and wildlife products. In 2013 Operation Lead, under INTERPOL's project LEAF, was conducted in Costa Rica and Venezuela. It resulted in 292,000 cubic meters of wood and wood products seized – equivalent to 19,500 truckloads (worth ca. USD 40 million). Operation Wildcat in East Africa involved wildlife enforcement officers, forest authorities, park rangers, police and customs officers from five countries – Mozambique, South Africa, Swaziland, Tanzania and Zimbabwe. The operation resulted in 240 kg of elephant ivory and 856 timber logs seized and 660 arrests. Also seized were 20 kg of rhino horns, 302 bags of charcoal, 637 firearms, and 44 vehicles.

An Indonesian case has shown how money-laundering measures can lead to prosecutions for illegal logging. A UNODC training course in 2012 involved the Financial Investigative Unit (PPATK) and the Indonesian Anti-Corruption Agency (KPK), took trainers from the Jakarta capital level to local level in west Papua. Methods learned in the course revealed how Anti Money Laundering (AML) and Anti-Corruption regimes can be used to detect investigate and prosecute illegal logging. After the course the PPATK detected highly suspicious transactions. This, in turn led to an investigation and prosecution. A timber-smuggling suspect was sentenced to eight years of imprisonment after a legal appeal overturned the milder verdict handed down earlier this year by a court in West Papua. The suspect was originally charged with illegal logging, fuel smuggling and money laundering, and the suspect was in February found guilty of just one charge – illegal logging – and was sentenced to just two years in prison

with a USD 4,000 fine. The suspect was acquitted of money laundering, despite evidence showing US\$ 127 million had passed through his accounts. An appeal filed by the Prosecutors trying the case resulted in a conviction of money laundering. The High Court of Jayapura, Papua, sentenced the suspect to eight years imprisonment on 2 May 2014, revealing the scale of illegal logging and smuggling.

Resolutions have also been adopted by the UN governing bodies. These include ECOSOC Resolution 2013/40 on crime prevention and criminal justice responses to illicit trafficking in protected species of wild fauna and flora, the 2014 Commission on Crime Prevention and Criminal Justice resolution on strengthening a targeted crime prevention and criminal justice response to combat illicit trafficking in forest products, including timber as well as the General Assembly Resolution 68/193 emphasizing that “coordinated action is critical to eliminate corruption and disrupt the illicit networks that drive and enable trafficking in wildlife, timber and timber products, harvested in contravention of national laws. The INTERPOL General Assembly adopted a Resolution in November 2010 (AG-2010-RES-03) recognising that INTERPOL plays a leading role in supporting international law enforcement efforts to tackle environmental crime, which is transnational, involving organised crime, who engage in other crime types including murder, corruption, fraud and theft.

Recently, UNODC have developed the Global Programme for Combating Wildlife and Forest Crime to strengthen the crime prevention and criminal justice response, and are providing support to a wide range of countries.<sup>163</sup>

At INTERPOL, the Environmental Crime Unit<sup>164</sup> has an established record of training law enforcement and conducting successful operations across a number of countries to combat environmental crime from wildlife crime to illegal logging. Established in 2009, the unit became an official Sub-Directorate of INTERPOL in 2013.”

A number of initiatives involving direct collaboration between UNODC, WCO, CITES, INTERPOL, UNEP and other UN agencies provide a new approach to share and exchange vital information, support and training to countries under particularly high pressure from environmental crime. These initiatives have revealed important lessons and yielded significant early results. However, the scale and coordination of the efforts must be substantially increased and a widened effort implemented. They must be combined with efforts on good governance, management and consumer awareness to ensure a long-term demand reduction. It is particularly crucial to support the countries directly, as financial resources need to be directed towards efforts with effect on the ground, whether in enforcement, governance or consumer awareness.





Several NGOs, such as The Diane Fossey Fund, help protect and rescue gorilla orphans. Following the release of the UNEP-INTERPOL Rapid Response report, the UN peace keeping force in DRC assisted in transporting orphaned critically endangered gorillas to safe zones.













# Conclusion

**The consequences of the illegal trade in wildlife span environmental, societal (including security), and economic impacts – including affecting the resource base for local communities, and resulting in the theft of natural capital at national levels. The illegal trade in wildlife is therefore a barrier to sustainable development, involving a complex combination of weak environmental governance, unregulated trade, loopholes and laundering systems used to conduct serious transnational crime, and undermining government institutions and legitimate business.**

The illegal trade in wildlife involves a wide range of flora and fauna, across all continents. The pace, level of sophistication, and globalized nature of the illegal trade in wildlife is beyond the capacity of many countries and individual organizations to address. The illegal trade in wildlife constitutes not only a very significant criminal sector, involving organized crime, violent conflicts and terrorism, but it also entails poverty, development and governance challenges. Of particular relevance is the increasing involvement of transnational organized criminal networks in the illegal trade of wildlife, as well as the significant impact to the environment and sustainable development. Current trends suggest priority attention be focused on the illegal trade in charcoal and other forest products (including paper, timber and pulp, as well as endangered high-value species like rosewood, African cherry and wild mahogany), and the illegal trade derived from various charismatic mammals (especially, but not limited to, tigers, elephants and rhinos), and many other species including sharks, manta rays and sturgeon, to mention a few. Here, CITES continues to be the lead authority controlling and monitoring such trade.

Responses to the illegal trade in wildlife need to reflect the differentiated and shared characteristics of various supply chains, and recognize that consumer demand remains the most important driver of the illegal trade in wildlife. The economic, social, and environmental impacts of the illegal wildlife trade can only be effectively tackled if both the demand and supply elements of the chain are targeted, encompassing elements of deterrence, transparency, legal clarity and enforcement, behavioural change, and the development of alternative livelihoods. This will require both national and international stakeholders to be engaged, including environmental, enforcement and development sectors, as well as stakeholders involved in security and peacekeeping missions.

