





# MITI MINGI MAISHA BORA: SUPPORT TO FOREST SECTOR REFORM IN KENYA



# The Legally Compliant Charcoal Industry and its Barriers to Growth in Kenya

Matthew Owen, consultant

November 2013

NIRAS Finland Neilikkatie 17 01300 Vantaa, Finland Business ID 0891018-0

www.niras.com

P: + 358 9 836 2420 F: + 358 9 836 2 421 E: niras@niras.fi

# TABLE OF CONTENTS

ACKNOWLEDGEMENTS AND DISCLAIMER				
ACR	ACRONYMS AND ABBREVIATIONS			
EXE	EXECUTIVE SUMMARY			
			-	
1 1	NTROD			
1.1	The Ke	nyan charcoal industry		
1.2	Study I	background		
1.3	Study p	purpose	10	
1.4	Study a	approach	10	
1.5	Scope	of study	11	
<b>^</b> 1		<b>c</b>	40	
21		o	12 12	
2.1			IZ	
	2.1.1	Charges I production	∠۱ 10	
	2.1.2	Charcoal production	12	
	2.1.3	Charcoal movement	15	
	2.1.4	Charcoal trade and retail	17	
• •	2.1.5	Regulatory situation in other countries	17	
2.2	Charco	al production case studies	20	
	2.2.1		20	
	2.2.2	Beet cattle operation, Laikipia	20	
	2.2.3	Mixed beef, game and tourism operation central Rift Valley	21	
	2.2.4	Dairy cattle operation, Kilifi	21	
	2.2.5	Arable farming operation, Rift Valley	22	
	2.2.6	Forestry operation, Thika	22	
	2.2.7	Lessons from case studies	23	
2.3	Charco	al markets	26	
	2.3.1	Introduction	26	
	2.3.2	Hospitality industry	26	
	2.3.3	Retail sector	27	
2.4	Industr	y harmonisation	28	
	2.4.1	Introduction	28	
	2.4.2	Industry association	28	
	2.4.3	Industry standards	28	
	2.4.4	Shared branding	29	
3 1	BARRIE	RS TO GROWTH	30	
3.1	Introdu		30	
3.2	Uncert	ainty over rules	30	
3.3	Fear of	enquiring	31	
3.4	Dispro	portionate cost of compliance	31	
3.5	Moverr	ient difficulties	32	
	DECOM	MENDATIONS	22	
<b>4</b> 1		isting environmental legislation to regulate charcoal production on private land	<b>33</b>	
т. і 12	Elimina	te movement permits charcoal from all sources	33	
<b>т.</b> ∠			55	
Anne	ex A : AF	RIDGED TERMS OF REFERENCE	34	
Annex B : STUDY ITINERARY				
Anne	Annex C : PEOPLE CONSULTED			
Anne	Annex D : BIBLIOGRAPHY			
			-	

# ACKNOWLEDGEMENTS AND DISCLAIMER

I am indebted to the staff of the Kenya Forest Service, particularly the Miti Mingi Maisha Bora Programme team in Nairobi under the management of Zipporah Toroitich, who jointly developed the idea for this study and moved it through the various stages of KFS procurement. Steffen Roettcher, the former MMMB Forest Livelihoods Advisor, provided invaluable help with timetabling and logistics, as well as giving his personal support and accompanying me on the July field visits.

I would also like to thank the many other people in Kenya who agreed to meet me or to be interviewed by phone or email in the course of the study. They are listed individually at the end of the report. Without their generous responses to my unsolicited approaches it would have been impossible to gather a meaningful cross-section of experiences and ideas for the development of the legally compliant charcoal sector.

Notwithstanding the efforts made to seek a wide cross-section of opinion, the views expressed in this report remain those of an independent consultant.

