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AGAINST TRANSNATIONAL  
ORGANIZED CRIME

# BLACK GOLD

The charcoal grey market  
in Kenya, Uganda and  
South Sudan

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JULIUS KAKA | LUCY MODI | KEN OPALA



MARCH 2021





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Cover: A charcoal production site in Kenya. In East Africa, where access to electricity remains low, the use of charcoal as fuel is an essential commodity.  
© Tony Karumba/AFP via Getty Images.

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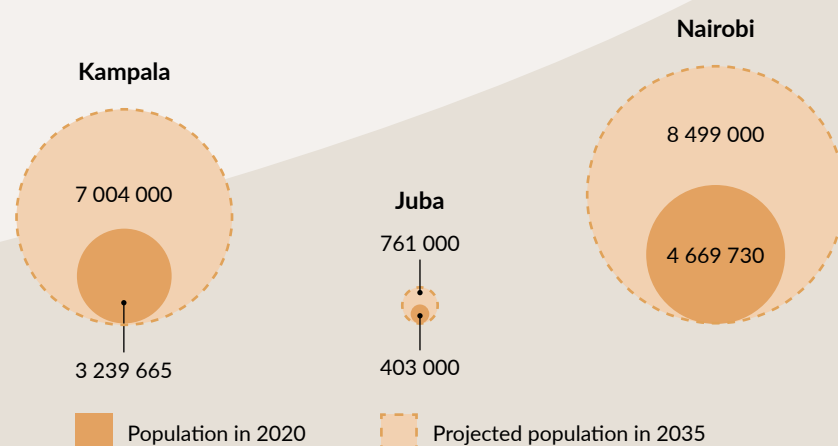


# EXECUTIVE SUMMARY

Buckets of charcoal for sale in Entebbe, Uganda. © Camille Delbos/Art In All of Us/Corbis via Getty Images

Charcoal is one of the most important commodities in sub-Saharan Africa, with as much as 80% of the urban population in the East Africa region using charcoal as their primary energy needs for cooking.<sup>1</sup> It is cheap, efficient and easily transportable. It also provides income and livelihoods for millions of people. In Kenya, for example, the charcoal industry employed approximately 700 000 people in 2018, who in turn supported between 2.3 million and 2.5 million dependants.<sup>2</sup>

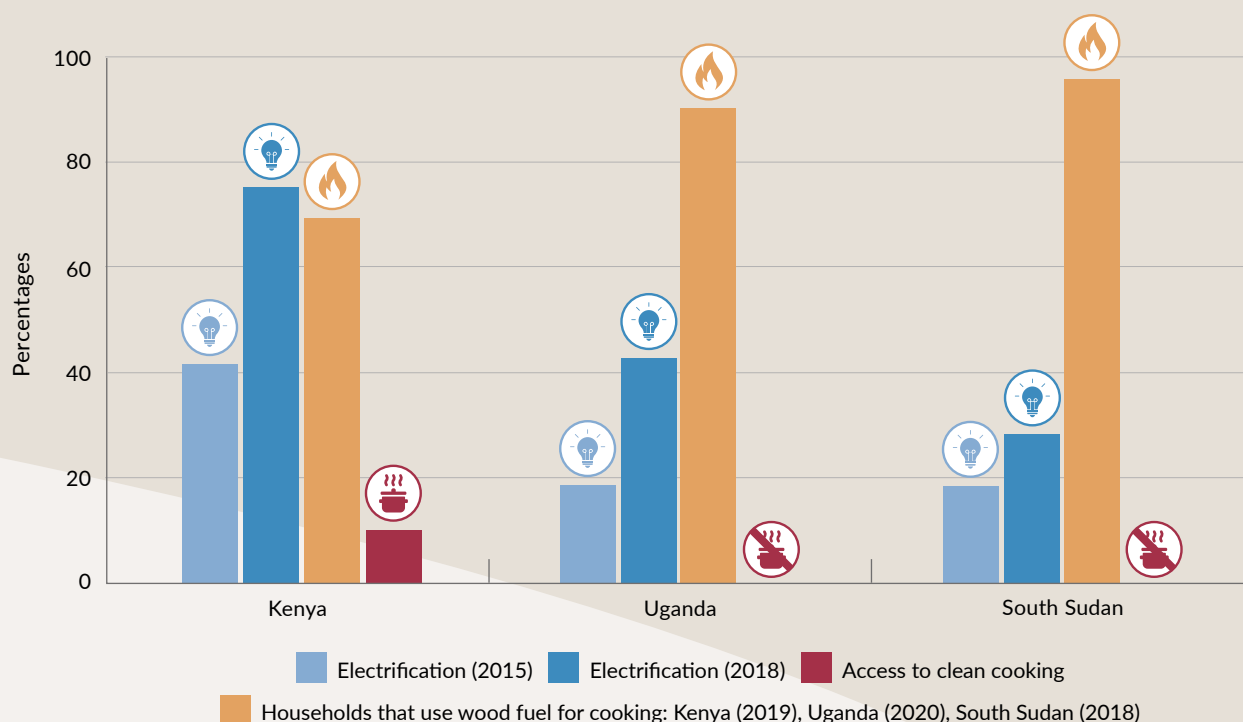
But for the majority of those who rely upon charcoal as a fuel, alternatives are often more expensive or less accessible.<sup>3</sup> In East Africa, where urban populations are growing rapidly (see Figure 1), investment in other forms of energy (such as electrification) is not matching current needs, with inadequate infrastructure, limited ability to transmit electricity over long distances, and limited generation capacity.<sup>4</sup> This created an 'energy gap' that is currently filled by wood fuels, among which charcoal is a common option.<sup>5</sup>



**FIGURE 1** Current and projected population growth in Kampala, Nairobi and Juba.

SOURCE: Population Stat





**FIGURE 2** Rates of electrification, wood fuel use and access to clean cooking.

NOTE: Electrification has increased in all countries in focus in recent years, but charcoal remains a favoured source of fuel for cooking. Access to clean cooking remains very low, and rudimentary charcoal stoves and other such equipment are routinely used.

SOURCES: The Energy Progress Report, Uganda 2016 National Charcoal Survey, Charcoal value chains in Kenya: a 20-year synthesis

The dependence on charcoal comes at both an environmental and public health cost. Charcoal conversion is a contributor forest cover loss threatening biodiversity and, in turn, the environment that sustains rural populations,<sup>6</sup> as well as posing a health risk due to rudimentary burning techniques and the use of inefficient charcoal stoves.<sup>7</sup> A 2018 report on the state of East Africa's forests noted Tanzanian deforestation rates are among the highest globally: if they continue or increase, all forest will be lost within 50–80 years. Elsewhere, Uganda lost almost half its forest cover between 1990 and 2015.<sup>8</sup> In short, the charcoal value chain ties the continent's carbon sinks, biodiversity hotspots and watersheds to the fate of the rural poor and the quality of life of millions of urban residents.

The role of the state in such instances is to regulate the trade and balance these interests, but in East Africa – the focus of this study – the legal frameworks around charcoal production and trade are patchy. Kenya currently has a total trade ban on the production and sale of Kenyan charcoal, which has been in place across the whole country since 2018. In Uganda, certain districts have passed by-laws which attempt to stop all charcoal production. In South Sudan, a ministerial decree banned the export of charcoal in 2015, but this decree was only enforced in 2018.<sup>9</sup> Other countries in the region have also sporadically instituted bans, often following outcry from communities in rural areas or advocacy groups against rapid rates of forest degradation or deforestation linked to charcoal production.

But while the production and sale of charcoal may have been prohibited in some places, demand for charcoal remains high. This situation has led to the emergence of a 'grey market' in charcoal, where laws or regulations are flouted at some point in the value chain, but where the final sale is not strictly illegal. (The absence of absolute prohibition on all stages of the value chain is why we talk about 'grey' rather than 'black' charcoal markets.)<sup>10</sup> In addition, the charcoal trade is largely perceived as socially acceptable as it concerns a vital basic commodity, even if some aspects of the value chain may be unlawful.

But despite such acceptance, there are real consequences to the grey market trade in charcoal, ranging from corruption and cartelization to violence and intimidation, not to mention the unchecked exploitation of valuable forest resources and health risks that dirty fuels pose. Criminality affects each stage of the value chain in charcoal, although the nature and extent of that criminality differs from country to country.

This report explores how such criminality manifests in the charcoal value chains in Kenya, Uganda and South Sudan, and how the three are linked by the regional flows of charcoal. It finds that while there is no massive or acute organized crime problem, poor, ineffective or inappropriate regulation has given rise to forms of market organization with organized crime qualities – including cartels, high-level corruption and violence – in some locations. This has undermined law enforcement capacity, jeopardized environmental protection efforts and expanded the exploitation and coercion of vulnerable populations, not least those for whom charcoal is a convenient fuel.

This report is premised on the belief that an in-depth understanding of the value chains across the region is crucial to improving regulation; by understanding where power and criminal risk is concentrated, we can help locate where intervention will be most effective. Given the current rates of urban growth in Africa, as well as trends in forest cover loss (which have global implications for climate change), such action is much needed.

*Ineffective or inappropriate regulation has given rise to forms of market organization with organized crime qualities.*

▼ A man carries wood harvested illegally from a protected forest in Uganda.  
© Rick Loomis/Los Angeles Times  
via Getty Images







## Grey market charcoal: corruption and criminality risks

The charcoal trade has been framed in numerous different ways: as a mundane commodity, a labour and poverty issue, an energy security issue, an environmental threat and, in recent years, as a conflict finance issue, given al-Shabaab's role taxing the charcoal trade in Somalia.<sup>11</sup> It is relevant to ask what value framing it as an organized crime problem adds to our understanding of the issue. Our answer to this is that we set out, first and foremost, to analyze an illicit market, and then to understand at what points, if any, criminal organization, concentrated criminal profits and the symptoms of organized crime activity occur. This analysis, as the report goes on to explain, does not reveal a large or acute organized crime problem, but rather a grey market in which poor, ineffective or inappropriate regulation gives rise to forms of market organization that display organized crime qualities in some locations, such as cartels, high-level corruption and violence.

This study draws on three key analytic frames drawn from the criminological literature and the Global Initiative Against Transnational Organized Crime's (GI-TOC) work over the last decade: 'flows', 'harms' and the particular problems arising from 'grey markets'.

Flows describe the physical movement of goods across physical territories, but they are also an analytical framework that allows us to capture the differential impact of national legislation, governance and enforcement on commodities that are smuggled across borders. This study is structured around understanding the flow of charcoal from production to consumption sites, drawing both on qualitative and pricing information.

The GI-TOC's work analyzing contraband markets has highlighted three key characteristics of illicit flows:

- Not all components or activities in the flow may be illegal – and indeed the product or activity may not be illegal in all countries. This presents opportunities and challenges for an effective response.
- Many illicit flows have parallel systems of legal flows (such as people, minerals or timber). In these flows, laundering becomes a key focus of criminal activities, so that illegal goods can ultimately be disguised in legal markets.
- Due to their transnational nature, tackling illicit flows requires international cooperation and, even more importantly, some form of international consensus on how to respond. This consensus-building process should include defining what is legal and what is illegal – and harmonizing this definition across legislation.<sup>12</sup>

◀ Forest cleared by 'slash and burn' methods in the Kanunga Hills, Uganda.  
© Wolfgang Kaehler/LightRocket via Getty Images



In this report, the concept of flows is seen from the mapping of the physical movement of charcoal, to the bird's-eye view of price changes in the value chain, to considerations of how different national administrations and local authorities do or do not regulate the trade. We also believe that in framing the problem posed by illicit markets a discussion of harm is crucial. It is important to identify a range of harms, and move away from a view of harm as being, simply, the fact that a law has been broken.<sup>13</sup> This has been crucial in the discussion of illicit drug markets, where a debate about harms has in fact played an essential role in persuading policymakers to reconsider the ways in which drug markets are regulated. The scope for harm should include not just the harm to the rule of law, law enforcement or the formal economy, but also harms that vulnerable and marginalized people in society are exposed to, including the low-level participants in illicit economies, and harm to non-human entities, like the environment. It should also embrace the notion of local and global harms.

*Charcoal presents a classic grey market, where laws or regulations are flouted at some point in the value chain, but where the final sale is not illegal in the strict sense.*

### **Flows through zones of prohibition: a theory of grey markets**

Charcoal presents a classic grey market, where laws or regulations are flouted at some point in the value chain, but where the final sale is not illegal in the strict sense. Many countries have regulations that specifically addresses the production of and trade in charcoal. Such laws seek to keep environmental degradation through deforestation to a minimum while allowing production to take place. However, due to weak enforcement capacity, such laws often exist in word but not in deed.<sup>14</sup> Illegality often concerns only one point in the value chain – such as production, or perhaps transport of domestically produced charcoal – but by the time charcoal has reached large urban markets it has been successfully merged with licit forms of trade and cannot be identified as an illegal commodity. Also, as the charcoal trade concerns a ubiquitous, mundane and vital basic commodity, it is largely perceived as legitimate and socially acceptable, even if it is unlawful. This is why we use the term 'grey', even though there are strict trade bans on charcoal in some countries.<sup>15</sup>

While the legal frameworks around charcoal production and trade are overall patchy (see for example the section on regulation), the use of trade bans as a central governance act in the regulation of charcoal in East Africa is notable. Kenya currently has a total trade ban on the production and sale of Kenyan charcoal, which has been in place across the country since 2018. In Uganda, certain districts have passed by-laws that attempt to stop all charcoal production. In South Sudan, a ministerial decree banned the export of charcoal in 2015 and was enforced in 2018. Other countries in the region have also sporadically instituted bans.