At the national and regional level, numerous strong recent commitments have been made in relation to the many aspects of illegal trade in wildlife, and immediate, decisive and collective action is now required to narrow the gap between these

existing commitments – including those made under the various multilateral environmental agreements and UN agencies – and their implementation. In particular, strengthened environmental legislation, compliance and awareness, and support to enforcement agencies is required to reduce the role of illegal wildlife trade (especially of charcoal) for threat finance to non-state armed groups and terrorism.

Strengthened enforcement efforts need to be complemented by broader development and awareness raising efforts. End-user markets need to be further analysed, and consumer awareness campaigns need to be systematically designed, supported and implemented. There is a central role for civil society and the private sector in such efforts, and also to identify alternatives in some instances to consumer demands for illegally traded wildlife products.

At the international level, a comprehensive and coordinated UN system-wide response to support holistic national approaches to address the illegal trade in wildlife is an important component of the global response. Such a response, with additional support from the enforcement sector, would further strengthen coordinated efforts in relation to coherent legislation, environmental law, poverty alleviation and development support, awareness raising and demand reduction.

Support from the international and bilateral donor community will be essential to recognize and address the illegal trade in wildlife as a serious threat to sustainable development, and support national, regional and global efforts for the effective implementation of, compliance with, and enforcement of targeted measures to curb illegal trade in wildlife. In particular, investment in demand reduction campaigns is urgently required, and in capacity building and technological support to national law enforcement agencies to enable them to further protect key populations of species threatened by illegal trade. Such support must be accompanied by renewed efforts to strengthen broader environmental management for sustainable development.

# Recommendations

**1 Acknowledge the multiple dimensions of environmental crime** and its serious impact on the environment and sustainable development goals, and help support and balance the appropriate coordination and sharing of information from stakeholders, such as civil society, private sector, indigenous peoples, governments and a wider UN system with the need and recognition of also the role of law enforcement in good environmental governance.

**2 Implement a comprehensive coordinated UN system and national approach to environmental crime** by helping coordinate efforts on environmental legislation and regulations, poverty alleviation and development support with responses from the enforcement sector to curb environmental crime, as part of a holistic approach to challenge the serious threat to both the environment and sustainable development caused by the continued environmental crime.

**3 Support UNEP as the global environmental authority to address the serious and rising environmental impacts of environmental crime** and to engage the relevant coordination mechanisms of the UN system to support countries and national, regional and international law enforcement agencies with relevant environmental information to facilitate their efforts to combat the illegal trade in wildlife species and their products, as well as illegal logging and illegal trade in timber.

**4 Encourage the entire international and bilateral donor community to recognize and address environmental crime as a serious threat to sustainable development** and revenues, and to support national, regional and global efforts for the effective implementation of, compliance with and enforcement of targeted measures to curb illegal trade in wildlife species and their products as well as illegal logging in timber.

**5 Support immediate, decisive and collective action to narrow the gap between commitments and compliance**, such as the ones expressed in multilateral environmental agreements, through national implementation and enforcement, including the relevant decisions and resolutions taken by their governing bodies intended to combat the illicit trade in wildlife and forest products.

**6 Identify end-user markets and systematically design, support and implement where appropriate consumer awareness campaigns** focusing on high consumer end-markets. Call upon both Governments and the UN system to effectively work with and engage civil society and the private sector in efforts to identify alternatives to consumer demands for traded wildlife species and forest products.

**7 Strengthen awareness through certification schemes**, such as e.g. the Forest Stewardship Council (FSC), to facilitate consumer recognition of legal and illegal products. This especially applies to such wood products as paper that currently include the largest share of import-exports of tropical wood, as well as to CITES-listed species and their products. To this end, both voluntary, market and legislative approaches could enhance collaboration between governments, civil society and the private sector.

**8 Strengthen institutional, legal and regulatory systems to further combat corruption** to effectively address wildlife-related offences and to ensure that legal trade is monitored and managed effectively.

**9 Strengthen international and development support to the entire enforcement chain**, including frontline, investigator, customs, prosecutors and the judiciary, with particular reference to environmental crime to support legal revenues and sustainable development, and to reduce the impacts on the environment from environmental crime.

**10 Strengthen support to INTERPOL, UNODC, WCO and CITES, such as through ICCWC as well as individual programmes**, to enable them to support member states and other relevant stakeholders to further identify, develop and implement the most appropriate responses to environmental crime, reflecting and acknowledging the serious threats and effects it has on environmental governance, wildlife, ecosystems and the services it provides.

**11 Invest in capacity building and technological support to national environment, wildlife and law enforcement agencies** to enable them to further protect key populations of iconic endangered species threatened by poaching, such as but not limited to, rhinos, tigers and the African elephant as a necessary response to safeguard these species from poaching, alongside renewed efforts to strengthening habitat protection and management.

**12 Strengthen environmental legislation, compliance and awareness and call upon enforcement agencies and countries to reduce the role of illicit trade and taxing of forest and wildlife products for threat finance** to non-state armed groups and terrorism. Strengthen specifically the research on the possible role of trade in wildlife and timber products including charcoal for threat finance and identify gaps in environmental legislation that may facilitate this.

