Achieving sustainable charcoal in Kenya
Harnessing the opportunities for cross-sectoral integration

OVERVIEW
The charcoal sector in Kenya is ever growing along with urbanization. It can greatly contribute to the economic development, employment creation and the livelihoods of the population. However, lack of coordination among different ministries and actors in regulating the sector results in low profits for producers, the majority of whom are resource-poor farmers in drylands. This brief aims to raise awareness among Kenyan stakeholders on the urgent need to create an enabling environment for the charcoal sector through cross-sectoral integration.

Summary of Kenya’s charcoal sector
Charcoal consumption is increasing faster than urbanization, with over 80% of the urban population dependent on it. The sector’s estimated value is equivalent to that of the tea industry, and it supports the livelihoods of over 2 million people in the country.
Charcoal production and trade has been legalized, with regulation and permits handled by the Kenya Forest Service (KFS). Despite this, a number of challenges remain:
• Overlapping responsibilities among ministries across the charcoal value chain complicates its management and regulation (See Table 1).
• Lack of awareness and protection of rights afforded by charcoal production and trade permits give leeway for corruption, particularly in transportation.
• Most charcoal producers use inefficient traditional earth kilns, wasting 85-91% biomass. This puts additional pressure on the drylands which provide over 75% of the hardwood used to make charcoal.
• Farmers do not prioritize sustainable production of wood for charcoal due to low economic profits and non-compatible technologies in the absence of an enabling policy environment.

How important is the charcoal sector to the national economy?
Compared to firewood which is a dominant primary energy source in rural areas, over 80% of urban households in Kenya rely on charcoal, due to its higher energy density, lower transport costs and relative cleanliness. A national survey in 2013 estimated that charcoal consumption had risen from 1.6 million t/year in 2004[1] to 2.3 million t/year in 2013[2]. This is an increase of 5% per year, higher than the rate of urbanization during the same period. Based on this type of consumption data, the economic value of the charcoal sector in Kenya in 2004 was estimated at KSh 32 billion [1], comparable to the contribution of the tea industry, a major export commodity of the country, and far exceeding that of coffee, maize, wheat and livestock. The most recent survey suggests that the sector is now worth KSh 135 billion [1, 2].
The charcoal sector involves several actors (see Figure 1).

### Figure 1: Stakeholders in the charcoal value chain in Kenya

It is estimated that the charcoal sector supports the livelihoods of 2-2.5 million Kenyans directly and indirectly, creating employment for 0.5-0.7 million as producers (farmers and burners), traders/middlemen, and vendors across the value chain [1]. Other stakeholders include those responsible for regulation (KFS, Police), those involved in research and development (R&D) (KEFRI, universities) and those responsible for policy (Ministries of Health, Agriculture, Livestock and Fisheries, Environment and Natural Resources, and county authorities).

**The charcoal policy environment**

The policies related to the charcoal sector in Kenya are spread across several ministries ranging from Agriculture, Livestock and Fisheries Development, Energy and Petroleum, Environment and Natural Resources and county governments, resulting in an unclear framework for stakeholders [3,4]. As Table 1 shows, incoherent legislation from different government departments targeting the same or sometimes different sections of the value chain (from feedstock supply to marketing) have become difficult to implement due to conflicting directives, making it impossible for the stakeholders to comply. Despite the Charcoal Rules of 2009 mandating Kenya Forest Service (KFS) to grant licenses to groups organized into Charcoal Producer Associations (CPAs) to legally produce sustainable charcoal, high transaction costs to screen applications for sustainability have resulted in delayed licensing, discouraging potential sustainable producers. Corruption and delays in issuing the required licenses for sustainable charcoal production allows illegal charcoal to dominate the market at the expense of those abiding by the rules. This has also opened up the sector to more corruption from other law enforcement agencies like the traffic police and local authorities who capitalize on the lacuna by demanding bribes while almost no prosecution or confiscation of arrested charcoal is reported. For example, in 2010/2011, KFS reported that only 498 sacks of illegal charcoal were recovered [1] despite existence of many control points within the production sites and transportation channels around the country. Ironically, charcoal producers and transporters are often unaware of their rights upon applying/acquiring the licenses, and as such they continue to pay bribes to the police. Middlemen also exploit producers by keeping farm-gate prices low. Consequently, farmers gain low returns while urban consumers pay higher prices, because bribes amount to 20%+ of the final price, thus discouraging sustainable supply.
Charcoal geography and technology