Matthew Owen Axbridge, UK

Cover photo: Charcoal being weighed and packed at Kakuzi Ltd., Makuyu

# ACRONYMS AND ABBREVIATIONS

ASIFLOR	Associacao das Siderurgicas para Fomento Florestal (Steel Industry Association for Forest Promotion, Minas Gerais, Brazil)
CPA	Charcoal Producer Association
CPG	Charcoal Producer Group
EMCA	Environmental Management and Coordination Act
FSGO	Forest Service General Order
IEF	Instituto Estadual de Florestas (State Forestry Institute, Minas Gerais, Brazil)
KeBS	Kenya Bureau of Standards
KFS	Kenya Forest Service
MMMB	Miti Mingi Maisha Bora programme
NEMA	National Environment Management Authority

## **EXECUTIVE SUMMARY**

#### Introduction

The Miti Mingi Maisha Bora (MMMB) programme is a joint forest sector support initiative of the Governments of Finland and Kenya. In collaboration with the Kenya Forest Service (KFS), one component of MMMB seeks to support the development of the charcoal industry into a modern and formalised sector of the economy.

Charcoal and firewood account for nearly 70% of primary energy consumption in Kenya. Demand for charcoal has never been higher and prices are at record levels. While this represents a significant commercial opportunity for companies and private landowners, none have been authorised to produce charcoal under the prevailing regulations. They clearly face significant barriers to legal compliance. As charcoal supply from community land is increasingly constrained and Kenya seeks viable strategies to meet its energy needs, MMMB commissioned a study to identify and address the barriers discouraging private landowners from making a more significant contribution to the supply of charcoal. The study focused on companies and individuals who aspire to produce charcoal legally as part of a planned system of resource management on their own land. It sought to document their experiences in trying to produce, transport, trade and sell charcoal legally, and to ascertain what they see as the main hurdles to growth. Recommendations were to be developed for more business-friendly regulations, to streamline the process for industry players to become legitimate, compliant and modern.

The assignment was carried out during June and July 2013, and included consultations with KFS and MMMB, a cross-section of companies and landowners with an interest in charcoal production and potential buyers of legally compliant charcoal in the hospitality and retail sectors.

#### **Charcoal production regulations**

The production and movement of charcoal in Kenya is subject to the 2009 Forest (Charcoal) Regulations. While the regulations are a significant improvement on the unrealistic charcoal 'bans' that were periodically imposed during the 1980s and 1990s, they have proven unworkable and no production permits have yet been issued. The regulations lack an application track for individual landowners, contain a number of unclear provisions and are built around a highly centralised application approval process. Few producers have applied for permits and there is uncertainty how applications should be handled within KFS. In the meantime, the Environmental Management and Coordination Act (EMCA, 1999) is providing a workable legal framework for charcoal production on private land and empowers District Environment Committees (DECs) to process applications from landowners to make charcoal. It is a decentralised and relatively efficient system that draws on the technical expertise and local knowledge of a cross-section of government departments. There is nevertheless a need for greater clarity on the preferred format for applications via DECs and the scale or nature of charcoal production for which a stipulated requirement for an Environmental Impact Assessment may be waived.

#### **Charcoal movement regulations**

The transportation of charcoal requires a movement permit under the 2009 regulations. It is not clear which staff in KFS may issue these permits and the decision is frequently passed to Ecosystem (County) level, making the application process cumbersome. Permits are also time-limited and vehicle-specific. This makes it particularly difficult for charcoal to be moved in small volumes or redistributed from storage depots. The regulations are also vague on the carriage of fewer than four bags and unofficial interpretations result in fleets of bicycles, motorbikes and donkeys ferrying charcoal unimpeded to urban markets. The movement of charcoal is subject to significant extra-legal payments to police officers that may exceed 25% of the retail price. While these payments are a relatively predictable cost of doing business for regular transporters of charcoal, they are a highly variable element for those who produce charcoal only infrequently. Most landowners opt to sell their charcoal at farm-gate and avoid getting involved in transportation.

#### Charcoal trade and retail regulations

The regulations makes it illegal to trade in charcoal from unlicensed producers and traders are expected to keep records of all suppliers and their licences. Enforcement of these rules is unrealistic, however. It is also questionable whether the KFS mandate extends to the regulation of retail enterprise.

#### **Regulations in other countries**

Charcoal regulations in most sub-Saharan African countries bear a close resemblance to those in Kenya and are similarly comprehensive but difficult to enforce. A different legal environment can be found in Namibia, where the landowner (rather than the charcoal burner) is the usual applicant for a production permit; permits are valid for 6 months; they may be issued by any forestry office; and transport permits are valid for 14 days. These laws are more business-friendly. Meanwhile in Brazil, the world's largest charcoal producer, an interesting feature is the use of market controls to drive more sustainable production and stimulate farm forestry. In the main charcoal producing state, no permit is required for production and transport permits may be acquired online.