# Acronyms

CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DDR	Disarmament, Demobilization and Reintegration
DRC	Democratic Republic of the Congo
CAR	Central African Republic
EIA	Environmental Investigation Agency
ETIS	Elephant Trade Information System, system for tracking illegal trade in ivory and other elephant products
EU FLEGT	EU programme: Ensuring Legal Timber Trade and Strengthening Forest Governance
EUROSTAT	EU Statistics agency
FAO	UN Food and Agriculture Organization
FDLR	Democratic Forces for the Liberation of Rwanda, Rwandan Hutu rebel group based in east of DRC known for French name Forces démocratiques de libération du Rwanda
ICCWC	International Consortium on Combating Wildlife Crime (CITES, Interpol, UNODC, World Bank, WCO)
INTERPOL	International Criminal Police Organization
INTERPOL LEAF	Interpol Law Enforcement Assistance for Forests
ITTO	International Tropical Timber Organization
KPK	Indonesia Corruption Eradication Commission (Komisi Pemberantasan Korupsi)
LRA	Lord's Resistance Army
ODA	Official Development Assistance, OECD term
OECD	Organisation for Economic Co-operation and Development
PIKE	Proportion of Illegally Killed Elephants, calculated as number of illegally killed elephants found divided by the total number of elephant carcasses encountered, aggregated by year for each site
PATK	Indonesia Financial Transaction Reports and Analysis Center (Pusat Pelaporan dan Analisis Transaksi Keuangan)
UN ECOSOC	United Nations Economic and Social Council
UNEP	United Nations Environment Programme
UNODC	United Nations Office on Drugs and Crime
UN-REDD	UN collaborative initiative on Reducing Emissions from Deforestation and forest Degradation
REDD+	Beyond REDD: The role of conservation, sustainable management of forests and enhancement of forest carbon stocks in reducing emissions
RWE	Round Wood Equivalent, measure of volume of logs when converting between tons and cubic meters, or when detailing how much roundwood went into a wood product
UNSC	United Nations Security Council
UNODC-WCO CCP	UNODC-WCO Container Control Programme
UNTOC	United Nations Convention against Transnational Organized Crime
WCO	World Customs Organization





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# Notes

1. UNEP (2011). Towards a green economy: pathways to sustainable development and poverty eradication, United Nations Environment Programme. Available from: [www.unep.org/greeneconomy](http://www.unep.org/greeneconomy)
2. UNEP (2010). Dead planet, living planet: biodiversity and ecosystem restoration for sustainable development. United Nations Environment Programme and GRID-Arendal, Available from: <http://grida.no/publications/rr/dead-planet/>
3. UNEP (2009). The environmental food crisis. The environment's role in averting future food crises. United Nations Environment Programme and GRID-Arendal, Available from: <http://grida.no/publications/rr/food-crisis/>; Charles, H. *et al.* (2010). Food security: The challenge of feeding 9 Billion People. *Science* 327(812). Available from: DOI: 10.1126/science.1185383
4. OECD. (2012). Illegal trade in environmentally sensitive goods. Executive summary. OECD. Available from: <http://www.oecd.org/trade/envtrade/illegaltradeinenvironmentallysensitivegoods.htm>
5. UNODC. (2011). Transnational organized crime in the fishing industry. United Nations Office on Drugs and Crime. Available from: <http://www.unodc.org/unodc/en/human-trafficking/2011/issue-paper-transnational-organized-crime-in-the-fishing-industry.html>; UNEP and INTERPOL (2012). Green carbon, black trade: Illegal logging, tax fraud and laundering in the World's tropical forests. United Nations Environment Programme and GRID-Arendal, Available from: <http://www.grida.no/publications/rr/green-carbon-black-trade/>
6. OECD (2014). International Development Statistics (IDS) online databases. [Online]. Available from: <http://www.oecd.org/dac/stats/idsonline.htm>
7. CITES (n/a). Decisions of the Conference of the Parties to CITES in effect after its 16th meeting. CITES. Available from: <http://www.cites.org/eng/dec/index.php>
8. UNODC (2014). Wildlife and forest crime overview. [Online]. Available from: <https://www.unodc.org/unodc/en/wildlife-and-forest-crime/overview.html>
9. INTERPOL (2014). Environmental crime. [Online]. Available from: <http://www.interpol.int/Crime-areas/Environmental-crime/Environmental-crime>
10. UNEP and INTERPOL (2012). Green carbon, black trade: Illegal logging, tax fraud and laundering in the World's tropical forests.
11. UNODC (2011). Transnational organized crime in the fishing industry. UNEP and INTERPOL (2012). Green carbon, black trade Africa Progress Panel (2014). Grain, Fish, Money. Africa Progress Report 2014, Africa Progress Panel. Available from: [http://africaprogresspanel.org/wp-content/uploads/2014/05/APP\\_AR2014\\_LR.pdf](http://africaprogresspanel.org/wp-content/uploads/2014/05/APP_AR2014_LR.pdf)
12. UNODC (2011). Transnational organized crime in the fishing industry.