In urban areas where charcoal is most consumed, the adoption rate of more efficient charcoal stoves is high at 85% [5]. In contrast, in rural areas where most charcoal is produced, about 99% of producers use earth mound kilns with a wood-to-charcoal conversion efficiency of 8-15% [1]. Furthermore, charcoal production depends on selective felling of live hardwood tree species, such as *Acacia* spp., leaving the landscape dominated by softwood species, such as *Commiphora* spp., leading to biodiversity loss. Roughly 75% of charcoal consumed in Kenya comes from the drylands [6], with a shift of charcoal hotspots into further hinterlands – say from Narok to Kajiado and Makueni – over the past few years as favourable tree species become exploited [2]. With urbanization expected to rise in the coming decades, increasing charcoal demand with current technology levels will have a significant impact on dryland forests and woodlands degradation.

Options and challenges to make the sector sustainable

In view of the increasing demand for charcoal in coming decades, improving sustainability of the charcoal sector in Kenya is critical, and promotion of efficient charcoal production and consumption technologies together with an enabling policy framework is necessary. Agroforestry supplies wood from farms and if adopted, together with improved kilns and cookstoves, may play an important role in making the charcoal sector more sustainable [4]. To date, however, adoption rates of sustainable production practices are generally very low. This could be as a result of lack of incentives for producers in an adverse policy environment.

### Table 1: The charcoal regulatory framework in Kenya

<table>
<thead>
<tr>
<th>Ministry of Environment, Water and Natural Resources</th>
<th>PRODUCTION</th>
<th>TRANSPORT</th>
<th>TRADE/END-USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure endangered species not used</td>
<td>Mandate the use of efficient conversion kilns</td>
<td>Issue a license to charcoal producer association</td>
<td>Issue a permit for transport</td>
</tr>
</tbody>
</table>

**Ministry**
- Regulate and mandate tree planting on farm
- Ensure endangered species not used
- Mandate the use of efficient conversion kilns
- Issue a license to charcoal producer association
- Issue a permit for transport
- Issue a permit for trade

**Agriculture, Livestock & Fisheries**
- Requires minimum 10% tree cover on farm

**Energy**
- Stresses fast growing species
- Advocates for renewable energy

**Environment, Water and Natural Resources**
- Mandates National Environment Management Authority (NEMA) to determine if Environmental Impact Assessment License (EIAL) is issued

**Ministry of Environment, Water and Natural Resources**
- Empowers the responsible minister to make the Charcoal Rules regulate all the activities of the charcoal sector
- Mandates Kenya Forest Service (KFS) to issue a license to charcoal production association (CPA) once sustainability is ascertained, while providing extension services. Ensures CPA involved in the local environment committee to assess the land-use plan
- Mandates KFS to process the charcoal transport/movement permit

**Local Gov./Internal Security**
- Empowers the Local Authority to regulate forest exploitation and transportation of forest products including charcoal
- Requires traders to apply for a Single Business Permit
- Mandates Traffic police to verify the validity of charcoal transport permits

Key steps to achieve transition from business-as-usual to a sustainable charcoal industry in Kenya include:

- **Creating a reliable sound baseline** on charcoal demand and supply for guiding policies and planning.
- **Promoting R&D by public/private sectors to develop compatible technologies** for sustainable charcoal production depending on particular operating scales – i.e., multi-purpose agroforestry systems, coupled with institutional arrangements to control grazing animals to enable farmers managed natural regeneration, affordable and acceptable charcoal kilns to make full use of wood resources including small stems and branches, and efficient cooking stoves – taking into consideration the dryland socio-economic contexts in which they will be operated.
- **Setting up a policy forum** where Ministries of Environment and Natural Resources (with KFS), Energy, Agriculture, Livestock and Fisheries Development, county governments and others discuss, streamline and harmonize their authority and responsibilities to regulate the charcoal sector as a prerequisite for an enabling environment.
- **Simplifying the license/permit systems**, including considerations for streamlining licensing and decentralization of the process of implementing screening and environmental impact assessment (EIA) under the National Environment Management Authority (NEMA) country offices.
- **Harmonization of related regulations** dealing with tree felling among relevant authorities at the decentralized local level to ease legal compliance by stakeholders.
- **Initializing a national communication strategy** to raise awareness on sustainable production and utilization of charcoal, and its legal status.

Figure 2: “From seeds to ash” sustainable charcoal model (Cookswell Jiko) It is easy to participate in the seed-to-ash cycle by planting and growing more trees, using only the branches without cutting the whole tree down for fuelwood, and using energy-saving stoves, ovens and kilns for clean cooking.

References: