Nature and extent of environmental crime in Kenya

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Acronyms

ANAW	African Network for Animal Welfare
CBD	Convention on Biological Diversity
CDA	Coast Development Authority
CID	Criminal Investigation Department
CITES	Convention on International Trade in Endangered Species
DRC	Democratic Republic of Congo
DRSRS	Department of Resource Surveys and Remote Sensing
EAPCCO	East African Police Chiefs Cooperation Organisation
ECP	Environmental Crimes Project
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
ESP	Environmental Security Programme
GoK	Government of Kenya
IFAW	International Fund for Animal Welfare
IMDG	International Maritime Goods Code
ISS	Institute for Security Studies
JKIA	Jomo Kenyatta International Airport
KAA	Kenya Airports Authority
KEFRI	Kenya Forestry Research Institute
KENRIK	Kenya Resource Centre for Indigenous Knowledge
KEPHIS	Kenya Plant Health Inspectorate Services
KFS	Kenya Forest Service
KPA	Kenya Ports Authority
KWS	Kenya Wildlife Services
LATF	Lusaka Agreement Taskforce
LVEMP	Lake Victoria Environmental Management Project
MEA	Multilateral Environmental Agreement

MoU	Memorandum of understanding
NCB	National Central Bureau
NEMA	National Environmental Management Authority
NGO	Non-governmental organisation
NMK	National Museums of Kenya
ODS	Ozone-depleting substances
PCC	Public Complaints Committee
POPS	Persistent organic chemicals
SOE	State of environment
SPM	Suspended particulate matter
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USA	United States of America
WWF	World Wildlife Fund for Nature

Executive Summary

BACKGROUND

This report deals with the nature and extent of environmental crime in Kenya and was commissioned by the Environmental Crimes Project (ECP) of the Institute for Security Studies (ISS). The ECP is a project in partnership with the East African Police Chiefs Cooperation Organisation (EAPCCO). Its core objective is to enhance human security by improving regional law enforcement and policymaking to fight environmental crime in eastern Africa.

An environmental crime can be defined as a grave act against the environment that results in the infringement of the right of citizens to a clean and healthy environment. For such an act to constitute a crime, it must contravene laid-down legislation in the various sectors of the environment, such as forestry, water and wildlife. Environmental offences have, for a long time, been treated as misdemeanours, and not felonies.

Environmental crime is a serious and growing concern, leading to the near extinction of valuable wildlife species, and significantly impacting on the biological integrity of the planet.

It contributes to environmental degradation, which in turn affects the quality and quantity of environmental resources. By doing so, it leads to unhealthy competition for these scarce resources, and subsequently to volatile situations and even resource-use conflicts. As such, environmental crime impacts on human livelihoods.

STATE OF THE ENVIRONMENT

Some 83% (46 140 000 ha) of the land surface in Kenya is classified as arid and semi-arid, whilst the remaining 17% (11 530 000 ha) is classified as

medium- and high potential. Kenya is rich in biodiversity, with about 35 000 species of animals, plants and micro-organisms. Key resources are forests, wildlife, aquatic ecosystems and wetlands, drylands, and agricultural lands.

Forests are divided into natural and plantation forests and cover less than 3% of the country. Some 2,4-million ha have been designated as reserves. Kenya has felled more than 90% of its natural forests and ranks fifth in Africa in terms of the loss of forests. Forests are disappearing at a rate of more than 5 000 ha per year, following the settlement of people, cultivation and development projects in the reserves.

Wildlife. Wildlife-protected areas occupy about 8% of Kenya's land area. There are currently 23 terrestrial national parks, four marine national Parks, twenty eight Terrestrial National Reserves, six Marine National reserves, and four national sanctuaries. The protected areas are distributed in all ecosystems and therefore provide an important protection system for flora and fauna and their habitats.

Agriculture is practiced mainly in the medium- and high-potential areas. Genetic diversity is being reduced by pressure arising from efforts to improve productivity through cross-breeding and general preference for exotic varieties of both crops and breeds of animals.

Water: Kenya is a water-scarce country. It is estimated that the country receives 354-billion m^3 of rainwater annually, whilst annual potential of underground water is reportedly about 619 million m^3. Water availability is presently 647m^3 and is projected to fall to 253 m^3 by 2025. This is against the per capita of 1 000 m^3 considered the threshold for water sufficiency. Kenya has a total of 467 lake and wetland habitats estimated to cover 1 460 300 ha or 2,5% of total land area. Constraints to water supply include uncontrolled diversion, degradation of catchments, microclimate and weather changes, changes in settlement patterns and quarrying along the riverbanks and beds.

The main environmental threats in the country include: poverty, which leads to over-reliance on natural resources, land degradation in form of soil erosion, destruction of forests, loss of biodiversity through habitat loss, hazardous wastes, water pollution, air pollution, climate change and desertification.

STUDY APPROACH AND METHODOLOGY

The study approach sought to provide a detailed analysis of the status of environmental crime in the country.

Five methods were used, namely extensive review of literature, review of policy and legislation, key informant interviews, internet searches and e-mail inquiries where face-to-face interviews were not possible.

Overall, 38 persons from 27 institutions in Nairobi and Mombasa were contacted for information. A stakeholder workshop was also held and participants' comments incorporated in the report.

NATURE AND EXTENT OF ENVIRONMENTAL CRIME IN KENYA

Those who engage in environmental crime do so to meet either commercial or subsistence objectives and they include individuals, small independent groups, organised groups and corporate bodies.

Environmental crimes in the **forestry sector** include illegal trade in sandalwood, illegal logging, illegal trade in endemic flora, including bioprospecting and biopiracy; forest excisions, forest encroachment, illegal grazing, illegal forest fires, growing of bhang, and illegal charcoal making.

Environmental crimes in the **wildlife sector** include illegal trade in wildlife and their products; poaching, and illegal grazing.

In the **tourism sector,** crimes include blockage of access to natural resources for local communities, aesthetic pollution, offroad driving, destruction of marine, lacustrine and river ecosystems, and wastes pollution.

Crimes in the **water sector** include diversion of water bodies, water pollution, reclamation of wetlands and illegal development of riparian areas.

Environmental crimes in the **fisheries sector** include illegal trade in ornamental fish, illegal fishing methods, illegal fish farming, illegal trawling and illegal fishing by foreign fisherfolk.

Other environmental crimes in the country include hazardous wastes, and failure to comply with the provisions of the Environmental Management and Coordination Act (EMCA) and its regulations.

LEGAL FRAMEWORK

Kenya has various laws that seek to protect her natural resources from the consequences of pollution and environmental degradation. However, most of these

laws are sectoral and the country's institutional framework is still fragmented, with key environmental laws and regulations still lacking.

The primary legislation is EMCA, which is a framework law, and its regulations published. Other key legislation includes the Wildlife (Conservation and Management) Act, National Museums and Heritage Act of 2006, Fisheries Act, Forest Act of 2005, Water Act of 2002, Agriculture Act, Public Health Act, Local Government Act and the penal code. Kenya has ratified various international conventions and multilateral environmental agreements against environmental crimes.

These laws face a number of challenges in fighting environmental crimes, including the lack of deterrent sanctions, lack of proper enforcement, lack of policy harmonisation, inadequate public participation, including community participation; lack of a clear environmental communication strategy on applicable legislations, and lack of harmonisation in managing transboundary ecosystems such as parks and waters.

CAPACITY OF INSTITUTIONS TO DETECT CRIME AND ENFORCE LAW

Kenya has not designated a single national institution to fight environmental crimes, but key institutions address various crimes. These institutions are the National Environmental Management Authority (NEMA), the Kenya Wildlife Service (KWS), the Kenya Forest Service (KFS), the police department, the fisheries department, the Kenya Plant Health Inspectorate Service (KEPHIS), the Lusaka Agreement Taskforce (LATF), the United Nations (UN), and non-governmental organisations (NGOs). To address crimes adequately, these institutions should have an intelligence network and law enforcers such as prosecutors to apprehend perpetrators. The law should also have adequate deterrents to punish those involved n crime and dissuade others from taking part.

In our view, none of these institutions, save for KWS, LATF and UN, has an effective system to fight environmental crime. There is also lack of links and systems to collect, store and share data across the various institutions.

RECOMMENDATIONS

The key recommendations arising from the study are the need to:

- Undertake thematic studies on key sectors where there are environmental crimes;
- Formulate a communications strategy for environmental crime;
- Formulate a strategy to amend key legislation on environmental crime;
- Build capacity of civil authorities and the police;
- Create a new focal point for environmental crime, and
- Ensure that the public plays a meaningful role in the fight against environmental crime.

CONCLUSIONS

The study concludes that environmental crimes are a real threat to Kenya as its economy is based on natural resources. The crimes must thus be fought from all fronts if the country is to attain the goals set out in the government's Vision 2030.

1 Introduction

BACKGROUND

This report examines the nature and extent of environmental crime in Kenya. It was commissioned by the Environmental Crimes Project (ECP), which is a joint initiative of the Institute for Security Studies (ISS) and the East African Police Chiefs Cooperation Organization (EAPCCO).

But what would constitute environmental crime in Kenya?

The Environmental Management and Coordination Act provides that: 'Every person in Kenya is entitled to a clean and healthy environment and has a duty to safeguard and enhance the environment.'[1] It defines the environment as including all the physical factors of the surroundings of human beings, including land, water, atmosphere, climate, sound, odour, taste, the biological factors of animals and plants, and social factor of aesthetics. It includes both the natural and built environment[2]. On the other hand, crime may be defined as an act, usually grave, which is punishable by law[3].

As such, environmental crime can be defined as a grave act against the environment, which results in the infringement of this statutory right of Kenyans to enjoy their environment. For the act to qualify as a crime however, it must

violate some laid-down law, and should also be punishable by law. Such a law may be national (including bylaws) or international. In addition, an environmental crime may be committed knowingly or unknowingly.

Laws dealing with various sectors of the environment, such as forestry, water, wildlife etc, establish various environmental offences. However, these offences have been treated mainly as misdemeanours or minor crimes, and not felonies or serious crimes. Nevertheless, with increasing awareness of the environment, and the adverse impacts of environmental degradation on resources and people's wellbeing, the issue of environmental crimes is slowly gaining currency in the country.

On the whole, environmental crime is a serious and growing concern leading to the near extinction of valuable wildlife species, and significantly impacting the biological integrity of the planet[4]. Its rise also led to the establishment of an Environmental Crimes Committee by Interpol in 1992. Further, environmental crime is closely linked with other crimes such as drug trafficking, weapons trade, smuggling, fraud and money laundering[5]. Environmental crime is, thus, a lucrative trade and has attracted persons with political and security connections, thus granting protection to operatives.

Internationally, there are five key broad areas of offences that have been recognised by bodies such as the G8, Interpol, the European Union (EU), the United Nations Environment Programme (UNEP) and the United Nations Interregional Crime and Justice Research Institute. These are:

- Illegal trade in wildlife and their products;[6]
- Illegal trade in ozone-depleting substances;[7]
- Dumping and illegal transport of various kinds of hazardous waste;[8]
- Illegal, unregulated and unreported fishing, and
- Illegal logging and trade in timber.

Other environmental offences that share similar characteristics with these five accepted categories include:

- Biopiracy and transport of controlled biological or genetically modified material;
- Illegal dumping of oil and other wastes in oceans;[9]
- Trade in chemicals,[10] and

- Fuel smuggling to avoid taxes or future controls on carbon emissions.

Fighting of environmental crime is not easy as it is cross-border in most cases, and involves well-organised groups that are sometimes better armed than those protecting the natural resources base. The issue of environmental crime is further compounded by the integration of economies, syndicates that use corruption and take advantage of weak states such as Somalia, lack of political will to fight it, and the role of unemployed youth, who in most cases do not find much meaning to life and thus the environment. Further, most agencies charged with fighting the vice are not well coordinated. ECP was initiated to address this rising problem, among others.

STATE OF THE ENVIRONMENT IN KENYA

Kenya is located astride the equator and longitude 38^{0} E. The country's total surface area is about 582 650 m^2 (58 900 000 ha),[11] out of which 57 670 000 ha is land surface. About 83% (46 140 000 ha) of the land surface is classified as arid and semi arid. The remaining 17% (11 530 000 ha) is classified as medium and high potential. Arid and semi-arid areas are predominantly used for livestock production and conservation of wildlife.

Kenya is rich in biodiversity which comprises forestry, wildlife resources, aquatic ecosystems and wetlands, dry lands and agricultural lands. Kenya is said to contain about 35 000 species[12] of animals, plants and micro-organisms that need protection for the conservation of biodiversity. There are currently 23 terrestrial national parks, four marine national parks, 28 terrestrial national reserves, six marine national reserves and four national sanctuaries. The protected areas are distributed in all ecosystems and, therefore, provide an important system of protection of flora and fauna and their habitats.