13. Africa Progress Panel (2014). Grain, Fish, Money. Africa Progress Report 2014.
14. OECD (2012). Illegal trade in environmentally sensitive goods. Executive summary. UNODC. (2011). Transnational organized crime in the fishing industry. UNEP and INTERPOL (2012). Green carbon, black trade. Houghton, R.A. (2013). The Emissions of carbon from deforestation and degradation in the tropics: past trends and future potential. *Carbon Management*. Vol 4 (5). pp 539-546.
15. GRID Arendal-FFA, 2013. Enforcement manual; ZOI and GRID-Arendal (2013). Environmental Crime. E-book Available from: <http://issuu.com/zoienvironment/docs/environmental-crimes-ebook>
16. Haken, J (2011). Transnational crime in the developing world. *Global Financial Integrity*. [http://www.gfintegrity.org/storage/gfip/documents/reports/transcrime/gfi\\_transnational\\_crime\\_high-res.pdf](http://www.gfintegrity.org/storage/gfip/documents/reports/transcrime/gfi_transnational_crime_high-res.pdf)
17. OECD (2012). Illegal trade in environmentally sensitive goods-executive summary. UNODC (2011). Transnational organized crime in the fishing industry. UNEP and INTERPOL (2012). Green carbon, black trade. INTERPOL (2014). Environmental crime.
18. UNEP (2010). Dead planet, living planet: biodiversity and ecosystem restoration for sustainable development.
19. Section adopted from UNEP (2013). Stolen Apes – The illicit trade in chimpanzees, gorillas, bonobos and orangutans. Rapid Response Assessment. United Nations Environment Programme. Available from: <http://grida.no/publications/rr/apes/>
20. CITES (n/a). Monitoring the illegal killing of elephants. CITES. [Online]. Available from: <http://www.cites.org/eng/prog/mike/index.php>
21. CITES (n/a). The elephant trade information system. CITES. [Online]. Available from: <http://www.cites.org/eng/prog/etis/index.php>
22. Maisels F *et al.* (2013). Devastating decline of forest elephants in central Africa. *PLoS ONE* 8(3): e59469. doi:10.1371/journal.pone.0059469
23. CITES (2013). New figures reveal poaching for the illegal ivory trade could wipe out a fifth of Africa's Elephants over next decade. CITES. [Online]. Available from: [http://www.cites.org/eng/news/pr/2013/20131202\\_elephant-figures.php?\\_ga=1.7329010.1510314340.1386245222](http://www.cites.org/eng/news/pr/2013/20131202_elephant-figures.php?_ga=1.7329010.1510314340.1386245222)
24. UNEP, CITES, IUCN and TRAFFIC (2013). Elephants in the Dust – The African Elephant Crisis. A Rapid Response Assessment. United Nations Environment Programme, GRID-Arendal. Available from: <http://www.grida.no/publications/rr/elephants/>.
25. Martin, E. and L. Vigne (2011). The Ivory Dynasty: A report on the soaring demand for elephant and mammoth ivory in southern China. London: Elephant Family, The Aspinall Foundation and Columbus Zoo and Aquarium, Available from: [http://www.elephantfamily.org/uploads/copy/EF\\_Ivory\\_Report\\_2011\\_web.pdf](http://www.elephantfamily.org/uploads/copy/EF_Ivory_Report_2011_web.pdf)
26. Ca. 39 APU commanders or staff members interviewed informally from Tanzania, Zambia, Uganda, Kenya, Mozambique during training sessions 2011-2013.
27. IUCN population estimates
28. Naresh, M. (2013). Militant link to rhino deaths worries experts. *The Times of India*. [Online]. August 23. Available from: <http://timesofindia.indiatimes.com/city/guwahati/Militant-link-to-rhino-deaths-worries-experts/articleshow/21988801.cms?referral=PM>
29. Government of Nepal, Ministry of Forests and Soil Conservation and Department of National Parks and Wildlife (2006). The greater one-horned rhinoceros conservation action plan for Nepal (2006-2011). Kathmandu: Department of National Parks and Wildlife. Available from: [http://awsassets.panda.org/downloads/rhino\\_action\\_plan\\_25aug\\_06\\_low.pdf](http://awsassets.panda.org/downloads/rhino_action_plan_25aug_06_low.pdf)
30. Interviews of APU commanders during the conflict in Nepal 2005-2008 by a Rapid response team; UNEP, FAO and UNFF (2009). Vital forest graphics.
31. Thapa, K. *et al.* (2013). Past, present and future conservation of the greater one-horned rhinoceros *Rhinoceros unicornis* in Nepal. *Oryx*. Vol. 47(3). pp. 345-351.
32. Laing, A. (2013). Last rhinos in Mozambique killed by poachers. *The Telegraph*. [Online]. April 30. Available from: <http://www.telegraph.co.uk/news/worldnews/africaandindianocean/mozambique/10028738/Last-rhinos-in-Mozambique-killed-by-poachers.html>
33. Thapa, K. *et al.* (2013). Past, present and future conservation of the greater one-horned rhinoceros *Rhinoceros unicornis* in Nepal.
34. Mills J., Jackson P. (1994) Killed for a cure: a review of the worldwide trade in tiger bone. Cambridge: Traffic International.
35. Nowell, K. and Ling, X. (2007). Taming the tiger trade. Hong Kong: TRAFFIC East Asia.
36. Tigers in Crisis (2014). [Online]. April 30. Available from: [http://www.tigersincrisis.com/trade\\_tigers.htm](http://www.tigersincrisis.com/trade_tigers.htm)

37. Gratwicke, B. *et al.* (2008). Attitudes Toward Consumption and Conservation of Tigers in China. PLOS ONE. Vol. 3(7). Available from: DOI: 10.1371/journal.pone.0002544.
38. Wetton, J. *et al.* (2002). An extremely sensitive species-specific ARMS PCR test for the presence of tiger bone DNA. Forensic Science International. Vol. 126: 137–144.
39. Nowell *et al* (2007) Taming the tiger trade
40. INTERPOL (2014). Executive Summary. Assessment of Enforcement Responses to Tiger Crime. INTERPOL. Available online: <http://www.interpol.int/News-and-media/News/2014/N2014-055>
41. CITES (n/a). Sturgeons. CITES. [Online] <http://cites.org/eng/prog/sturgeon.php>
42. See: <http://www.deol.ru/nature/protect/osetr.htm>
43. See: [http://www.express-kz/show\\_article.php?art\\_id=89789](http://www.express-kz/show_article.php?art_id=89789)
44. See: <http://m.prokuror.kz/rus/o-prokurature/smi-o-prokurature/osetrovyh-unichtozhaet-brakonerstvo-i-bezdeystvie-gosorganov>
45. Food Market (2013). Russian market of sturgeon caviar. Research on the company “Agriconsult”. [Online]. Available from: <http://www.food-market.spb.ru/eng/archive.php?year=20&article=1127&section=6>
46. See: <http://www.rg.ru/2014/03/14/ikra-site.html>
47. See: <http://www.firstnews.ru/articles/id675739-russkiy-osyetr-spasibo-chto-zhivoy/>
48. See: <http://www.genproc.gov.ru/smi/news/genproc/news-57657/>
49. Adapted from <http://www.cites.org/>
50. Wenbin, H. and Xiufang, S. (2013). Tropical Hardwood Flows in China: Case Studies of Rosewood and Okoumé. Forest Trend, World Agroforestry and CIFOR. Available from: <http://www.illegal-logging.info/content/tropical-hardwood-flows-china-case-studies-rosewood-and-okoumé>
51. EIA (2012). Rosewood robbery: the case for Thailand to list Rosewood on CITES. Environmental Investigation Agency. Available from: <http://eia-international.org/wp-content/uploads/Rosewood-Robbery.pdf>
52. Wenbin *et al* (2013) Tropical Hardwood Flows
53. Pham, J. P. (2013). Poaching peace and security. Atlantic Council. [Online]. October 28. Available online: <http://www.atlanticcouncil.org/blogs/new-atlanticist/poaching-peace-and-security>
54. International Fund for Animal Welfare. (2013). Criminal Nature: The global security implications of the illegal wildlife trade. IFAW. Available from: <http://www.ifaw.org/usa/united-states/resource-centre/criminal-nature-global-security-implications-illegal-wildlife-trade>
55. Peters, G. (2009). How opium profits the Taliban. Washington: United States Institute for Peace. Available from: [http://www.usip.org/sites/default/files/resources/taliban\\_opium\\_1.pdf](http://www.usip.org/sites/default/files/resources/taliban_opium_1.pdf) ; Stanford University (2012). Mapping Militant Organizations: Haqqani Network. Stanford University. [Online]. <https://www.stanford.edu/group/mappingmilitants/cgi-bin/groups/view/363#note18>
56. Matthew, R., Brown, O. and Jensen, D. (2009). From conflict to peacebuilding: The role of natural resources and the environment. Nairobi: United Nations Environment Program.
57. Hanson T. *et al.* (2009). Warfare in biodiversity hotspots. Conservation Biology. Vol.23, pp. 578–587.
58. Leao, A. (2007). Different opportunities, different outcomes- Civil war and rebel groups in Angola and Mozambique. Discussion paper 24/2007. Bonn: Deutsches Institut für Entwicklungspolitik
59. UNSC (2001). Letter dated 26 October 2001 from the Chairman of the Security Council Committee established pursuant to resolution 1343 (2001) concerning Liberia addressed to the President of the Security Council. S/2001/1015. United Nations Security Council. Available from: <http://www.un.org/Docs/sc/committees/Liberia2/1015e.pdf>.
60. Blundell, A.G. (2010). Forests and conflict: the financial flows that fuel war. Washington, DC: Program on Forests (PROFOR)
61. Matthew *et al* (2009) From conflict to peacebuilding.
62. Le Billon, P. (2000). The political economy of resource wars. In : Cilliers, J. and Dietrich, C. (eds). Angola’s war economy: the role of oil and diamonds. Pretoria: ISS Books.
63. UNEP, FAO and UNFF (2009). Vital forest graphics.
64. Forensic Technology Inc. (2012). The international trade in endangered species and the firearm nexus. White paper. Available from: [http://www.forensictechnology.com/Portals/71705/docs/white-paper\\_endangered-march6-2012.pdf](http://www.forensictechnology.com/Portals/71705/docs/white-paper_endangered-march6-2012.pdf)
65. National Defense University (2012). Trans-Atlantic Dialogue on Combating Crime Terror Pipelines. Washington, DC: National Defense University. Available online: <http://cco.dodlive.mil/files/2012/08/Crime-Terror-Pipelines-DC-Final-Report.pdf>
66. Ballentine, K. and Nitzschke, H. (2005). The political economy of civil war and conflict transformation. Berlin: Berghof Research Center for Constructive Conflict Management. Available from: [http://www.berghof-handbook.net/documents/publications/dialogue3\\_ballentine\\_nitzschke.pdf](http://www.berghof-handbook.net/documents/publications/dialogue3_ballentine_nitzschke.pdf)
67. UNSC (2013). Letter dated 12 July 2013 from the Chair of the Security Council Committee pursuant to resolutions 751 (1992) and 1907 (2009) concerning Somalia and Eritrea addressed to the President of the Security Council. S/2013/413. United Nations Security Council. Available fom: [http://www.un.org/ga/search/view\\_doc.asp?symbol=S/2013/413](http://www.un.org/ga/search/view_doc.asp?symbol=S/2013/413); UNSC (2001). Report of the Panel of Experts on the Illegal Exploitation of Natural Resources and Other Forms of Wealth of the Democratic Republic of the Congo. United Nations Security Council. Available from: <http://www.un.org/News/dh/latest/drcongo.htm> ; Garret, N. and Piccinni, A. (2012). Natural Resources and Conflict A New Security Challenge for the European Union. Swedish Institute for Peace Research; see Berdal & Malone, op cit; D Keen, Economic Functions of Violence in Civil Wars, Adelphi Paper no 320, IISS, London and Oxford University Press, Oxford, 1998; J François & JC Rufin (eds), Economie des Guerres Civiles, Paris, Hachette, 1996; Cilliers, J. (2000). Resource wars. A new type of insurgency. In : Cilliers, J. and Dietrich, C. (eds). Angola’s war economy: the role of oil and diamonds. Pretoria: ISS Books.
68. Shelley, L. (2005). The unholy trinity: transnational crime, corruption, and terrorism. Brown Journal of World Affairs, Vol. XI(2). p. 101-111.
69. International Fund for Animal Welfare (2013) Criminal Nature
70. Jaspardo, C. (2009). Environmental threats to security, stability, and US interests in Southern Africa: Opportunity knocks- time for a comprehensive regional defense environmental international cooperation and environmental security assistance strategy. Naval War College.
71. Jensen. D. and Halle, S. (eds) (2013). The role of natural resources in disarmament, demobilization, and reintegration: Addressing risks and seizing opportunities. Nairobi: United Nations Environment Program. Available from: [http://postconflict.unep.ch/publications/UNEP\\_UNDP\\_NRM\\_DDR.pdf](http://postconflict.unep.ch/publications/UNEP_UNDP_NRM_DDR.pdf)
72. UNEP (2014). Disasters and Conflict: Conflict Prevention, Peacebuilding and Natural Resources. [Online] Available from: <http://www.unep.org/disastersandconflicts/Introduction/ECP/Conflict-Prevention/tabid/105989/Default.aspx>.
73. Le Billon, P. (2000). The political economy of resource wars
74. Jensen *et al* (2013) The role of natural resources in disarmament
75. Berdal, M. and Keen. D. (1997). Violence and economic agendas in civil wars: some policy implications. Millennium: Journal of International Studies Vol 26 (3). p. 795-818.
76. Ballentine *et al* (2014) The political economy of civil war
77. Le Sage, A. (2010). Non-state security threats in Africa: Challenges for US engagement. Prism, Vol. 2 (1). Available from: <http://www.isn.ethz.ch/Digital-Library/Publications/Detail/?ots591=oc54e3b3-re9c-bere-2c24-a6a8c7060233&lng=en&id=133911>.
78. Le Billon, P. (2000). The political economy of resource wars