#### **Case studies**

Lessons learned from case studies of charcoal production on private land in Kenya are that:

- Landowners produce charcoal as a **by-product of their core business.** This may be a cattle ranch where trees are cleared to open up pasture in a managed rotation, a dairy farm where trees are pruned to maintain pasture quality, an arable farm where trees are cleared for cultivation or a pure forestry operation where charcoal is made from low grade poles, posts or timber. This is relevant for policy: landowners do not set aside land for charcoal production and are not, by profession, charcoal-makers. They therefore require a licensing process that is decentralised, efficient and cheap.
- Landowners have developed numerous models of cost-sharing in charcoal production, from fully internalised operations to out-sourced systems run by itinerant gangs. The latter has variants where land-owners may retain a portion of the output, charge the producers a fixed sum per bag or buy all the charcoal and sell it on. This has further policy implications: there is no single production model and it is appropriate that the land-owner, rather than the producer, should apply for the right to make charcoal and determines which model of production and benefit-sharing works best for achieving their objectives.
- There are many ways to produce charcoal and **technology choice lies with the producer.** This choice balances cost, efficiency, speed and labour. Several producers have invested in brick kilns but subsequently abandoned them, having compared the costs of wood haulage with the potential efficiency gains. The choice of technology should be a matter for the land owner and need not be regulated.
- **Premium bulk marketing does not pay its way** as there is no price advantage from branding charcoal as 'sustainable' or legally-compliant' when sold in bulk. With rural charcoal prices at an all-time high, private landowners are now producing charcoal for the mass domestic market at prices competitive with charcoal from community land. There are nevertheless price advantages to be gained by breaking charcoal into smaller bag sizes and targeting high-end consumers with a retail proposition.

#### New charcoal marketing opportunities

Hospitality industry: Within the hospitality industry the demand for a differentiated charcoal product with assurances of legal compliance and environmental sustainability is minimal, given the lack of consumer interest in the procurement policies of hotels and restaurants. Price is the key factor governing charcoal sourcing. The situation is slightly different in the international tourism sector, where some properties highlight their environmental credentials as a marketing strength. However, the level of charcoal consumption in such establishments tends to be low because they have few beds and usually cook with gas. Most also buy sustainably sourced charcoal or environment-friendly

briquettes already so the scale of this additional market opportunity is small. Nevertheless, the potential exists for suppliers of sustainably-sourced charcoal to be profiled via Ecotourism Kenya's Green Directory.

*Retail sector:* In the retail sector there is a more significant opportunity driven by the rapid growth of Kenya's supermarket chains and the aspirational shopping habits of the middle class. There is an opportunity to market charcoal through these outlets to upscale consumers, not initially as an environmentally-responsible product, but as a clean-packaged, convenient commodity for leisure use. If this opportunity was established through one or more of the major chains and the supplier built up storage and distribution capacity in Nairobi, with a regular round of deliveries, it could be worth considering service stations as supplementary charcoal outlets.

#### Industry harmonisation

*Industry association:* The many private landowners producing charcoal in Kenya do so as a subsidiary output of diverse core businesses and - apart from the fact that they may produce charcoal from time to time as a by-product - they lack a coherent shared interest around charcoal with common advocacy objectives. The issue of charcoal is not significant enough for any of them to justify the effort and expense of forming a stand-alone charcoal industry association.

*Industry standards:* An area of more useful harmonisation is in the setting of consistent product standards. Standard-setting for charcoal is in fact underway through the provisional adoption by the Kenya Bureau of Standards of the South African standard for charcoal. Its adoption for formal retail sales could play a useful part in bringing legally compliant charcoal into the mainstream economy in appropriately labelled packaging.

*Branding:* Branding can provide further assurance to consumers that a product meets defined criteria, such as ethical or environmental standards. While formal branding schemes such as Fair Trade and Forest Stewardship Council are a poor fit for charcoal or unjustifiably costly, a cheap and potentially effective form of branding for a company supplying legally compliant charcoal is self-certification through clear and informative labelling on the product itself.

