Kenya’s sand cartels

Ecosystems, lives and livelihoods lost

Mohamed Daghar

Summary

Kenya faces a scourge of illegal and unregulated sand mining, a crime which is leaving irreversible scars on ecosystems, lives and livelihoods. Sand mining has been driving inter-communal conflict and has ushered in a violent cartel market protected and controlled by state actors. Weak legislation, ineffective controls and an insatiable demand for sand, fuelled mainly by the construction industry, all contribute to the problem. With lack of a formidable alternative, sand remains the only option for mass concrete production. But it must be harvested sustainably and not mined – as promising practices in communities suggest.

Key findings

- The sand trade is driven by organised criminal cartels that enjoy protection from powerful state actors.
- Communities play a crucial role in ensuring sustainable sand harvesting, which can provide long-term employment opportunities and help to reduce job scarcity for Kenya’s youth.
- Sand mining in Kenya is fuelling environmental degradation, affecting livelihoods and increasing inter-communal conflict.
- A lack of strong regulations and sufficiently mandated authorities means that there is no effective framework to oversee sand activities.
- Properly regulated sand harvesting and trading could generate much-needed revenue for local governments.
Introduction

From the manufacture of glassware to the construction of skyscrapers, sand – a natural resource mineral – is said to be the second most consumed substance after water. Every year, the world extracts more sand and gravel – collectively known as aggregate – than any other mineral, translating to some 50 billion tonnes mined per year. In 2012 alone, the world consumed almost 30 billion tonnes of aggregate: enough to build a wall that measures 27 metres high by 27 metres wide around the equator. As of 2017, the global market value of sand stood at US$99.5 billion. This number is projected to reach almost US$481 billion by 2100.

Intensive sand mining has seen China consume more sand in the two-year period from 2011 to 2013 than the volume consumed by the United States in the entire 20th century. Sand as a natural renewable commodity is now a finite resource given that it is being depleted faster than it regenerates. When rocks break down, sand is formed. It eventually settles in swathes of land and is washed into water bodies such as rivers and lakes. It takes millions of years for sand to settle in a river – but can be mined out in a fraction of the time.

The construction industry in real estate is the most lucrative form of organised crime worldwide

Land allocation, real estate and property development may be the largest forms of organised crime in Africa. This research paper asserts that the construction industry in real estate and property development, both residential and commercial, is the most lucrative form of organised crime worldwide, including in Kenya. Construction was the main catalyst for the development of the sand industry in Kenya, and was then infiltrated by organised crime. The sand trade in Kenya, whether legal or illegal, spans two different sectors: the construction sector, where it is difficult to distinguish who owns the land and who owns the construction, and the natural resource – in this case, sand – extraction sector.

This research paper refers to the harvesting, mining and extraction of sand. ‘Extraction’ in this context is used neutrally and does not denote the presence or lack of criminality. In Kenya, relevant legal frameworks allow for sand to be harvested, so ‘harvesting’ in this paper refers to the licit extraction of sand: the partial removal of sand from a source, with the intention of allowing it to replenish naturally over time. If regulated, harvesting allows for the sustainable extraction of sand. It also governs the trade of sand as a commodity like any other, where its usage is controlled and its extraction serves as a source of income to communities and allows ecosystems to thrive.

Mining, on the other hand, is defined in this paper as the complete removal of sand from a source. Once sand is mined exhaustively in this way, it never fully regenerates. In Kenya, this illegal activity is depleting sand reserves and degrading ecosystems. The value chain of illegal sand mining is directly associated with violence, and precludes sand harvesting from being a sustainable source of income for communities.

The illegal mining and trafficking of sand is a form of organised crime that damages ecosystems and livelihoods. This is a global problem. In Indonesia, some 24 islands disappeared following intensive sand exports to Singapore, with another 80 low-lying islands facing a similar threat. Communities and environmental defenders are under increasing threat worldwide, and in 2020, more than 200 people were killed globally as a result of their advocacy against environmental degradation. These worrying patterns can also be seen in Kenya, where sand is disappearing at an alarming rate. While criminal cartels drive these trends, communities that oppose it are left to fend for the environment – without much-needed national or county-level support. In a context where many livelihoods are directly dependent on the surrounding ecosystem, sand mining is causing irreversible damage.

What gaps are there in the regulatory framework in Kenya, and how do they shape regulators’ ability to respond to illegal sand mining? These guiding questions frame this paper, which maps out the criminal economy of illegal sand mining: the actors involved and their modus operandi; the current regulatory framework and the gaps within it; and, ultimately, what this means for both the people and the ecosystems affected by sand mining.
Research Paper 26 / February 2022

The remainder of this research paper first identifies gaps in how sand extraction is governed in Kenya. It investigates how criminals have been able to establish and operate sand-mining and -trafficking cartels with impunity.

The actors driving this market are identified, and the associated violence is analysed. The paper then explores the impact of sand mining on communities, including women and children. Environmental degradation is linked directly to livelihoods, and this section takes a closer look at the destructive effects on ecosystems.

In 2020, more than 200 people were killed globally as a result of their advocacy against environmental degradation.

The paper concludes with a series of recommendations, urging governance structures at the county level to put in place, and implement, effective frameworks to regulate sand extraction. The recommendations draw on the experiences of Makueni county, where efforts by the local government seem to have effectively regulated sand extraction. Also highlighted are community efforts in Machakos, a county where sand mining is pervasive but where communities have shown resilience in protecting their areas from the illegal practice.

The main objective of this paper is to fill a critical knowledge gap on sand mining through empirical research. The recommendations are aimed at policy influencers, specifically at the county level. It is anticipated that by highlighting the successes of Makueni in particular, other counties will be able to emulate good practices that currently exist to ensure that sand is harvested and traded in a regulated and sustainable manner.

Methodology

Literature review

Sand, and its illegal extraction, is a relatively understudied subject and the body of research available for Kenya is limited. As unregulated and illegal sand extraction occurs around the world, reviewing how this crime takes place in other countries is an instructive starting point. A wide range of source information was reviewed, including scientific and academic articles on sand classification to ensure an informed understanding of the unique properties that make sand distinct as a substance.

Several reports from international organisations such as the United Nations and the World Bank were reviewed. Also analysed were reports from civil society organisations, media articles and accounts documented by sand conservation experts who have been at the forefront of responses to illegal sand extraction. Prior to conducting field research, the relevant regulatory frameworks in Kenya were also reviewed to produce a picture of where responsibility and oversight lie at county and national levels, and the legislation providing the functions to regulate sand at these levels.

Specific sections of all the sources consulted have been referenced throughout this paper. Much of the current literature focuses on the harms and effects of sand mining from an environmental and socio-economic perspective. There seem to be notably fewer sources that explore the intersection between sand mining perpetrated by violent organised crime groups, and the harm this has brought to communities and their ecosystems. Field research was conducted to mitigate this knowledge gap, and to ensure that the research paper recommendations are informed by the lived realities of those who are most affected by these harms.

Field research

Four neighbouring counties were studied for this research: Machakos, Kajiado, Nairobi and Makueni. These counties have battled rampant sand mining and trading and were selected on this basis. In the case of Machakos and Kajiado, the majority of illegally extracted sand goes to Nairobi – Kenya’s capital city, which is also home to the country’s highest rates of civil construction.