Forests: Forests are the backbone of Kenya's economy through linkage to agriculture and tourism. They support livelihoods by providing food, medicine, wood for construction and fuel-wood, in addition to other products and services such as water catchment areas.

Forests cover less than 3% of the country and may be divided largely into natural ones (about 2-million ha) and plantations (about 0,24-million ha). Kenya, which has felled more than 90% of its natural forests, ranks fifth in Africa in terms of the loss of forests. Forests are disappearing at a rate of more

than 5 000 ha per year following the settlement of people, cultivation and development projects in the reserves. The decrease in forests has led to the decline of important functions, including prevention of erosion, water yield, and the conservation of wildlife habitats and genetic resources. It has also caused problems of sedimentation in the lower reaches. Overgrazing and felling have resulted in desertification in arid and semiarid areas.

To protect these limited forest resources, an area of about 2,4-million ha has been designated as reserves. A timber-harvesting moratorium was put in place in 1999 and is still in force, although some companies are exempted.

Wildlife: The government has established an extensive system of wildlife-protected areas that occupies about 8% of the country's land area. The protected areas are distributed in all ecosystems and therefore provide an important system of protection for flora and fauna and their habitats. Despite the great efforts being made to conserve and use wildlife resources sustainably, the sector is facing a number of challenges. Agricultural expansion, forest destruction and human-wildlife conflicts (resource use conflicts) are major challenges in the country. Changing land tenure systems, subdivision of group ranches and lack of a comprehensive land-use policy are also major threats to wildlife conservation.

Loss or damage of crops by wildlife in the farming communities is prevalent in areas where migratory routes and dispersal areas for animals have been encroached by farms and settlements. Elephants are a major source of conflicts since they destroy crops. Some incidents of lions predating on livestock have also been a source of conflicts among the Maasai communities. In addition, lack of equity in the sharing of benefits accruing from wildlife protected area communities has contributed to the human-wildlife conflicts.

Agriculture: This is practiced mainly in the medium- and high-potential areas. Genetic diversity within and between species comprising agricultural biodiversity in the country is being reduced by pressure arising from efforts to improve productivity through cross-breeding and general preference for exotic varieties of both crops and breeds of animals. Agricultural biodiversity also faces threats from neglect and under-utilisation of indigenous crops and animal species.

Water: Kenya is a water-scarce country. It is estimated that the country receives 354- billion m^3 of rainwater annually. However, due to rapid population increase the annual per capita availability of water is now 647 m^3 and per capita

Table 1 Protected areas

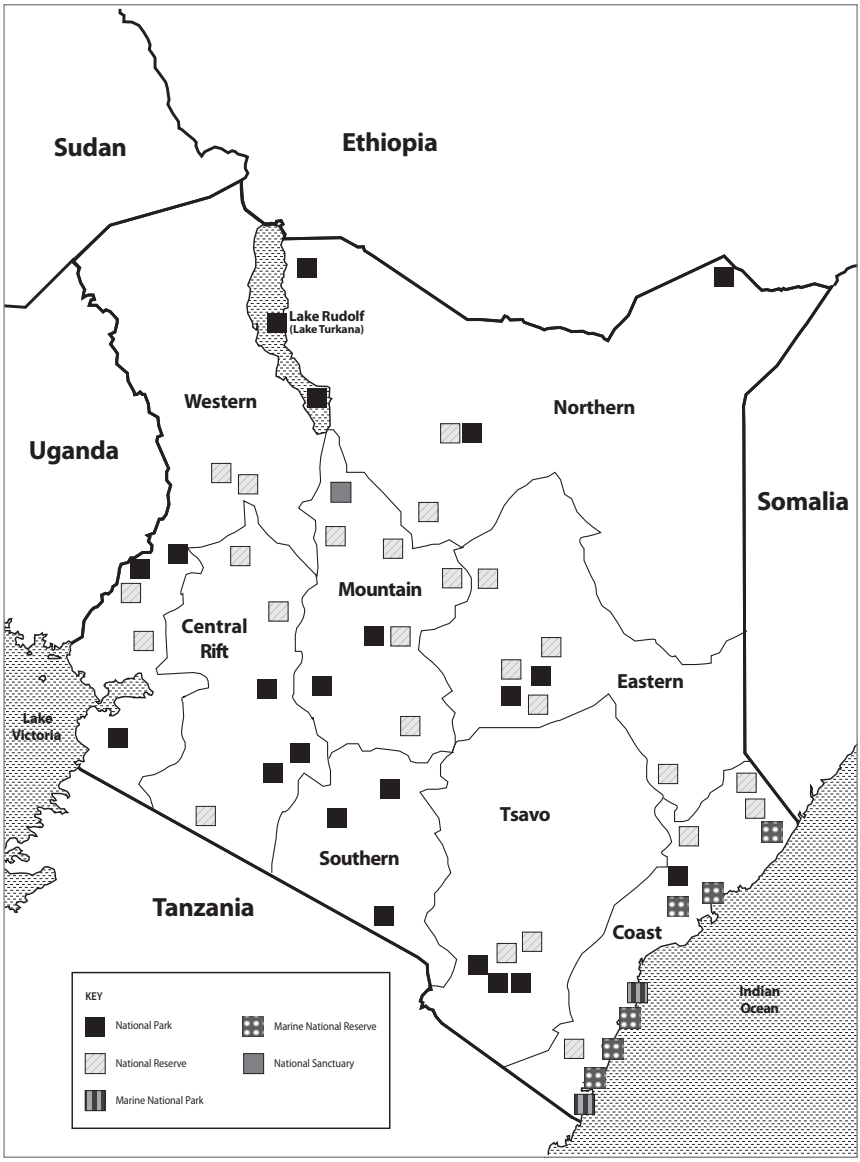
Total area of Kenya	582 650
Area occupied by national parks	29 100,5 km^2
Area occupied by national reserves	15 827,34 m^2
Area occupied by national parks	5,0 %
Area occupied by reserves	3,7 %
Number of terrestrial national parks	23
Number of marine national parks	4
Total number of national reserves	**27**
Number of terrestrial national reserves	28
Number of marine national reserves	6
Total number of reserves	**34**
Total number of national sanctuaries	**4**
Number of forest reserves	203 (16 690) km^2
Number of private reserves	6 (133) km^2
Number of biosphere reserve	5 (346) km^2
Wetland under the Ramsar Convention	188 km^2
Number of planned forest reserve (143)	143 (9 385) km^2

Source JICA Country profile on environment, 2007.

availability is projected to fall to 253 m^3 by 2025[13]. This is against of 1 000 – 1 700 m^3 termed sufficient supply.

Kenya has a total of 467 lake and wetland habitats estimated to cover 1 460 300 ha or 2,5% of total land area.[14] These include 18 large and many small lakes, six man-made lakes, marshes, swamps and the banks of five main watershed river systems. Although rivers are distributed across the country, many do not always have sufficient flow throughout the year. For example, the Athi River is one of the main rivers in Kenya but may dry up as a result of excessive water abstraction in the middle reaches during the dry season. Additionally, there is the problem of rainfall distribution and inadequate water supply infrastructure. Other constraints to water supply include uncontrolled diversion, degradation

Map 1 Protected areas in Kenya



Source http://www.kws.org/kws/parks/conservation_areas/index.html

Table 2 Approximate number of wildlife

Species	Number
Elephant	17 500
Buffalo	22 500
Giraffe	34 000
Burchell's zebra	120 000
Grevey's zebra	4 800
Topi	3 100
Kongoni	10 000
Wildebeest	300 300
Oryx	21 500
Eland	8 600
H Hartbeest	1 000
Waterbuck	4 400
Kudu	13 600
Gerenuk	27 000
Impala	72 500
Grant's gazelle	116 100
Thompson's gazelle	48 700
Warthog	14 400
Ostrich	25 000

NB: declining number due to habitat loss, changes in land use, predation, poaching and unfavourable weather conditions

Source Kenya Wildlife Service

of catchments, microclimate and weather changes, changes in settlement patterns and quarrying along the riverbanks and beds.

The main freshwater lakes are concentrated in the Rift Valley. Lakes Victoria, Baringo and Naivasha are freshwater lakes, while lakes Turkana and Nakuru are brackish or saltwater. The annual potential of underground water is reportedly about 619 million m^3. Some 74% of the urban and 50% of the

rural populations have drinking water. Agriculture accounts for 70% of water consumption, domestic use 20% and industries 4%.[15] Precipitation is the main source of recharge for both surface- and groundwater during rains long and short. However, deforestation of water catchment areas at an annual rate of 3% in the Mau, Mount Kenya, Mount Elgon, Aberdares and Cherengany forests poses a threat to underground and surface-water availability.

Deforestation has reduced the capacity of these water catchments to regulate runoff , with subsequent flush floods experienced recently on the Kano plains, in Budalangi area and in other parts of the country.

Key environmental issues

Poverty: About 56% of the Kenyan population lives below the poverty line. Poverty leads to livelihoods that demand over-reliance on natural resources leading to their over-use and destruction. Environmental problems aggravate the poverty situation and make sustainable development an elusive goal.

Land degradation: This includes soil erosion, encroachment and exploitation of marginal lands for agriculture due to population increase; overstocking of livestock beyond carrying capacities and overgrazing, resulting in a reduction in the economic potential of the affected areas; poor agricultural husbandry, for example, ploughing on steep slopes and, indiscriminate use of inorganic fertilisers, and land subdivisions and land-use changes.

Destruction of forests: Forest cover in Kenya is estimated at 1,7% of the total land area and an annual reduction rate of 3%. Deforestation is increasing due to encroachment, over-reliance on wood fuels, charcoal burning, illegal logging, frequent forest fires and livestock grazing.

Loss of biodiversity: This arises from clearing of certain habitats such as forests, over-exploitation of certain tree species such as the slow-growing acacia, over-reliance on monocultures, erosion of indigenous knowledge related to biodiversity, poaching, and introduction of invasive species.

Hazardous wastes, including medicinal wastes, pose serious risks to the environment. The country has only two facilities[16] to handle such waste. Most clinics and hospitals do not have incinerators to dispose of their wastes.

Water pollution: Water resources include surface water, rainwater and groundwater and these are polluted by organic, inorganic and microbial matter. The main causes of water pollution include effluent from industry and

agricultural activities, soil erosion, municipal solid and liquid wastes, sludge from wastewater treatment plants, asbestos and mining activities. Water quality is not monitored regularly because of financial constraints and the absence of monitoring systems. More than half the population does not have proper sanitation facilities. No more than 30% of the present 142 urban areas have sewerage systems due to financial and planning deficiencies.

Air pollution: Air pollution is a major threat, and comes in the form of offensive odour or noxious smells of decay - hydrogen sulphide released by decomposing garbage, and odours from tanning plants, slaughterhouses and piggeries. The main source of air pollution, however, remains industries in major towns. The main air pollutants in urban areas are the suspended particulate matter (SPM), lead, oxides of sulphur (SO_X), carbon monoxide (CO), hydrogen sulphide (H_2S), and oxides of nitrogen (NO_X).

There are no established standards for most of these pollutants. But studies show that levels in some towns far exceed WHO and other international standards. It should be noted, however, that the petroleum industry has now reverted to low sulphur diesel and unleaded fuels.

Climate change and desertification: Although its contribution to global warming is small, the impact of climate change is bound to be severely felt in the country as its economy depends on climate-sensitive sectors such as agriculture and tourism. The country does not have the means to cope adequately with climate hazards. Already, changing climate conditions are melting glaciers on Mt Kenya - in 1900 it had 18 glaciers and now has only seven.[17]

THE ENVIRONMENTAL CRIMES PROJECT

The core objective of the ECP is to enhance human security through improving regional law enforcement and policymaking to fight environmental crime in eastern Africa.[18]

The ISS is a regional research institute operating across sub-Saharan Africa and guided by a broad approach to security, reflecting the changing nature and origin of threats to human development. Its mission is to conceptualise, inform and enhance the debate on human security in Africa to support policy formulation, implementation and decision making at all levels.[19]

The ECP intends to develop mechanisms to fight against environmental crimes and, thus, improve the protection of the eastern Africa environment. It

strives to enhance regional capacity to combat different forms of environmental crimes such as illegal logging, illegal dumping, and illegal transportation or transit of hazardous waste, illegal trade in wildlife species and illegal trade in bush meat. The project is implemented in the following member states: Burundi, Ethiopia, Kenya, Rwanda, Seychelles, Sudan, Tanzania and Uganda. It also seeks for future engagement with the Democratic Republic of Congo (DRC).