Laws proscribing the production and or sale of domestic charcoal often follow legitimate outcry from communities in rural areas, or from advocacy groups. But trade bans are a form of prohibition, which tend to generate certain unintended consequences. Prohibition is the creator of the illicit and the illegal: it is the single greatest factor behind the development of illicit markets. Prohibiting something does not stop demand for the prohibited item. Instead, it simply displaces trade and consumption of the item from the licit economy to the illicit. Prohibition also tends to raise the price of the illegal commodity, effectively increasing profits for market players. Prices remain high even after bans are reversed.<sup>16</sup>

Prohibition therefore generates a set of harms, the degree of which depends on the commodity. Drawing on drug markets and other literature, we set out the relationship between prohibition and corruption, violence and cartelization.

**Corruption:** As use of and trade in the prohibited commodity continues, enforcement must either succeed at eradicating the market (which is impossible when there is no substitute, as in the case of charcoal) or enforcement has to be corrupted by market players. This corruption is exercised by those who have the means to do so – and it is applied to protect the suppliers and major beneficiaries of illicit value chains. In the face of corruption, enforcement agencies seek to demonstrate that arrests, fines and seizures have been applied to people in the market. This means they usually target the poor or most vulnerable consumers, or producers.<sup>17</sup>

**Violence:** The most fundamental driver of violence in illicit markets is that participants have no recourse to independent adjudication of business disputes, as would be provided by commercial courts in licit markets. However, prohibition also lowers the costs of using violence because participants are already evading law enforcement for their market activities, lowering the cost of evading enforcement for acts of violence.<sup>18</sup>

**Cartelization:** The formation of cartels has many benefits for the participating members, including access to mechanisms to reduce conflict, divide markets and fix prices. Cartels are typically prohibited by anti-trust legislation. However, in grey industries, actors are already operating somewhat clandestinely, or at least, are skilled at evading existing legislation,<sup>19</sup> which means they are more likely to form in illicit markets. Cartelization has a mixed effect on violence. While violating cartel agreements in illicit markets is often punished with violence, cartels can also minimize violence by setting up surprisingly resilient mechanisms for coordination and dispute resolution.<sup>20</sup> However, cartelization tends to increase corruption: as it gives actors in the cartel scope to raise prices, more money is available to them with which to buy political or law enforcement protection.<sup>21</sup>

▼ Trucks carrying empty loads down the eastern escarpment of the Rift Valley, Kenya.

© Tony Karumba/AFP via Getty Images



# Methodology

The study employed a mixed-methods methodology, using both qualitative semi-structured interviews and the collection of prices for quantitative analysis.

Key frames of analysis were drawn from the GI-TOC's experience analyzing illicit markets in licit goods, and in following transborder flows.<sup>22</sup>

Charcoal is a major fuel source across all of East Africa, and there is some degree of transborder charcoal trade between all the countries in the region.

We selected Kenya, Uganda and South Sudan as our case-study countries for three reasons:

- Kenya and Uganda have an established high level of cross-border trade, and in both countries, there were claims to verify about an increase in charcoal imports from South Sudan.
- Individually, they each presented different formal governance situations. Kenya presented a case with a total trade ban in place and yet a high level of trade; South Sudan, a case with a legal framework; and Uganda, a case where formal regulation differed between different districts.
- Kenya is also the largest economy in the region, with some of the largest urban economies, which serves as a draw for charcoal traders across the region; Uganda is both an important producer of high-quality charcoal and an important transit country for a variety of goods; and South Sudan has been flagged as a site of rising production, with a large amount of forest cover still to be preserved.

A substantial amount of data was collected from across these three countries. There were, however, limitations, most notably the coronavirus pandemic and the associated restrictions on mobility, which caused several months of delay to the fieldwork for this project. As a result, the GI-TOC team made use of remote price-data collection in several locations (an expansion of a methodology that had already been designed into the project). Insecurity in South Sudan also limited the ability of our researchers to travel and restricted the fieldwork sites to Juba and nearby towns and Nimule.

Three sources of primary data were drawn on for the analysis contained in this report:

1. Prices of the product, by collecting longitudinal data remotely over several months in order to

calculate median prices, and to map variations in value and profit.

2. Qualitative information about the structure of charcoal value chains.
3. Bribes prices and other indications of corruption, taking care to make distinctions between petty bribes and grand corruption, the intentions of different bribes and the sharing of profits in less direct ways.
4. Qualitative information about how regulations meet reality from in-person interviews.

Pricing data was collected from interviewees involved in the charcoal trade at regular intervals. Contact was made in the shape of in-person field trips by GI-TOC researchers, who then set up systems to remotely collect the prices at two-weekly intervals. All pricing data has been converted from local currencies into the US dollar equivalent, using the interbank rate on the day the data was collected.

We have used pricing data collected over a series of months to make preliminary calculations about the value of three key markets: Kampala, Nairobi and Juba. Each of these has the largest urban populations in their respective countries, and are major destination points, though charcoal is sold country-wide. These calculations are reproduced in graphics and the analysis in the report, and we explain our approach here and in Appendix 2.

Qualitative data was also collected from several sites identified as key locations in the preliminary data-gathering phase. At these sites – which included production, transit and retail locales – researchers interviewed a wide range of stakeholders with direct knowledge of the charcoal trade, according to a questionnaire (see Appendix 1).

In total, 348 interviews were conducted: 65 in Kenya, 172 in Uganda, 108 in South Sudan and 3 with academics based outside the region. Of the total interviews, 208 were with people with direct involvement in the value chain as producers (62), transporters (45) or dealers and traders (101). The rest were government officials (78), academics (7), civil society actors (28), journalists (25) or other professions (2).






# THE CHARCOAL TRADE:

IMPACT AND REGULATION

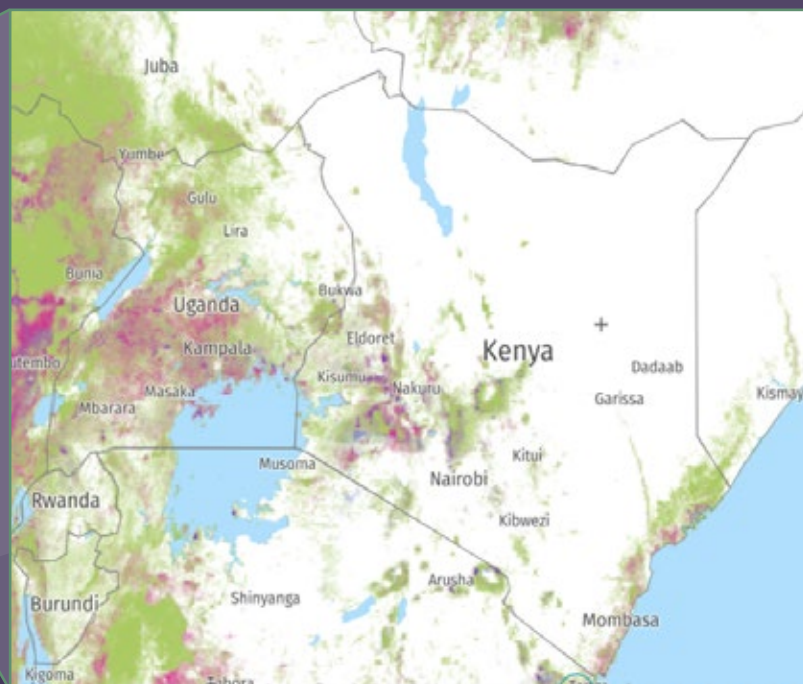
Freshly felled trees awaiting charcoal burning in Aberdares, Kenya. © Mark Boulton/Alamy





Charcoal harvesting is a significant cause of forest degradation in many parts of the region. 'Degradation' implies that forest ecosystems are losing their capacity to provide important goods and services to people and nature, rather than that they have disappeared. When forests are converted to wholly non-forest uses, such as agriculture and road construction, then 'deforestation' has occurred. However, forest degradation can be the first steps towards changing the way in which land is used, a path that eventually leads to deforestation. In other cases, deforestation happens first, and then charcoal is produced with trees felled in the process. Converting land for agriculture remains the major driver of deforestation. These distinctions are important either because 'deforestation' tends to dominate debates about tree cover loss, obscuring that environmental damage may still be occurring on mass – though less perceptible – scales through degradation, or because charcoal trade is blamed for damage caused by other processes.

In Kenya, tree-cover loss has been an acute concern for several years, with forest depletion estimated at 5 000 hectares per annum in 2018. In Uganda, the Third National Development Plan estimates that 72 000 hectares of the country's forests are cleared each year as result from harvesting for firewood and charcoal,<sup>23</sup> commensurate with an annual decline of 1.8% of forest cover loss.<sup>24</sup> In South Sudan, fuelwood and charcoal account for over 80% of all wood used, with an annual deforestation rate estimated at between 1.5% and 2%,<sup>25</sup> although the total forested area of South Sudan is largely unknown and estimates of forest coverage vary considerably. Deforestation is highest in forests with poor management and weak land tenure security, such as open-access land in Tanzania and communal lands in Kenya. In Uganda, however, deforestation is highest in private forests, with less deforestation occurring in government-managed public forests.



**FIGURE 3** This visual displays how forest cover is receding in East African countries. Tree cover loss is estimated to have been 11% for Uganda, 10% for Kenya, and 1.1% for South Sudan between 2001-2019. 'Tree cover' encompasses far more land surface than 'forests'. Rate of natural forest conversion (deforestation) may be even higher, as in South Sudan, where natural forests are destroyed at a rate of 1.5 to 2% per year.

Green = Tree cover    Pink = Tree cover loss    Blue = Tree cover gain

SOURCE: Global Forest Watch; UNEP, South Sudan: first state of environment and outlook report 2018, <https://www.unep.org/resources/report/south-sudan-first-state-environment-and-outlook-report-2018>.

However, trees are not harvested indiscriminately for the trade. Certain tree species are specifically selected because they are made of denser wood, yielding higher-quality charcoal, which produces more energy when burnt. These trees may be harvested to depletion in some areas. In East Africa, the most sought-after tree species for charcoal production are shea (*Vitellaria paradoxa*), *Azelia africana* and various *Acacia* trees. Several indigenous tree species in northern Uganda are highly sought after for the high-quality charcoal that can be produced from their wood, including okuttu oryang (*Albizia hockii*) and okuttu lacari (*Albizia grandibracteata*), opok (*Terminalia schimperiana*), oduku (*Combretum collinum*), owak (*Acacia sieberiana*), and, again, shea (known as yar).<sup>26</sup> In South Sudan, the most sought-after trees are slow-growing acacias (such as *A. nilotica*, *A. seyal*, *A. zanzibarica* and, again, *A. sieberiana*) as well as *Balanites aegyptica* and *Azzeria sp.*

More worryingly, the figures quoted above for tree-cover loss almost certainly undercount the degradation caused by harvesting wood for charcoal. This is because harvesting trees for charcoal does not always involve removal of all trees. As such, this may not be detected as tree-cover loss. Further, many of the charcoal trade's preferred trees grow in arid landscapes, for which global tree-cover assessments do not perform as well as in less arid areas. This is not to say that remote sensing should not be used, but estimates of deforestation in arid areas will invariably be underestimated.<sup>27</sup>





Overall, the loss of trees has several important negative impacts for the development of the region and the environmental integrity of the planet. Not only do forests provide measurable economic benefits through their contributions to timber, construction materials, bushmeat (and other harvestable edible goods) and tourism, they also act as carbon sinks, contribute to the creation of fertile soil and filtered water, and provide essential goods to local populations, as well helping to mitigate the global effects of the climate crisis. This latter benefit gives the problem of how to sustainably regulate the charcoal trade global implications.

This situation has in recent years led many to call for tighter regulation of the charcoal trade, but such regulation poses real challenges for jurisdictions across the region. Demand for charcoal is huge, and restricted supply could cause acute resentment in urban markets. The challenge of regulation is also heightened by the fact that charcoal-producing regions are sometimes in relatively remote areas. In addition, the problems of the charcoal trade straddle different portfolios: charcoal is a forestry, trade, energy and rural livelihoods issue.

As a result, regulating charcoal production and trade (so that it is sustainable and legitimate) is often seen as relatively onerous and politically costly, and this may explain the region's somewhat problematic reliance on bans, which are often poorly enforced. The regulatory picture is further complicated by some sub-national administrative units, such as counties, passing their own by-laws.

▲ Flooding around Lake Bogoria, Kenya, due to deforestation. © Hemis/Alamy

Formal and informal regulatory frameworks also exist side by side, with mixed and at times contradictory results. Formal efforts have been made around the institutional development of the charcoal industry in recent years in response to the alarm raised by local communities and international observers at high rates of tree-cover loss in East Africa, but such efforts are often considered to be blunt, unenforceable or fragmented. Informal frameworks are mainly characterized by customary systems, in which resource extraction is governed by the local customs and customary law<sup>28</sup> and communities and local authorities are key stakeholders. Clans, chiefs and elders in villages can give charcoal production free rein, or they can put limits on production and impose more fine-grained regulation than *de jure* laws. Such customary systems have been known to collude with corrupt forces in the destruction of the local environment, but they have also been known to stand up to these forces despite massive power imbalances.

Central to the question of charcoal production and the scope for regulation – be it formal or informal – are issues of land ownership and use rights. The nature, control and ownership of land in a particular area has a direct influence on the strength of that area's charcoal business. In some areas, tree harvesting from private land dominates the production landscape, while in others communal land ownership and rights dominate, and there is harvesting from state-protected forests in several locations. All countries struggle to maintain protected areas free of charcoal production/tree harvesting.

The effectiveness (or lack of) this spectrum of regulation and enforcement ultimately determines the scope for criminality, corruption and harm in the charcoal trade in the region.