Makueni is the only county of the 47 in Kenya that seems to have an effective framework in place to oversee its sand activities and reduce sand mining. Makueni thus serves as a case study for how other counties can regulate sand extraction. Nairobi city is a ‘recipient’ of mined sand for use in the construction sector. A number of key national actors in the sand-mining and -trafficking value chain – such as transporters and complicit state officers – are based in Nairobi. Thus key informants from the media, government and civil society organisations were interviewed.
The field research was conducted in adherence to COVID-19 protocols. Open-ended questions and a qualitative research framework were used to obtain data. Semi-structured interviews – both face-to-face and telephonic – were conducted with 25 informants. Two focus group discussions were conducted in Machakos and Makueni counties.

The first set of interviewees were drawn from the county government departments of natural resources, environment, water, irrigation and climate change. Officers from the Makueni County Sand Conservation and Utilisation Authority – the only institution of its kind in the country – were also interviewed. Further, members of different civil society organisations and journalists were interviewed across all four counties. Members of the communities, and former sand miners from the counties of Machakos, Kajiado and Makueni, were also interviewed.

A third set of interviews were conducted with officers from three national authorities, each stationed within a ministry: the National Environment Management Authority (NEMA), housed in the Ministry of Environment and Forestry; the Water Resources Authority (WRA), in the Ministry of Water and Sanitation; and the National Government Administrative Officers (NGAO), in the Ministry of Interior and Coordination of National Government.

Interviewees’ anonymity has been protected due to the sensitivity of the research and the positions that interviewees hold, especially those in official positions in government. Through snowball sampling, the key interviewees – particularly from civil society – were requested to assist in identifying other potential interviewees, especially from communities.

Sand governance at national level

With the exception of the northern region, sand is extracted in the majority of Kenya’s counties in the coastal, central and western regions, along the Great Rift Valley, and along the upper and lower eastern regions.

In Kenya, sand activities are governed by various laws. The Constitution of Kenya (2010) provides a definition for natural resources, while the Mining Act of 2016 affirms that sand is considered a natural resource mineral. The Mining Act further provides that all minerals are entrusted to the government, regardless of who owns the land.

Until 2007, when NEMA compiled guidelines for sand harvesting, no single national-level regulation governed the extraction of sand. The development of these guidelines was spearheaded by community-driven advocacy and lobby groups from sand-producing areas, who had been witnessing with alarm how increased sand extraction was negatively affecting their environments. These guidelines were broad, and it was anticipated that additional legislation, along with sufficiently mandated authorities at the local government level, would be needed to put in place an effective framework to oversee and regulate sand activities.

Local government has not engaged local communities in formulating responses to organised crime

This pervasive lack of national frameworks worldwide leaves open opportunities for illegal sand activities.

Sampled counties, Kenya

Source: ISS
from extraction to brokering and selling at market. Stark examples of more mature illegal activities can be observed in the entrenched and violent sand mafias\textsuperscript{21} in countries such as India and Indonesia.\textsuperscript{22}

However, there are many international and regional environmental standards, notably those advocated by the United Nations Environment Programme (UNEP), which, if tailored to country-specific contexts, could provide the basis for crafting a solid framework at the national level.\textsuperscript{23}

### Sand governance at county level

Kenya has two levels of government – a national level, and 47 counties making up the subnational level. According to the Constitution, the implementation of policies on natural resources and environmental conservation falls under the remit of the county governments.\textsuperscript{24}

Regarding legislation in the four counties, Nairobi has no legislation on sand while Machakos\textsuperscript{25} Kajiado\textsuperscript{26} and Makueni\textsuperscript{27} have Acts in place that govern sand harvesting. These Acts comply with the NEMA sand-harvesting guidelines, but those of Machakos and Kajiado are not comprehensive and do not provide for the creation of local oversight authorities to oversee sand activities, whether legal or illegal.

In addition to the county-level shortcomings, there are no regional-level initiatives to regulate sand activities in eastern Africa. There are also no international authorities, treaties, conventions or other legal instruments that regulate legal or illegal sand activities. Some experts have argued that as much as sand is a global resource, its extraction – and how this is governed – is domiciled at the national level, and that it is the responsibility of states to put in place appropriate regulatory frameworks.\textsuperscript{28}

To stop the illegal trade, sand-producing counties should identify and seize opportunities to collaborate with and learn from one another. Since January 2018, Kitui has placed a ban on transporting and selling sand outside the county, and revoked all licences, permits and related documentation that transporters used.\textsuperscript{29} Makueni has established a sand authority. These measures have resulted in criminal cartels moving out of Kitui and Makueni and into Machakos and Kajiado. Of concern is that the implementation of the legislation has not disrupted or reduced illegal sand mining or transportation; rather, the activities have been displaced and the organised crime of the illegal sand trade is continuing.

In addition to the legislation and policy responses, community involvement is key to addressing illegal sand mining. In Kenya, there are several examples of promising practices in communities. Local authorities would do well to document and emulate these, and use them to craft effective frameworks. An officer from the Makueni County Sand Conservation and Utilisation Authority indicated that the county’s success in sand governance was directly linked to the involvement of communities.\textsuperscript{30}

There are no international authorities, treaties, conventions or legal instruments that regulate legal or illegal sand activities

In counties like Machakos, where several community-led initiatives have aimed to put an end to illegal sand mining, the local government has not yet leveraged local voices and knowledge in formulating responses. Despite communities’ efforts, criminals continue to encroach.

The next section analyses the criminal market, the actors driving it and their linkages to territoriality and violence. It describes how the current policy and response practices are leaving wide gaps which criminal actors and networks take advantage of.

### Criminality and sand cartels

### Mining and trading hotspots

This section looks at sand extraction sites in the counties under study, and the effect of illegal mining at these sites on rivers and pastoralist communities. Also explored are sand-trading hotspots at county border points. Most of the sand extracted in Machakos and Makueni comes from rivers that are shared by the two counties. The Athi, Thwake and Kibwezi are perennial rivers, while the Kaiti, Kambu, Kiboko, Mwooni, Moandeni and Kikuu are seasonal. Other rivers include the Ikiwe, Ngwani and Mto wa Mawe. These
rivers have many tributaries, all of which are potential sand extraction sites. In Kajiado, sand is now harvested mainly from land pits, as sand from water sources is becoming increasingly scarce.

Sand mining happens all year round in the Masinga and Yatta sub-counties of Machakos. Most of this sand goes to Kiambu county, where construction is booming. Other mining hotspots in Machakos are Kalamá, Kangundo, Kathiani, Mutituni and Matungulu. The market for sand from these areas is the urban node of Nairobi.

In Kajiado, several villages in the sub-counties of Mashuru and Isinya are sand-mining hotspots. The sand mined from these areas passes through Makueni en route to Nairobi.

During fieldwork for this study, the researcher noted that at least 10 rivers along the Kiserian–Isinya road have been left at bedrock level as a result of sand mining. Some rivers have no banks, while others no longer have a clear way for the water to flow, and become flooded when it rains. As a result of the alterations to the landscape, important grazing areas have been lost. Pastoralists from the communities now have to search for pastures in other areas, driving their livestock toward Nairobi and as far as neighbouring Tanzania.

The three counties of Machakos, Kajiado and Makueni neighbour one another and share borders. Sand from Kajiado and Machakos is sold at the side of the road at county border points such as Mlolongo, Kiu, Mbondoni, Emali, Wote, Sultan Hamud and Kathonzweni. While this sand trade is legal and the roadside traders often have licences to sell, it is impossible to ascertain if the sand was legally or illegally obtained.

Given the control measures for illegal sand mining in Makueni, it is possible that some of the sand mined in that county is also sold at border points, or disguised as sand from Machakos or Kajiado. However, if so, the volume is expected to be relatively low, as sand mined in Makueni can be used or sold commercially within the county.

The sand market in Makueni has been significantly regulated since 2015 after lifting the ban that was set in 2014 and is thus making good progress in its sand activities. The county has 500 registered sand harvesters operating across 154 licensed extraction sites in all 30 county wards. An estimated 50 to 100 unlicensed operators are believed to be active in the county, mostly mining sand at night. They do not have a permanent harvesting site, but move from one source to another. In most instances, they are either driven away by community members or arrested by the county officers.

The criminal value chain market

As noted, sand is mined and sold throughout the year in Kenya. However, the peak period for sand mining is just after the rainy seasons: the ‘long rains’ from March to May, and the shorter season between October and December. After these seasons, sand deposits are washed downstream and provide higher yields to mine. Despite seasonal increases in supply, prices generally remain consistent due to constant demand.

All county sand-harvesting Acts stipulate how sand harvesting, transporting and trading should be conducted and all are in compliance with the NEMA sand-harvesting guidelines. Like charcoal, sand is a legal commodity to transport if the requisite regulations are adhered to. Whether illegally mined or sustainably harvested, it is therefore easier to move sand – whether through licit, regulated trade or illegally trafficked – than to move an illicit product, like heroin. When sand is illegally trafficked, its transportation is illegal and transporters often resort to bribing the police or forging moving permits to pass through control points. Given the insatiable demand for the product, a Machakos county representative stated that, ‘Once loaded in a lorry, the sand is already sold.’

Unlike neighbouring Uganda, where the involvement of foreign actors in sand mining and exportation has been documented, in Kenya, the evidence to suggest external involvement is still anecdotal. Here, the market is driven mainly by local actors and the sand is used within the country, not exported. At the time of conducting this research, only one case involving external actors was shared – an instance in 2014 where Chinese nationals were implicated in a
sand-mining operation in Nunguni, a town in Makueni county. The county shut down a sand yard owned by an unregistered Chinese company following allegations that they were extracting silica from the sand, and possibly exporting it.39

Some 500 overloaded 10-tonne sand-tipper lorries leave Machakos every day.40 This does not include lorries that travel at night. Lorries are frequently loaded to carry up to double the appropriate volume, and it is estimated that Machakos loses over 5 000 tonnes of sand every day.41

Prior to 2013, NEMA had licensed five companies to harvest sand in Machakos.42 However, Machakos has not licensed any company to harvest sand since the county was formally established in March 2013, despite being one of the first counties to enact the Sand Harvesting Act in 2014. It is not clear whether the licences of these five companies have been renewed since 2013, as records are limited.

Prior to 2013, NEMA had licensed five companies to harvest sand in Machakos.42 However, Machakos has not licensed any company to harvest sand since the county was formally established in March 2013, despite being one of the first counties to enact the Sand Harvesting Act in 2014. It is not clear whether the licences of these five companies have been renewed since 2013, as records are limited.

Sand is a legal commodity and is therefore easier to move than an illicit product like heroin

The sand market in Kajiado, a county that neighbours both Machakos and Makueni, is described as being particularly lucrative. Of the three counties, Kajiado sand is said to be best for wall plastering,43 and fetches a higher price.44 Cartels are also said to pay significantly better in Kajiado than in Machakos. One focus group interviewee claimed that a loader who is paid US$3 (KES300) per lorry in Machakos is paid US$15 (KES1500) in Kajiado.45 This has created a brokerage system among loaders, where those working for the transporters who are part of the sand cartels source others to do the actual work at a cost of US$5 (KES500) per lorry. Some 200 overloaded 10-tonne sand lorries are said to leave Kajiado every day.46

Sand cartels

Criminals have taken advantage of the weak regulatory environment to establish and control the illegal sand market. Five actors with distinct roles make up the sand-mining and -trafficking value chain in Machakos and Kajiado: brokers, loaders, transport companies, state officers and gangs.

The sand cartels in these counties are organised by and receive protection from state officers. They are territorial, extremely violent, and frequently come into conflict with each other and local communities.

In Africa, more the 90% of the land is ‘uncadastred, untitled and unregistered’ and this encourages organised theft, often perpetrated by state officers.47 Rural land in Kenya is no exception and the lack of proper demarcation has left it vulnerable to organised crime, including environmental crimes like illegal sand activities.

Until 1995, sand was sourced from large tracts of land in Machakos and Makueni owned by three prominent senior state officers. A former sand miner describes how, since sand harvesting was unregulated, the ‘state officers, who were powerful politicians, allowed a few prominent companies to harvest sand from their land and also other places in Makueni and Machakos’.48 As shareholders in the trade and in exchange for a share of the profit, the companies received protection from the state officers in the event of any resistance from communities.49 One prominent state official, now deceased, was believed to have been the main actor who, an interviewee says, ‘allowed a prominent private transport company, which is still operational today, to get sand’.50

The demand for sand for the construction sector, especially in Nairobi, has increased over time. For example, from 1994 to 2014, 60% of all the investment made by Kenya’s diaspora was in real estate and related services.51 This led to the formation of cartels, as it became evident that sand mining was both unregulated and lucrative.

The most significant development in the regulatory environment occurred in 2007, when NEMA introduced the sand-harvesting guidelines. These guidelines were not, however, enforced, and by the time the counties were established in 2013, the sand market was already controlled by well-established cartels that included state actors.

Brokers

Brokers can be regarded as the fixers between transporters and loaders: they are the glue in the criminal network as they span all actors. A former
sand miner described how, with the demand for sand increasing after 1995, communities responded negatively to transporters, who would arrive with their workers and mine sand from the community’s land.52 ‘Communities were made to feel ill at ease by the transporters, who came with their workers and drove into their areas to mine sand.’53 This has led to conflict, and the communities drove away many such transport companies.

This conflict between communities and transporters created a role for brokers, who offer three main services to the transport companies. ‘They provide the companies with safe passage through the community lands, identify where sand can be mined, and provide sand loaders – who are local community members of the area,’ according to focus group interviewees.54 In Machakos, a transport company pays a US$60 (KES6 000) brokerage fee for each 10-tonne lorry. The broker pays 10 loaders a total of US$30 (KES3 000) and pockets US$20 (KES2 000) – some of which may be paid to his gang of 10 people per sand-mining territory. The latter offer protection to ensure the mining is done without resistance from anyone, such as community members. The remaining US$10 (KES1 000) is either paid to access an extraction site by crossing through someone’s land, or used to bribe local government officers. A broker is able to facilitate a minimum of 10 lorries a day, earning US$200 (KES20 000).

In Kajiado county, the brokerage fee is US$140 (KES14 000) per lorry – more than twice that of Machakos. This is because sand from Kajiado is of better quality and costs more. Throughout the value chain, higher initial costs mean greater profits and rents to the criminal network. This superior rate has attracted brokers from Machakos and Makueni, which has often led to turf wars between brokers in Kajiado.55

Loaders

Loaders are hired by brokers. They work in gangs of five, and their pay differs from one county to the next, and depending on how much sand there is.

It takes 10 minutes for five people with spades to load a 10-tonne lorry of sand at US$3 (KES300) each. After the long rainy season (from May) and short rains (from December), when the sand has settled back into the rivers and the supply is abundant, it takes five minutes for 10 people to load a 10-tonne lorry of sand at US$6
(KES600) each. Hence, a loader earns US$3–6 (KES300–600) per lorry. On a good day, a loader can easily process at least 10 lorries, earning US$30–60 (KES3 000–6 000). In the context of Kenya’s rural economy and informal trade, this is a decent earning.

There are two levels of brokers in Kajiado. Senior brokers pay junior brokers US$15 (KES1 500) to outsource the loading work to a loader at US$5 (KES500). In most instances, loaders are transported by these junior brokers from Machakos and Makueni to Kajiado, which again leads to turf wars among loaders.

Transport companies

Transport companies source sand from the counties through brokers, and sell it to the final buyers. Some companies have yards where buyers come to purchase sand, while others deposit their sand along the highways that connect to Nairobi and buyers informally buy the sand.

Transport companies pay US$100 (KES10 000) to have a 10-tonne lorry loaded, beyond capacity, with 12 tonnes of sand. This includes a brokerage fee of US$60 (KES6 000), about US$25 (KES2 500) for vehicle fuel costs and US$15 (KES1 500) to police and county officials as bribes, locally known as kusafisha barabara (clearing the road).

The lorry load is then split into two six-tonne loads, each sold at US$500 (KES50 000) to final buyers. Gaining twice the amount for less volume, a transport company makes 900% profit from one lorry load sold commercially to a buyer.

State officers

State actors are partial owners of the trade and are thus shareholders that offer protection to the cartels to operate with impunity. Government officers at both county and national levels are involved in the sand trade. These senior state officers, including politicians, profit directly from the trade. “[Senior officers] are not stakeholders, but shareholders in the trade.” They work with the transport companies by offering them protection in exchange for cuts of the profit. For example, officers ensure that when the companies transport sand, they can do so without their lorries being confiscated. In the event that lorries are stopped and transport workers are arrested, the senior national officers work with local officers to facilitate their release.

The local state officers include the national police, chiefs of administrative locations, county inspectorates and environmental officers. These officials work directly with the transport companies by being on their payroll as they receive bribes on a pay-as-you-go system per lorry.

Government officers at both county and national levels are involved in the sand trade and profit directly from it.

Makueni governor, Professor Kivutha Kibwana, has pointed to the involvement of the police and politicians in sand mining. The governor has also intimated that there are direct linkages between state officers and sand-mining gangs. In some instances, friction between politicians leads to conflict between gangs. This often happens in Kajiado, where county-level politicians get caught up in territorial disputes over sand-mining sites. This, in turn, often leads to gang-on-gang violence.

Gangs, territorial clashes and violence

There are many gangs in sand mining. Each gang is controlled by a broker, and has at least 10 members. There are up to eight gangs operating in each sand-mining site. Each gang has its own defined territory, yet violent conflict between gangs is common and takes place across many levels, with differing degrees of severity.

The first level of gang-on-gang conflict is at mining sites. Although common, the intensity of violence is typically low. Disagreements often occur when one gang mines at another’s territory, or when they carry over confrontations that arose at drinking spots. In most instances, these conflicts are resolved by the loaders or the brokers.

The second level of conflict is between gangs in a county. In these cases, having mined all the sand from one source, a gang goes to mine from another site in the same county. Clashes like these have been on the increase in Machakos and Kajiado, and have resulted in serious injuries among gang members. In recent
cases, gang members were hospitalised and the lorries they protect were burnt.63

The third and most severe type of conflict occurs between gangs in different counties. With Makueni having banned sand mining in 2014 and implementing regulatory measures since 2015, the sand cartels in that county were, to a large degree, dismantled. The majority of the Makueni sand cartels appear to have moved to Kajiado, and this has resulted in violent conflict, leading to many fatalities among gang members.

Although the violence is between gangs, communities are directly affected by the conflict. For example, the youth from the communities are often divided into those who are involved in sand activities, either as loaders or gang members, and those who are not. Community elders do not have any control over sand activities either, as miners proceed without their consent even when the source is located on their land.

Sand and livelihoods

Makueni has implemented measures across the county to move from subsistence-based farming to commercialised agriculture.64 This has had a significant impact on job creation, with people earning decently and thus improving their livelihoods. Apart from Makueni, the other sand-producing counties in this study indicated that beyond the sand trade, there were few economic opportunities for rural communities to access and improve their livelihoods.

Beyond the sand trade, there are few economic opportunities for rural communities to access and improve their livelihoods

This section analyses how a lack of access to alternative economic opportunities has increased communities’ vulnerability to becoming involved in illegal sand activities. These activities have not only resulted in the degradation of the ecosystems that people depend on for agriculture, whether subsistence or otherwise, but have also ensnared communities in a vicious cycle of poverty.

Drivers of the sand trade

Sand in Kenya is extracted from rural regions and sold commercially in counties with urban hubs, such as Nairobi, where the demand is high. As noted, many rivers have been mined to bedrock level. This has led to a loss of grazing lands in areas such as Isinya and Suswa, leaving settled communities, predominantly from the Maasai tribe, no choice but to search for pastures in other areas.

Poverty: Most people living in sand-producing areas engage in the trade to earn an income to avoid being plunged into absolute poverty. Poverty reduction has to be addressed if sand mining is to be eradicated, but this remains a complex issue. The percentage of Kenyans facing poverty declined from 46.8% in 2006 to 36.1% in 2016, which means that 4.5 million people were able to escape poverty.65 However, the total number of people living in poverty did not change. This is largely because the population increased by 10 million (28%) over the same period.66

A study on poverty in rural Kenya from 2000 to 2010 found that 50% of households escaped poverty.67 The study noted that only 11% managed to sustain the escape, and a significant 39% were found to have fallen back into poverty by the time the study concluded in 2010.

Limited education: Poor rural households spend more money on medical expenses than on education.68 Even though primary education in Kenya is free, over a million children, especially girls, miss school due to barriers like menstruation shaming and hunger – issues which are not related to the cost of tuition.69 Lack of higher education drives children to engage in sand activities as a way to earn a living.

Lack of employment prospects: Employment, especially in the formal sector, is scarce. Makueni county officers described how in early 2019, the county advertised for 100 vacancies for clerks and content supervisors. ‘They received over 10 000 applicants. Even after upping the academic requirement from diploma to degree and re-advertising, over 5 000 people re-applied.’70

Sense of entitlement: Another driver of sand mining is the sense of being entitled to deriving benefits from this resource. Young people, especially, believe that sand is a God-given resource meant to alleviate them from hopelessness by being a daily source of income...71 This is not an unreasonable sense of entitlement considering
the socio-economic challenges faced by people coming from sand-producing areas. Given that sand is a source of earning for communities, it is important to make the sand-harvesting industry sustainable and well regulated. There are rivers everywhere in sand-producing areas, making sand a reliable source of employment not only for men, but also for women and children.