The ECP falls under the Environmental Security Programme (ESP), which addresses a wide range of issues, including environmental crimes, climate change, energy security, food security, environment and natural resource management, pollution, gender-related issues in environment and human security, the environmental agenda in peacekeeping doctrines, environmental diplomatic discourse and capacity building, and sustainable livelihoods.

The objectives of ECP are to:

- Collect, collate, analyse, document and publish information on environment-related crimes;
- Monitor, track and contribute to the prevention of environment-related crimes;
- Enhance institutional and legislative capacity of law enforcement agencies to address environment-related crimes;
- Undertake public education, awareness and community outreach programmes, and
- Facilitate and participate in collaborative national, regional and international processes to combat environmental crimes.

ENVIRONMENTAL CRIME AND SECURITY

Security can be defined as a sense of confidence, or that which guards or guarantees.[20] Security is further divided into national and human security, with the former looking mainly at external aggressors and internal domestic enemies. On the other hand, human security is an emerging paradigm for understanding global vulnerabilities, with proponents arguing that the proper referent for security should be the individual rather than the state.[21] First, human security means safety from chronic threats such as hunger, disease and repression. Secondly, it means protection from sudden and hurtful disruptions to the patterns of daily life.[22]

Environmental crime affects the environment, quality of life and wellbeing of human beings. It degrades the environment, destroys habitats and biodiversity, reduces forest and wildlife resources, and destroys watersheds, leaving wells and springs to dry and impact on the quality and quantity of water. Eventually, it also impacts adversely on agriculture and food security, the overall quality and quantity of environmental resources, and, ultimately, people's lives and livelihoods. Conflicts are often triggered by loss of or difficulty in sustaining traditional livelihoods.[23]

The environment is about resources, and environmental crime impacts on the availability of resources, resulting in undue competition for them. Growing competition for scarce and dwindling resources, particularly vital resources such as water, food and energy, in turn creates tension and volatile situations, which easily trigger violent conflicts within and even between countries.

Competition for resources ordinarily results in resource-use conflicts. These are already rife for water usage, and for pastures in pastoralist communities in Kenya. Competition for resources has also led to conflicts between agriculturists and pastoral communities, especially when droughts occur. Internationally, the control and use of the River Nile is a good example of international political tension on resources, which can easily lead to conflict.

Resource scarcity is usually induced by environmental degradation, which is closely tied to poverty. Poverty, on the other hand, can be regarded as a cause and consequence of environmental degradation. As such, environmental crime also contributes to poverty and the potential for conflict. Environmental degradation is thus a threat to human security and can also be both a cause and consequence of violent conflict.

OBJECTIVES AND SCOPE OF THE STUDY

The aim of this study was to collect data and generate information for the production and publication of a comprehensive status report on the nature and extent of illegal trade in flora and fauna as well as the illegal dumping of hazardous waste in eastern Africa. This, in part, addresses the first and fourth objectives of the ECP. It is a first step that hopefully will lead to other, more detailed studies in thematic areas.

The study addressed the following nine tasks set out in the terms of reference (ToR):

- Undertake an inventory and thorough analysis of the state of the environment in the country.
- Undertake a thorough analysis of the nature and extent of illegal trade in fauna and flora.
- Undertake a thorough examination of the nature and extent of pollution and illegal transportation and dumping of hazardous waste.
- Collect data from the national agencies, including national central bureaus (NCBs), on statistics on the illegal trade in fauna and flora including illegal logging, illegal transportation and dumping of hazardous waste as well as pollution.
- Examine the legal regime governing the management and enforcement of environmental crime in the country.
- Identify and assess the effectiveness of the relevant government institutions in detecting and enforcing environmental crime in the country.
- Identify and analyse the challenges faced by government institutions in the detection of environmental crime in the country and enforcement.
- Identify key national level civil society actors and the role they play in assisting law enforcement agencies in fighting environmental crime in the country.
- Present the findings of the study at public fora and workshops organised by the ISS.

The study further looked at the capacity of key institutions to fight environmental crime, and the manner in which data are captured, stored, retrieved and shared among the focal players.

STUDY APPROACH AND METHODOLOGY

The study approach was geared to meet all the tasks in the ToR, and give a detailed analysis of the status of environmental crime in the country.

The methods used were:

- Extensive review of literature, policy and legislation;
- Key informant interviews;
- Internet searches, and
- E-mail enquiries where face-to-face interviews were not possible.

The study was undertaken mainly in Nairobi, but included a brief visit to the coastal town of Mombasa.

The team interviewed 38 persons from 27 institutions who gave information on the nature of crimes they are aware of, the extent and seriousness of the crimes, species involved, the perpetrators, how they and their organisations are dealing with the crimes, and the challenges of doing so. All data were then collated and analysed.

A stakeholders' workshop was held to authenticate the findings and to obtain feedback and additional information on the study.

2 Nature of environmental crime in Kenya

PARTICIPANTS IN ENVIRONMENTAL CRIME

The characteristics of those involved in environmental crime depend on whether the crime is intentional or not, and whether it is commercial (has some economic benefit) or subsistent.

As with other crimes, those involved in environmental crimes can be characterised largely into four groups:

Individuals: They act of their own accord and are mainly subsistent. Most of these crimes are committed out of negligence, lack of alternatives or the need to survive. Examples are waste disposal in slums and snaring of wildlife for own consumption. This group is difficult to apprehend or control.

Small, independent groups: These are small, largely independent and semi-permanent groups of persons who are subsistent in their operations, and meet only to actualise the crime, for example, snaring or hunting of animals. They are hard to control, especially if they are irregular operators. Regular groups are easier to apprehend, since they operate in the same areas and use similar tactics.

Organised groups: They operate in networks and are always commercial in their exploits. In organised groups, different people play different roles, and this makes it difficult to control or apprehend them. In rare cases, some links to the long chain may be arrested, especially those involved in the initial crime (actual killing of wildlife or undertaking illegal logging), or those involved in transportation. The real leaders of organised groups are well connected with politicians and security personnel, and are rarely arrested as they do not do the actual work, but only facilitate the movement of the illegal goods from one point to another.

Corporate bodies: They are involved mainly in business or other commercial activities and their crimes are related primarily to pollution and non-compliance to statutory obligations such as undertaking environmental impact assessments and audits. Their main interest is economic, and they pollute to save costs, by, for example, not treating their effluent before discharging into water bodies. These are easy to apprehend with strict enforcement.

ENVIRONMENTAL CRIMES IN THE FORESTRY SECTOR

Illegal trade in sandalwood (Santalum Album)

This is currently the most popular commercial illegal trade in flora. A five-year presidential ban on harvesting sandalwood was imposed in February 2007. Sandalwood contains essential oils with a fragrant scent and is used in the manufacture of cosmetics. The essential oils are more concentrated in the roots than in the stem, and as a result the whole tree is uprooted. The species has male and female plants, with the latter being favoured for its fragrance.

Currently, there is a 'rush' for sandalwood because it fetches very good prices on the international market: 1kg of essential oils sells for about US$ 1 500. These prices are not reflected locally, where farmers sell sandalwood to middlemen for between KSh. 80 and 200 (US$ 1 – US$ 2,50) per kg.[24] Sandalwood was originally sourced from Chyulu Hills, and from Tsavo West in protected areas. It was then 'discovered' in the western and eastern parts of the country, with key areas including Baringo, Pokot, Samburu and Naivasha districts.

Kenyan sandalwood is exported mainly to India and China and is ordinarily sent abroad as wood. The key dealers are politicians and traders of

Asian origin. However, since the ban and subsequent awareness of it export, sandalwood now is exported through Tanzania. There is a chain to facilitate passage from the village where middlemen buy it, to its transportation by road to Namanga and the larger Kajiado district, from where it smuggled into Tanzania. On 6 October 2008, 40 tonnes harvested in Maralal (Samburu district) were netted at Namanga.[25] An estimated similar amount had already crossed into Tanzania. KWS has already netted about 20 tonnes in 2009 and made 40 arrests.[26]

With transportation becoming increasingly difficult, traders are now semi-processing sandalwood into chips and sawdust. It is then transported, and even exported, in these forms packaged in packets the size of cigarette packs. Some are sent as 'free samples' and are thus exempt from duty.[27]

Although the tree would assist communities to generate revenue and improve their lives, the present method of uprooting the whole tree is not sustainable as the tree is slow growing. Additionally, the plant is parasitic and it requires a host to support its growth. To make the growing of sandalwood sustainable and commercial, KEFRI is currently researching its propagation, but the main problem has been to find a suitable host.[28]

Illegal logging

This is rampant in most forests, especially as a result of the presidential ban on logging in government forests. Illegal loggers targets mainly indigenous species although exotics are also illegally harvested.

Figure 1 Abandoned trailer in Mau forest



Source Kamfor Company Limited (2005)

Figure 2 Impounded timber at Narok County Council



Source Kamfor Company Limited (2005)

Small-scale illegal logging is done using seesaws, and power saws in some areas, and is done mainly at night. Large-scale illegal logging is done using power saws and is undertaken by timber merchants in collusion with government authorities responsible for the resources.

Some illegally mined timber is exported to Singapore, China, India and the Middle East, which favour mainly the indigenous species of cedar, podo and camphor. Although exotic, cypress is also popular, mainly in the local market.

KFS and KWS staff patrol and make arrests and seizures of some of the illegally harvested timber and the vehicles carrying it. However, the areas are large and the staff few. Corruption is also rampant, especially with the timber merchants.

Key areas are the Mau and Mt Elgon. The problem has declined in the Aberdares due to the fencing project and because various groups are active in this area. In October 2008 alone, six trucks were apprehended in Mau forest,[29] and in Transmara district, an average of one lorryload of illegal timber is seized each month.[30]

Illegal trade in other flora

This involves mainly endemic species such as the African orchid flower, which looks like leopard skin, in Tiwi and Kwale; and the African violet in the Taita Hills. The African Violet Society in the USA has clones of the African violet that it admits were sourced from Kenya.[31]

There is also the African aloe which is listed under CITES and is now exported as resin, and *Prunus africana*. Additionally, there is bioprospecting and biopiracy of undetermined extent. Some cases, however, are well known and followed up. These include the bacteria from Lake Bogoria, sourced from Kenya,[32] and used in an enzyme for the production of faded jeans.

There is also theft of indigenous knowledge, especially of the use and values of certain herbs and medicinal herbs. Benefits sharing as enshrined in the Convention on Biological Diversity (CBD) have not been actualised, although Kenya is a signatory to this convention.

Forest excisions

Forests have in the past been excised illegally, even without the necessary degazettement. Key areas have included water catchments such as the Mau complex. The excisions have been done mainly with a view to settling indigenous communities such as the Ogiek, who have lived in the Mau all their lives, but the bulk of the land is hijacked by politicians and administrators. The 'illegal' beneficiaries then sub-divide their large parcels of land and then sell tracts to unsuspecting members of local communities.

In the Mau complex alone, 35 000 ha have been excised in eastern Mau, 22 000 ha in south western Mau and 1 000 ha in Molo. About 15 000 ha have been settled on in the Maasai Mau.[33] There are about 20 000 persons now settled in the Mau, but only 1 962 have title deeds.[34]

Excisions especially in the water catchment have resulted in loss of ecosystem goods and services, leading to flash floods during and just after the rainy seasons, and lower base flows during other times. With increasing human populations in the upper catchments, communities downstream experience water shortages, which leads to conflicts. In the Mau complex alone, 12 rivers are threatened. Excisions have also resulted in loss of biodiversity.

The new Forest Act of 2005 has adequately addressed the issue of forest excisions. It provides that no forest excisions will be done without an EIA and the approval of parliament. If these provisions are enforced, the Act will enhance the preservation of gazetted forests.

In areas such as the Mau, a land audit is being undertaken by a taskforce appointed by the prime minister in 2008. After the audit the taskforce, which

includes both public and private sector actors, will give recommendations on measures to preserve the Mau.

Forests encroachment

This is rampant in most forest areas with the most common areas being the Mau forest complex, Marmanet forest, Marakwet forest, and Ol rabel, Gakanga and Mandusuna near Arabuko Sokoke at the Coast Province.

Encroachment takes different forms with the key forms being illegal cultivation of food crops, cutting of fodder, beekeeping, and firewood collection (the most common). Collection of firewood and fodder is allowed in some forests for a token fee. These issues are addressed in the new Forest Act.[35]

Most encroachment results from the ending of the Shamba system, through which communities were allowed to farm on condition that they plant and tend young seedlings.