## Charcoal and politics in Kitui

In January 2018, Kitui Governor Charity Kaluki Ngilu banned charcoal and sand harvesting in the county, which is a key charcoal production region about 170 kilometres south-east of Nairobi. Ngilu, who has often equated charcoal burning to mass murder (owing to the activity's destruction of forests in the area), exhorted people to take an active stance against the charcoal trade:

If you see the lorries burn them and call me ...  
If you knew I was coming to kill you, would you wait for me to kill you or you would kill me first? We will kill you first. Since these people [charcoal producers and transporters] want to kill us, we will kill them ... their lorries and charcoal will remain here.<sup>29</sup>

In February 2018, several trucks carrying charcoal were burned, although Governor Ngilu denied inciting her ethnic community against others, saying 'I've a duty as a leader

to take decisive measures to protect our environment'.<sup>30</sup> Still, the governor's stance sparked outrage elsewhere. Some musicians released songs that disparaged the governor and her ethnic community, the Kamba, including a song that threatened to incite tribal feelings (this song was later banned by the Kenya Film Corporation Board and the musician arrested). Moses Kuria, an MP from Central Kenya, who was disgusted with the truck burnings, paid US\$2 304 for the musician's bail. In a Facebook post, Kuria said: 'I am asking all charcoal and sand traders to pass by my office and pick up a few machine guns before you travel to Kitui County', although he also said, 'Whereas Governor Charity Ngilu may have a point on the charcoal trade, asking the locals to take the law into their own hands is illegal, unconstitutional and primitive.'<sup>31</sup> He later removed the post.



# Kenya

## Formal

Legislation in Kenya covering charcoal includes the Environmental Management and Coordination Act (EMCA) of 1999, the Energy Act of 2019, the Traffic Act of 2010 and the Forest (Charcoal) Regulations of 2009 under the Forest Act (2005) and subsequent replacement by the Forest (Conservation and Management) Act, 2016. Other important national policies include the National Energy Policy of 2018 and the Forest Policy of 2014. In addition to national policies, a number of counties, such as Kitui and Elgeyo Marakwet, have introduced their own regulations (in 2014 and 2017 respectively) dealing with charcoal and forest products.

The 2009 Charcoal Regulations aimed to establish a self-regulating sector. They provide for all commercial charcoal producers to organize themselves in charcoal producer associations (CPAs) and charcoal producer groups (CPGs), which are supposed to be self-regulatory. Members have to target the correct tree species, use the correct technologies and sell from a central point. They offer certificates of origin, which are required for charcoal movement permits.<sup>32</sup>

But alongside these efforts to develop the industry, Kenya also imposed a nationwide moratorium in 2018 on production in an effort to conserve the country's forests.<sup>33</sup> This moratorium did not extend to imported charcoal. Despite the moratorium, charcoal production still continues in Kenya, though greater imports from Uganda suggest that the ban has suppressed domestic production to some degree. The task force that paved the way for the charcoal production moratorium found that the Kenya Forestry Service – the state body responsible for protecting the forests and monitoring their use – was understaffed and abused its authority by understating the quantity of wood produced and undervaluing the quality thereof, resulting in undisclosed revenue which is allegedly taken by KFS personnel.<sup>34</sup>

## Informal

CPAs act as the informal regulators of production. In theory, no commercial charcoal producer should operate without being a member of an association.

CPAs are meant to encourage sustainable production; self-regulate through a code of conduct; assist the government in enforcing the Forest Act; and ensure that CPA members are involved in reforestation and conservation practices.

However, since the 2018 ban on production, many charcoal producers have been left without a legal means of operating, even if they are CPA members. Some of the more powerful and organized CPAs have switched to import charcoal legally, while others produce charcoal illegally or have become involved in cross-border smuggling, particularly between Tanzania and Kenya.

*Since the 2018 ban on production, many charcoal producers have been left without a legal means of operating.*





▲ Electricity lines through Naguru, Uganda.  
© Sumy Sadurni/AFP via Getty Images

## Uganda

### Formal

There is currently no national law in Uganda specifically regulating charcoal. This does not mean that it has not been acknowledged as a problem. Rather, the government aims to regulate the charcoal market indirectly through the development of alternative energy sources, particularly through electrification.<sup>35</sup> However, widespread use of charcoal and firewood persists in spite of alternatives being available, largely due to the costs associated with them and infrastructural problems that inhibit reliable electricity supply.<sup>36</sup> Production and transport remain legal nationally, but counties and districts have implemented their own regulations to deal with the trade, particularly as it contributes to forest cover loss. The districts of West Nile, Karamoja and Acholi have all imposed bans on charcoal production via by-laws.<sup>37</sup>

Between 2016 and 2018, the National Environmental Management Authority and the National Forestry Authority helped local administrations to design policies and programmes to address the impact of logging on local forests and exploitation of vulnerable communities. This includes technical assistance in drafting by-laws – such as those mentioned above – and greater scrutiny on the issuance of logging permits by local government officials.

The effectiveness of the by-laws has been mixed; some have not been strictly enforced or have been undermined by corruption, but they have had a positive effect in some areas. The practice of awarding logging permits without adequate justification, for example, has reportedly decreased in Karamoja, Gulu, Amuru, Omoro, and West Nile since the intervention of the two agencies. One by-law introduced in the districts of Moroto, Abim, Napak, Kotido and Nakapiripirit, which came into force in 2018, involved a ban on power saws (used for logging shea trees) in an effort to reduce logging without banning the practice. In Acholi subregion, a joint initiative of district local government, the military and the police led to the introduction of intensive night operations to impound trucks carrying charcoal, and imposed a total ban

on trucks carrying more than five bags of charcoal. Between September 2018 and May 2020, sales from impounded charcoal generated over 600 million Ugandan shillings (approximately US\$164 000) for the district treasury.<sup>38</sup> These operations have seen a reduction in the scale of commercial charcoal production.

## Informal

Informal regulation comes in the form of civil society and pressure groups. One such group is Our Trees, We Need Answers, based in Acholi and comprising a local journalist, researchers and law enforcement personnel. This group has exposed prominent government officials as being involved in the illicit charcoal trade, including the chairman of Amuru district, the Fourth Division Army spokesman and the speaker of Gulu district.<sup>39</sup> In collaboration with various district leaders,<sup>40</sup> it succeeded in establishing a framework contained in the 2019 Acholi Sustainable Charcoal Production and Marketing Bill. This policy framework seeks to establish functional local authority committees and standard procedures to monitor and oversee environmentally friendly charcoal farming in the region.<sup>41</sup>

In areas of West Nile, and particularly in Arua district, there are also partnerships between community leaders and a variety of community-based organizations.<sup>42</sup> The aim here is to promote more sustainable charcoal production, i.e. where the environmental and health impacts are reduced. The most widely practised strategy is the planting of tree species provided by environmental conservation agencies that take only nine months to mature before they can be used for firewood. Other strategies include encouraging the use of higher-efficiency charcoal stoves. Political, security, community and religious leaders try to engage the community about sustainable charcoal production – such as methods to harvest and replant trees – by speaking at public events or by making statements on the radio.

▼ Seedlings at a tree-plantation nursery in Uganda.

© Dennis Wegewijs/Alamy





## South Sudan

### Formal

The charcoal trade in South Sudan has operated in a legal and policy limbo for several years. A Forest Policy has existed in draft form since late 2011, with the most recent draft (2015) having been presented for a final reading in late 2015. A main aim of this bill is to create a legal basis for the management of the charcoal trade along with the establishment of the South Sudan National Forest Corporation to aid in this purpose.<sup>43</sup> Between 2015 and 2020, this policy was waiting for 'presidential assent'. As a result of the delay, the Ministry of Environment and Forestry (MoEF) defaulted to colonial-era regulatory arrangements and customary resource-use rules.<sup>44</sup> The only option for strict regulation available to the MoEF was to use ministerial orders to control the extraction, production and trade of charcoal, but these are blunt tools that have effectively operated as bans. In 2015, the MoEF placed a ministerial order banning charcoal exports, though our interviewees say that this ban was only enforced in 2018. Still, the ban has largely been effective, aside from a few porous borders. The government has also tried to introduce cheap cooking gas as alternative to charcoal energy and reduce the felling of trees.

Domestic trade in charcoal is allowed because, other than wood fuels, there is no alternative source of energy for the majority of people in South Sudan. Charcoal production is effectively unregulated at local level. Producers neither have licences nor are they required to get a licence, according to government officials. 'Production of charcoal has been allowed simply because we don't have alternative sources of energy so far,' said a MoEF director general, but 'production is only legal for local consumption, not for export.'<sup>45</sup>

▼ Charcoal sellers on the streets of Juba, South Sudan.

© Mike Goldwater/Alamy







▲ Women sell fresh produce in markets stocked with regional imports in Juba, South Sudan.

© Ashraf Shazly/AFP via Getty Images

Before the export ban, the Ministry of Trade and Industry would issue licences to companies to produce charcoal and export it, but this stopped in 2018 when the ministerial order banning exports came into effect.<sup>46</sup> The MoEF has, however, expressed concern that local consumption is leading to the unsustainable harvest of trees, and that greater regulation of production would be ideal. Producers of charcoal 'should be licensed, given specific areas to produce from and required to plant trees', according to a ministry official, and should also be limited by prohibitions on the harvesting of certain tree species.<sup>47</sup>

In 2020, President Salva Kiir finally assented to the Forest Policy, but it does not appear to have been implemented at the time of writing.<sup>48</sup> It therefore remains to be seen whether and if the Forest Policy will succeed in establishing a formal framework that helps regulate South Sudan's charcoal trade and preserve its forest resources.

## Informal

Theoretically, the use of forest resources in South Sudan is controlled by *payams*<sup>49</sup> – local administrative units, led by traditional authorities – that decide how communal land can be used, and by whom. In practice, however, land tenure in South Sudan is a fraught issue that has become highly complicated through waves of conflict-induced displacement, settlement and return. Returnees in particular have often cut down forests to create farmland or have turned to harvesting trees when they find that communal land is no longer agriculturally productive.<sup>50</sup> Displaced populations, who often have no access to land for farming, often find themselves in a similar position, and so over-exploit forest resources, which are not well regulated.<sup>51</sup>

The breakdown of traditional governance has also led to the exploitation of trees that would normally have been protected by local leaders, such as important fruit trees, which are typically used as dry-season food supplies. According to experts, this is a worrying trend as these trees take over a generation to regrow to maturity, and people rely on their fruit during crop-related food shortages.<sup>52</sup> However, in some rural areas, particularly remote ones, the *payam* system does effectively regulate tree harvesting.





# REGIONAL ROLES AND FLOWS

*A matatu transports charcoal and other goods through Nairobi. © Boniface Muthoni/SOPA Images/LightRocket via Getty Images*



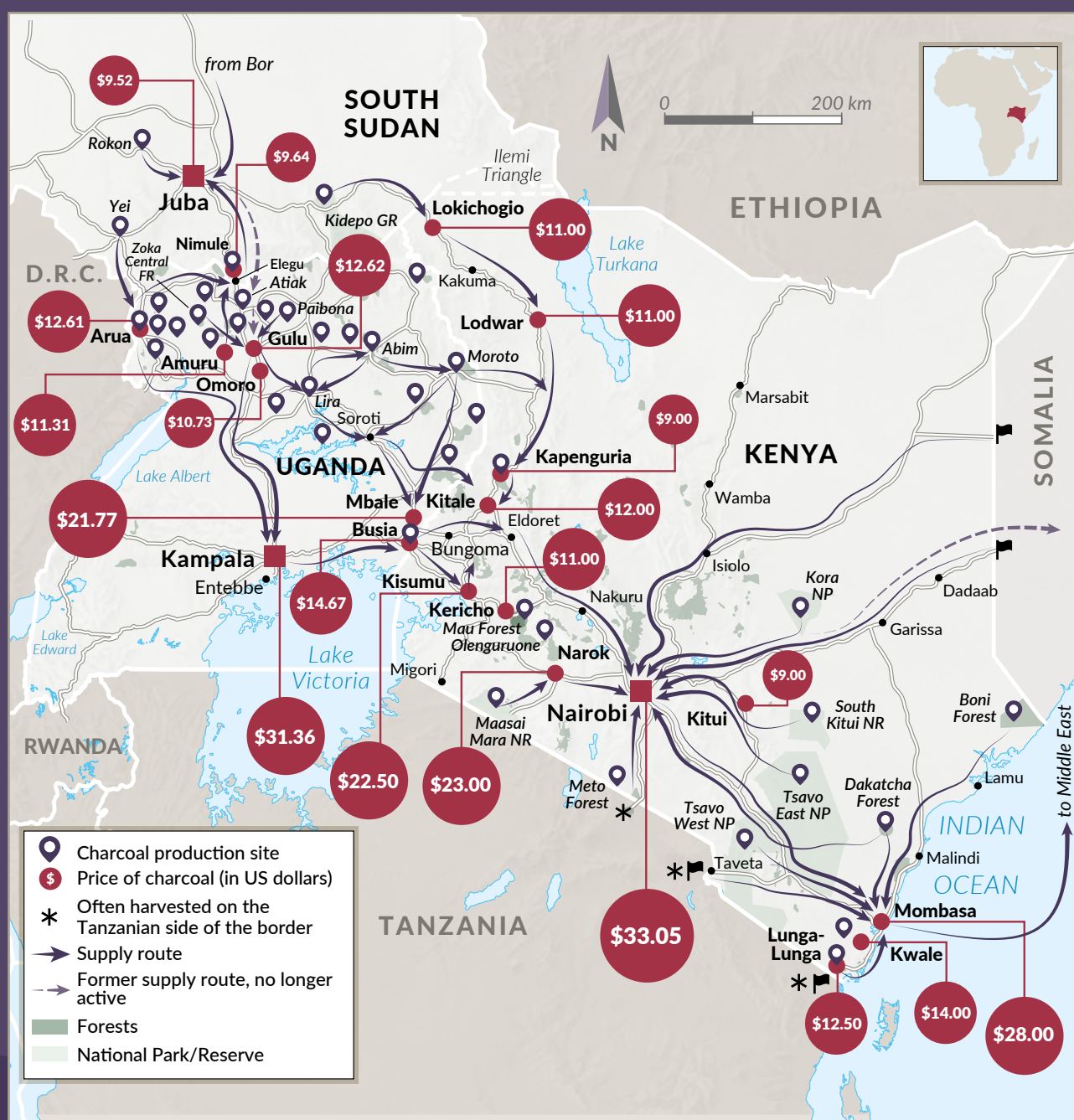
Legislation attempting to regulate or even outright ban the charcoal trade has shaped the system of charcoal flows across the region. It is a system with feedback loops: generally speaking, heightened demand in one country results in the depletion of forest reserves and then increased legal restrictions on production, which then stimulates a lucrative cross-border market and shifts pressure on forest reserves in another country in the region. Most of the charcoal that is produced in East Africa is also consumed in the region, primarily for use in cooking, but some charcoal is also exported internationally.