#### **Barriers to growth**

The following barriers to growth of the legally compliant charcoal sector are identified:

- a) There is **uncertainty over the rules** and confusion over what is expected of private landowners wishing to produce and transport charcoal. Few know of the regulations and those who do are discouraged from applying by a lack of clarity and the burdensome nature of compliance.
- b) There is widespread fear of enquiring about the legal requirements. Landowners are reluctant to ask whether they may produce charcoal in case they are turned down, told not to proceed until authorised, asked to submit a complex application or see their request escalated and stalled. Most opt to proceed without enquiring and out-source production and transport. They feel that attempts to seek clarity or request permission may result in undue attention and over-regulation.
- c) Given that landowners produce charcoal as a peripheral enterprise, the costs of compliance are disproportionate. The 2009 regulations were designed for full-time producers of charcoal and are a poor match for occasional producers. Land-owners cannot justify the time-consuming acquisition of licences for a marginal activity that takes place irregularly. The complexity of the regulations is also at odds with the strong vested interest that landowners have in managing their resources sustainably. They are unlikely to behave irresponsibly and need not be closely controlled through such a demanding set of rules.
- d) Barriers to movement of charcoal by private landowners include the inability of most local KFS officers to issue movement permits, the lack of clarity over what is actually required to obtain one, their time-limited and vehicle-specific nature, the requirement for separate permits for each load and above all police corruption which makes charcoal transport cumbersome, expensive and unpredictable.

#### Recommendations

Use existing environmental legislation to regulate charcoal production on private land: EMCA established a functional, decentralised system for the authorisation of consumptive natural resource utilisation on private land through DECs. This adequately covers charcoal production and is relatively fast, efficient and business-friendly. It is a good fit for charcoal production on private land. There seems to be no merit in a further layer of regulation under the Forest Act. Counties may add legislation concerning charcoal at their own discretion.

*Eliminate movement permits:* It is not possible to control the trade in a commodity such as charcoal once it has been produced, packed, loaded and despatched to market, therefore any attempt to regulate its movement is likely to be pointless. The removal of movement permits for charcoal is proposed. As well as eliminating a significant impediment to free trade, this would greatly facilitate redistribution of repackaged charcoal within towns, including to up-scale retail outlets.

### **1 INTRODUCTION**

#### 1.1 The Kenyan charcoal industry

Kenya's heavy dependence on biomass energy is well documented: charcoal and firewood together account for over 68% of primary energy consumption<sup>1</sup>. Although this proportion is in gradual decline, the demand for biomass energy in absolute terms continues to rise due to population growth and urbanisation.

In fact demand for charcoal has never been higher and is estimated at 2.3 million t in 2013<sup>2</sup>. The phasing out of 3 and 6 kg gas cylinders by most petroleum companies in favour of larger sizes may accelerate the growth of the charcoal market as 'it will discourage use of cooking gas among low income households that largely rely on woodfuel... turning back to clock on adoption of clean energy'<sup>3</sup>.

As indigenous tree species favoured for charcoal production have been selectively removed from the rangelands, transport distances have increased and prices are consequently at record levels – now over KES 28/kg at wholesaling sites in Nairobi and up to KES 35/kg at retail<sup>4</sup>. On this basis the annual retail value of the industry is currently thought to be around KES 80 billion (USD 920 million).

On the face of it this seems to represent a significant commercial opportunity for companies and private landowners with indigenous woodland or the means to establish their own tree plantations for charcoal production. Indeed, it was estimated that 38% of Kenya's charcoal already came from private land in 2005, and this share is likely to be rising every year<sup>5</sup>. Yet no charcoal production permits have been issued under the latest regulations introduced by the Kenya Forest Service (KFS) in 2009 and all charcoal being produced is therefore illegal by definition. It is clear that companies and private landowners, many of whom produce charcoal in large volumes, face significant barriers to legal compliance. Others choose not to produce charcoal even though they have the land and resources to do so, in spite of a market opportunity that appears to be more attractive than ever.

As Kenya seeks viable strategies to meet its future energy needs, it is important to address the barriers that discourage private landowners from making a more significant contribution to the supply of charcoal in a legally compliant manner. This study was commissioned to identify such barriers and propose ways to address them.