There have also been illegal assemblies of people and training of warriors in forests. An example is Mt Elgon, where militias hide in caves and take part in transboundary crime, terrorising the local communities and taking cover in Uganda.[36]

Illegal grazing

This is a crime in both forests and wildlife conservation areas and is closely tied to encroachment. It is a major problem especially in the Tsavos, Mau complex and Mt Kenya regions. Countrywide, about 500 000 animals are poached annually, with the Tsavos accounting for about 80%. The KWS alone arrests in the region of 1 000 persons a year.[37] Others are arrested by KFS and the police for trespassing on private property.

The problem is difficult to manage as the boundary between the protected areas and forests has no barriers. The local communities, mostly pastoralists with high regard for their animals, also feel they have a 'right' to graze their animals anywhere. Illegal grazing also occurs in Laikipia, where pastoral communities invade private, agricultural and ranching farms.

Illegal grazing, other than destroying the forests and protected areas' ecosystems, causes conflicts between pastoralists and farmers, and pastoralists and

the government (KFS and KWS), and also leads to animals contracting diseases such as east coast fever from the close interaction with wildlife.

Illegal forest fires

Lighting of fires is forbidden in government forests,[38] but this rule has been routinely ignored and fires started for land preparation, honey hunting, charcoal burning and cigarette smoking. Other fires are started maliciously or through carelessness in throwing away matches or cigarette butts. For example, a total of 200 acres of the Ontulili forest in the Mt. Kenya region was destroyed by fire in August 2008.[39]

Growing of bhang

This was common in the Mt Kenya forest, where large-scale plantations had been established and transported using even helicopters. This has now been curbed somewhat, but there are still small pockets of bhang being planted. The crop takes about six months to mature.

This crime escalates during the rainy season when it is difficult to patrol the forests. However, the perpetrators collude with certain government officials, which make the crime difficult to eliminate.

Illegal charcoal making

This crime is akin to illegal logging, as trees in government forests and trust land are felled and converted into charcoal. It is very common in the arid and semi-arid lands (ASALs) where it is a fallback economic activity when it is too dry to farm or raise livestock. It is also common in areas under civic authorities as they are more easily accessible and rarely manned.

In dealing with the problem, charcoal kilns found are usually destroyed and bags of charcoal seized. In the Mau forest alone since the taskforce was formed, 11 031 bags of charcoal[40] have been seized, whilst in Transmara District, there is an average of eight lorryloads of charcoal a month and 90 donkeys that carry charcoal from the forests each day[41]. Mangroves are also harvested for charcoal burning.[42]

ENVIRONMENTAL CRIMES IN THE WILDLIFE SECTOR

Illegal trade in wildlife and their products

It is illegal in Kenya to handle wildlife or wildlife products without a licence.[43] Illegal trade involves mainly African grey parrots and lovebirds, most of which originate from Congo and Uganda. Most are sourced from trailer drivers at about Ksh. 40 000 a pair.[44] Most buyers are Asians.

There are about 4 000 illegal parrots and KWS has, through a public notice, given citizens the chance to keep the birds by registering them. The response has been very poor, however, with only 25 people responding.[45] Those who registered their birds were given letters of authenticity to foster the birds on behalf of KWS. They will, however, not be able to export them.

Other illegal trade involves snakes such as puff adders, cobras, black mambas, mountain vipers and pythons, which are all traded as pets. Others include crocodile and tortoise (leopard tortoise found in Ukambani, Baringo, Koibatek and Kajiado districts and pancake tortoise commonly found in Mwingi district). Recently, 18 crates of snakes and terrapins were impounded at Jomo Kenyatta International Airport (JKIA). A similar consignment had already flown out, but was intercepted in Frankfurt, Germany, with assistance from Interpol.[46]

There is also illegal trade in bush meat from zebra, buffalo, giraffe and other animals. This is sold mostly in Nairobi and other major towns. The main outlets are hotels and restaurants, where the meat is cut into small pieces and cooked, rather than places such as butcheries where meat is displayed. The trade in bush meat is receding, but it has been a tough battle for KWS.[47]

There have also been a few cases of ivory trade involving Chinese nationals.

Poaching

Poaching is either commercial or subsistence. Commercial poaching involves bush meat, elephants (for ivory), rhino (for their horn) and cats, namely leopard and lion (for their skin, claws and teeth).[48] Commercial poaching is rife on the northern frontier where there are many illegal firearms. Key areas are Tana River, Lamu, Isiolo, Samburu, Marsabit and Garissa districts.

Subsistence poaching involves use of dogs, blinding by powerful torches and stupefying with blow horns, bows and arrows, and snares (wire, string, and

Figure 3 Elephant tusks



Source Interpol – www.interpol.org

noose). It is widespread and more than 95%[49] occurs outside protected areas where more than 60% of wildlife is found. The main problem areas are wildlife dispersal areas and corridors, and where KWS presence is thin. Most of these areas are controlled by local authorities. The main animals targeted are antelopes, zebra, buffalo, gazelles, dik dik and other small animals, and the main problem areas are the Tsavos, Taita Taveta and Machakos areas. This year alone KWS has removed about 5 000 snares, 80% from the Tsavos, whilst the African Network for Animal Welfare (ANAW) removed 171 snares in four days in Machakos and estimates that about 8 000 animals have been killed in a 23 km2

Figure 4 Poacher arrested and jailed for five years after killing giraffe



Source ANAW (2008)

Figure 5 Dried giraffe meat



Source ANAW (2008)

area in Machakos alone[50]. In Transmara district, an average of fifty snares are removed every month.[51]

Subsistence poaching is also undertaken by settler communities that have not lived side by side with wildlife. This is common in former ranges in Samburu, Laikipia and Taita districts.

ENVIRONMENTAL CRIMES IN THE TOURISM SECTOR

Blockage of access to natural resources

Tourist facilities, especially hotels and lodges at the coast, block access paths to beaches, making it difficult for local communities to access these important recreational facilities. In some instances, tourist facilities also block fish landing sites in the name of security of tourists.

Other than blocking access to beaches, tourist facilities impact on the landscape and block the beach view and sea breeze to those behind the facilities.

Aesthetic pollution

Some tourist facilities are built totally out of character with their surroundings, with materials and colours not in harmony with the natural environment. This is mainly so in and around wildlife protected areas.

Figure 6 Beach encroachment



Figure 7 Beach walls



Figure 8 Blockage of access paths



Figure 9 Offroad driving impacts



Source Kamfor 2006

Offroad driving

This is common in national parks and reserves, where tour operators drive offroad in search of animals to for tourists to view and photograph. This degrades the vegetation causes soil erosion. Offroad driving also disturbs animals, with many tourist vehicles congregating around single animals, especially the big cats.

Destruction of marine, lacustrine and river ecosystems

Many tourist facilities along the Kenya coast and the major rivers (Tana, Athi, Ewaso Ng'iro) are built too close to the water bodies in contravention of the law requiring a distance of 6m – 30m from the highest water mark.

Built too close to water bodies, these facilities contribute to soil erosion and sometimes discharge liquid and solid wastes directly or indirectly through infiltration. The facilities also expose guests to the dangers of flooding.

At the coast, these facilities also interfere with marine life, especially turtles, which breed on the beaches and which are disoriented by light and glare. The facilities also contribute to beach erosion, especially through construction of beach walls, and sometimes encroach on the beaches.

Poor waste disposal

Tourist facilities are wanting in terms of both solid and effluent disposal, with some facilities discharging their wastes directly into water bodies. Poor disposal of solid wastes by the tourist facilities is evident from the many marabou storks seen hovering around their waste disposal sites. The facilities also contribute to beach littering and pollution, and impact on wildlife, which become dependent on waste food.

ENVIRONMENTAL CRIMES IN THE WATER SECTOR

Diversion of water bodies

This is illegal in Kenya[52] and is done mainly for irrigation. In some instances, it has led to significant adverse environmental impacts and water use conflicts, especially between communities upstream and downstream. An example is the Rumi River in Taveta, which originates from the Kilimanjaro hills and flows to Lake Jipe from where another river, Ruvu, starts. Earlier, water had been diverted using blockages so that it flowed directly to Ruvu River, bypassing Lake Jipe, which was in danger of drying up completely. Water from Ruvu River flows to Nyumba ya Mungu dam and then goes on to generate power. As the Ruvu is in Tanzania, the issue is actually transboundary in nature.[53] Rivers have also been diverted for fish farming.

The diversion of water bodies is closely tied with over-abstraction of water. Most water abstracted is not metered. Further, the abstraction occurs all year in contravention of laid-down regulations,[54] which mandate the construction of reservoirs for storage.

Water pollution

This is rampant and includes discharge of effluent directly into water bodies. The most common illegal source of pollution is discharge of raw sewerage from municipalities that lack adequate systems for sewerage treatment and disposal. Other polluters are industry and hotels. Illegal discharge is also done by those who do not meet the required standards.[55]

Landlords and real estate developers also discharge wastewater illegally, when their properties are not connected to sewers or septic tanks as is required by law. Others may have septic tanks that cannot handle the amount of waste generated mainly because they have changed the original building plans. Through a notice issued through the newspapers, these persons are usually given one month's notice by NEMA to put up adequate septic tanks and exhaust them regularly, or come together and set up an effluent treatment plant. Failure to do so results in their buildings being condemned.[56]

Other environmental crimes include anthropogenic activities such as car-washing on shores and in rivers.

Reclamation of wetlands

Wetlands are protected by law[57] and by international convention.[58] However, most wetland areas are being reclaimed for agriculture, whilst some in the cities are being used for construction, with resultant flooding during the rainy season. Key wetlands impacted include the Yala Swamp.

Figure 10 Open sewer drain into Indian Ocean in Lamu (2006)



Source Kamfor 2008

Figure 11 Carwash in Lake Victoria, Kisumu (2007)



Source Kamfor 2008

Illegal development in riparian areas

Due to increasing competition for land, people have encroached on riparian reserves for economic activities. There is also a tendency in towns and cities for developments to occur along rivers and other water bodies. This is more so in towns such as Nairobi, where there are many developments along the Nairobi River. Naivasha is another town where several horticultural farms have encroached on the riparian reserve. The Nairobi River is currently being mapped with a view to moving any developments out of the riparian section.

ENVIRONMENTAL CRIMES IN THE FISHERIES SECTOR

Illegal trade in ornamental fish

Ornamental fish are collected among the coral reefs and exported to international markets. It is very lucrative and there are some licensed dealers, but also several illegal traders who are difficult to net because most licensed operators hire local fishermen to collect fish for them, creating a grey area in terms of which fishermen are contracted by licensed dealers.

Even for licensed dealers, there are no limits on amounts and species collected. All licensed dealers do is declare their fish to the fisheries department for royalty purposes. The beach management units operating in the various ports, which are made up of locals, have, however, raised complaints with the department about the quantities and sizes of ornamental fish, and even the methods used.[59]

Illegal fishing methods

Both dynamite and poisons are used in the fishing industry contrary to laid-down regulations.[60] Dynamite is used to scare fish (mainly lobsters) from crevices in coral rocks and results in the destruction of coral reefs that may have been formed over many years. This is undertaken mainly by the Wapemba from Tanzania. Other illegal fishing methods include the use of irregular gear comprising mainly small/restricted nets in certain water bodies, and the use of fishing crabs among mangroves.

Illegal fishing also involves the use of leaves and other materials which sedate or kill fish, which then float in the water and are easy to catch. Other

fisherfolk use water gas, which removes fish (mainly lobsters) from their crevices. Poisoned fish are easily identifiable from bleeding gills.[61]

In Malindi, the use of ringnets for fishing has been a very controversial subject and a source of a fierce resource-use conflict between artisanal fishermen and the commercial ringnet fishermen. However, ringnet fishing targets only fish moving in shoals and its destructiveness arises from its catching of fish en masse. Due to fierce opposition from local fishermen, the fisheries department has ordered this method suspended in the district.

Other illegal fishing methods include use of undersize nets, monofilament nets, spear guns, harpoons, beach seines and herbal poison (locally called *mkanga*). Although these methods are illegal, some persist due to poor enforcement by the fisheries department.

Illegal fish farming

Although fish farming is highly encouraged in the country, a new, illegal form that involves blocking of creeks along the Kenyan coast. There is no farming per se, but the fish are trapped in these 'ponds' and then harvested. The activity is done in groups and is now rampant in the Kwetu area along the coast.

Illegal trawling

Trawling is banned in Lake Victoria but allowed in the Indian Ocean[62] where there are some licensed dealers. However, there are several unlicensed trawler operators who come into Kenyan waters (200 nautical miles from the shore) for trawling purposes, mostly for prawns. This is a very destructive method of fishing, as it catches other fish, which are later discarded as bycatch. This bycatch, on average, constitutes a ratio of 8:1 of the total catch by weight. That means for every a tonne of prawns caught, there are eight tonnes of bycatch. Artisanal fishermen are strongly opposed to trawlers because they argue that trawler operators destroy the fish that would constitute their catch. Most trawlers are of Japanese and Korean origin and it is said that the piracy on the Gulf of Eden actually started with armed gangs protecting the Somali waters from these trawlers.

Even for licensed operators, the amounts netted are not known, as the ships do not dock and some process their catch aboard. It is also not clear whether the trawlers release unintended catches as required.

Another challenge is that trawlers destroy local fishing gear such as boats and fishing nets, which contributes to impoverishment of artisanal fishermen.

Furthermore, although trawlers are fitted with turtle exclusion devices (TEDs), they are not effective and deaths of turtles and dugongs from trawlers are always reported by fishermen.

Foreign fisherfolk

Many foreigners, notably the Wapemba from Tanzania, fish illegally in Kenyan waters and also use the wrong fishing methods. That said, Kenyan fisherfolk are often arrested and jailed by both Ugandan and Tanzanian authorities for fishing outside Kenya waters.

HAZARDOUS WASTES

Hazardous wastes, which include medical wastes, are generated in industries producing consumer products such as tobacco, beer, rubber, tyres and steel, and in oilwell drilling, medical institutions and agriculture.

There is much concern about radioactive pollution, including radioactive wastes dumped on uncontrolled landfill sites without inspection by local governments. This may affect the health of garbage-processing workers and scavengers. Radioactive materials dumped on the coast may affect the natural environment, and there is the international transport of nuclear wastes. Some 20 years ago,[63] the Kenya Grain Growers Cooperative Union complained about dumping of radioactive wastes by oil-drilling companies in Wajir and in Athi River, Ngurumani and Menengai. In other incidents, 13 lorries carrying suspicious materials (claimed to be scrap metal) were stopped in Garissa.

Transportation and disposal of hazardous wastes is also not uncommon[64] at the port of Mombasa, where occasionally, damaged or leaking cargo is send back to the ship. In one incident last year, two leaking containers of nitric acid were returned to the ship. Ideally, the cargo should have been stripped and salvaged at the ship owner's cost before going back to the ship, the owner refused to comply and the nitric acid was dumped into the sea. The vessel owner has been sued.[65]

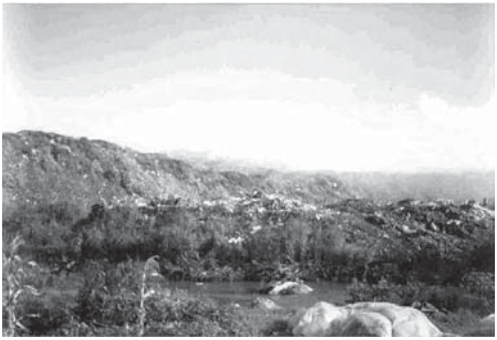
Given the rising concern about hazardous wastes, NEMA has developed regulations[66] to govern waste disposal mechanisms and procedures, including those for e-waste, which is considered hazardous waste due to its content.

Figure 12 Dandora dumpsite, Nairobi



Source Fieldwork October 2008

Figure 13 Dandora dumpsite, Nairobi



Source Fieldwork October 2008

As per the new regulations, the major environmental 'criminals' are municipal and town councils that are required to have designated sites for waste disposal where sanitary landfills are to be used. None of the councils has fulfilled these conditions. Others are large multinational firms that do not see the need to conform to the stringent environmental standards they follow while operating in western countries. What matters to them are costs and the result is adverse impact on the environment.

Other violators include medical clinics and hospitals without incinerators to burn their waste as required and that dump medical and solid waste together. Others are transporters of solid waste, who have to be registered, have covered vehicles, and the required personnel.

CRIMES DUE TO NON-COMPLIANCE

These are new crimes arising out of new legislation, namely the Environmental Management and Coordination Act and the various regulations prepared under the Act.

The key offences here include those related to inspection (for example, blocking of environmental inspectors), failing to carry out environmental impact assessment and environmental audits, not keeping records as required, not operating according to laid-out standards, offences related to hazardous wastes, pollution, and non-compliance with restoration orders, easements and conservation orders.

OTHER CRIMES

Use of banned substances

Although several chemicals, especially persistent organic pollutants (POPS) have been banned in the country, they are still used and traces found in water bodies, agricultural produce and soil samples.[67]

Global warming

Contributing to global warming is a new crime due to the grave impacts of the phenomenon. The chemistry department of the University of Nairobi is currently monitoring climate change in the country especially its impact on malaria, which is currently shifting to the highlands. Here, its impact is severe as the residents do not have natural resistance to the disease.[68]

Illegal mining

Mining involves construction materials and gemstones and is done in both protected and non-protected areas. Most mining in Kenya is open cast and in some cases uses ammonium nitrate dynamites for blasting.

Most illegal mining is undertaken for gemstones (green, purple and red granites and rubies), whilst most operators in the construction sector operate without licences. Other illegal activities in mining include use of licensed

blasters.[69] Mining in protected areas and forests requires special consent from KFS[70] and KWS.[71]

Non-rehabilitation of mines

This is widespread in both protected and non-protected areas and goes against the Mining Act,[72] which mandates those who carry out mining to rehabilitate the mining areas on abandonment. In practice, however, miners move to new sites without rehabilitating the old mines. With gemstones, the main issue is the technology used, with old mines being left open 'in case' more minerals will be found later.

Non-rehabilitation of mines causes land degradation and is an eyesore, especially as most mines in Kenya are open cast. Their non-rehabilitation also causes accidents and provides breeding grounds for mosquitoes and other pests. NEMA is piloting new guidelines for miners in the eastern province.

Sand harvesting

Sand harvesting, although legally undertaken, is done unsustainably in the country. Harvesting in river beds has led to change even in river courses with resultant adverse impacts on livelihoods, particularly among women who now have to walk longer distances to fetch water. Sand harvesting has been banned in many areas, but the local civic authorities are not keen to enforce the ban as they get cess from the sand transporters.

3 Legal framework for enforcement of environmental crime

LEGISLATION

Kenya has various statutes that seek to protect natural resources from over-exploitation and degradation and protect the public from the potentially dire consequences of pollution and the degradation of natural resources. This body of legislation is concerned principally with ensuring the sustainable use of natural resources according to a number of fundamental principles developed over the years through both local and international processes.

The key environmental law is the Environmental Management and Coordination Act of 1999, which, as the name implies, seeks to coordinate the protection of the environment in Kenya. Despite this law, the country's institutional framework remains fragmented and key environmental laws and regulations are still lacking.[73] Relevant and applicable laws governing flora, fauna and the environment include the following:

Table 3 Relevant legislation for environmental crime in Kenya

Legislation	Applicability	Institution
Environmental Management and Coordination Act (EMCA) 1999	■ EIA licence ■ EIA/EA compliance ■ Pollution prevention ■ Environmental degradation	NEMA
Environmental Management and Coordination (Environmental Impact Assessment and Audit) Regulations 2003	■ Undertaking of EIA ■ Undertaking of EA ■ Improvement orders	NEMA
Environmental Management and Coordination (Water Quality) Regulations 2006	■ Provides for the protection of water sources ■ Water pollution prevention ■ Provides standards for effluent discharge in aquatic and sewerage systems	NEMA
Environmental Management and Coordination (Waste Management) Regulations 2006	■ Provides standards for handling, transportation and disposal of different types of wastes	NEMA
Environmental Management and Coordination (Conservation of Biodiversity, Access to Genetic Resources and Benefit Sharing) Regulations 2006	■ Protection of endangered species andenvironmentally significant areas, provision of access permits, material transfer agreements and benefit sharing	NEMA
Environmental Management and Coordination (Fossil Fuel Emission Control) Regulations 2006	■ Provides for acceptable emission standards by motor vehicles and generators ■ Any use of unpermitted fuel catalysts must be disclosed for approval	NEMA
The Wildlife (Conservation and Management)Act, Cap. 376	■ Establishment of national parks, reserves and sanctuaries ■ Establishment of mines within parks ■ Code of conduct within the park: offroad driving, introduction of invasive species, collecting of trophies and animal disturbance ■ Flying restrictions (<1500ft)	Ministry of forestry and wildlife

Legislation	Applicability	Institution
National Museums and Heritage Act 2006	■ Acquisition of land and monuments, sacred sites and forests of cultural significance	National Museums of Kenya
Fisheries Act, Cap 378 1989	■ Regulates trout fishing ■ Protection of fish and turtle breeding sites ■ Prohibits gathering of corals whether alive or dead, and use of explosives in fishing ■ Provides a list of gazetted fish landing sites	Department of fisheries
Forest Act 2005	■ Provides for the establishment of the Kenya Forest Service to manage state forests ■ Recognises the vital role played by community participation in the management and conservation of forestry resources ■ Provides for protection of forestry resources ■ Any tourism development in the national forest must be authorised by Kenya Forest Service.	Kenya Forest Service
Plant Protection Act Cap 324	■ Provides for prevention and introduction of diseases that are destructive to plants ■ Prohibits introduction of exotic species into the country ■ Provides for quarantine and prescribed offences	Kenya Plant Health Inspectorate
Suppression of Noxious Weeds Cap 325	■ Provides for clearing of noxious weeds such as ***datura stramonium and eichhornia crassipes*** (water hyacinth)	Ministry of agriculture
Water Act 2002	■ Management of water resources ■ Regulation of rights to supply and use water ■ Provision of water permits ■ Provision of sewerage services ■ Prevention of water pollution	Ministry of water and irrigation

Legislation	Applicability	Institution
Agriculture Act Cap 318	■ Principal land use statute ■ Prohibits any land use practices that may intensify soil erosion ■ Provides for protection of riparian zones up to 30m-high watermark	Ministry of agriculture
Public Health Act Cap 242	■ Provision of clean and sanitary premises ■ Protection of public health ■ Prevention of public nuisance	Local authorities
Local Government Act Cap 265	■ Provision of sewerage services ■ Pollution prevention through enforcement of the law	Local authorities
Penal Code Cap 63	■ Provides for prosecution of persons polluting water bodies, or causing injury to human health	GoK
Traffic Act Cap 403	■ Prohibits air pollution from motor vehicles	GoK
Radiation Protection Act Cap 243	■ Provides for protection of public and radiation workers from ionising radiation ■ Prohibits unauthorized manufacture, use and disposal of radioactive materials	NEMA
The Maritime Zones Act Cap 371	■ Provides for conservation and management of marine resources ■ Prescribes the limits of national jurisdiction	Kenya Maritime Authority
Maritime Authority Act 2006	■ Provides for the establishment of new maritime authority	Kenya Maritime Authority
Continental Shelf Act Cap 312	■ Governs the exploration of natural resourcesliving and non-living on the seabed or in subsoil	Kenya Maritime Authority
Occupier's Liability Act Cap 34	■ Provides for duty of care upon persons residing on the premises	Local authorities

MULTILATERAL ENVIRONMENTAL AGREEMENTS (MEAS) AND TREATIES

Kenya has ratified various international conventions and multilateral environmental agreements that outlaw environmental crimes. Conventions are agreements that are binding on states that have become parties to them. Kenya is a party to, among others:

- 'Convention on biological diversity' (ratified 26 July 1994) and the 'Cartegena protocol on biosafety (party 11 September 2003).
- 'Convention on international trade in endangered species of wild fauna and flora' (ratified 13 February 1978).
- 'Lusaka agreement on cooperative enforcement operations directed at illegal trade in wild fauna and flora' (ratified 17 January 1997).
- 'Convention on the conservation of migratory species (ratified 5 January 1999) and one of its instruments, the 'African Eurasian waterbird agreement' (ratified 1 June 2001). Kenya also participates in information exchange and joint cooperation with other countries in the western Indian Ocean sub-region on sea turtle and dugong conservation.
- 'Ramsar convention on wetlands' (ratified 5 October 1990).
- 'African convention on conservation of nature and natural resources (Algiers 1969) ratified in 1992.
- 'Basel convention on the control of transboundary movements of hazardous wastes and their disposal' (ratified in 2000).
- 'The Kyoto Protocol'
- 'Stockholm convention on persistent organic pollutants' (ratified in 2006).

CHALLENGES IN LEGISLATION TO COMBAT ENVIRONMENTAL CRIME

Kenya has established statutory and regulatory frameworks to control environmental crimes, especially illegal trade in flora and fauna. The implementation and enforcement of the various statutes is vested in the relevant government agencies, but are marred by various challenge, including:

- Lack of sufficiently punitive deterrents, since most environmental offenders are given very light sentences. Typically, environmental offenders are fined very low sums of money, which only makes it worthwhile for them to continue with their illegal activities.
- Lack of enforcement. There is poor enforcement of existing legislation, mainly because law enforcement agencies lack the capacity to detect, arrest and enforce the laws on environmental crime. Law enforcement has also been undermined by corruption, whilst some law enforcers have been discouraged by the non-deterrent punishment, especially when compared to the efforts they expend in bringing the offenders to book.
- Lack of policy harmonisation in fighting environmental crimes. An illustration is the conflict between the Wildlife Act and the Forest Act. The former prohibits entry into protected areas, whilst the latter allows access to forest products by communities in protected areas. The National Museums and Heritage Act 2006 also provides for acquisition of land and monuments, sacred sites and forests of cultural significance. Due to lack of harmoniation in the management of flora and fauna, the general public is unsure of what constitutes environmental crime and what does not.
- Community participation is crucial in the fight against illegal trade in flora and fauna and other environmental crimes. This is because agencies depend upon the voluntary cooperation and truthful reporting of members of the regulated community. But community participation and community policing have been lacking, which undermines the credibility and integrity of the overall regulatory regime.
- Lack of a clear environmental communication strategy on applicable laws and regulations is also a challenge. New laws are published, but are not disseminated to the grassroot levels, which is crucial if they are to be implemented.
- Lack of harmonisation in managing transboundary ecosystems such as parks and waters. The Serengeti and Maasai Mara are good examples of such transboundary ecosystems. However, the former is a national park and the latter is a game reserve. Lack of harmonisation poses a big challenge, especially when pursuing poachers and enforcing environmental crimes such as deforestation of the Mau forest, which affects the Mara River, the lifeline of the Serengeti and Maasai Mara.

4 Capacity of institutions to detect crime and enforce law

To address environmental crime adequately, the key institutions need to be mandated by law, which should provide for sufficiently punitive deterrents. These institutions should also be supported by an intelligence network capable of detecting crimes, able enforcers to apprehend the perpetrators, and able prosecutors. This whole system should also be seen to be fair and address the issues of corruption.

Kenya has not designated a single national institution to fight environmental crime as such, but there are key institutions which address various crimes. These key institutions include:

KENYA WILDLIFE SERVICE

The KWS is a state corporation with the mandate of conserving and managing wildlife, and enforcing the relevant laws and regulations. The key legislation that governs the operations of KWS is the Wildlife (Conservation and Management) Act as amended in 1989.

KWS manages national parks and national reserves; formulates policies on the conservation, management and utilisation of all types of wild fauna and

flora; provides wildlife conservation education and extension services to create public awareness and support for wildlife policies; administers and coordinates international conventions, treaties and protocols regarding wildlife, and renders services to the farming and ranching communities in Kenya necessary for the protection of agriculture and animal husbandry against destruction by wildlife.

Its responsibilities include custody of Kenya's 56 protected areas (26 national parks and 30 national reserves) used to conserve ecosystems and areas of distinct biodiversity. KWS is also responsible for the protection of wildlife outside the protected areas, which constitutes more than 70% of Kenya's wildlife. It provides legal protection of wild animals, including a ban on hunting and prohibition of trade in wildlife and wildlife products.

On the whole, this is the agency at the forefront of fighting environmental crime in the country. It enforces the relevant laws, including stopping illegal trade and trafficking in live fauna and flora and their products. It also provides security to tourists and protects water catchment areas.

KWS has an intelligence system to gather information on poaching and trade in environmental crime. It also has trained rangers and wardens on the ground and works with local communities. In terms of law enforcement, the service has a good record and most crimes occur outside the protected areas. They are, however, thin on the ground and much of their time is taken up with animal-wildlife conflicts.

KWS has a good system of data collection and collation that produces weekly data on environmental crimes and other security-related activities. One is thus able to see at a glance what has happened in any given week and cumulatively throughout the year. The data is shared with the NCB quarterly and whenever required.

KWS has strong links with other institutions, for example, joint management programmes with KFS in Mt Kenya. It also has links with the police in their operations. At KWS, there is a senior superintendent of police for liaison purposes, and a chief inspector of police for investigations and follow-up with the Criminal Investigations Department (CID) on various cases.

KWS also has links with LATF, with which it shares intelligence and carries out joint operations; and with private ranches and wildlife sanctuaries such as Lewa and Muge, with which it carries out joint management and from which it borrows even sniffer dogs. KWS also gives honorary warden status to key persons involved in conservation to aid their work.

Additionally, KWS liaises with the immigration and customs departments on trade of fauna and flora, and on surveillance of known traffickers, and with the neighbouring countries of Uganda and Tanzania.

To enhance its law enforcement capabilities, 26 KWS officers (plus four police and two officers from LATF) have been trained by Interpol in, among others, crime scene management and wildlife forensics for prosecution.

KENYA POLICE

This is the main law enforcement agency in the country and, as such, should have the resources to investigate and detect environmental crime. However, environmental crime is not among its priorities as this is seen as the domain of others – read KWS and KFS – to which it refers such cases.[74]

Information of all crimes is recorded in what are known as occurrence books, but these books contain little information on environmental crime. Other than in 2000, when pole fishing was listed as a reported crime,[75] no incidents of environmental crime have been reported. The police links established with other organisations dealing with the environment are, however, crucial in the war against environmental crime.

KENYA FOREST SERVICE

KFS was established by the Forest Act of 2005 and formulates policies and guidelines for the management, conservation and utilisation of all types of forest areas in the country. Its mandate includes managing all state forests and provisional forests in consultation with the forest owners. It also protects forests in the country in accordance with the provisions of the Act, which include promoting capacity building in forest management, assisting in drawing up management plans for all indigenous and plantation forests, and collaborating with other organisations and communities in the management and conservation of forests and for utilisation of the biodiversity therein.

The Act empowers KFS to enforce the laws and regulations pertaining to logging, charcoal making and other forest utilisation activities, and any forestry and land use laws made pursuant to any other written laws.

KFS employs a number of rangers, has capacity for law enforcement and occasionally arrests illegal loggers. The crime, however, is perpetrated by

syndicates and the rangers on the ground may have no control after handing in the culprits to the police.

Data capture and storage in KFS has still to be developed, especially a regularly updated central database on crimes and other information from various forests or forest stations. Sharing of information is also poor.

NATIONAL ENVIRONMENTAL MANAGEMENT AUTHORITY

The operations of NEMA are governed by the Environmental Management and Coordination Act of 1999 (EMCA) and by sectoral environmental laws, including those relating to agriculture, energy, fisheries, health, industry, local government, natural resources, tourism and water resources.

EMCA establishes various environmental offences that relate to inspection, EIA, standards, hazardous wastes, materials, chemicals and radioactive substances, pollution, restoration orders, easements and conservation orders. A general penalty of imprisonment for not more than 18 months or to a fine of not more than KSh 350 000 or both is stipulated for most of these offences. EMCA also provides for forfeiture, cancellation and other orders.

Accordingly, NEMA plays a coordinating role but also enforces environmental law. But its capacity to detect crime is low because it is fairly thin on the ground, and most of its regulations are also new. With time, as the public and collaborating institutions internalise these regulations, its capacity to detect hopefully will improve. NEMA also has a hotline to report environmental crimes.

The authority employs about 120 environmental inspectors to assist in enforcement work. Additionally, it has established a new environmental police unit, with ten officers, headed by an inspector of police. Whilst this unit is relatively new, its impact is already felt with about 30 cases prosecuted so far. The police unit investigates, prosecutes offenders and provides security to environmental inspectors. It also liaises with other police stations countrywide to provide similar services to other NEMA inspectors on the ground. Additionally, NEMA has employed about 20 trained prosecutors, who, however, are yet to be gazetted. The prosecutors will help improve the success rate of environmental crimes as they are trained environmentalists able to argue court cases better than ordinary police prosecutors.

In terms of records, NEMA has a hotline, and at the moment, only crimes reported over this system are recorded. However, it has additional information that needs to be organised. Environmental crimes should also be reported in the 'State of environment report'. As a coordinating agency, NEMA has good links with other stakeholders.

FISHERIES DEPARTMENT

This department enforces law in its sector but lacks capacity and has, as its primary concern, ensuring fish quality. Accordingly, most arrests it makes concern the types of fishing gear used and illegal methods.

The fisheries department has trained about 20 prosecutors under the Lake Victoria Environmental Management Project (LVEMP 1) and has held a workshop to train magistrates on the importance of giving deterrent sentences for fish-related crimes.

NATIONAL MUSEUMS OF KENYA

Whilst the National Museum of Kenya (NMK) does not undertake any management role, it provides backstopping support to fight environmental crimes by providing key agencies with scientific information about existing species, populations and their geographical spread. It gives information on lookalikes – for example, how to identify Kenyan aloe from resin. NMK has links with KWS, KFS and KEPHIS.

KENYA PORTS AUTHORITY

This institution handles imported and exported cargo. To detect environmental crime it relies on customs and police personnel. However, the three institutions do not have enough capacity to detect environmental crime, especially on illegal trade of flora and fauna.

KPA handles hazardous wastes in accordance with the International Maritime Goods Code, which covers safe handling, classification, storage and transportation of hazardous cargo. It also has a pollution control unit that monitors pollution especially that relating to oil spillages.

KENYA AIRPORTS AUTHORITY

Most live fauna is transported though airports, but KAA has no capacity to detect and relies on customs and police officers. It should establish better links with KWS staff to monitor illegal trade. With regard to flora, KAA relies on KEPHIS.

KENYA PLANT HEALTH INSPECTORATE SERVICE

Kenya Plant Health Inspectorate Service (KEPHIS) is mandated to provide plant variety protection, seed certification, phytosanitary services, analytical chemistry laboratory and farmer advisory services. In terms of environmental crimes, KEPHIS controls importation and exportation of plant material, for which it has employed inspectors and established inspection units at various points of entry in the county. To enable KEPHIS carry out its functions effectively, the law requires that all 'persons entering Kenya must declare plant materials (including gifts) in their possession to a plant inspector.' In addition, the law requires all persons dealing with the exportation of plant materials to apply for a licence, stating species, variety, category and quantities, and to obtain a copy of certification from KEPHIS.

DEPARTMENT OF RESOURCE SURVEYS AND REMOTE SENSING

DRSRS monitors land use cover changes in various habitats, habitat changes in various habitats and livestock/wildlife population trends. Changes in populations of wildlife and livestock, for instance, may be used as indicators of habitat changes in the respective areas. DRSRS has capacity to detect environmental crime, but only after it has occurred, through comparing maps and satellite imagery. Its storage and sharing of information are fairly good.

PUBLIC COMPLAINTS COMMITTEE ON THE ENVIRONMENT

The PCC is the environmental ombudsman in Kenya and is mandated to investigate all allegations or complaints on the condition of the environment in

Kenya or, on its own motion, all cases of suspected environmental degradation. It presents its findings to the National Environmental Council. The PCC also deals with environmental conflict resolution. It has capacity to detect environmental crime through public information and keeps good records on all complaints received. However, it needs to share information and forge links with other stakeholders.

JUDICIARY

Members of the judiciary are key in the fight against environmental crime, because sentences imposed by the courts have been very lenient and have failed to deter persons from engaging again in these activities.

The members of the judiciary have in the past been trained by the fisheries department on environmental crimes in the fish sector. Others have been trained on environmental crimes. After these training sessions, environmental crimes are now seen not as administrative breaches, but for the offences they really are, especially in view of their impact on community health and the national economy. Courts now give fairly deterrent sentences to violators of the environment.

INTERNATIONAL ORGANISATIONS

LATF: Its mission is to support member states and collaborating partners in reducing and ultimately eliminating illegal trade in wild fauna and flora through facilitation of cooperative activities in undertaking law enforcement, investigations on violations of national wildlife law, dissemination and exchange of information on illegal trade activities, and capacity building, including promotion of awareness. In Kenya, LATF works closely with and shares headquarters with KWS in Langata, Nairobi. LATF has the staff and capacity to fight environmental crime and has undertaken successful operations with KWS and member countries. Its technology is appropriate and includes ivory detectors, and it experiments with more effective law enforcement techniques, which it then shares with party states. LATF has good links with governments, research organisations and NGOs.

United Nations offices in Nairobi: This hosts a number of UN agencies, including the United Nations Environment Programme (UNEP), United Nations High Commissioner for Refugees (UNHCR), United Nations Development

Programme (UNDP), UN Habitat, and United Nations Children's Fund (Unicef). In terms of environmental crime, UNEP plays the role of overall promotion of the environment, mainly through the UNEP division of environmental law and conventions. This division has data on environmental crime and has prepared different guidelines to combat the vice. Guidelines prepared include that for establishing and strengthening environmental crime units to complement civil and administrative enforcement programmes. The role of the division is mainly geared towards multinational environmental agreements. Kenya can therefore take advantage of the support it can receive from these UN agencies to fight environmental crime.

For its part, UNDP supports sustainable economic development.