## Kenya

Despite the 2018 ban, Kenya is still a producer of charcoal. Charcoal is produced predominantly in the north-west, centre, south and south-east of the country. National game reserves, community land and private land are all sources of wood for charcoal production. Production appears especially high in the Kora National Park, Tsavo East National Park and Kitui South Reserve, along with the woodlands in Meto, Nyakweri and Dakatcha. Meto, along the Tanzanian border, is known for its forests of acacia – a tree that produces high-quality charcoal.<sup>53</sup> Community forests are the biggest sources for charcoal in Kenya.

Kenya is also a destination country for Ugandan and South Sudanese charcoal (as well as charcoal from Tanzania, Somalia and timber from Ethiopia).<sup>54</sup> Ethiopian timber is later made into charcoal for consumption in Kenya's northern towns, with some of it reportedly reaching Nairobi.<sup>55</sup> Kenya has also become a major exporter of charcoal to the Middle East (where charcoal is used to light hookah



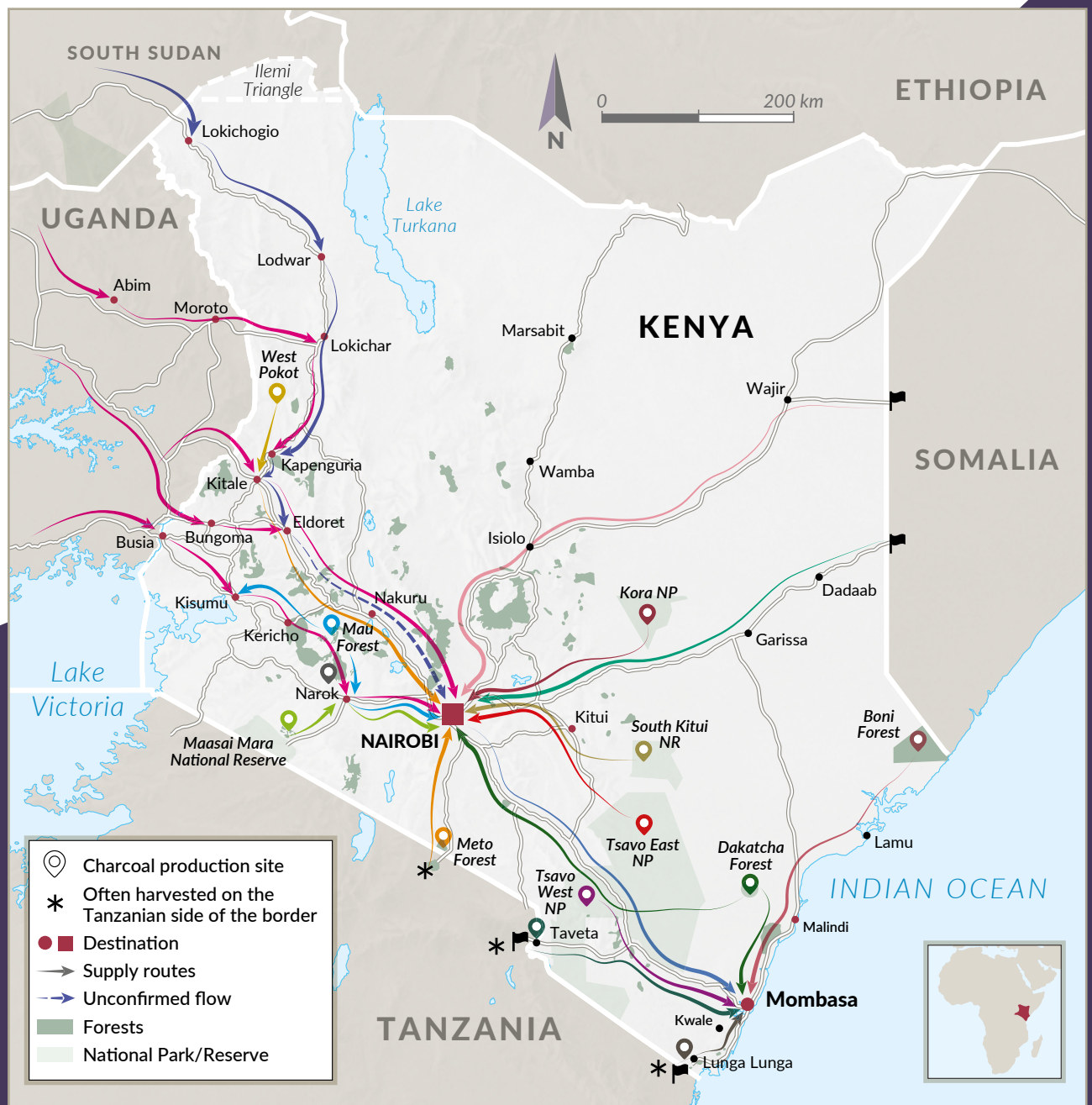


**FIGURE 4** Main charcoal transport routes and average price per bag at local markets.

NOTE: Price per bag sold on the wholesale market was determined using pricing data collected between March and October 2020. A median average was determined from the pricing data available for each city/town.<sup>56</sup>

SOURCE: Field researchers, after consultation with people involved in the charcoal supply chain.

pipes, rather than for cooking), with most charcoal flowing out of the port city of Mombasa.<sup>57</sup> Until as recently as 2018, Somalia was the major exporter of the region's charcoal to the Middle East, with the extremist group al-Shabaab capturing some income from this through levying taxes on goods passing through its territory.<sup>58</sup> However, this situation has now largely stopped due to al-Shabaab's diminished territorial control.



**FIGURE 5** Charcoal supply in Kenya – routes, production areas, forests.

NOTE: Most production in Kenya occurs in arid or semi-arid areas, and often in community forests where law enforcement has restricted powers. Flows were identified through interviews with producers, transporters, and with traders who have knowledge of the origin of the charcoal they sell.

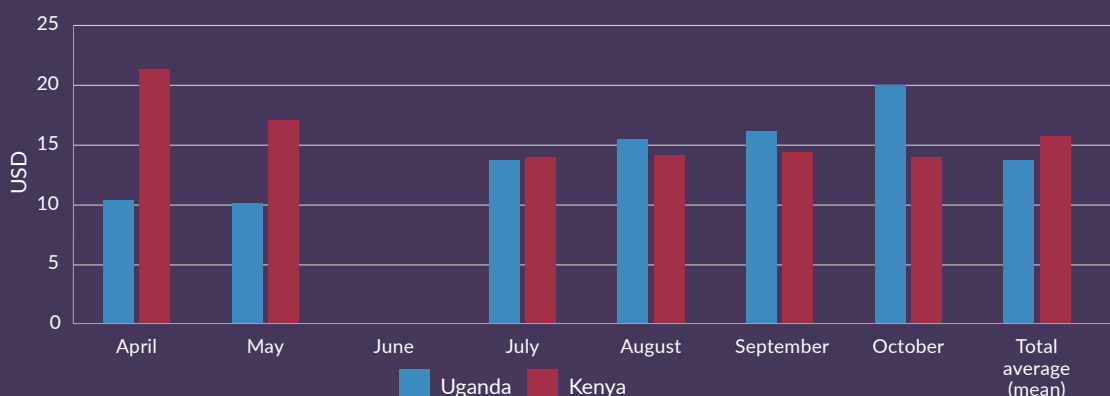
## Kenya–Uganda trade adapts to lockdown

The coronavirus pandemic and its related restrictions had an impact on economies across the region, including the charcoal economy. The town of Busia, which straddles the Kenya–Uganda border, demonstrates both the disruptions of the pandemic and the interdependence of the regional charcoal economy, being the key exit point for Ugandan charcoal into Kenya.

Before the first lockdown was imposed in April 2020, Busia was an important collection centre for charcoal. The Sofia market on the Ugandan side of the border was filled with Kenyan and Ugandan dealers and was a hive of activity, with charcoal being sorted and repacked for the Kenyan market. Before lockdown, at least 200-plus large truckloads of charcoal were offloaded in the Sofia market every day. A journalist who covers the cross-border trade in Busia claims that, by volume, the scale of charcoal smuggling dwarfs all other goods smuggled from Uganda into Kenya.<sup>59</sup>

Sofia market closed during the coronavirus-induced lockdown, but trucks carrying charcoal continued to cross the border, although the number had decreased to about 100 per day.<sup>60</sup> Notably, trucks passed the official checkpoint without being stopped. According to a police commander, with law enforcement preoccupied with enforcing lockdown regulations, the charcoal trade was able to operate more freely.<sup>61</sup> In addition, bribery relating to charcoal became more common among the police due to other sources of ‘income’ not being available.<sup>62</sup>

Since the lockdown, the parking, sorting and loading has changed to the Kenyan side, and is occasionally done at the Kenya Revenue Authority Yard.<sup>63</sup> There, many trucks (more than 50 at a time) will be waiting to load charcoal and distribute it to other towns in Kenya.



**FIGURE 6** Average wholesale price of charcoal in Kenya and Uganda, April–October, 2020.

NOTE: Pricing data was collected from March to October 2020. Participants were typically wholesalers who were asked the price for which they purchased each bag of charcoal and the price they were selling. The increase in Ugandan prices is most likely due to the inclusion of Kampala in the pricing survey from August onwards. Due to this and other difficulties in data collection presented by the pandemic, we have used the median average for monthly prices, rather than the mean, in order to eliminate outliers.



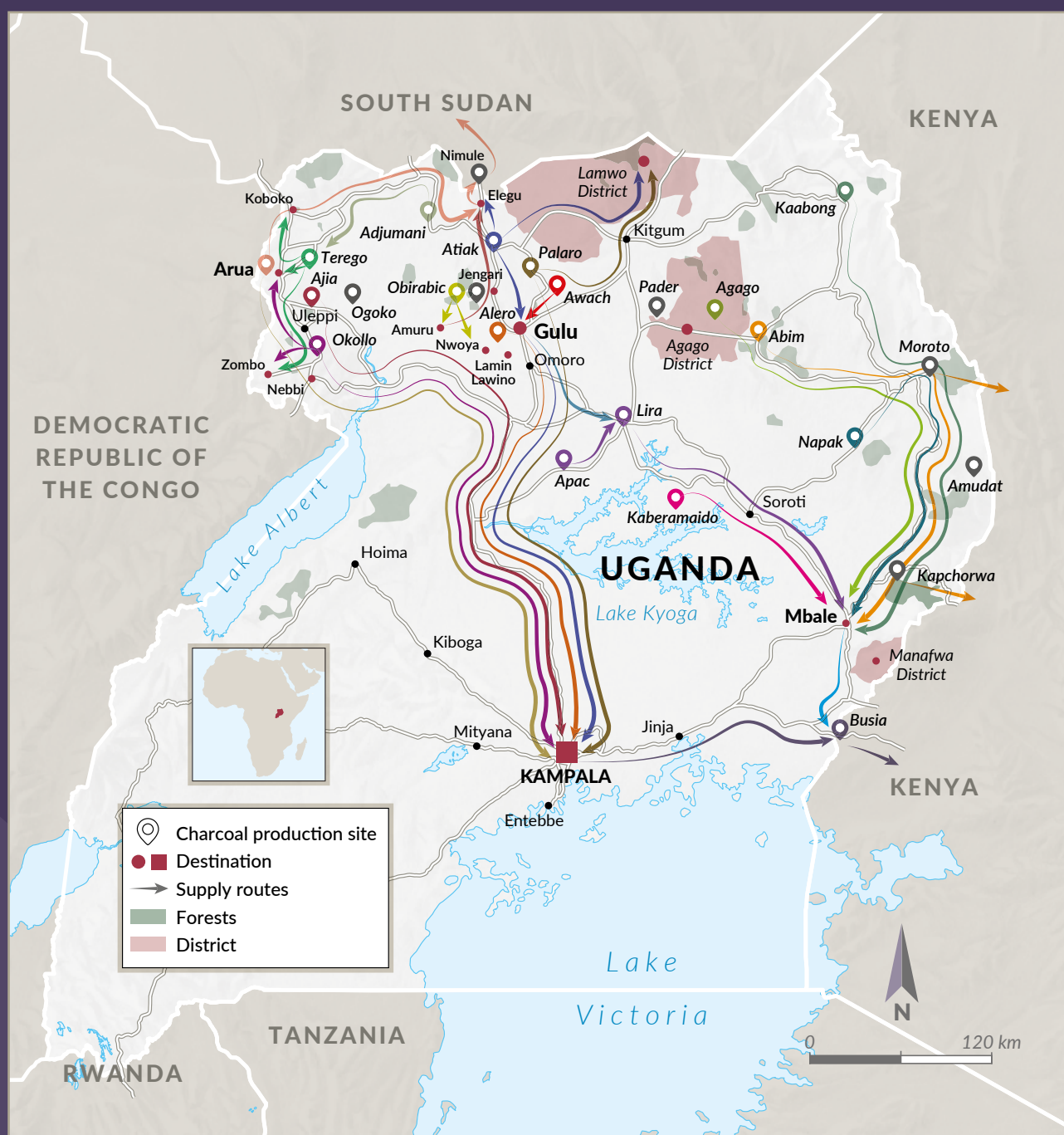


## Uganda

Uganda serves as a producer, consumer and regional transit country of charcoal. Much of its charcoal is transported to Kenya. Due to the Kenyan ban on charcoal production, it is often more desirable for transporters to carry Ugandan charcoal in Kenya as it is often accompanied by a certificate of origin, which serves as protection against confiscation and/or extortion.<sup>64</sup>

The main sites of production in Uganda are found in the northern parts of the country, mainly West Nile and Acholi,<sup>65</sup> and the charcoal produced there is transported south to the major urban centres of Kampala and Mbale. (The annual turnover of the charcoal trade in Kampala estimated to be well over US\$182 million.)<sup>66</sup> Most charcoal is produced from wood harvested in private land, so charcoal producers have no obligation and very little incentive to replant trees. Reforestation initiatives are often impeded by lack of funds and limited interest from the landowners and charcoal producers.<sup>67</sup>

▲ Parked trucks wait to cross the Kenya–Uganda border at Busia. © Baz Ratner/Reuters/Alamy



**FIGURE 7** Charcoal supply in Uganda – routes, production areas, forests.

NOTE: Kampala is the biggest consumer market for charcoal in the country. A substantial amount also makes its way to Busia, where it is moved across the border to be sold in the Kenyan markets.