79. Ballentine *et al* (2014) The political economy of civil war
80. Sedra, M. (2002). Challenging the Warlord Culture: Security Sector Reform in Post-Taliban Afghanistan. BICC Paper 25. Bonn: Bonn International Center for Conversion.
81. Ballentine *et al* (2014) The political economy of civil war
82. Karbo, T. and Nelson, C. (2010). War Economies: Issues and Options for Transformation. *Africa Peace and Conflict Journal*, Vol. 3(1). p. 13-24.
83. Le Sage (2010) Non-state security threats in Africa.
84. Shaw, M. and Reitano, T. (2013). The evolution of organized crime in Africa: Towards a new response. Briefing Paper 244. Institute for Security Studies. Available from: <http://www.africaportal.org/dspace/articles/evolution-organised-crime-africa-towards-new-response>; Le Sage (2010) Non-state security threats in Africa
85. Karbo *et al* (2010) War Economies: Issues and Options
86. The Hindu (2013). Militants turn poachers in new threats to wildlife. *The Hindu*. [Online]. November 22. <http://www.thehindu.com/todays-paper/tp-in-school/militants-turn-poachers-in-new-threat-to-wildlife/articles376961.ece>
87. Firstpost (2013). Kaziranga: Insurgents join poachers, use AK-47 rifles to hunt rhino. *Firstpost*. [Online]. February 17. Available from: <http://www.firstpost.com/living/kaziranga-insurgents-join-poachers-use-ak-47-rifles-to-hunt-rhinos-628212.html>.
88. Levy, A. and Scott-Clark, C. (2007). Poaching for Bin Laden. *The Guardian*. [Online]. May 4. Available from: <http://www.guardian.co.uk/world/2007/may/05/terrorism.animalwelfare>.
89. Talukdar, S. (2012). The twin threat to Kaziranga rhinos. *The Hindu*. [Online]. October 7. Available from: <http://www.thehindu.com/sci-tech/energy-and-environment/the-twin-threat-to-kaziranga-rhinos/article3972746.ece>.
90. Heath, K. (2012). Indian rhino poacher caught but Chinese buyer escapes. *Wildlife News*. [Online]. October 24. Available from: <http://wildlifeneews.co.uk/2012/indian-rhino-poacher-caught-but-chinese-buyer-escapes/>.
91. IBN Live (2014). Rhino shot dead in Kaziranga by poachers, take away horn, ears. *IBN Live*. [Online]. November 25. Available from: <http://ibnlive.in.com/news/rhino-shot-dead-in-kaziranga-by-poachers-take-away-horn-ears/436035-3-251.html>.
92. Bhattacharjee, U. (2013). Inside Kaziranga's one horned dream. *Yahoo News India*. [Online]. October 7. Available from: <http://in.news.yahoo.com/inside-kaziranga%E2%80%99s-one-horned-dream-o80126062.html>.
93. The Hindu (2012). Two rhino poachers arrested in Assam. *The Hindu*. [Online]. October 16. Available from: <http://www.thehindu.com/news/national/other-states/a-gang-of-18-rhino-poachers-nabbed-in-assam/article4002582.ece>.
94. Bhattacharjee (2013). Inside Kaziranga's one horned dream
95. UNEP (2006). Africa Environment Outlook 2. Nairobi: United Nations Environment Program. Available from: <http://www.unep.org/dewa/Africa/publications/AEO-2/content/001.htm>.
96. Global Witness (2014). Conflict. [Online] <http://www.globalwitness.org/campaigns/conflict>.
97. Global Witness (2014) Conflict
98. Blondel, A. (2004). The logs of war. *Global Policy Forum*. [Online] <http://www.globalpolicy.org/component/content/article/198/40325.html#author>.
99. UNSC (2001). Letter dated 26 October 2001 from the Chairman of the Security Council Committee established pursuant to resolution 1343 (2001) concerning Liberia addressed to the President of the Security Council. S/2001/1015. United Nations Security Council. Available from: <http://www.un.org/Docs/sc/committees/Liberia2/1015e.pdf>.
100. UNSC (2001). Letter dated 26 October 2001 from the Chairman of the Security Council
101. Global Witness (2002). Logs of war. The timber trade and armed conflict. Fafo-report 379. Fafo Institute for Applied Social Science. Available from: <http://www.globalwitness.org/library/logs-war>.
102. UNSC (2001). Letter dated 26 October 2001 from the Chairman of the Security Council
103. Stockholm International Peace Research Institute. 2014. UN arms embargo on Liberia. [http://www.sipri.org/databases/embargoes/un\\_arms\\_embargoes/liberia](http://www.sipri.org/databases/embargoes/un_arms_embargoes/liberia)
104. UNSC (2001). Letter dated 26 October 2001 from the Chairman of the Security Council
105. UNEP (2006). Africa Environment Outlook 2
106. UNEP, CITES, IUCN and TRAFFIC (2013). Elephants in the Dust – The African Elephant Crisis.
107. UNSC (2013). Letter dated 12 July 2013 from the Chair of the Security Council Committee
108. International Fund for Animal Welfare (2013) Criminal Nature
109. UNSC (2013). Letter dated 12 July 2013 from the Chair of the Security Council Committee; Agger, K. and Hutson, J. (2013). Kony's Ivory. How elephant poaching in Congo helps support the Lord's Resistance Army, Enough Project. Available from: <http://www.enoughproject.org/files/KonysIvory.pdf>.
110. ACF (2013). DRC: LRA attacks at Garamba National Park- African Parks Report. African Conservation Foundation. [Online]. May 24. Available from: <http://www.africanconservation.org/in-focus/item/drc-lra-attack-at-garamba-national-park-african-parks-report>.
111. HSBA (2013). Lord's Resistance Army. Human Security Baseline Assessment. Available from: [http://www.smallarmssurveysudan.org/fileadmin/docs/facts-figures/south-sudan/armed-groups/lra/LRA\\_8\\_March.pdf](http://www.smallarmssurveysudan.org/fileadmin/docs/facts-figures/south-sudan/armed-groups/lra/LRA_8_March.pdf)
112. Hack, S. (2012). DR Congo War Stretches into Virunga National Park. *The Daily Traveler*. [Online]. July 10. Available from: <http://www.cntraveler.com/daily-traveler/2012/07/virunga-war-break-news-071012>; Lovgren, S. (2011). Marijuana Trade Threatens African Gorilla Refuge. *National Geographic*. [Online]. April 27. Available from: <http://news.nationalgeographic.com/news/2011/04/110426-virunga-gorillas-marijuana-africa-animals-environment/>; Clough, L.D. (2009). Virunga National Park, Democratic Republic of Congo. *The Earth Encyclopedia*. United Nations Environment Program, World Conservation M. [Online]. July 4. Available from: <http://www.eoearth.org/view/article/156857/>
113. Lovgren (2011). Marijuana Trade Threatens African Gorilla Refuge
114. Lewis, K. (2014). Virunga National Park Ranger killed in Ambush. *Voice of America*. [Online]. January 21. Available from: <http://www.voanews.com/content/drc-virunga-park-attack-fdlr-ranger-militia-forest-killed/1834367.html>.
115. Lewis (2014) Virunga National Park Ranger killed
116. UNSC (2013). Letter dated 12 July 2013 from the Chair of the Security Council Committee; UNSC (2013). Letter dated 19 July 2013 from the Chair of the Security Council Committee established pursuant to resolution 1533 (2004) concerning the Democratic Republic of the Congo addressed to the President of the Security Council. United Nations Security Council. Available from: [http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4F-F96FF9%7D/s\\_2013\\_433.pdf](http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4F-F96FF9%7D/s_2013_433.pdf)
117. UNSC (2013). Letter dated 12 July 2013 from the Chair of the Security Council Committee
118. UNEP and INTERPOL (2012). Green carbon, black trade.
119. UNEP and INTERPOL (2012). Green carbon, black trade.
120. Global Witness and Environmental Investigation Agency (US) (2009). Investigation into the illegal felling, transport and export of precious wood in SAVA Region Madagascar. *Global Witness and Environmental Investigation Agency (US)* Available from: [http://www.parc-madagascar.com/doc/report\\_vsfinal.pdf](http://www.parc-madagascar.com/doc/report_vsfinal.pdf); Global Witness and Environmental Investigation Agency (US) (2010). Investigation into the Global Trade in Malagasy Precious Woods: Rosewood, Ebony