**Women and children in the sand trade**

The sand trade is dominated and driven by men. However, women and girls are involved in the trade in both direct and indirect ways, but mostly on the periphery. Direct ways include women selling food to loaders at sand sites. Women are sometimes also engaged in other chores, like sharpening shovels or washing lorries, but this happens seldom. The research conducted for this paper did not find any accounts of women being involved in extracting or loading sand.

间接地，采砂业吸引女性和女孩，尤其是通过商业性性工作。由于采砂业务是基于现金的和非正式的，沙子装载者收到他们的收入每天，即使在工作后。每天，采砂工人都从马库内伊、马查科和卡贾到 counties can be seen congregating after work in Mlolongo – a border meeting point of the three counties and an area popular for commercial sex work. Sand is also sold in Mlolongo along the roadside, and sex workers find clients with ease. Already facing limited access to other economic opportunities, women are particularly vulnerable to being exploited by the sand trade.

'Almost all children who don’t continue with higher education engage in sand activities.'

The sand trade attracts a high percentage of young people, and particularly those who do not pursue further education. To start as a loader, all you need is a shovel. Loaders aspire to become brokers.

The number of young people of school-going age engaged in the sand trade escalated following the abrupt closure and reopening of schools during the COVID-19 pandemic. It will be difficult for children who have become fully engaged in sand activities to simply slot back into the school system.

Sand activities can also affect children’s learning in school due to constant noise and air pollution. In some areas, classes have had to be stopped because of the amount of dust that enters classrooms, and the noise pollution from sand lorries. This is just one example of how sand mining has negatively affected communities and their environment. The next section explores this issue in greater detail.

**Sand and ecosystems**

In rural areas, land ownership - including rivers and streams, as well as the wetlands and habitats situated alongside them - is based on traditional family customs and is located within communities. Sand is demarcated manually, for example by using sisal plantations as boundaries. While laws in Kenya prohibit sand harvesting in some of these areas, communities rely on traditional customs, which are often in conflict with the counties' administration.

The best sand for civil construction is harvested from freshwater sources, such as rivers and lakes. Sand from seas and oceans is preferable for large constructions, such as dams and railways, but it must first be washed. Sand harvested from land pits is considered the third best type of sand. Sand mining, particularly in Machakos and Kajiado, has destroyed both water and land ecosystems. In addition to negative environmental impacts, it has also undermined sustainable livelihoods for communities.

The destruction of sand ecosystems has a multiplier effect. A primary consequence is the loss of biodiversity, with birds and other water-dependent animal populations either dying or having to migrate to other ecosystems for their survival. Trees and other types of vegetation also wither, and the surrounding land eventually becomes bare and fallow. This further hinders activities such as subsistence farming, which relies on arable land and a regular water supply.

However, interviewees described that too much sand can also be detrimental. They indicated that in Kako and Mbitini Mutiso in Makuenei county, excessive sand...
contributes to flooding. Sand washes into classrooms, houses and farmlands, which further hampers education, farming and livelihoods. This once again highlights the urgent need for sustainable sand harvesting, as both too little and too much sand has negative impacts on waterways and land surfaces.

Impact on waterways

All national and county legislation contains provisions to guide how sand harvesting should occur. When harvesting on land or in waterways, the level of scooping should not exceed six feet in depth. The legislation also indicates that harvesting in and around rivers should ensure that enough sand remains in place to guarantee sufficient water retention. Miners do not adhere to these limits, and typically extract all the sand to the level of the river bed.

Depleting sand reserves in this way has led to flash floods in many areas of Machakos and Kajiado. Sand, stones and vegetation act as natural barriers that shape and constrain waterways. When these barriers are destroyed and the system disrupted through mining, the force of water is no longer constrained, and flooding occurs. Flash floods, in particular, swamp farmlands, sweep away houses and lead to incidents of drowning. Sand-producing areas face flooding of this nature every year. One of the biggest contributors is unregulated sand activities.

Salvaging lorries that have become stuck or that have overturned is always a protracted task.

The degradation of riverbanks in particular is brought about by lorries illegally accessing rivers in this way, and by extracting sand directly from the banks, despite legislation prohibiting this. This once again destroys the waterway, diverting water in a way that negatively impacts the supply for domestic and agricultural use.

The constant mining of sand from water bodies also leads to siltation, where sand does not settle but remains suspended in water. This makes it unsuitable for consumption and use by humans and animals.

Another consequence of altered waterways is the loss of both fish and plant life, as their habitats are destroyed. Siltation also means that sunlight is unable to penetrate the water. This has a direct effect of the growth of plankton, the primary food for fish. As a result, fish and other aquatic life forms die off and ecosystems slowly deteriorate and eventually collapse.

Impact on land surfaces

Deep excavation sites are created where sand is mined from land sources. This has led to many problems. When the sand supply is depleted, miners typically leave the area bare and when it rains, the sites get filled up with water. These stagnant pools become a breeding ground for parasites like mosquitoes, which spread malaria. Outbreaks of waterborne diseases such as typhoid and malaria have also occurred. Open excavation pits are a danger to humans, particularly children, but also to livestock. Rescuing animals from such sites is difficult. In Kajiado, especially, this is a big concern to communities.

Houses near sand-mining areas – and in some cases, entire homesteads – risk collapsing as excessive excavation damages the structural integrity around the site. There have been many such cases in the Bahati Constituency in Nakuru county. Miners also risk serious injury and death from collapsing walls as they mine sand.

These activities make an area inaccessible over time. Children face difficulty getting to school, land surface area is lost, and conflict between miners and community members increases. Eventually, this undermines development prospects.

Mining sand from water bodies leads to siltation, making the water unsuitable for consumption

Regulations in Kenya also state that sand-collection sites should be located at least 50 metres away from a water source. This seldom happens, as miners drive the lorries into water sources to load sand directly.

This practice has had devastating outcomes. Lorries pollute rivers by spilling oil, fuel and other harmful chemicals, and in some cases lorries even overturn. Communities and their livestock depend on these sources for drinking water and domestic usage.
Impact of sand mining on ecosystems

River beds mined to bedrock level

Destroyed waterways due to lorries illegally accessing rivers

Degraded riverbanks

Degraded riverbanks

Source: Mohamed Daghar
This study has found that the most visible consequences of sand mining can be seen in damage to surrounding ecosystems. Ecological restoration, the process of repairing destroyed ecosystems, is a very slow process: it may take decades for ecosystems to recover, and, in most instances, they never return to their original state. The need for advocating against environmentally harmful practices, such as sand mining, and enforcing legislation cannot be overemphasised.

Box 1: Makueni county – a best practice case study

The adverse impact of sand mining on community livelihoods and ecosystems can be reversed, as can be seen from the case study of Makueni. Responses in this county show how a government, with community input, can put in place measures to regulate sand activities.

These responses helped to inform the recommendations to policy makers that appear at the end of this paper. It is also anticipated that non-state actors, such as civil society organisations and the media, will be able to draw on these examples to advocate for ending sand mining in other areas of Kenya.