## South Sudan

South Sudan produces and consumes almost all of its own charcoal. This is a phenomenon of the last 15 years: the signing of the 2005 Comprehensive Peace Agreement introduced a period of relatively greater peace (and higher international investment), and the development of better transport routes, and hence more efficient and interconnected markets, including those for charcoal. Central Equatoria and Eastern Equatoria states are the main regions of production for charcoal destined for Juba, which is the biggest market for charcoal in the country. Lorries heading to Juba use one of four roads: the Juba–Bor road, the Juba–Mundri road, the Juba–Nimule road or the Juba–Yei road. But like other goods, the transport of charcoal across South Sudan is seriously impeded by heavy rains (which wash away roads) and insecurity, with goods subject to ambush by rebel forces in some parts of the country,<sup>68</sup> notably along the Juba–Nimule road.

As well as having a fast-growing consumer market for charcoal, South Sudan is considered to be an important regional exporter. The ministerial order that came into effect in 2018 has been successful at stopping international export of South Sudanese charcoal from Juba (by air) or via Nimule, but charcoal is still smuggled through more remote border crossings and through the northern border to Sudan. Some truck drivers returning from Democratic Republic of Congo, Central African Republic and South Sudan act as brokers as well as transporters in the charcoal supply chain, moving the product through northern Ugandan provinces to the Kenya border at Busia. Small-scale (but high incidence) smuggling also takes place across *panya* routes by foot, cart, bicycle and motorbike (*boda bodas*). (*Panya* routes are untarred, often unmapped, paths through forests and brush that circumvent official border crossings.)

▼ Juba, South Sudan.  
Charcoal for sale at Malakia Market. © Authors







# CHARCOAL VALUE CHAINS

Charcoal bags and chopped wood at a wholesale market in Entebbe, Uganda.

© Camille Delbos/Art In All of Us/Corbis via Getty Images

Value chains follow the same structure throughout the region, but certain aspects may differ from route to route or county to county. Value chains also vary in their degree of vertical integration: in some instances, producers, transporters and retailers may operate almost completely independently of each other, but in others they may all operate in tandem under the instruction of a single actor.

## Producers

Wood is harvested either from private land (usually with the consent of, and payment to, the private landowner); communal land, where use rights may be agreed or contested; or protected forests, where harvesting wood is outright illegal. Wood harvesting is generally done with very little equipment, usually only *pangas* (machetes) or axes. In some instances, a division of labour exists between woodcutters and burners.<sup>69</sup> In some cases, producers do not harvest wood themselves and simply buy it in bundles.



▲ Rural populations in their thousands are involved in charcoal production, contributing to household incomes for millions of people. © Jake Lyell/Alamy



A charcoal kiln is usually constructed close to where wood is harvested. Typically, these are earthen mounds, which again require little in terms of equipment. There are two kinds of earthen kilns: a circular configuration for small trees and a longer, rectangular kiln type for larger trees.<sup>70</sup> Wood is partially covered so that it burns slowly, allowing pyrolysis (the thermal conversion of organic matter in low-oxygen environments) to take place.

This type of charcoal production, however, is highly inefficient: according to the UN, 'as little as 10–20% of the wood used in traditional charcoal making is marketable as charcoal, while the rest is often wasted in the process'.<sup>71</sup>

Given how rudimentary this process is, and that it is mostly reliant on human labour rather than machinery, it is very easy to enter the market at this level. Across the region, hundreds of thousands of rural people are involved in charcoal production at some point of the year, often in between intense periods of agricultural activity. As such, it contributes to household incomes for millions of people, albeit sporadically. However, charcoal producers earn very little in comparison to others along the value chain. They often cannot directly access major retail markets owing to barriers like lack of logistical means, strong ties to native land that limit long distance travel, language barriers, lack of research and market information.<sup>72</sup> Thus, it is difficult to profit substantially from the business as a mere producer.<sup>73</sup>

## Pandemic drives rise in charcoal producers

The coronavirus pandemic and associated economic impact caused by lockdown restrictions drove an uptick in charcoal production among communities who had lost their livelihoods due to the pandemic restrictions. About 1.7 million Kenyans lost their jobs in the second quarter of 2020 due to COVID-19 restrictions,<sup>74</sup> a situation that led many to turn to the charcoal trade, although some also were attracted by the higher wages on offer. In September 2020, it was estimated that over 4 000 people were actively engaged in the charcoal trade in Busia district, Kenya,<sup>75</sup> many of whom had abandoned other income-generating activities to participate in the charcoal trade, which locals referred to as 'black gold'.

The pandemic restrictions also led to South Sudanese citizens returning from neighbouring countries, with some taking up charcoal production to replace lost economic or educational opportunities in countries under lockdown. One charcoal trader in Juba stated:

I am a student in Uganda, but since the pandemic, I could not continue with my schooling. So, I came back here and my friend advised me to venture into the business of selling charcoal. I am still selling at his place but very soon I will have my own place to sell charcoal. I make enough money for my family and I.<sup>76</sup>



▲ A charcoal trader packs charcoal in small tins for sale in Nairobi. © Simon Maina/AFP via Getty Images

Charcoal often moves from producer directly to the consumer, who lives within the locality, carried in small loads by means such as donkeys, wheelbarrows or in small vehicles such as *boda bodas*. The participants in the production process vary from place to place, but share the common characteristic of being impoverished and either lacking work or seeing making charcoal as more profitable. Usually, they are residents in or close to the forests, although the use of foreign labour from neighbouring countries is also common.<sup>77</sup>

Across the region, producers generally sell bags for between US\$6 and US\$10, depending on the mass of each bag and region concerned.<sup>78</sup> Prices may also be affected by the dynamics of individual value chains and market prices. Where producers take care of each phase of production and sales themselves, they reap greater profits. This appears to be the case where production occurs closer to urban areas, as is the case in Juba and Nimule, South Sudan. Here, producers have greater access to other actors in the value chain and are closer to the markets, meaning that the services of intermediaries are not required and they typically have more bargaining power.

Where value chains are longer – for example, in instances where production is split between tree cutters and burners, and where brokers take care of sales – producers generally make less. In Kitui county in Kenya, a group of producers is paid roughly US\$90 for 30 bags, a sum which then is split between as many as 15 people, or US\$6 each.<sup>79</sup> Working conditions are far from ideal and these particular producers forage for their own food in the forests, relying on hunting for bushmeat and their relationships with transporters to procure other food and sanitation supplies.<sup>80</sup>

## Brokers

Following production, charcoal is transported to various destinations. Most of the time, producers will sell directly to transporters. In some cases, though, brokers act as intermediaries. This is common in Kenya and to a degree in Uganda,<sup>81</sup> although not reported to be the case in South Sudan.

In addition to these ‘upstream’ brokers, who provide the link between producers and transporters, there are also ‘downstream’ brokers, who link transporters with dealers and retailers. Downstream brokers are mostly present in urban areas, such as Kampala, although most Kampala retailers (77% according to the Ugandan Ministry of Environment and Forestry’s 2015 charcoal survey) reportedly still acquire their stock directly from transporters.<sup>82</sup> However, a certain degree of overlap in value-chain roles has been observed.<sup>83</sup> For example, a transporter could also be a broker and vice versa. For the purposes of this paper though, a ‘broker’ refers to one who performs no role other than a third party one.

Brokers are also one of the drivers of corruption in the value chain, as they strike deals with local authorities to grant licences to producers, or to sanction the export of charcoal from their district.<sup>84</sup>

*Brokers strike deals with local authorities to grant licences to producers, or to sanction the export of charcoal from their district.*





◀ A *boda boda* (motorcyclist) ferrying charcoal to Mai Mahiu, a rural town 60 kilometres north-west of Nairobi. © Authors

## Transporters

Transporters bring charcoal from rural areas to towns and cities, or from neighbouring countries. Between rural production areas and smaller towns, smaller forms of transport may be used, such as *boda bodas* or small trucks. *Boda bodas* also take charcoal to the highway or to 'go-downs' (warehouses or collection points). But large trucks are the primary form of charcoal transport, mostly taking loads of hundreds of bags at a time, and are more commonly used when transporting charcoal long distances to urban centres.

Truck drivers may work across commodities or be tied to charcoal transport for specific dealers. They tend to have the most direct involvement with petty corruption, paying bribes to traffic police or other law enforcement agencies who monitor the roads to compensate for the lack of the requisite licences. Bribery and corruption are common at this level, as are confiscations for profit.

Since the charcoal moratorium was imposed in Kenya in 2018, the number of police seizures of trucks (and arrests of transporters) has increased, and many independent transporters who were not 'protected' by dealers have been forced out of business transporters.<sup>85</sup> Due to this higher risk of interdiction, transporters, or dealers who control transport, have pushed up prices to account for money set aside for bribes or potential losses due to confiscation and arrests. This practice has led to large price mark ups on stock that has travelled further and that is bought and sold in urban markets. A report into the effects of the 2018 moratorium on logging found that the price of a bag (estimated at 50 kilograms) of charcoal rose by 40 per cent in 2018 compared with the average price for a bag in 2017.<sup>86</sup> Collectively, this reportedly cost consumers of the good an extra 19.7 billion Kenyan shillings (roughly US\$194 million) in 2018 compared with the previous year.<sup>87</sup>

## Dealers

Charcoal is primarily sold in towns and cities for use by households who do not have access to wood fuel for cooking. Major cities such as Kampala and Nairobi have large charcoal markets where wholesalers will collect stock to parcel into smaller bags for sale at various points around the city. These major cities are where most profit is made. A bag that was produced for as little as US\$3 and sold to a transporter for between

US\$6 and US\$10 can be sold for more than US\$30 to retailers in these cities,<sup>88</sup> before the bag is split up into smaller units and sold on the retail market.

By 'dealers', we refer to businesspeople who sit at the top of charcoal enterprises. Sometimes these are rich and powerful people who may control a fleet of trucks delivering charcoal to a city and who may commission charcoal production (or send their agents into the rural

areas to source charcoal supplies). In some cases, they form cartels with other big dealers to set prices, or enforce controls on entry into their market (such as imposing extra fees on transporters who are not allied to them and wish to drop deliveries in the dealer's city).

Dealers often engage in corrupt arrangements with high-ranking officials, who may take a portion of the profits by facilitating their business, for example, by allowing them to transport charcoal on major highways without delays or obstruction by law enforcement. Through the influence of these officials, dealers are able to negotiate the release of trucks that are impounded and even clear roadblocks.<sup>89</sup> Such dealers can afford capital outlays and the risk of having their stock seized or staff arrested, knowing that they can compromise the criminal justice system. 'We are the ones who get arrested and prosecuted so we have to cater for such an eventuality', says 'Maasai', a charcoal trader who always has cash to hand from dealers and police protection.<sup>90</sup> In some instances, dealers are alleged to be employees of the state in Uganda.<sup>91</sup>

## Retailers

Retailers are the last link in the market chain before consumption, and they determine the final price. Retailers have to make a profit but also charge a price that is reasonable enough to ensure clients return. If dealers mark up their prices, factoring in the cost of paying bribes and other costs, retailers must weigh up whether to increase their own prices (and potentially alienate consumers) or accept a reduced profit margin. Retailers' profits account for approximately 14% of the total value of the market in Kenya.<sup>92</sup>

## Police clash over charcoal

In 2019, two different police agencies – the Critical Infrastructure Protection Unit (CIPU) and the Kenyan Police – publicly clashed over jurisdiction over handling cases of illegal charcoal. The CIPU is responsible for securing the railway and key highways, among other infrastructure, while Kenya Police is responsible for general security within the country. In one such incident in October 2019, CIPU officers impounded a truck full of charcoal in Irida near Kitui county. Members of the Police Service later arrived, demanding that they take charge of the consignment. The head of the CIPU later criticized the action and suggested that the police were condoning the illegal activity.<sup>93</sup> Competition between law enforcement agencies could indicate that at least one of these players has been co-opted by a charcoal dealer, and is protecting his/her business.

▼ An open-air retail outlet for charcoal in the Eastlands area of Nairobi, Kenya. © Authors








# CRIMINAL MARKETS:

KENYA, UGANDA AND  
SOUTH SUDAN

Charcoal for sale near Entebbe, Uganda. © Camille Delbos/Art In All of Us/Corbis via Getty Images



**W**hile corruption, violence and cartelization do not characterize the whole of the charcoal economy, they do occur at certain points in the value chain. The pricing data for this report demonstrates the incentives for this. For actors at the top of the value chain, charcoal turnovers are high, and out of this revenue there are substantial profits to be captured through gaining a large share of urban markets (see the graphic below). Illicit profits generate the means for corruption while also attracting the attention of corrupt officials, and also encourage competition for market share. When formal mechanisms for regulating that competition are missing, violence and coercion can arise, though cartelization can provide informal dialogue mechanisms for regulation. If violence is used for competition, then efforts and money spent on deflecting enforcement of other regulations and can also be turned to deflecting enforcement of laws against violence. In this way, these three effects can be reinforcing.