NON-GOVERNMENTAL ORGANISATIONS

Various NGOs play a role in the fight against environmental crime, and these are crucial partners and stakeholders whose capacity should also be enhanced.

Kenya Forest Working Group: This organisation brings together various forest industry players in both private and public sectors. KFWG has been at the forefront of highlighting illegal logging and general forests degradation especially in the Mau.

Greenbelt Movement: This organisation is best known through its founder, Prof. Wangari Mathai, who won the Nobel Prize in 2006. It has successfully fought against forest excisions in the Karura forest. Other than tree planting, it also works to protect wetlands, riverbanks and riverines and carries out advocacy against environmental crimes.

African Network for Animal Welfare: This organisation undertakes desnaring exercises with KWS and researches the extent of poaching and other illegal activities practiced in its areas of operation. Its chief executive officer is an honorary KWS warden. Other organisations involved in desnaring are the **Sheldrick Trust Foundation**, and the **Youth for Conservation**.

World Wildlife Fund: This has different projects in the country, including the coast forests project, good woods and certification process, fresh water programme and elephant project. The WWF has the capacity to detect environmental crime and fight it through links with relevant government bodies. For example, in Transmara, under the elephant project, it supports local communities and KWS to undertake regular patrols.

International Fund for Animal Welfare (IFAW): It carries out habitat management and conservation programmes, which have been successful in, for example, Meru National Park (2002-7) and Amboselli (2007-12). Its activities include providing basic park operations such as housing and equipment; dealing with human-wildlife conflicts; undertaking research on wildlife numbers, movement, and behaviour; conservation education, especially of large mammals; conservation and community participation, and programmes on non-consumptive utilisation of wildlife.

5 Training capacity needs of environmental law enforcement agencies

The main environmental law enforcers are NEMA, the police and the government departments in charge of forests, environment and wildlife. These institutions face similar challenges, including limited personnel, inadequate legislation and lack of essential resources.

NATIONAL ENVIRONMENTAL MANAGEMENT AUTHORITY

NEMA supervises and coordinates all matters relating to the environment. It is the principal instrument of the government in the implementation of all its environmental policies. In carrying out its mandate, NEMA coordinates the various environmental management activities undertaken by the lead agencies and promotes the integration of environmental considerations into development policies, plans, programmes and projects, with a view to ensuring the sustainable management of environmental resources.

Current training programmes

NEMA runs a basic essential law enforcement course, which is modelled on courses offered by the United Kingdom's Environmental Agency. About 140 staff have been trained on how to collect evidence, compile a case file and present it in court. Staff who complete the course successfully are gazetted as environmental inspectors. The training cost, at KSh140 000 a week, is high for the authority.

In addition, NEMA runs a training programme for prosecutors, which has been completed by 20 prosecutors, who are currently awaiting gazettement. Finally, NEMA proposes starting a DFID-funded programme for trainers, which will focus on a risk-based approach to environmental management.

NEMA's capacity needs are evolving. Its staff need to be educated on the main laws relevant to environmental protection, namely the constitution, penal code, the criminal procedure code (CPC) and the Civil Procedure Act (CPA). NEMA would also like to have the sectoral laws aligned to EMCA so that they do not conflict with the Act. NEMA proposes to train its personnel on forensics, prosecution and directed surveillance. However, it lacks the resources to conduct this training.

Prosecution

According to NEMA, prosecution is a major challenge, because the courts seem not to know how to manage environmental cases. Currently, there are about 40 pending cases, with those that have already been determined riddled with legal inconsistencies. Additionally, the penalties are non-deterrent as noted earlier. For instance, in a case against Orbit Chemicals for failure to obtain a licence of KSh100 000, the company was fined only KSh 20 000. This does not encourage compliance as it is cheaper to pay the fine than adhere to the requirements of the licensing regime. The public and government bear the burden of such non-compliance.

Furthermore, there are no lower limits for the fines. NEMA is advocating a bond for all licensees. which is refundable if a project does not have an adverse environmental impact.

Part of the problem, which may be resolved soon, is that NEMA is currently using police prosecutors who do not understand environmental crimes.

Moreover, even when the authority begins prosecuting cases with its own staff, the impact may not be substantial as the judges are not environmentally savvy.

Collaboration

NEMA has cordial relations with the police force. There is an environmental police unit based in NEMA whose duty is to enforce environmental laws. It works with the environmental inspectors to apprehend offenders. The officers are stationed at NEMA headquarters at the moment but the authority hopes to decentralise its operations to the regional offices and will therefore need to train more police officers.

There has been some hostility from the regulated community because it feels that NEMA is either too strict or is trying to take over its roles. For example, NEMA has faced opposition from the Nairobi City Council over the management of Dandora dumpsite, which poses an environmental hazard. Opposition has also come from the Ministry of Health over its orders to close the Dagoretti abattoir (which provides meat for Nairobi and its suburbs) for failing to comply with established health standards.

Yet NEMA mandate's includes supervising and coordinating actions by all government departments and private individuals. Therefore, it has the power to direct lead agencies to act, prosecute if they fail to do so (as in the case of the Kibarani dumpsite in Mombasa); challenge judicial rulings and correct the environmental problem by taking the essential remedial measures.

Networking forum

NEMA has been selected to be the regional focal point for the international network for environmental compliance and enforcement officers. This is an informal organisation that provides a forum for environmental law enforcers such as KWS, NEMA and KFS to work together. The Danish Government promised to fund the secretariat of the regional network. To that end, NEMA decided first to establish a national network before initiating the regional one. However, the efforts of national agencies to collaborate in a similar national forum have been hampered by lack of resources. In addition, NEMA has requested concerned agencies to send their representatives to the national forum, but no agency has responded so far. Only two meetings have taken place, but at least the network

has been widened to include the local authorities and the ministry of water. Although rolling out the national network has been a problem, there is an urgent need to act in a coordinated manner and NEMA would like the network to be facilitated.

Regional and international agreements

Participation in and implementation of international and regional environmental obligations of the country have been a challenge for the authority. Policy decisions are made at the ministry level, whilst NEMA is the implementing agent. It is the focal point for domesticating the Rotterdam, Stockholm and Basel conventions, among others. Since the establishment of NEMA, no MEAs have been ratified. In fact, the authority believes that the MEAs it inherited were ratified without due consideration to the country's needs and would like more engagement in future MEA negotiations.

Another challenge is the lack of knowledge of the major issues negotiated on MEAs, such as climate change. Finally, the authority would like to develop a memorandum of understanding (MoU) on how it engages with other bodies/agencies in other countries. Currently, the ministry commits the authority to activities it may be ill-prepared or ill-resourced to manage, for example, the training of environmental officials of the government of southern Sudan.

There are also conflicts with Tanzania that NEMA hopes will be resolved at the East African Community (EAC) level. At present, UNEP is helping to develop the East Africa framework agreement on air pollution, which will domesticate and harmonise air standards. Nothing is binding yet, although the countries have set fuel standards by agreeing to reduce to 500ppn from 10 000ppn by 2009.

KENYA WILDLIFE SERVICE

KWS structure

As we have seen, KWS is responsible for conserving and managing wildlife in Kenya. To carry out its mandate, KWS has an armed wing of wardens and rangers, who make up 80% of its staff, and a civilian wing of three departments, namely finance, human resources and research and planning. The

armed unit has a security division to enforce wildlife laws and which comprises two units: a wildlife protection unit and an investigations unit. The former is the 'fighting unit' of KWS, which handles patrols and protection of the parks and reserves.

The key security areas are Tsavo East, Tsavo West, Lamu/Tana River, mountain areas, Mt Elgon, Meru, Isiolo and Samburu, and Nairobi. The investigations unit investigates offences with a view to prosecuting. It has already trained some officers who are awaiting gazettement. Threat levels vary and the unit is biased towards higher threats areas due to the limited personnel. It also ensures asset security, conducts internal investigation, and makes arrests, working with other departments on prosecution. Since the arrest powers of the unit are limited to wildlife management, a police officer from the CID has been seconded to the unit to help with non-wildlife crimes.

KWS trains its staff at Manyani Training School (paramilitary skills and law enforcement), and the University of Nairobi-affiliated Naivasha College (professional and academic programmes).

Challenges

Prosecution is a complex issue. For example, bush meat or trophy cases are difficult to prove without a forensic laboratory. It is currently establishing such a laboratory, which means that it will need to train its officers on the basics of forensics.

Lack of operating funds hinders activities, partly because it is difficult to predict operations. Further, its few staff members must be deployed strategically as threats demand.

Collaboration

KWS has a community wildlife department that deals with community conservation programmes and manages human-wildlife conflicts and manages all 120 district stations. The department creates community awareness of wildlife management and advises on translocation of animals. It also promotes the creation of private sanctuaries to allow wildlife to inhabit private land and encourages landowners to accept training and certain responsibilities delegated by KWS. In return, they receive certain wildlife-related, revenue-sharing and

consumptive-utilisation enterprises (tourism). Procedures have been developed for mobilising and training communities in wildlife management, including local wildlife associations and problem-animal control committees (PACCs).

A police liaison officer deals with KWS and other government law enforcement departments.

Through its intelligence department, KWS engages daily with LATF, an institution established by the 1996 'Lusaka agreement on cooperative enforcement operations directed at illegal trade in wild fauna and flora'. There are six parties to the agreement, namely Congo Brazzaville, Kenya, Tanzania, Uganda, Zambia and Lesotho. South Africa, Ethiopia and Swaziland are signatories. The agreement provides for the establishment of a permanent taskforce to implement its objectives, which include providing support to member states and collaborating partners to reduce and ultimately eliminate illegal trade in wild fauna and flora through:

- Facilitating cooperative activities in undertaking law enforcement operations;
- Investigating violations of national wildlife laws;
- Disseminating and exchanging information on illegal trade activities, and
- Building capacity, including promoting awareness.

KENYA FOREST SERVICE

KFS, through rangers, manages natural forests and plantations. It enjoys good relations with forest-adjacent communities in most areas. This would enable it to develop a good intelligence system to detect environmental crimes, but it has not done so. KFS comprises a director, a professional cadre of forest officers, a technical cadre of foresters headed by a chief conservator, and an enforcement and compliance division made up by disciplined officers (forest guards) under the leadership of a commandant.

Enforcement and compliance division

The enforcement and compliance division has 5 600 staff overseeing 165 forests stations. Its mandate is to protect the forests from illegal activities (grazing, logging and charcoal burning) through patrols, inspections and

accompanying licensed harvesters to enforce the laws. Further, it prevents crimes such as carjackings in Karura forest in Nairobi. The major environmental crimes include:

- Forests encroachment;
- Illegal logging;
- Eviction of illegal squatters, for instance, in the Kiserian settlement, which was gazetted as a forest after people had settled in it;
- Harvesting of forest produce other than timber, for example, honey and plants for medicinal purposes. The latter is problematic as communities such as the Dorobos in the Mau consider such activities part of their heritage. Honey harvesting presents a fire hazard, since the bees are smoked out. Some communities conduct religious activities and set up shrines in protected forests, for example, in Karura forest.

Training programmes and challenges

The Kenya forestry college has a forestry wing for training foresters and a paramilitary wing for rangers. Trained by foresters, rangers complete a five-week intensive course on weaponry, forests, equipment and community outreach. In addition, KFS plans to launch a skills development programme to give rangers an understanding and scientific knowledge of all trees, pests and natural forest habitats.

It is hoped to make ranger training a six-month programme, three months each of paramilitary training and forestry training. The challenge here is training the trainers. The division has received support from the CID of the Kenya police, the army and the general police, but hope to be self sufficient soon.

Other capacity challenges include:

- Limited personnel – currently, one ranger oversees 650 ha, which leaves most of the forests cover unpatrolled. KFS is establishing forests conservation committees (FCCs) to work with local communities to protect forests. An FCC consists of representatives from the provincial administration, the timber industry, four knowledgeable persons nominated by forest associations operating in the conservancy area (at least one woman and one youth), the forest officer, an agricultural officer and an environmental officer.

- Lack of equipment – vehicles, binoculars, aircrafts - maintenance of vehicles and bad roads. It is not allocated funds by the Kenya Roads Board because forest roads are not gazetted. In contrast, KWS receives more than Ksh 200-m annually for road maintenance.
- Technology – the service needs a geographic information system (GIS) for surveillance.
- Communications - whilst the service has radios and phones, it requires base stations to connect the forests.

Prosecutorial challenges

The Forestry Act empowers KFS to train its own officers. Fifteen have already been trained and are currently attached to the attorney-general (AG)'s chambers while they await gazetting. Their main challenge is the judiciary, which has limited knowledge of environmental crimes. KFS personnel recently intercepted 200 tonnes of sandalwood in Namanga, but a magistrate released the containers despite the laws banning the species and the fact that the container had no permit to transport any forest produce. The judiciary needs to be better informed.