#### 1.2 Study background

The Miti Mingi Maisha Bora (MMMB) programme is a joint initiative of the Governments of Finland and Kenya that seeks to achieve 'a reduction in poverty through ensuring that the forest sector contributes effectively and sustainably to improving the lives of the poor, restoring the environment and aiding the economic recovery and growth of Kenya within the context of Vision 2030'.

MMMB Component 4 is concerned with the development of viable forestry enterprises based on the sustainable management of woody resources on private and community lands. Charcoal is a key forest enterprise in Kenya of significant scale and economic importance, as explained, yet the industry operates largely outside the law and contributes minimal revenue to the state. MMMB, working closely with KFS, seeks to support the development of the charcoal industry into a modern and formalised sector of the economy.

<sup>&</sup>lt;sup>1</sup> Republic of Kenya, 2012a.

<sup>&</sup>lt;sup>2</sup> Assuming demand of 1.6 mill. t. in 2005 (Mutimba & Barasa, 2005), increasing in line with an urban population growth rate of 4.4% p.a. (http://data.un.org).

<sup>&</sup>lt;sup>3</sup> Business Daily, Nairobi, 10 July 2013: '*Oil marketing companies phase out smaller gas cylinders*'.

 <sup>&</sup>lt;sup>4</sup> In June 2013 the landed price for a typical 36 kg sack at Ngara market was KES 1,000 (pers. comm., E. Ekakoro, team leader, charcoal value chain study by Camco Clean Energy for Kenya Forest Service). A paint tin containing an average of 2 kg of charcoal was retailing for KES 70 (survey in Umoja estate, July 2013).

<sup>&</sup>lt;sup>5</sup> Mutimba & Barasa, 2005.

In part this is being done by supporting small-scale charcoal producers and transporters at community level to comply with the legal requirements of the 2009 regulations, thereby opening channels of communication and cooperation with these groups through which to leverage improvements in production efficiency and more sustainable resource management.

In addition, MMMB and KFS are keen to identify and support industry players already known to be committed to sustainable production and legal compliance, in order to document their specific experiences and opinions on the path to legitimisation, modernisation and sustainable industry growth. This study on the 'barriers to growth of the legally-compliant charcoal industry in Kenya' was therefore conceived and an independent consultant<sup>6</sup> was commissioned through a competitive tendering process to carry it out.

#### 1.3 Study purpose

As per the Terms of Reference in Annex A, the purpose of the study was to document the experiences of land-owners and businesses aspiring to produce, transport, trade and sell charcoal legally in Kenya, and to ascertain what they see as the main hurdles to the growth of the legally-compliant sector of the industry.

The following specific tasks were to be carried out:

- compare the legal and regulatory requirements to produce and market charcoal in Kenya with those known to be established and functional from other countries;
- identify a sample of charcoal producing enterprises in Kenya with the interest and ability to operate sustainably in compliance with prevailing regulations;
- assess their business models, markets and probable market share;
- establish their experiences in seeking to comply with legal requirements;
- seek their opinions on the potential and barriers to the growth of a more modern, regulated and sustainable charcoal industry;
- seek their opinions on potential mutually beneficial linkages with small-scale charcoal producers in Charcoal Producer Groups (CPGs) and Charcoal Producer Associations (CPAs);
- interview charcoal traders and commercial buyers to determine barriers faced in acquiring or trading in compliant charcoal;
- investigate the justification and potential for developing an industry association, industry standards or shared branding; and
- document and disseminate findings to stakeholders.

Based on this industry analysis, recommendations were to be developed for improving sector efficiencies. The study was also expected to contribute to the formulation of policies and regulations that are more business-friendly and can streamline the process for industry players to become legitimate, legally compliant and modern in their approach.

#### 1.4 Study approach

The assignment was carried during June and July 2013, and included two missions to Kenya totalling 26 days. The mission itineraries are in Annex B and a list of those consulted in Annex C.

The first country visit focussed on companies and landowners with an interest in charcoal production and an expressed commitment to ecological sustainability and legal compliance. These sampled firms and individuals were either producing charcoal on their own land, had done so in the past or were considering doing so in the future, and were located from the coastal strip as far inland as Elburgon and Thika. Staff of KFS and KEFRI were also consulted for their opinions, as were key informants from civil society and consultancy firms in the energy sector.

<sup>&</sup>lt;sup>6</sup> Matthew Owen, an independent energy specialist.

The second mission focussed on the market opportunities for legally compliant charcoal. Discussions were held with potential buyers in the tourism and hospitality industries, supermarket chains and a petroleum company to assess interest and opinions on nurturing market demand for legally compliant charcoal. Site visits were also made to additional charcoal producers in the Rift Valley and Laikipia, and further consultative meetings were held with KFS and MMMB in Nairobi.

Time before and between the missions was spent in the UK making contacts, organising itineraries and conducting internet-based research.

A draft report was circulated to MMMB and KFS staff prior to a validation workshop in Nairobi on 12<sup>th</sup> November 2013 at which the findings and recommendations were presented to a cross-section of stakeholders. Participant feedback resulted in a final report for general circulation.

#### 1.5 Scope of study

The study was expected to focus on the 'legally compliant charcoal industry'. In practice this proved impossible given that there have been only a handful of applicants for production permits under the 2009 regulations and KFS has yet to issue a licence to any of them. There is therefore no charcoal producer who is strictly speaking 'legally compliant'.

It was therefore decided to focus instead on *companies and individuals who aspire to produce charcoal legally as part of a planned system of resource management on their own land*. Some have applied to produce under the 2009 regulations, some under previous or parallel legislation, and some have not applied at all. But in all cases the charcoal comes from private land as a planned component of its owner's chosen land-use strategy.

The definition of private land is adopted from the Constitution of Kenya (2010) and encompasses any size of land-holding, regardless of location or agro-ecological zone. Private land may therefore cover arable and pastoral livelihood systems as well as mixed agro-forestry or silvo-pastoral forms of land use. The definition does not, however, include public land or community land. Therefore while a sample of CPAs and CPGs operating on community land were consulted in the course of the study, this was for purposes of information and comparison only. Additional research and new intervention ideas are still required to regularise charcoal produced on community land.

### 2 FINDINGS

#### 2.1 Legal and regulatory environment

#### 2.1.1 Overview

The production and movement of charcoal in Kenya is subject to specific government legislation known as the 2009 Forest (Charcoal) Regulations, developed as subsidiary legislation to the Forests Act (2005). However, there has been a time lag between legal assent and practical adoption. Many charcoal producers are still unaware of the rules and there is persistent uncertainty within KFS over how applications for producing or transporting charcoal should be received and processed. In the meantime there are several parallel systems in operation. A new Forest Act is currently being developed and is likely to be approved by parliament by 2014, offering a convenient window of opportunity to review and improve the regulatory provisions.

#### 2.1.2 Charcoal production

#### **Official regulations**

Under the 2009 regulations, any group or firm wishing to produce charcoal must apply to a subcommittee of their Forest Conservation Committee (FCC) at Conservancy-level<sup>7</sup>. The regulations give the Board of KFS the option to establish additional licensing committees (for example at ecosystem level<sup>8</sup> or below), although it has not elected to do so.

According to section 6(3) of the regulations, the FCC committees are empowered to 'consider and recommend applications for issuance, cancellation or revocation of charcoal producers' licence'. In what is probably an inadvertent case of poor wording, this suggests that an FCC may only 'recommend' and cannot actually issue a licence. Applications are therefore discussed by the FCCs and forwarded to KFS headquarters with a positive recommendation if deemed compliant, where they are directed to the office of the Deputy Director, Extension. He in turn presents them to the KFS Board at one of its three-monthly meetings.

Such a highly centralised system is clearly unsatisfactory. A situation where no-one may produce even a small volume of charcoal without the approval of the KFS Board is untenable, and cannot have been the intended outcome of the rules. To date it is understood that only two applications have reached Nairobi<sup>9</sup> and neither has yet been submitted to the Board.

Applications from private landowners are not explicitly catered for under the 2009 regulations due to another assumed wording oversight. Section 5(1) mentions 'business firm(s)' but makes no provision for applicants who do not hold land in a company name. It is therefore unclear whether (and how) individual landowners may apply to produce charcoal. Again, while this is presumably a case of poor legal drafting as the rules cannot have been intended to lock out individual landowners, it presents an additional impediment to compliance.