- and Pallisander. Global Witness and Environmental Investigation Agency (US). Available from: [http://www.globalwitness.org/sites/default/files/pdfs/mada\\_report\\_261010.pdf](http://www.globalwitness.org/sites/default/files/pdfs/mada_report_261010.pdf)
121. UNEP and INTERPOL (2012). Green carbon, black trade.; UNODC (2013). Transnational Organized Crime in East Asia and the Pacific: A threat assessment. United Nations Office on Drugs and Crime. Available from: [http://www.unodc.org/documents/southeastasiaandpacific/Publications/2013/TOCTA\\_EAP\\_web.pdf](http://www.unodc.org/documents/southeastasiaandpacific/Publications/2013/TOCTA_EAP_web.pdf); EIA (2012), Appetite for Destruction: China's Trade in Illegal Timber. Environmental Investigation Agency. Available from: [http://eia-global.org/images/uploads/Appetite\\_for\\_Destruction.pdf](http://eia-global.org/images/uploads/Appetite_for_Destruction.pdf)
  122. UNEP and INTERPOL (2012). Green carbon, black trade. UNODC (2013). Transnational Organized Crime in East Asia and the Pacific
  123. Boucher, B. *et al.* (2011). The roots of the problem. What's driving tropical deforestation today?. Cambridge: Union of Concerned Scientists.
  124. Wenbin *et al* (2013) Tropical Hardwood Flows
  125. See UNEP and INTERPOL (2012). Green carbon, black trade.
  126. FAO (2014). FAOSTAT Database. Production. The Food and Agriculture Organization of the United Nations. Available from: [http://faostat3.fao.org/faostat-gateway/go/to/download/Q/\\*/\\*E](http://faostat3.fao.org/faostat-gateway/go/to/download/Q/*/*E) 170m tons Paper+board excluding newsprint + 42m tons pulp for paper.
  127. FAO (2014). FAOSTAT Database. Production: 17 million out of 59 million m<sup>3</sup>
  128. RISI (2011). Lockwood-Post Directory of Pulp & Paper Mills. Global Edition 2011.
  129. FAO (2014). FAOSTAT Database. Production: Total industrial roundwood imported and produced in 2012: 388 million m<sup>3</sup>
  130. Boucher, B. *et al.* (2011). The roots of the problem.
  131. RISI (2011). Lockwood-Post Directory of Pulp & Paper Mills
  132. The conversion factor is based on FAO averages, 3.795 m<sup>3</sup> for every ton of pulp, and 2.49 m<sup>3</sup> for every ton of paper.
  133. This is estimated on the actual production figures compared with capacity at three of the largest mills in one of China's largest paper and pulp conglomerates.
  134. FAO (2014). FAOSTAT Database. Forestry production and forest trade. The Food and Agriculture Organization of the United Nations. Available from: <http://faostat3.fao.org/faostat-gateway/go/to/download/F/FO/E>; see also [http://www.cpbis.gatech.edu/files/papers/CPBIS-FR-08-03%20Zhuang\\_Ding\\_Li%20FinalReport-China\\_Pulp\\_and\\_Paper\\_Industry.pdf](http://www.cpbis.gatech.edu/files/papers/CPBIS-FR-08-03%20Zhuang_Ding_Li%20FinalReport-China_Pulp_and_Paper_Industry.pdf)
  135. UNEP and INTERPOL (2012). Green carbon, black trade.
  136. UNEP and INTERPOL (2012). Green carbon, black trade.
  137. UNODC (2013). Transnational Organized Crime in East Asia and the Pacific
  138. Forest Law Enforcement, Governance and Trade - see U.S Fish & Wildlife Service (2014). Lacey Act. [Online]. <http://www.fws.gov/international/laws-treaties-agreements/us-conservation-laws/lacey-act.html>; European Commission (2014). Environment: FLEGT Voluntary Partnership Agreements (VPAs). [Online]. <http://ec.europa.eu/environment/forests/flegt.htm>;
  139. FAO (2014). FAOSTAT Database. Forestry production and forest trade; ITTO (2013). Annual Review Statistics Database. International Tropical Timber Organization. Available from: [http://www.itto.int/annual\\_review\\_output/?mode=searchdata](http://www.itto.int/annual_review_output/?mode=searchdata); European Commission (2014). Eurostat. European Commission. Available from: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>
  140. FAO (2014). FAOSTAT Database. Forestry production and forest trade
  141. FAO (2014). FAOSTAT Database. Forestry production and forest trade.
  142. FAO (2014). FAOSTAT Database. Forestry production and forest trade.
  143. FAO (2014). FAOSTAT Database. Forestry production and forest trade; Amous, S. (n/a). The role of wood energy in Africa, Rome: Food and Agriculture Organization of the United Nations. Available from: <http://www.fao.org/docrep/x2740e/x2740e00.htm#exesu> Prices are based on a range from a low USD 5 per 25 kg sack at local markets/USD 200/ton to a high USD 800 per ton on the international internet based market.
  144. FAO (2014). FAOSTAT Database. Forestry production and forest trade
  145. FAO (2014). FAOSTAT Database. Production; FAO (2014). FAOSTAT Database. Forestry production and forest trade; World Bank (2009). Environmental crises or sustainable development opportunity? Transforming the charcoal sector in Tanzania. Policy Note 50207. The World Bank. Available from: [http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/09/01/000334955\\_20090901084035/Rendered/PDF/502070WPoPolicrBOx0342042B01PUBLIC1.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/09/01/000334955_20090901084035/Rendered/PDF/502070WPoPolicrBOx0342042B01PUBLIC1.pdf)
  146. I.e. sub-Saharan Africa minus South Africa, Lesotho and Swaziland
  147. Kenya Energy Regulatory Commission
  148. Based on FAO's estimate of 1 million tons, and Kenya's Energy Regulatory Commission's 1.6m tons. See Oimeke, R.P. (n/a). Charcoal production and commercialization in Kenya, Joint UN Habitat / IRENA workshop: "Renewables for Growing Cities in Africa: A roadmap from 2012 to 2050". Energy Regular Commission. Available from: [http://www.irena.org/DocumentDownloads/events/NaplesSeptember2012/Robert\\_PaveL\\_Oimeke.pdf](http://www.irena.org/DocumentDownloads/events/NaplesSeptember2012/Robert_PaveL_Oimeke.pdf)
  149. Hosier, R.H., Mwandosya, M.J. and Luhanga, M.L. (1993). Future energy development in Tanzania: the energy costs of urbanization. Energy Policy. Vol 21(5). p. 491-509.
  150. INTERPOL (2014). Environmental crime. UNEP and INTERPOL (2010). Last stand of the gorilla. UNSC (2001). Report of the Panel of Experts on the Illegal Exploitation of Natural Resources
  151. The low estimate is based on the lower 12% estimated private taxation of shipments of charcoal in the Malawi charcoal value chain. The higher estimate combines the higher 20% estimated private taxation of shipments of charcoal in Malawi with the 33% revenue gain at the point of sale. See: Kambewa *et al* (2007). Charcoal - the reality: A study of charcoal consumption, trade and production in Malawi. International Institute for Environment and Development. Available from: <http://pubs.iied.org/13544IIED.html>
  152. UNODC (2013). Transnational Organized Crime in Eastern Africa: A Threat Assessment. United Nations Office on Drugs and Crime. Available from: <http://www.unodc.org/unodc/data-and-analysis/TOC-threat-assessments.html>; UNODC (2013). Transnational Organized Crime in West Africa: A Threat Assessment United Nations Office on Drugs and Crime. Available from: <http://www.unodc.org/unodc/data-and-analysis/TOC-threat-assessments.html>
  153. Martin *et al* (2011). The Ivory Dynasty
  154. IUCN (2014). The African and Asian Elephant Database. [Online] <http://www.elephantdatabase.org>
  155. UNEP, CITES, IUCN and TRAFFIC (2013). Elephants in the Dust – The African Elephant Crisis.
  156. Kalron, N. (2012). Africa's white gold of jihad: al-Shabaab and conflict ivory. Elephant League. [Online] <http://elephantleague.org/project/africas-white-gold-of-jihad-al-shabaab-and-conflict-ivory/>
  157. UNSC (2013). Letter dated 12 July 2013 from the Chair of the Security Council Committee
  158. UNSC (2013). Letter dated 12 July 2013 from the Chair of the Security Council Committee
  159. Gratwicke *et al* (2008). Attitudes Toward Consumption
  160. Wetton *et al* (2002) An extremely sensitive species
  161. Nowell, K. and Ling, X. (2007). Taming the tiger trade. Hong Kong: TRAFFIC East Asia.
  162. Gratwicke *et al* (2008). Attitudes Toward Consumption
  163. UNODC (2014). Wildlife and forest crime overview.
  164. INTERPOL (2014). Environmental crime.





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