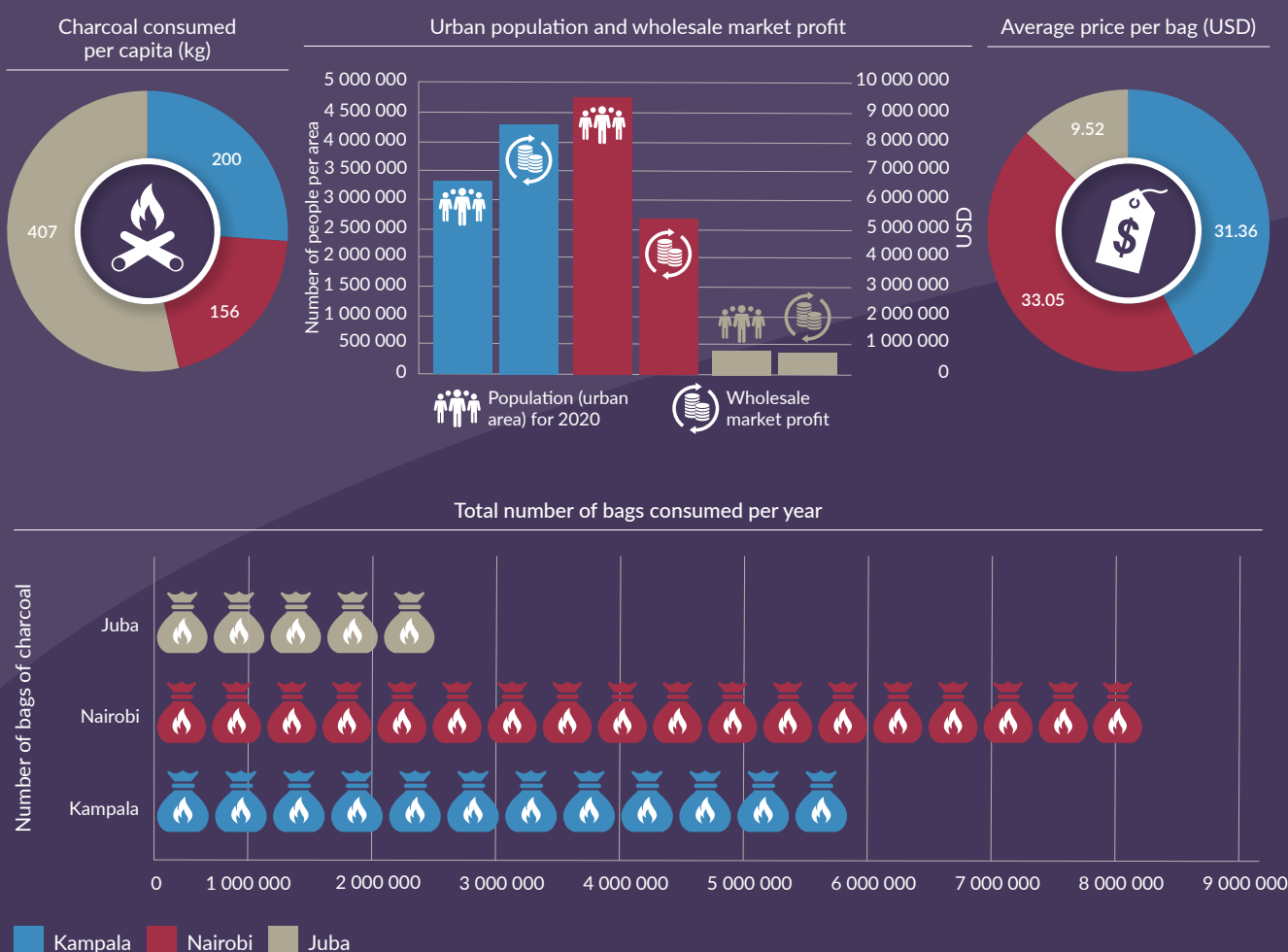
Estimating the size of grey markets provides important information about financial flows and illustrates the incentives and stakes involved in a particular market. It is also difficult and some of the challenges in arriving at these figures are described in the annex. Nonetheless, we hope that our pricing data can add an empirical input that allows us to generate an indicative picture of the value of this vital commodity market.

The diagram on the next page shows that the indicative revenue value of charcoal markets in the three capital cities of this report are high: more than US\$31 million for Juba, US\$182 million for Kampala and US\$271 million for Nairobi. These are the largest markets in the countries, but charcoal is sold nationwide: in every other city, town, and also, at a lower rate, in other locations.

Although we would have liked to calculate the profits for these markets, we don't yet know all the costs of business, which include fuel and vehicle costs, driver and loader salaries, and bribes. As a result, we have calculated revenue. However, we do know that in producer regions the prices that producers are paid per bag of charcoal are far lower than the final retail price. In Kenya, our prices are for bags bought after transport, and so include costs. Our interviews suggest one bribe for a policeman pushes price up by US\$3.63–US\$4.54 per bag. In Uganda, our prices are pre-transport, and we don't have bribe prices, but from our interviews we know that transporters are paying them, and specifically choosing different transport routes to avoid them.



## CHARCOAL PRICES AND CONSUMPTION VOLUMES: KAMPALA, NAIROBI, JUBA



Note: South Sudan experienced very high inflation throughout 2020. In spite of this, price on the ground in local currency (South Sudanese pounds) stayed fairly consistent.

With the information we were able to collect, we believe these calculations indicate that the value of these urban markets is very high. In Uganda, a large share of that value probably gets dispersed into the petty corruption market, and largely captured by police. An unknown amount is diverted into bribes at a higher level, which are also aimed at deterring enforcement.

These preliminary calculations suggest that the grey charcoal economy generates a significant amount of money, much of which is captured in bribes, and not enough by state revenue authorities and people along the value chain.

In East Africa, we see symptoms of fierce – and sometimes violent – contestation of access to charcoal production areas and of competition between different

charcoal dealers, particularly in Kenya and also in Uganda. In Uganda and South Sudan, the military plays a key, corrupt, role in the charcoal economy at certain sites. Local communities, particularly in rural areas, are the major losers in this scenarios, as the environment they depend upon for other rural activities is degraded. The urban poor also suffer inflated prices for a basic commodity.<sup>94</sup> In Uganda, inflation for charcoal increased from –8 per cent to –1.5 per cent over the space of a month between December 2020 and January 2021.<sup>95</sup> Demand appears to remain fairly price inelastic for as long as alternatives such as electricity remain more expensive or unavailable. Consumers need some form of fuel for cooking, so are likely to pay higher prices for charcoal as long as they are lower than the cheapest alternative.

## Kenya

A high degree of criminality surrounds the charcoal market in Kenya, but the nature of the crime differs depending on where along the value chain it occurs. At the production level, the very act of harvesting wood for charcoal production is a crime, as it violates the 2018 nationwide moratorium. Another concern at this level is also the threat of violence by brokers and their exploitation of local populations and foreign labourers.

The transportation phase involves collusion with the state. Informal agreements include *kusafisha barabara* (meaning 'to cleanse the road'), whereby police are withdrawn from major transport routes, allowing the unimpeded flow of charcoal.<sup>96</sup> If roadblocks and patrols need to be reintroduced, dealers will receive prior notice from the police.

Bribes paid on the road are also a common and well-established form of corruption in Kenya. The sum paid as a bribe by the transporter or dealer varies (see box: 'Transporting charcoal to Nairobi'), but they calculate a rough estimate of what they are likely to pay based on the quantity/volume of the charcoal consignment. For instance, the bribe for charcoal from Kitui to Nairobi is about 100 Kenyan shillings (KSh), or US\$0.91, per bag at every roadblock, although this excludes bribes paid to the county government inspectorate and Kenya Forest Service personnel. Transporting charcoal from Ilbissil, Kajiado county, to Nairobi (a distance of 105 kilometres along the Namanga Road) costs about KSh200 (US\$1.82) per bag (for fuel and payment for driver, loader and owner of truck),<sup>97</sup> but bribes to police add an extra KSh400 to KSh500 (US\$3.63–US\$4.54) per bag to the cost.<sup>98</sup>

Given that roadblocks are an effective way of demanding bribes, it is perhaps no surprise that charcoal-transporting routes are heavily monitored. Between Lunga Lunga and Likoni – a distance of 95 kilometres – there are about 19 roadblocks in an area that is supposed to have just one. Here, each

transporter has to part with KSh200 for every truck or *boda boda*. Law enforcers on highways will always claim that the money from bribes 'belongs to the boss',<sup>99</sup> i.e. the officer in charge of a police division.

In theory, the importation of charcoal and its onward transport and sale remains legal in Kenya. Domestically produced charcoal is often claimed to be imported in order for transporters or retailers to avoid confiscation, although of course these loads will lack the correct certification. However, it is also the case that many importers also do not have the correct licences. For importers from Uganda (or those who acquire charcoal from the Busia border point) who lack the requisite documentation, bribes help smooth the way, although they can be expensive. A 200-bag truckload can incur as much as US\$923 in police bribes on the way to Nairobi,<sup>100</sup> but this is still a small price to pay in relation to the potential profits. The GI-TOC estimates that the wholesale market in Nairobi generates upwards of US\$270 million per year,<sup>101</sup> although a substantial portion of this is likely netted by dealers. Ultimately, the cost of bribes is estimated to represent between 20% and 30% of the final retail price in Kenya.<sup>102</sup>

Charcoal has also been used to 'hide' illicit wildlife products, such as ivory. As one interviewee put it: 'If you want to carry contraband just use charcoal. If you mention charcoal to police or any other law enforcement authorities, they immediately think about money [bribes]. They don't want to screen the consignment.'<sup>103</sup>

Corruption also reaches more deeply into the criminal justice system in Kenya. There have been reports of confiscated charcoal simply disappearing from the inventory (and probably sold to another dealer),<sup>104</sup> police involvement in transport,<sup>105</sup> and the seemingly arbitrary throwing out of court cases involving charcoal,<sup>106</sup> indicating collusion between charcoal dealers and various organs of the state.





© Tony Karumba/AFP via Getty Images

## Transporting charcoal to Nairobi

We interviewed a *matatu* (minibus) driver, aged 50, in Embakasi, Nairobi, who also transports charcoal illicitly. He told us about his journey from Nairobi to collect charcoal from an illegal production site in the south of the country, and how he brings the charcoal back to the capital:

We leave Nairobi at 7 p.m., get to the production area [Meto] at midnight, rest and load early in the morning. We would then leave with the cargo at sunset, just as it starts to get dark. The truck is taken to a car wash at Ilbissil Town, where all the dust and mud is removed to forestall detection by hawk-eyed traffic police out to arrest dusty vehicles believed to come from forests.

I would then leave Ilbissil Town at 10 p.m. for Nairobi, using the Namanga Highway. I part with KSh3 000 [US\$27.70] at the first police roadblock. It's a standard figure, and it's been like this for a while. The second roadblock is always at the weigh bridge at Mlolongo, about 20 kilometres from Nairobi CBD [Central Business District]. Here, I give out KSh5 000 [US\$46.13]. This round,

the amount is bigger because this roadblock draws police and the county council inspectorate officers, so one must take care of them all. Any other roadblocks in between, you pay an average of KSh1 000 [US\$9.20]. However, on an unlucky day, you can bump into a Directorate of Criminal Investigations patrol car. Here, be ready to cough [up] KSh10 000 [US\$92.25]. It's just bad luck to meet them. Remember, you also have to part with a 'toll fee' of KSh200 [US\$1.84] per truck/vehicle to owners of farms one passes through moving the commodity from the forest. Mostly charcoal from Meto passes through five farms before getting onto the Namanga Highway on [to] its destination.

We arrive in Nairobi between 3 a.m. and 4 a.m., just before people pour out onto the streets. Our trucks are always in tiptop form, to be able to move fast or outpace patrol police. This cycle would happen two–three times in a week ... After doing this for years, I have come to accept that charcoal is gold.

## Uganda

In Uganda, while charcoal production does lead to tree loss, most production happens on private land where it is legal for landowners to sell access to charcoal producers. However, our fieldwork documented corruption and criminality at several points along the Ugandan charcoal value chain. During the transport phase, bribes are paid to police to avoid scrutiny of charcoal licences, while influential charcoal dealers enter into arrangements with government officials for 'protection' of their business interests. And while the majority of charcoal production takes place in private forests, there is illegal harvesting of wood in protected forests (where the military is implicated).

### Local government corruption

Officials in district local councils receive bribes from producers and dealers to irregularly issue permits even if requirements are not met or instruct law enforcement officials not to impound trucks.<sup>107</sup> Corruption at this level has also undermined efforts to introduce stricter legislation in rural areas. For example, in 2016, district local governments in West Nile and Acholi began discussions about regulating the trade, including by instituting bans and formulating ordinances. Dealers in Kampala reportedly swung these procedures in their favour by establishing local trade organizations that lobbied the districts for changes that would ensure that charcoal still flowed to Kampala.<sup>108</sup>

### Police role in protecting cartels

Dealers seek relationships with state officials who do not themselves participate directly in the trade but exert enormous influence in the civil service and with the police and military.<sup>109</sup> These contacts ensure safe passage of charcoal so that it is not impounded by the National Forestry Authority, local district authorities or any other regulatory or enforcement body.

The District Police often provide dealers with security and protection from a number of risks, such as robbery and confiscation by environmental enforcement officials, but dealers are also able to use their relationships with police to undermine competitors. According to a dealer, confiscation of charcoal by certain officials is a tactic used to destabilize competitors.

Dealers with political protection have also been able to use their contacts to secure industrial charcoal contracts. Between 2015 and 2018, some charcoal cartels counted among their members the then minister for Justice and Constitutional Affairs, two senior army commanders and an assistant commissioner of the Ugandan Police Force.<sup>110</sup> These groups obtained a monopoly on the supply of charcoal to factories in Jinja, where businesses used it to process vegetable oil and smelt iron, and other factories in Kampala and nearby Wakiso district, where small factories refine steel and produce plastic products.

Also, one local council chairman in Gulu explained how a lieutenant general in the army has used his influence to order the release of impounded charcoal on at least two occasions, once in Gulu<sup>111</sup> and again in Arua.<sup>112</sup>

*Dealers in Kampala reportedly established local trade organizations that lobbied the districts for changes that would ensure that charcoal still flowed to Kampala.*



## Military involvement in forests

The Ugandan military has been implicated in both logging and charcoal crimes in public forests, particularly in the forests where they have been deployed to prevent environmental crime.<sup>113</sup> In a historical case, logging and charcoal burning was rampant in the Mabira forest, in the Mukono and Wakisa districts, for example, from the early 2000s to 2014, despite the forest being categorized as a Central Forestry Reserve and nominally protected by the military and Environmental Protection Police Unit.

From 2005 until the present, Zoka forest, in Adjumani district, has also witnessed the heavy deployment of environmental police and military to protect the forest from encroachment by loggers, charcoal dealers and farmers. However, in this instance, enforcement units actively removed competition for forest resources – to the benefit of charcoal producers and dealers – by evicting people, including refugees, who had fled to the forest as a result of insecurity in northern Uganda and South Sudan.<sup>114</sup> These people, realizing the opportunity to establish livelihoods, used the forest's resources both for cooking and as a means of income.<sup>115</sup> As a consequence, forest reserves in this region came under pressure.<sup>116</sup>

In response, the National Forestry Authority, in collaboration with other government agencies, undertook a series of evictions of the 'encroachers' in a number of forests countrywide, beginning around 2005.<sup>117</sup> However, the evictions did not result in a reduction in logging and charcoal burning. Rather, after the removal of refugees and other forest dwellers, loggers and burners moved in, protected by the army and the Environmental Protection Police Unit.<sup>118</sup> Tree felling continued, with the exception that refugees and other dwellers were barred from accessing the forest. An environmental activist with Friends of Zoka, an advocacy group, remarked that the army still exerted control even after the 2018 crackdown exposed rackets in the trade,<sup>119</sup> and indeed continues to do so.<sup>120</sup>

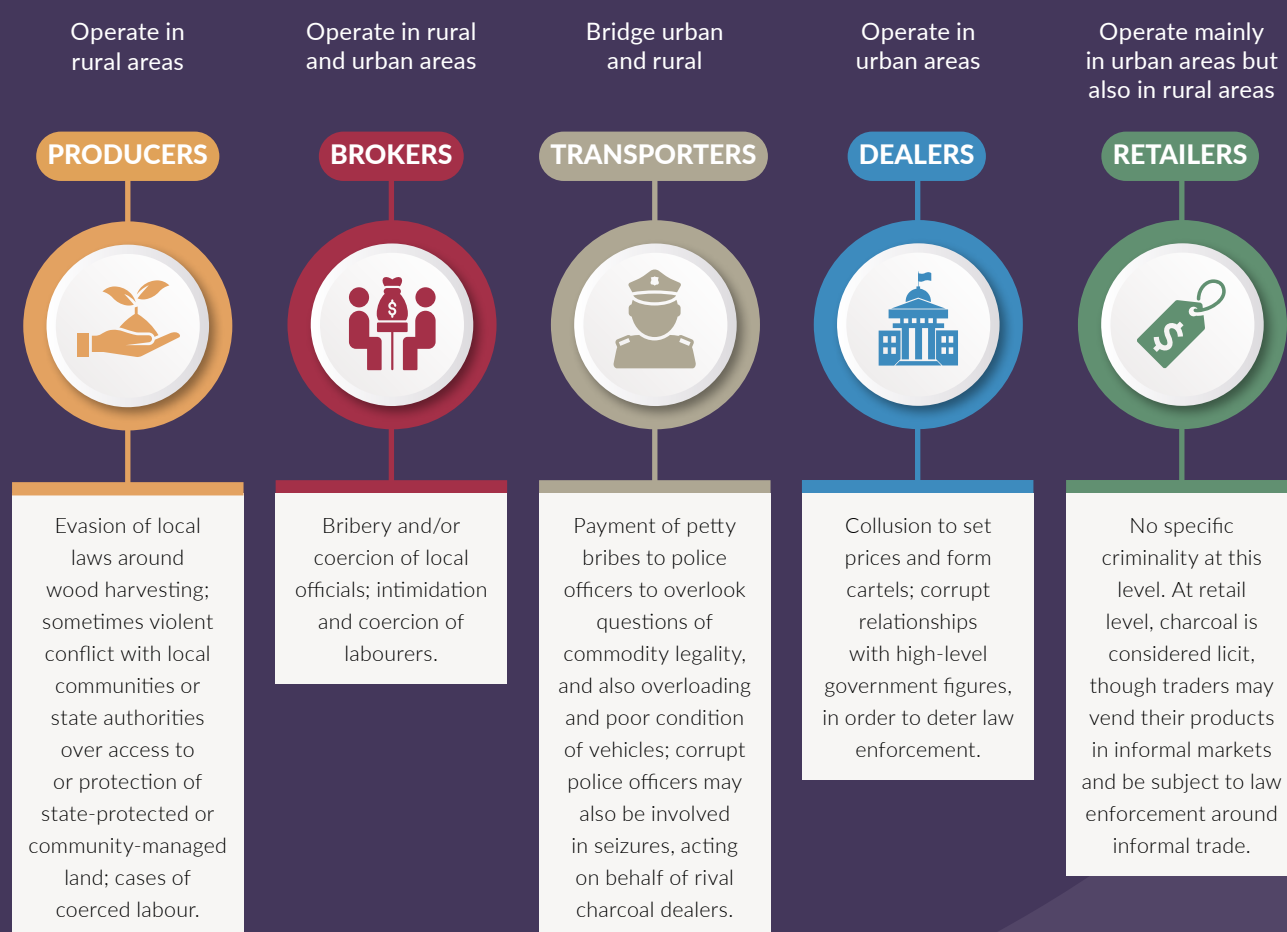
## South Sudan

The trade in charcoal does not appear to be highly organized in South Sudan. The formal legal framework is nascent and largely unimplemented, and as such the charcoal trade may be as much a matter of opportunism as criminality. Nevertheless, there is considerable opacity as to the ultimate destination of various taxes levied by local authorities. Once the charcoal is produced, local authorities tax the charcoal at checkpoints (the MoEF said it does not levy taxes). There is no clear communication between local authorities and the MoEF, and no evidence was found during field research as to how this tax money is actually spent.

In addition, military personnel often involve themselves in woodcutting due to a delay in, or lack of, payment for their ordinary jobs as soldiers.<sup>121</sup> A soldier interviewed at a military post along Juba–Nimule Road had this to say: 'Nobody grants us access. We just go alone. We walk a distance of two hours footing [walking] deep into the forest.'

The involvement of the military in the charcoal trade sometimes leads to violence, with rebels and government soldiers sometimes clashing in forests. ‘There is a lot of insecurity in the forest because of the presence of rebels,’ said one of the soldiers who engages in charcoal production to make a living. ‘They sometimes beat and undress us. We do not wear our uniform when we go to the forest. We just dress like civilians and usually wear shabby clothes.’<sup>122</sup>

At least 10 people involved in the charcoal trade were killed or went missing in 2020 in the outskirts of Juba due to insecurity. According to a trader at Gurei market, who lost two of his workers, the people (who are mostly traders or transporters) were attacked at different locations while ferrying charcoal towards Juba.<sup>123</sup> The attacks have been linked to opposition forces loyal to either the National Salvation Front or the Sudan People’s Liberation Army–In Opposition.<sup>124</sup>




**FIGURE 8** Corruption and criminality in the charcoal value chain.





# CONCLUSION

A view from Kibera slum, Nairobi. © Kabir Dhanji/AFP via Getty Images



**T**his report has attempted to show how numerous grey flows of charcoal through Kenya, Uganda and South Sudan form a regional system with multiple inputs and effects. This analysis has attempted to pull apart the various aspects of this system, while also showing how they are related. We have also attempted to account for the effects of national and local jurisdiction and economy, while pointing out the cross-border nature of many of these flows.

The system described here provides an income and meets the need for an energy source for cooking for millions of people across the region. However, it has several dysfunctional aspects. Charcoal-related forest degradation threatens other aspects of rural livelihood and also destroys precious habitat for wildlife and the carbon capture function of trees. The system also generates corruption and criminality, at times even violence. These effects are largely the result of the failure to effectively implement existing regulations, sustainably manage forest resources and deploy alternative energy solutions; they do not arise because the charcoal trade needs more prohibition.

In fact, data gathered from all across the region indicates the adverse and unintended consequences of Kenya's charcoal ban. After the ban, domestic production continued but corruption increased, and producers became more vulnerable to exploitation. Prices also rose for consumers. The ban may have been effective in reducing the volume of domestic production, but it also appears to have increased the supply of imported charcoal from neighbouring countries via Kenya, effectively displacing environmental degradation to Uganda, South Sudan and most likely Tanzania too.

The ban made regional imports attractive for several reasons: prices were lower in neighbouring countries as supply became restricted in Kenya, and properly imported charcoal was legal, meaning that transporters had to part with fewer bribes on the roads to police. Continued regional imports also allowed illegal domestic production to be laundered into these import flows, as it not really possible to distinguish charcoal from different regions.

In Uganda, where a more complex regulatory situation pertains, with no national ban on domestic charcoal production or trade, several districts in the north have developed their own by-laws to better regulate or to ban charcoal production at a local level. The best of these processes involve engagement with multiple stakeholders and have considerable community support. Where these regulations themselves have had mixed results, this is because in some cases influential charcoal dealers were able to undermine the process.

In South Sudan, where the charcoal regulation framework is underdeveloped and there is weak de facto regulation at production level, the state is deprived of revenue and the charcoal trade is leading to huge pressure on forest resources near urban areas. Producers operating close to Juba and Nimule say they conduct their business

with almost no official oversight of their use of the forests, and an informal system of local tax. In these regions, locals claim that charcoal production has had a devastating impact on tree cover and that producers are venturing into more and more remote areas to harvest wood.

Key characteristics of grey markets are documented by stories of competition and corruption that suggest the presence of cartel-like arrangements in major urban areas, such as Nairobi, and widespread low-level corruption along transport corridors, as police solicit bribes from charcoal transporters. The former speaks to the ability of the grey market to generate high-level corruption risks, as major urban dealers were often rumoured to be protected by high-ranking government officials, who would, for example, 'clear the road' for them. The latter speaks to the inherent risks of making a ubiquitous, bulky,<sup>125</sup> commodity illegal. It is easier for police to spot a charcoal truck carrying a 'grey' load approaching than, say, a trader smuggler a small amount of high-value gold concealed among other goods.

Charcoal trucks are also often overloaded to reduce the number of trips needed, and so transport costs overall, creating more scope for transgression against the law. This makes the charcoal truck driver a prime target for small bribes.

Violence was also noted, though it was not a pronounced feature of the charcoal flows documented here. Violence typically arose where there was a particularly valuable forest resource that enjoys widely-acknowledged state protection (often in nature reserves, including Kora National Reserve, South Kitui National Reserve, Tsavo West National Park and Mount Kenya Forest) and military actors became involved in violently claiming access to it. In South Sudan, the coercive role of the armed actors in charcoal value chains was pronounced, with reports of charcoal traders murdered during the course of the fieldwork and reports of forced labour. In Uganda, the military has also been accused of assisting charcoal producers to gain access and conduct their activities in protected forests such as in the Adjumani district of the Zoka Forest.



▲ Trucks wait in line to cross the Kenya-Uganda border at Malaba. © Brian Ongoro/AFP via Getty Images





## Recommendations

While the role that the current system has in promoting corruption and cartel behaviour must be acknowledged, the emphasis should be on improving charcoal governance and regulation. We set out five recommendations to guide national, regional and international actors:

- **Accurately measure the environmental impact:** the environmental impacts of charcoal production are hard to monitor with the conventional tree cover satellite analysis. It is essential that countries use methods that can capture the impact of charcoal on tree cover loss, and not only other methods which are biased to other forms of impact. This is one of the key potential harms of the charcoal trade and needs to be understood.
- **Monitor value chains, pricing and illicit financial flows:** revenue is being lost due to ineffective regulation of the trade, and financial flows from the trade are partly illicit, often funding low-level corruption and in some cases securing high-level cooperation from political figures. This report has demonstrated the utility of being able to put figures on the amount of money circulating in grey markets – money that is often not captured by official taxation systems.
- **Involve communities, civil society and local authorities:** they are key constituents in preserving environmental resources and regulating local production. In Uganda, local community pressure groups have played an important role advocating to (better) protect state-designated protected forests, and also in working with local authorities to promote more sustainable charcoal production in certain districts of the north. These types of initiatives play a vital interface role between communities and authorities. Interventions should understand and operate within the specific context of local legal frameworks and customs.
- **Harmonize and improve regulation at all levels and transnationally:** measures to improve governance and regulation need to happen at the local (charcoal-producing) level, in national fora and regionally. This last level – the region – is particularly important to prevent national and local measures having unintended consequences for neighbouring countries.