Section 8(4) of the regulations sets out the 'material considerations' that should be taken into account by an FCC licensing committee when considering a production application. In the case of a company these are:

- a) the registration certificate and articles of incorporation;
- b) the place(s) where charcoal is to be produced;
- c) designated charcoal collection point(s);
- d) consent from the owner of the land where charcoal is to be produced;
- e) tree species, number of trees and estimated volume to be used for charcoal production;
- f) type of technology to be used;

<sup>&</sup>lt;sup>7</sup> There are eight Conservancies covering the areas formerly known as Provinces.

<sup>&</sup>lt;sup>8</sup> Equivalent to County level.

<sup>&</sup>lt;sup>9</sup> From Wildlife Works Carbon (Taita-Taveta) and Green Forest Social Initiative (Homa Bay).

- g) a recommendation from the local environment committee; and
- h) a reforestation or conservation plan for the area where trees will be managed for charcoal production.

The inclusion in this list of details on the tree species, numbers and volumes to be harvested, the intended [carbonisation?] technology and a reforestation or conservation plan, suggests that KFS sees a need to regulate and control how landowners produce charcoal quite tightly. These 'material considerations' have also been interpreted as 'requirements' by KFS, meaning that full compliance is necessary if an application is to progress. A conservative line has also been taken in any areas where leeway might exist for interpretation. For example, the required 'recommendation from the local environment committee' has been deemed to refer to an externally-commissioned Environmental Impact Assessment (EIA) by government-approved consultants, according to a recent applicant<sup>10</sup>.

It came as a surprise to many landowners visited during the study that these regulations exist and that KFS has the mandate to apply significant conditionalities to the way they may manage and harvest trees on their property, even those they may have planted themselves. There seems to some inconsistency in policy, as the same degree of government control over private resources would certainly not apply to the cultivation of crops or the rearing of livestock.

Lastly, the 2009 regulations were clearly designed for producers of charcoal rather than the owners of the resource to be charcoaled. This perhaps reflects an attempt to develop a single set of legislation that would cover itinerant groups of charcoal burners under the CPA model as well as those who own land to which such groups might be given temporary access. However, a focus on the producer seems inappropriate in the case of private land, where decisions on management and utilisation would naturally fall to the owner. There are also practical barriers to producers making applications in compliance with the current rules. For example, it would clearly be impossible for most charcoal burners to produce a 'reforestation or conservation plan' for land that was not theirs.

In summary, the entire charcoal industry - worth perhaps KES 80 billion at retail, almost double the value of Kenya's flower exports and two thirds of its tea exports<sup>11</sup> - operates outside the regulations at present. It is apparent from the very small number of applicants for production permits and the failure of KFS to issue any to date that the 2009 regulations are essentially unworkable. Barriers to implementation include the absence of a system within KFS for receiving and processing applications, the slow and centralised nature of the approval process, the onerous compliance requirements that impinge on landowners' commercial independence, the apparent inability of individual landowners to apply and the onus placed upon charcoal producers to make applications, rather than the owners of the resources to be utilised.

#### Alternative forms of compliance

Most landowners producing charcoal have adopted alternative approaches to achieving legal approval. Indeed the majority have no knowledge of the 2009 regulations and are unaware that they are not in fact compliant.

There seem to be two main systems in operation:

- 1. Landowners who have been producing charcoal for some time generally possess open-ended letters of authority from their District Forest Officer giving blanket permission to produce charcoal from a specified parcel of land. It is not clear under what legislation these letters were issued, but they provide legal comfort and seem acceptable to KFS at local level.
- 2. Landowners who began producing charcoal more recently or who produce only occasionally appear to be doing so under the provisions of the Environmental Management and

<sup>&</sup>lt;sup>10</sup> Pers. comm., Vice President African Field Operations, Wildlife Works Carbon.

<sup>&</sup>lt;sup>11</sup> Tea exports are expected to be worth KES 116 billion in 2013 (Business Daily, Nairobi, 7 April 2013: '*New tea factories to increase industry capacity*') and flower exports were worth KES 42.9 billion in 2012 (www.kenyaflowercouncil.org/index.php/2013-03-24-08-12-08/market-data).