Makueni: leading county-level responses

Before 2013, when devolved governance came about following Kenya’s new Constitution, sand mining in Makueni was rampant and violent. A lot of people, including law-enforcement officers, lost their lives as a result of it.

The Makueni county government thus made it a priority to regulate sand harvesting. In 2014, Makueni banned sand harvesting and set up a taskforce mandated to regulate sand activities and also recommend its value in socio-economic development. In February 2015, it enacted the Makueni County Sand Conservation and Utilisation Act. The Act, which complies with NEMA sand-harvesting guidelines, is comprehensive and was the first of its kind in the country. It outlines three key areas in managing sand: regulating, sustainably conserving and utilising sand; protecting the environment and sand ecosystems; and generating benefits and revenue for the people of Makueni.

To ensure the legislation could begin to be implemented, Makueni set up a Sand Conservation and Utilisation Authority. This is the only sand authority in the country and, together with the Act, the only county framework in Kenya that manages sand.

Makueni’s sand authority is structured to be inclusive, made up of county and national government officers, and also members of the community – including women, youth, elders and the clergy. The authority also created nine sub-county sand management committees in each of its six administrative constituencies, which are composed of community members who are responsible for all sand-related activities in their areas. These include the construction of sand dams, gabions (containers filled with sand) and terraces, and ensuring that lorries use designated access roads.

Out of these sub-county committees, a number of local Sand Resource Users Associations have been formed. These local associations are responsible for sand activities in their areas, and are composed of three riparian (areas surrounding rivers) land owners, two women and youth who are not riparian owners, an elder and a religious leader. These local associations ensure that sand use is sustainably managed, educate the public on sand conservation, ensure community projects are funded and rehabilitate sand sites.

The Makueni sand authority also licenses sand harvesters and sand dealers and sets out clear penalties for unlicensed harvesters or miners. The authority also presides over a Sand Conservation Fund, which funds its operations from revenues attained from the licences and fines derived from the sand trade. Some 50% of revenue collected from the sand trade goes to the Conservation Fund, which conserves sand by building dams and rehabilitating sand sources; 25% is utilised to run the authority; 20% goes to the county government as revenue and 5% to the local communities.

Through specific supplementary regulations, the Makueni county government periodically implements procedures related to revenue, sand rates and administration to ensure the continued functioning of the sand authority.

Four categories of sand are sold in Makueni county. These are domestic sand for household use, domestic sand for home improvement, sand for local commercial use, and sand for commercial use outside the county. Makueni has banned the sale of locally harvested sand outside its borders since 2015 to help rehabilitate sand sites and also to curb the criminality that was driving the market.
In six years, Makueni has managed to conserve its sand, regulate the harvesting and transportation of sand to daytime only and not at night, dismantle criminal cartels and protect its ecosystem – all to the benefit of its people. In some areas of the county, sand is so abundant that it is becoming detrimental to communities and must be harvested, as the aforementioned case of Kako and Mbitini Mutiso shows.

At the time of writing, the Makueni Sand Conservation and Utilisation Authority was conducting public participation on harvesting the sand in Kako and Mbitini Mutiso and selling it commercially. At the same time, the authority was also discussing the process of setting up the county’s sand markets to ensure that buyers and sellers can trade legally and in a regulated way.

It is also important to acknowledge the role of the political leadership of Makueni governor, Professor Kivutha Kibwana. He made clear his stance on ending sand mining and illegal harvesting even before he took up his position. In his advocacy, the governor always emphasises the need to involve communities in the protection of their own natural resources.

Responses from communities

With the exception of communities in Mwala, Kiu and Kasikeu, this study found that communities are often divided when it comes to involvement in sand activities. Some members depend on sand mining for their livelihoods, while others actively oppose it due to its negative impact. This gives rise to various degrees of inter- and intra-community tensions. Some communities that oppose sand activities experience tensions with neighbouring communities that permit these activities in the same county, as is the case in Machakos. In other examples, communities that live outside of sand-producing areas, like those in Makueni, experience tensions with communities in neighbouring Kajiado county, where sand activities are permitted.

In all the interviews, respondents stated that the negative impact of sand mining exceeds its benefits to the communities and their environment. A case worth highlighting is that of Mwala, a sub-county in Machakos. In 2015, communities came together to fight sand mining. They demanded that the police boss from the sub-county be transferred, as the police often work with sand cartels and had, in this case, refused to take action despite many reports of sand mining. Thanks to concerted community efforts over the past five years, incidents of sand mining and illegal harvesting in Mwala have been reduced to almost zero. This has included setting up road blocks and warding off transporters.

As part of their protest against sand mining and illegal harvesting, communities in both Kasikeu and Kiu, Makueni county, have often barricaded their villages and fought with gangs. While Kasikeu and Kiu do not possess significant sand reserves, communities have been outraged by lorries from Kajiado that traverse their lands and damage local roads.

Communities are often divided when it comes to involvement in sand activities

In some cases, communities have taken the law into their own hands and have burnt sand lorries that come from Kajiado. Thus, even though sand activities are regulated in Makueni, it is necessary to regulate the sand trade from Kajiado as it has a direct impact on Makueni. The next section discusses recommendations.

Recommendations

The key recommendation of this research paper is for every sand-producing county to have an effective framework in place: interrelated, harmonised and implementable legislation on the one hand, and an established authority to enforce the legislation and provide oversight of all sand activities on the other. Community involvement is key in both contexts.

With devolved governance since 2013, the management of sand activities is a function of county government and many national and county departments are involved in managing sand activities. NEMA, the WRA, the NGAO and the National Police Service are key among the national authorities. At the county level, at least seven departments (environment, water, finance, trade, youth, public works, land and the inspectorate) are involved. However, the overall management is with the county government and all these departments, as in the case of Makueni, as coordinated through the sand authority.
The counties that border or are close to Nairobi – Machakos, Kajiado, Kitui, Kiambu, Murang’a and Nakuru – would do well to draw on the example of Makueni as they set up their frameworks. Sand mining is prolific in all these counties, with Nairobi being their primary market.

**County-level legislation**

- Identify current gaps in legislative frameworks to enable a more comprehensive approach to include how sand is harvested, as well as how it is traded.
- Embark on a process of public participation to include people’s voices in this framework, as per the legal requirement in the national Constitution.108
- Draw on the existing guidelines stipulated by the national government to craft sand-harvesting legislation.
- Allocate seed funding to augment livelihood prospects can also help to mitigate the harm of illicit sand activities – for instance, providing communities with sand conservation skills such as building sand dams. A group of former sand miners expressed their willingness to contribute lessons learnt to such an initiative.

**County sand authority**

- Develop coordinated oversight of sand activities: Establish an authority to which officers from all relevant departments can be seconded to implement sand legislation.
- Include community in the oversight: Involve sand workers such as current and former loaders, and community members – such as women, youth and the clergy – in oversight. This gives the community a platform to voice their inputs and concerns, while the sand authority benefits from direct access to the people who are intended to help implement and comply with policy directives.

**Inter-county frameworks**

- Coordinate neighbouring sand-producing counties regulation of their sand activities. For example, Machakos, Kajiado, Makueni and Kitui are all sand-producing counties that neighbour Nairobi city, but they all manage their sand activities differently.
- Harmonise all neighbouring counties regulation of sand activities, criminality and other illegalities in the sand trade collectively.

**Communities’ involvement**

- Bring community voices into the legislation and regulations as per the county-level recommendations.
- Encourage and facilitate inter-community dialogues headed by elders and the clergy to de-escalate tensions over sand activities between communities. Civil society organisations can play an active role in facilitating such dialogue.
- Community-based organisations are well positioned to lead public awareness campaigns on conservation and the use of natural resources.
- Share information from the conservation efforts of communities that oppose sand mining and illegal harvesting.

**Crime-proofing the sector**

- Responses to reduce the criminality in a sector where law enforcement and politicians have partial ownership need to be multi-pronged and multi-level.
- Excellent conventional law enforcement from investigation, to arrest and conviction are necessary, however this will not be sufficient in the current context.
- In this context of high levels of complicity of state officers who abet illegal sand activities goes beyond having effective frameworks to political will and a zero tolerance approach to illegal sand activities. There is no simple approach to this and solutions need to mirror this complexity.
- Champions in higher offices such as the county governor, as in the case of Professor Kivutha Kibwana of Makueni, would serve to highlight their own positive experiences for their counties.

**Advocacy**

- Advocacy for curbing the harmful impacts of sand mining is still in its infancy in Kenya. This is a space that non-state actors such as the media could fill to increase awareness.
- Statements from the political class could go a long way to strengthen communities’ voices. Tabling motions in the national Parliament and at county assemblies would ignite a much-needed national conversation on the need to regulate sand activities.
- Advocate a sand workers’ savings and credit cooperatives (SACCOs). A more regulated sand labour pool with decent wage brackets would help to eliminate youth exploitation by transporters. It may also encourage a culture of savings among the workers.
- The creation of county sand markets would help to regulate the trade and enable counties to benefit meaningfully from the cess charges. Selling sand by the roadside encourages criminality and robs the county of revenues.
Further research priorities

• Sand mining and the illegal trade in sand is a vastly understudied subject, despite the significance of its role in so many aspects of development. Areas that merit additional research includes
  – Scoping the involvement of foreign actors including sand exports to other countries and the involvement of foreign actors in the sand trade
  – Understanding the harms of sand trafficking and building community level resilience

• Beyond the counties sampled in this research, many other areas in Kenya also face a similar challenge – including the counties of Nakuru, Kiambu and Murang’a. Kisumu faces a sand-mining scourge from Lake Victoria, while communities in Kwale have often protested against sand being mined from the Indian Ocean. Studies in other counties would offer unique perspectives on the impact of sand mining on other land surfaces and water bodies like lakes and oceans.
Kenya’s sand cartels: ecosystems, lives and livelihoods lost

Notes

2 Visual Capitalist, All the world’s metals and minerals in one visualization, 1 March 2020, www.visualcapitalist.com/all-the-worlds-metals-and-minerals-in-one-visualization/
4 Reuters, As ice melts, Greenland could become big sand exporter, study, 11 February 2019, www.reuters.com/article/us-climatechange-greenland-idUSKCN1Q01YC
6 WWF, Uncovering sand mining’s impacts on the world’s rivers, 24 August 2018, https://wwf.panda.org/?uNewswireID=333451
8 Ibid.
9 This input was made by Eric Scheye, one of the reviewers of this paper. Scheye has worked for over 20 years on justice and security development; organised crime; women’s access to justice/ending violence against women; trafficking in persons and modern slavery; police accountability; state building, governance, rule of law; and monitoring and evaluation. He has also participated in portfolio reviews of the United Kingdom, Australia and the European Commission’s justice and security programming.
13 A list of key interviewees from the government and civil society organisations was compiled, and Haki Africa, a Kenyan civil society organisation with livelihoods and human-rights advocacy programmes, assisted in planning the field research and arranging interviews. For more information on Haki Africa, see https://hakiafrica.or.ke/.
14 Nineteen men and six women were interviewed four from the county governments of Machakos, Kajiado and Makueni; seven from the three authorities of the national government; five civil society organisations in the four counties; five journalists from the four counties; four community members and reformed sand miners from Machakos, Kajiado and Makueni.
17 Other Acts also state that all natural resources belong to the government, regardless of land ownership.
20 Interview, two civil society organisations, Makueni and Machakos, 8 and 9 April 2021.
23 The 2019 UNEP report ‘Sand and sustainability: Finding new solutions for environmental governance of global sand resources’ identifies the Sustainable Development Goals (SDGs) and 10 international conventions at the global level. The report also identifies 17 regional conventions on cooperation on development and security issues, marine and freshwater ecosystems. The report further identifies other sectoral-based global initiatives, national legislations and voluntary schemes that can contribute to putting in place extraction standards and best practices. See https://wedocs.unep.org/handle/20.500.11822/28163.
Uganda, https://enactafrica.org/enact-observer/sweeping-
M Daghar, Sweeping illegal sand mining under the rug in
2021.

Focus group discussions, Makueni, 8 April 2021. The
officer explained how the county government involved
communities from the onset of crafting the legislation that
enacted the Authority.

Focus group discussion, Machakos, 9 April 2021.

Information from key informants from civil society
organisations and media, April, May and June 2021.

Large droves of livestock are increasingly being observed
moving from Kajiado county in search of pastures in
Nairobi.

Focus group discussion, Machakos, 8 April 2021.

Interview, female officer of the Makueni County Sand
Conservation and Utilisation Authority. 8 April 2021. He
worked with the transport companies in the 1990s, and narrated how the communities were made to
feel uneasy by ‘outsiders’ who came to take their ‘God-given
resource’ (sand).

Ibid.

Focus group discussions, Machakos, 8 April 2021.

Brokers from Machakos go to Kajiado as they can make
better money by sourcing sand used for plastering, which
yields better prices in the market. With the dismantling
of sand cartels in Makueni, most have moved to Kajiado.
This ‘invasion of their territory’ has led to conflict between
Kajiado-based cartels and ‘outsiders’. Phone interview.

Focus group discussion, Machakos, 9 April 2021.

Focus group discussion, Machakos, 9 April 2021.

Focus group discussion, Machakos, 9 April 2021.

Interview, NEMA officers, Machakos, 8 and 9 April 2021.

A soft paste of sand and cement evenly spread on hard
surface structures to provide a smooth finish, form a
protective layer and also increase the aesthetic of a
structure.

Interview, male journalist, Nairobi county, 15 April 2021. The
journalist has written on sand mining for the newspaper
where he works.

Focus group discussion, Machakos, 9 April 2021. Interviews,
civil society organisations that work in Kiü, Makueni, and
Isinya in Kajiado county, conducted in Nairobi county, 23
April 2021.

Focus group discussion, Machakos, 9 April 2021. Two
members from civil society organisations in Machakos and
Makueni, April and May 2021, interview, male reformed sand miner, Makueni, 8 April 2021.

Focus group discussions, Machakos and Makueni, 8 and 9
April 2021.

Interview, male reformed sand miner who worked with the
transport companies in the 1990s, Makueni, 8 April 2021.

Focus group discussions, Machakos and Makueni, April and
May 2021, interview, female officer of the Makueni County Sand
Conservation and Utilisation Authority, 8 April 2021.

Focus group discussion, Machakos, 9 April 2021.

Information from government authority officers working in
Kajiado, physical interview 8 April 2021, and telephone
interview 14 April 2021.

E Scheye, Heart of Africa’s organised crime. Land, property
s3.amazonaws.com/site/uploads/2019-05-10-urbanisation-
policy-brief-001.pdf#page=2.

Interview, male reformed sand miner who worked with the
transport companies in the 1990s, Makueni, 8 April 2021.

Focus group discussions, Machakos and Makueni, 8 and 9
April 2021.

Interviews, two members from civil society organisations
in Machakos and Makueni, April and May 2021, interview,
male reformed sand miner, Makueni, 8 April 2021.

E Scheye, Heart of Africa’s organised crime. Land, property
s3.amazonaws.com/site/uploads/2019-05-10-urbanisation-
policy-brief-001.pdf#page=3.

Interview, male reformed sand miner, Makueni, 8 April 2021.

There are sand yards along the major county roads in
Machakos. These include the Kiumvi-Makutano-Kitui
road and the Kenol-Kangundo road. In Kajiado, this
includes along the Nairobi-Namanga road. It has not been
established if these yards are legally licensed to sell sand,
or if the sand was sourced legally, as this was beyond the
scope of this study.

This is observed mainly along the Mombasa road (which
includes towns like Athi-River and Milongo) that connects
Makueni, Machakos and Kajiado counties to Nairobi City.

Information from a male county director working with the
Machakos county government, and a male officer working
with the national government administration in Machakos.
They also explained how state officers work together.

Interview conducted on 9 April 2021 and followed up by
phone on 26 April 2021.

Ibid.

Governor Kivutha Kibwana’s Facebook account. Deputy
OCS Sultan Hamud is the man behind the illegal harvesting
of sand in Makueni. 24 October 2015, https://web.face
book.com/photo/?fbid=444737185722462&set=a.3356883
6996078.1073741830.294115107451338.

The Kenya Monitor, Illegal sand harvesting rears its ugly
head in Kasikeu, Makueni County. 27 October 2015, www.
monitor.co.ke/2015/10/27/illegal-sand-harvesting-rears-
ugly-head-kasikeu-makueni-county/.

The Star, MP, Lenku in standoff over Kajiado golden sand,
21 May 2020, www.the-star.co.ke/counties/rift-valley/2020-
05-21-mp-lenku-in-standoff-over-kajiado-golden-sand/.
Kenya’s sand cartels: ecosystems, lives and livelihoods lost

See also County Press, Teeka to Lenku. Lift sand ban, or face ire of stakeholders. 18 May 2018. https://countypress.co.ke/teeka-to-lenku-lift-sand-ban-or-face-ire-of-stakeholders/.

Focus group discussions, Machakos, and key informant interviews, Kajiado, April. May and June 2021.


Ibid.


Interview with officers from Makueni county government during a focus group discussion, Makueni, 8 April 2021.

Interview, male reformed sand miner, Makueni, 8 April 2021. He was part of a gang but is now a tomato and onion farmer in Makueni.

Focus group discussion, Makueni, 8 April 2021.

Interview, female officer from the Makueni County Sand Conservation and Utilisation Authority, 8 April 2021.

Ibid.

KU TV. Sand harvesting has become a hindrance to education in some parts of the state, 14 September 2017. www.youtube.com/watch?v=pM1EEu_3-YY.


Interviews, officers from the Makueni County Sand Conservation and Utilisation Authority, 8 April 2021.


Ibid.

Focus group discussions and key informant interviews, Machakos, Makueni and Kajiado. April and May 2021.


Focus group discussions, Machakos and Makueni. 8 and 9 April 2021.

Interview, key informant working for a government authority in Kajiado, 8 April and 19 May 2021.


Ibid. Section 4.

Ibid. Part II 7(1) – administration of the Act.

Ibid. Part II 11(1) – administration of the Act.

Ibid.


Ibid. Part II 14, 15, 16 – administration of the Act.


The current regulations are made by the Makueni county subsidiary legislation, 2015, on establishing the functions

100 ‘Domestic sand harvesting’ means the harvesting of sand for domestic household use, which should be transported by use of a cart, wheelbarrow, donkey or any other means not exceeding one tonne, and should not be stockpiled for commercial purposes. This category is defined as per the Public Finance Management Regulations, 2015, Part I – preliminary, interpretation.

101 ‘Domestic use’ means use of sand harvested and transported for home improvement. This category is defined as per the Public Finance Management Regulations, 2015, Part I – preliminary, interpretation.

102 ‘Local use’ means sand harvested and used within the county for internal development and the improvement of infrastructure and other local commercial purposes. This category is defined as per the Public Finance Management Regulations, 2015, Part I – preliminary, interpretation.

103 ‘Commercial use outside the county’ means sand harvested in the county and transported for use outside the county. This category is defined as per the Public Finance Management Regulations, 2015, Part I – preliminary, interpretation.

104 Interviews, officers from the Makueni County Sand Conservation and Utilisation Authority, 8 April 2021.

105 Kibwana in row with cartels over sand mining, 23 April 2013, www.standardmedia.co.ke/eastern/article/200082115/kibwana-in-row-with-cartels-over-sand-mining; Governor Kivutha Kibwana’s Facebook account. With increased sand harvesting, we are now staring at a calamity, 11 February 2018, https://web.facebook.com/294111510745133/posts/dailynation-httpstcoxqylaxodewith-increased-sand-harvesting-we-are-now-staring-/804794113050099/?_rdr=1&_rdr.


107 Focus group discussions, Machakos, 9 April 2021.

Subscribe to ENACT

ENACT works to enhance Africa’s response to transnational organised crime. **Receive the latest analysis and research, delivered directly to your inbox:**

1. Go to www.enact.africa
2. Click on ‘Connect’, then ‘Subscribe’
3. Select the topics you’re interested in, click ‘Subscribe’
Read more about Africa’s response to transnational organised crime at www.enact.africa
About the author

Mohamed Daghar is the ENACT Programme’s Regional Organised Crime Observatory (ROCO) coordinator for East Africa and the Horn of Africa, based in Nairobi. Before taking up this position, Mohamed worked with government and other research centres conducting analyses on evolving areas of crime and how to respond to them. He has a Masters degree in peace, conflict and development studies from Universitat Jaume I, Spain.

About ENACT

ENACT builds knowledge and skills to enhance Africa’s response to transnational organised crime. ENACT analyses how organised crime affects stability, governance, the rule of law and development in Africa, and works to mitigate its impact. ENACT is implemented by the ISS and INTERPOL, in affiliation with the Global Initiative Against Transnational Organized Crime.

Acknowledgements

ENACT is funded by the European Union (EU). This publication was produced with the assistance of the EU.

Cover image: Flickr/ Cooks Well

The contents of this publication are the sole responsibility of the authors and can in no way be taken to reflect the views or position of the EU, or the ENACT partnership. Authors contribute to ENACT publications in their personal capacity. © 2022. ENACT. Copyright in the volume as a whole is vested in ENACT, its partners, the EU and the authors, and no part may be reproduced in whole or in part without the express permission, in writing, of the author and the ENACT partnership.