Collaborative initiatives

The Mau forest complex, which is one of Kenya's main water towers, is an example of the service collaborating with other government agencies to protect the environment. KFS realised that the problems facing the Mau complex were too complicated for a single agency to deal with and sought to work with KWS, the administration police, and Narok County Council to evict squatters from the forest and protect it from illegal encroachments.

KFS had assumed that, with the support of politicians, the evictions would be carried out smoothly and finalised in three months after the creation of a high level taskforce headed by the prime minister in July 2008. But within two months, KFS's leadership role was given to KWS, which has more resources. This has demoralised the service staff who feel the plans they had for the forest have been diluted, under an organisation with a lesser mandate. What will happen is uncertain, but KFS hopes to resume its role in the Mau complex.

The FCC has a pilot scheme in Rumuruti forest in which forest scouts who have been given basic forest training and equipment have been sent to the local

community to detect illegal activities in neighbouring forests. The community pays the forest scouts a token wage. The division is urging the foresters to adopt the use of forest scouts in other stations.

Apart from the FCC, KFS is making local communities understand the importance of protecting forest species such as sandalwood, which is protected by a 1999 presidential decree. However, since it grows naturally, KFS has no control over how communities use it. KFS is currently holding regular discussions with the people and ranchers on how to stop trade in the tree.

KFS participates in Africa Forest Law Enforcement and Governance (AFLEG), which offers it a forum to exchange information and ideas, and discuss the harmonisation of laws. For instance, Kenya and Uganda have different forest laws, which mean that criminals escape to the neighbouring countries where they think that the laws are favourable.

PUBLIC COMPLAINTS COMMITTEE

The Public Complaints Committee (PCC) is a statutory body created by EMCA to address environmental complaints from the public against any private or public entity. The committee investigates allegations or complaints made against any person or NEMA regarding the condition of the environment, and any suspected case of environmental degradation anywhere in the country. Refusal to assist it in its investigations is an offence under the Act. PCC-initiated investigations, constitute 15-20% of investigations. It conducts investigation of potentially adverse environmental activities on behalf of the public without charge, a role similar to that of a public ombudsman.

The PCC prepares a report of its findings and recommendations for submission to the National Environment Council (NEC), the highest institution created by the EMCA. NEC, which is a policymaking body, prescribes allowances for members of the PCC and assigns additional functions or powers to it. The committee submits regular reports and recommendations to NEC, which form part of the annual state of environment report submitted by NEMA to parliament.

The committee consists of seven members, a chairman who is qualified to be appointed as a judge, a representative of the AG, a representative of the law society of Kenya, a representative of NGOs appointed by the NGO council who shall be designated as secretary, a representative of the business community and

two members appointed by the minister for their active role in environmental management.

Challenges for the PCC

The PCC cannot order the cessation of any act or omission during its investigation of a matter within its jurisdiction, that is, it does not have injunctive powers. Moreover, it cannot ensure that its recommendations are acted upon by the relevant lead agencies or parties.

It lacks the powers to prosecute persons who do not comply with its request based on its findings. In addition, PCC has inadequate funding to engage in activities such as raising public awareness of its existence. However, it is allowed to accept funding from other sources.

The committee is seeking powers to enable it to compel any entity, public or private, to act on its recommendations. Another major challenge is redefining its role to better serve the public. Nonetheless it is a unique organisation in Africa.

6 Tools for capturing, storing and sharing crime information

NEMA ENVIRONMENTAL CRIME INFORMATION TOOL

This tool includes EIA, but NEMA states that it is too early to assess whether it has been effective. Moreover, an EIA on its own is not enough to regulate development and tools such as a strategic environmental assessment (SEA) are needed.

The first database established by NEMA contains information on solid waste management and effluent discharge, indicates which companies/entities have been licensed, and whether they have complied with or breached the licence conditions.

NEMA is now installing another database in the inspectorate department. A classification of environmental incidents has been developed but a good tracking system is still lacking and the authority has no database yet to identify, for instance, whether an incident is high risk or high priority, or whether it needs immediate attention. Thus, key stakeholders are left out of the information loop - for example, the Kenya Revenue Authority (KRA) should have been on board because it intercepts waste containers and needs to know how to dispose of them.

NEMA has a 24-hour hotline (**020-606041)** for reports of any incident of environmental damage by the public, but it is not a toll-free number and is manned by only one person. In addition, the number needs to be publicised to make more people aware of its existence.

KWS ENVIRONMENTAL CRIME INFORMATION TOOL

The intelligence unit of the security division of KWS supports the other units (wildlife protection unit and investigations) by disseminating information for appropriate action. The department provides information on movements of trophy dealers, poachers, tourism attacks etc. It maintains a civilian network of informants through 15 field units (cliques).

The unit also handles all the security-related information of the organisation, including maintaining informant networks, intelligence operators and assistants. The unit stores and analyses this information and provides periodic security reports. A smaller database is maintained of wildlife and related offences.

The department is of the view that KWS is self sufficient in terms of wildlife crime enforcement. However, it lacks adequate skills in surveillance work (trophies, poachers, and armed gangs), analysis of intelligence gathered, general investigation and forensic investigations (for example, to undertake a DNA test to discover the origin of captured contraband). Currently, it is forced to work with the government chemists, Interpol and NMK.

The unit collaborates with law enforcement agencies, mainly the Kenya police and national security intelligence, and with neighbouring wildlife agencies (such as the Tanzania National Parks Authority and Ngorongoro Conservation Authority), which provides opportunities to engage and exchange information on transboundary crimes, particularly in the Serengeti and Mara areas. A police liaison officer liaises with KWS and other government law enforcement departments. The intelligence unit also liaises with LATF on daily basis.

KFS ENVIRONMENTAL CRIME INFORMATION TOOL

Enforcement and compliance division personnel lack expertise on forest criminology, whilst the police have no expertise on forestry, a dual deficiency that hampers environmental crime tracking and enforcement.

Staff members are currently being trained with CID support on the sharing and processing of information on criminal activities.

During 2009, KFS intends to establish two departments dealing with forests intelligence and investigation, along the lines of KWS, with which it works well and shares information on the Mau area, for example. KFS also works well with local administration at provincial and local government level. For example, a communication was received recently from the chief in Eburu, Gilgil, over illegal logging activities in the area. The agency also has a toll-free hotline (**020-2107027**).

PCC ENVIRONMENTAL CRIME INFORMATION TOOL

The committee gathers information from daily news reports (print and electronic) as well as observations by members and staff of the committee. Sometimes, information prompting new investigations arises during investigations of other complaints. In 2008, it received 212 complaints, more than double those of the previous year. These involved, among other things, air and noise pollution, land degradation, deforestation, poor waste management and water pollution. About 60% of the cases relate to EIA, such as the dominion farms' effects on the western Kenya wetlands.

The PCC knows it needs to conduct more awareness workshops to sensitise the public on its existence and mandate, as this would increase the flow of information. However, it lacks financing and facilitation. Complaints are lodged letter, email, phone call or completion of a complaint form issued by the PCC. The information can also be conveyed in person to the PCC offices which, unfortunately, are situated only in Nairobi. The information and results and recommendation of PCC investigations are presented in a report to the NEC.

7 Recommendations

The study on environmental crimes in Kenya indicated several gaps in information and understanding of the issues involved. The following recommendations were made:

Undertaking of thematic studies: There is a need to carry out further studies on the various sectors to come up with the actual levels of the crimes listed, and others which might not have been captured. Key among these crimes are those relating to hazardous wastes, where information is minimal and non-authoritative, especially on dumping and transportation of waste. The situation is similar with snaring, the bush meat trade and illegal logging. A monetary value should be determined for economic crimes and further studies conducted in the key sectors identified broadly in this study.

Formulating an environmental communication strategy: It is important to formulate a communication strategy on environmental crimes that will be both internal (among the key players) and external (targeting the media, politicians and technocrats, public and private sector and local communities). Raising awareness on the nature, extent and status of environmental crime, especially among local communities, and formal and informal institutions, will assist in the fight against it. Eventually, issues of environmental

crime need to be mainstreamed into the education curricula in primary and secondary schools.

The communication strategy should publicise and politicise environmental crime so that it becomes a concern at the very highest levels of government and attracts the political will necessary to fight it.

The strategy should also target the judiciary to encourage it give more deterrent sentences where allowed by law.

Formulate a strategy to push for amendment of legislation: This is closely tied to the communication strategy and is critical to the fight against environmental crime. The law, especially the penal code, needs to be amended to deal adequately with environmental crime, especially by providing deterrent punishment. This strategy will require a detailed study on what legislation needs to be changed, and then advocate the required changes. It is particularly important to incorporate the 'polluter pays principle' in dealing with environmental crime.

The strategy to amend legislation should also look at the possibility of establishing and lobbying for special courts to deal with environmental crimes.

Capacity building of civic authorities: Most environmental crimes occur in areas under civic authorities, most of which have no environmental departments and lack capacity to detect, enforce and even collect and collate data on environmental crimes. Capacity building is needed. A capacity building assessment of key civic authorities should be undertaken and a pilot designed for them prior to a countrywide rollout.

Creating a new focal point for environment: NCBs are currently the focal point for the environment and environmental crime in particular countries. However, Kenya NCB seems to have no capacity to collect and disseminate information from and among key stakeholders. That it is part of the Kenya police system may make it difficult to obtain voluntary information and may also impede communication flow among key stakeholders. Other than strengthening the NCB, there is a need to create a new focal point for the collection and collation of environmental crimes data and information among the key institutions. The focal point should ideally be within NEMA, which is responsible for coordinating the work of all institutions dealing with the environment.

A new focal point will also assist to create links and fora for the different stakeholders and to disseminate information on environmental crime to the public.

Capacity building: There is a need to build the capacity of new institutions such as the environmental police unit based at NEMA to detect, investigate, prosecute and otherwise enforce law on environmental crimes. Capacity building should then extend to other police and law enforcers, including staff of KAA, KPA, customs and immigration.

Special attention should be given to prosecutors, who should be capacitated in preparing charge sheets, investigation and presenting evidence.

Cross-border links: Cross-border sharing of information on environmental crimes is needed, as is enhanced community participation in the fight against the crime.

Investments: Institutions should invest in advanced technology to detect smuggling of flora and fauna at points of entry and departure. Law enforcers should have weapons, communication equipment and transport to fight environmental crime effectively.

Public participation: The public and industry should be encouraged and their help enlisted to detect and eliminate contraband. Public education should go hand-in-hand with an emphasis on solving poverty that might drive crime. The campaigns should foster the legitimacy of protected areas with local residents and ensure that resources devoted to conservation enrich rather than deprive local communities by providing alternative employment programmes.

Certification: Institutions should be encouraged to undertake professional due diligence through ISO certification, engaging insurance companies and banks to assess the legality of operations as part of financial due diligence. Investors, banks and export credit agencies that have funded illegal activities or activities without due diligence could perhaps be targeted by legislation on money laundering or proceeds of crime.

Incentives: The issue of hazardous waste can be addressed by providing incentives and subsidies for clean production and waste minimisation technologies. For communities, incentives for wildlife protection should include benefits sharing from proceeds of tourism. Incentives may also be given for those who report or give intelligence on environmental crime and those who play a role in apprehending offenders.

Gazettement: Several officers from fisheries department and NEMA have been trained as inspectors and prosecutors but are yet to be gazetted. Their gazettement should be facilitated through lobbying and advocacy.

8 Conclusions

Environmental crimes present a key challenge to Kenya, which depends largely on its natural resources base especially for tourism and agriculture. Environmental crimes thus hit at the very core of the economy and should be addressed by rallying and coordinating all relevant agencies.

Fighting environmental crimes is crucial to the realisation of Vision 2030, especially because they impact on people's livelihoods, poverty and human security. The vision can be achieved only when people enjoy human security and live in a conducive environment. The sustainable use of resources and their availability in adequate quantities and quality are also key.

The rise in environmental crimes should be addressed by policy and legislation that ensure that local communities benefit from the country's natural resources so that they value and protect them.

Furthermore, environmental crimes should be addressed by improving the capacity of environmental law enforcement officials and agencies by enhancing training. The main training gaps across the agencies visited include:

- Poor or lack of knowledge of the relevant environmental and criminal legislation;

- The need to harmonise the sectoral environmental laws with EMCA;
- Lack of knowledge of environmental crimes by the police and judiciary;
- Inadequate investigation and prosecution skills among enforcement personnel;
- The need for improved cooperation and networking skills and opportunities among agencies;
- The need to enhance knowledge of international environmental agreements and their domestication/implementation in the country.

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