▲ A farmer processing wood into coal in Bunjako Island, Uganda. © Camille Delbos/Art In All of Us/Corbis via Getty Images

# APPENDIX

## Appendix 1

### Survey questions

#### PRODUCERS

Primary question	Supplementary questions
1. How much charcoal do you produce?	<ul style="list-style-type: none"> <li>How is yield measured? Weight? (g, kg)</li> <li>Is there an average yield per sq. m or sq. km burnt?</li> <li>How often do you produce a yield? Once a week? Once a day?</li> <li>What are the steps in the process and how does it take?</li> <li>Quality? – How do you determine quality?</li> </ul>
2. How much does it cost you to produce a yield?	<ul style="list-style-type: none"> <li>Cost for a set quantity</li> <li>What are the different inputs and how much do they cost? <ul style="list-style-type: none"> <li>Labour</li> <li>Materials</li> <li>Access to land</li> </ul> </li> <li>How is production organized – one owner and many workers? A co-operative? Community ownership?</li> </ul>
3. How did you get access to timber or live forest?	<ul style="list-style-type: none"> <li>If forest, <ul style="list-style-type: none"> <li>Who grants access?</li> <li>How long does access last before it must be renewed?</li> <li>What does this access cost?</li> </ul> </li> <li>If timber, <ul style="list-style-type: none"> <li>Where is it from? (location of the forest)</li> <li>What type of wood is it?</li> <li>Who and where did you buy it from?</li> </ul> </li> </ul>
4. Who takes the charcoal once it is produced?	<ul style="list-style-type: none"> <li>Up until which point do the producers own the charcoal?</li> <li>How is the charcoal transported and who pays these costs?</li> </ul>
5. How much are you selling charcoal for?	<ul style="list-style-type: none"> <li>By weight and quality</li> <li>How are you paid for the charcoal? (Currency, goods, credit, etc.)</li> <li>What is your profit?</li> </ul>
6. Are you being financed by any individuals, cooperatives or companies?	<ul style="list-style-type: none"> <li>If yes, who?</li> <li>How do they provide financing?</li> <li>What are the terms of the agreement?</li> </ul>
7. As far as you are aware, do you need a licence to trade this charcoal?	<ul style="list-style-type: none"> <li>Have you applied for a licence in the past?</li> <li>Have you ever held a licence?</li> </ul>
8. Do you have a licence?	<ul style="list-style-type: none"> <li>Who granted it?</li> <li>What did it cost?</li> </ul>

## TRANSPORTERS

Primary question	Supplementary questions
1. How much charcoal are you transporting?	<ul style="list-style-type: none"> <li>Weight? (g, kg, bags, basins)</li> </ul>
2. How often do you transport charcoal?	<ul style="list-style-type: none"> <li>Is it always the same load?</li> <li>Do you always follow the same route?</li> <li>How much do you transport per week?</li> <li>Do you know of other charcoal routes?</li> <li>Do you ever transport charcoal to export ports on the coast?</li> </ul>
3. Who owns the charcoal you are transporting?	<ul style="list-style-type: none"> <li>Individual or company?</li> <li>Where are they based? <ul style="list-style-type: none"> <li>Where are they from?</li> <li>Where was the charcoal produced?</li> <li>Where did you buy it from them?</li> </ul> </li> </ul>
4. How much does the charcoal owner pay for this transport?	<ul style="list-style-type: none"> <li>How much are you paid? For what role?</li> <li>Are there any other costs – e.g. bribes – and how are these budgeted?</li> </ul>
5. When you arrive at your destination, who takes the charcoal?	<ul style="list-style-type: none"> <li>Is it all offloaded in one location?</li> </ul>
6. As far as you are aware, do you need a licence to trade this charcoal?	<ul style="list-style-type: none"> <li>Have you applied for a licence in the past?</li> <li>Have you ever held a licence?</li> </ul>
7. Do you have a licence?	<ul style="list-style-type: none"> <li>Who granted it?</li> <li>What did it cost?</li> </ul>
8. Does any 'informal' authority grant you permission to produce charcoal?	<ul style="list-style-type: none"> <li>What does this involve?</li> </ul>
9. Are you part of any trade associations?	<ul style="list-style-type: none"> <li>Which ones?</li> <li>What benefit do you derive from this association?</li> <li>How is this association organized?</li> </ul>

## TRADERS

Primary question	Supplementary questions
1. How much charcoal have you bought?	<ul style="list-style-type: none"> <li>Weight? (g, kg, basins, bags, truckloads)</li> <li>Period of time? (week, month, etc.)</li> <li>Quality? – How do you determine quality?</li> <li>How many times a month do you buy charcoal? <ul style="list-style-type: none"> <li>Do you always buy the same amount? If it varies, how?</li> </ul> </li> </ul>
2. How much did you pay for the charcoal?	<ul style="list-style-type: none"> <li>By weight and quality</li> <li>How did you pay for the charcoal? (Currency, goods, credit, etc.)</li> </ul>
3. Who did you buy the charcoal from?	<ul style="list-style-type: none"> <li>Role? (miner, buyer, dealer, producer, agent)</li> <li>Location? <ul style="list-style-type: none"> <li>Where are they from?</li> <li>Where was the charcoal produced?</li> <li>Where did you buy it from them?</li> </ul> </li> </ul>
4. How much charcoal are you selling?	<ul style="list-style-type: none"> <li>Weight? (g, kg, bags, basins)</li> <li>Period of time? (week, month, etc.)</li> <li>Quality? – How do you determine purity?</li> </ul>
5. How much are you selling charcoal for?	<ul style="list-style-type: none"> <li>By weight/ measurement and quality</li> <li>How are you paid for the charcoal? (Currency, goods, credit, etc.)</li> </ul>
6. Who are you selling your charcoal to?	<ul style="list-style-type: none"> <li>Role? (State, exporter, etc.)</li> <li>All to one person or to multiple people?</li> <li>Location? <ul style="list-style-type: none"> <li>Where are they from?</li> <li>Where do you sell to them?</li> </ul> </li> <li>What do they do with the charcoal?</li> <li>Is any of this charcoal destined for export?</li> </ul>
7. What or who determines the prices charcoal is bought and sold for?	
8. Are you financing any charcoal-producing operations or charcoal buyers?	<ul style="list-style-type: none"> <li>If yes, where?</li> <li>How do you provide financing?</li> <li>What are the terms of the agreement?</li> </ul>
9. As far as you are aware, do you need a licence to trade this charcoal?	<ul style="list-style-type: none"> <li>Have you applied for a licence in the past?</li> <li>Have you ever held a licence?</li> </ul>
10. Do you have a licence?	<ul style="list-style-type: none"> <li>What did it cost?</li> <li>Who granted it?</li> </ul>
11. Does any 'informal' authority grant you permission to trade charcoal?	<ul style="list-style-type: none"> <li>What does this involve?</li> </ul>
12. Are you part of any trade associations?	<ul style="list-style-type: none"> <li>Which ones?</li> <li>What benefit do you derive from this association?</li> <li>How is this association organized?</li> </ul>



## Appendix 2

### Calculations for total charcoal revenue generated in Kampala, Nairobi and Juba

Estimating the size of grey markets is difficult. We hope that our pricing data can add a vital empirical input that allows us to generate an indicative picture of the value of this vital commodity market.

There are several assumptions in our calculations for revenue. Price per bag is also not fixed due to negotiability, but our estimates are averages based on prices observed over a six-month period.<sup>126</sup>

Rough estimations of revenue in the major cities were determined using available data for each city, and data from the country level where city data was unavailable. Formulas differed according to city depending on what data was available from various sources. Using this data, rough estimations were made of the amount of charcoal consumed per city per year, as well as per household and per capita (if there was no source already specifying this).

Using existing estimates for average mass of a bag and number of charcoal consumers per city, we were able to calculate estimates for number of bags consumed per year. Using our own pricing data, we estimated the amount of revenue made from selling bags of charcoal in each city. As our pricing data was for large bags that are typically sold at wholesale level, these estimates of revenue generated for the trade are for the wholesale market, not retail where charcoal is sold in smaller quantities.

As with many such calculations, the data for these calculations posed several challenges and some aspects of assumptions and information used below should be noted. Some data was older than we would have liked, and some data was country specific rather than city specific. There is no standard mass for a bag of charcoal, so averages were used, which differ per city/country. Given that available data differed for each city/country in some cases, the formulas used in calculating revenue also differ based on what information is available.

#### KAMPALA:

Using data from the 2015 National Charcoal Survey:

837 metric tonnes were supplied daily in the dry season and 1 017 in the wet season. Dry and wet seasons make up roughly half of the year each.

1.  $837 \times 182.5$  (half a year) = 152 752.50
2.  $1\,017 \times 182.5$  = 185 602.50
3.  $152\,752.50 + 185\,602.50$  = 338 355 tonnes per year supplied to Kampala  
= 338 355 000 kgs

65.7% of households use charcoal in urban Uganda.

1. Kampala greater urban population (2015)  
= 2 577 000
2. Average number of persons per household (Uganda) = 4.7<sup>127</sup>
3.  $2\,577\,000/4.7 = 548\,297.87$  (number of households in Kampala)
4. % of households using charcoal (urban areas of Uganda) = 65.7%
5.  $65.7\% \text{ of } 548\,297.87 = 360\,231.70$  households using charcoal in 2015
6.  $338\,355\,000/360\,231.70 = 939.27$  kgs consumed per household per year

Using annual household consumption, number of people per household and percentage of households using charcoal as constants:

1. Kampala urban population 2020 = 3 298 000
2.  $3\,298\,000/4.7 = 701\,702.13$  households
3.  $65.7\% \text{ of } 701\,702.13 = 461\,018.30$  households using charcoal in 2020
4.  $461\,018.30 \times 939.27 = 433\,020\,658.64$  kgs consumed per year in Kampala (assuming consumption meets supply)
5. 433 020.66 metric tonnes per year in Kampala

Per capita consumption = household consumption/number of people per household

$939.27/4.7 = 199.84$  kg per capita consumption (rounded up to 200)

1.  $433\,020\,658.64/74.6$  (average mass of a bag as per Charcoal survey) = 5 804 566.47 bags consumed per year.
2.  $5\,804\,566.47 \times 31.36 = \text{USD } 182\,031\,204.50$  revenue per year

## Calculations for the respective value of charcoal markets in Kampala, Nairobi and Juba

### Formula:

Value/Turnover

- Annual turnover = Number of bags consumed per year  $\times$  Average price per bag
- Number of bags consumed per year = Total annual consumption  $\div$  Average mass per bag of charcoal

- Total consumption of charcoal per year (kg) = Total population urban area  $\times$  annual per capita consumption of charcoal urban area (kg)

### NAIROBI:

- Population total urban area = 4 735 000 persons<sup>128</sup>
- Charcoal consumption per capita per year (urban areas) = 156kg (pc)<sup>129</sup>
- Average mass per bag = 90kg (per bag)<sup>130</sup>
- Average price per bag in Nairobi (wholesale) = US\$ 33.05 (per bag)<sup>131</sup>
- Average price per bag in Nairobi bought from producers = USD 28 (per bag)<sup>132</sup>

Turnover/Value in Nairobi:

1.  $4\,735\,000 \times 156 = 738\,660\,000$
2.  $738\,660\,000 \div 90 = 8\,207\,333.33$
3. Turnover from wholesale per annum:  
 $8\,207\,333.33 \times 33.05 = \text{US\$ } 271\,252\,366.56$

### JUBA:

- Population total urban area = 403 000<sup>133</sup>
- Charcoal consumption per capita per year in kg (urban) =
  - No stats for per capita consumption, value calculated by GI-TOC researchers:
    - 2 500 000 bags consumed per annum as of 2014<sup>134</sup>
    - Juba population in 2014 = 307 000<sup>135</sup>
    - $2\,500\,000 \div 307\,000 = 8.14$  (bags consumed per capita per year)
  - $8.14 \text{ bags (pc)} \times 50\text{kg (per bag)} = 407\text{kg per capita consumption per year}$
- Average mass per bag = 50kg<sup>136</sup>
- Average price per bag in Juba (wholesale) = USD 9.5

Turnover/Value for Juba:

1.  $403\,000 \times 407 = 164\,021\,000$  kg total consumption per year
2.  $164\,021\,000 \div 50 = 3\,280\,420$  bags consumed per year
3.  $3\,280\,420 \times 9.52 = \text{USD } 31\,229\,598.40$  turnover per year

Unfortunately, pricing data for bags bought from producers was not collected in South Sudan.

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From production areas, charcoal is moved by road, by and large by truck, to larger urban areas. Major highways are generally used, but back routes (*panya* routes) are often used to circumvent border checks and roadblocks. Towns, especially major cities, receive charcoal from multiple sources.

Midsize towns en route to major cities – like Lokichogio, Lodwar, Eldoret and Busia – are destinations as well as transit points, and charcoal in these markets commanded prices that were not much higher (and in some cases lower) than in towns in production areas. Towns falling along the belt between Kampala and Nairobi (and to a lesser extent, Mombasa) commanded prices much higher than other midsize towns (e.g. US\$23 in Narok versus US\$11 in Lokichogio).

Major urban centres are generally the final destinations for charcoal and also where it is most expensive. Prices for a bag of charcoal in Kampala (US\$31.36) and Nairobi (US\$33.05) are around 300% higher than in production-area towns. The exception to this is Juba, where charcoal is far cheaper than in other regional capitals and in many smaller towns (US\$9.52). The transport of charcoal accrues various costs that factor into its ultimate price in these large markets. These costs include paying drivers, buying fuel and vehicle maintenance, but they also include bribes paid to corrupt officials along the way.

By far, the highest prices are seen in the cities and towns in the belt running from Kampala to Nairobi, which is also the road route that has the highest number of law-enforcement checkpoints where bribes must be paid, according to our informants. Relatively hidden factors – like corruption and cartel behaviour like price fixing – may account for high charcoal costs in some markets.

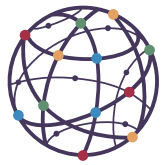
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