Coordination Act (EMCA, 1999). EMCA mandated the establishment of District Environment Committees (DECs), chaired by District Commissioners, 'responsible for the proper management of the environment within the district in respect of which they are appointed' (EMCA section 30). Some landowners apply to their DEC for permission to produce charcoal as part of pasture improvement, land clearing for farming, opening up of firebreaks or removal of underbrush for security improvement. The DECs deliberate on these applications and generally defer to the members from KFS and the National Environment Management Authority (NEMA) for an opinion. Sometimes they visit the applicant's land for further information before making their recommendation to the DEC. The Chairman then typically gives approval for 6 or 12 months of charcoal production by issuing a written authority or endorsing the applicant's letter.

This decentralised system of approval under DEC control is straightforward for landowners. It delegates decision-making to a multi-disciplinary government team at local level whose members are generally familiar with the applicant and well placed to consider their specific situation. It is a business-friendly approach, though retains a significant degree of accountability within the District/sub-County administration.

Nevertheless, while the second Schedule of EMCA allows forestry-related activities (including 'timber harvesting' and 'clearance of forest areas') to proceed in this way with DEC approval, the 2009 Charcoal Regulations state that 'the competent authority responsible for issuance of licence or permit for the production and transportation of charcoal shall be the KFS'. There is therefore a legal overlap and it is not clear whether the 1999 Act has legal precedence over the 2009 regulations.

Furthermore, even if the older, EMCA-based arrangement is deemed fit and applicable, the 1999 Act still officially requires landowners to commission an EIA for all forms of forestryrelated activities, however small. In theory, a DEC could therefore demand an EIA for the cutting of even a single tree to produce charcoal. While in practice there seems to be leeway for interpretation, it nevertheless remains unclear just how much charcoal may be produced, and over what period, before an EIA under EMCA becomes mandatory.

In concluding this discussion of the regulations, it should also be noted that there are many cases where producers of charcoal on private land have no licence of any sort. This is rarely because they have failed to ask for one, but usually because they do not get a reply to letters of request sent to the local forester or DEC and proceed with charcoal production regardless. It would be fair to say that a certain amount of confusion reigns and while most landowners do not deliberately set out to produce charcoal illegally and would prefer to comply with reasonable regulations if they could, they rarely know how to go about it and frequently receive no reply to their requests, so opt to go ahead in the absence of any formal authority.

#### Summary

In summary, EMCA (1999) seems to provide a workable legal framework for charcoal production on private land and empowers DECs to process applications from landowners to make charcoal on their property. It is a decentralised and relatively efficient system that draws on the technical expertise and local knowledge of a cross-section of government technical departments. There is nevertheless a need for greater clarity on the preferred format for applications and the scale or nature of charcoal production for which the EIA requirement may be waived.

Meanwhile the 2009 Charcoal Regulations apply controls on production that seem excessive in the case of private landowners, who are unlikely to manage their resources in an irrational and destructive way. The regulations also lack an application track for individual landowners, contain a number of unclear or poorly worded provisions and have proven unworkable due to a combination of these factors and the centralised nature of the approval process. There is justification for revising or suspending these regulations for charcoal production on privately owned land, a proposal discussed further below.

#### 2.1.3 Charcoal movement

The 2009 regulations specify that charcoal may only be transported in Kenya with a valid movement permit. Applicants for such permits are required to produce a 'certificate of origin' and receipt for the charcoal, endorsed by the owner of the land where it was produced. A transport fee of KES 20 per bag is payable to KFS, as gazetted in the current version of the Forest Service General Order (FSGO)<sup>12</sup>. In practice the fee tends to be rounded off to KES 1,000 or 2,000 per load, to avoid the need for precise counting of bags.

The regulations do not specify which KFS staff may issue movement permits and this is a matter of some inconsistency. In Maragua sub-County, permits to transport eucalyptus charcoal produced at Kakuzi Ltd. are issued by the local KFS officer upon production of the Kakuzi receipt and delivery note. Similarly at Rumuruti in Laikipia West sub-County, the forester will issue a movement permit provided that the charcoal comes from a producer approved by the DEC and is accompanied by a letter confirming this (effectively a 'certificate of origin').

However, the Forest Officers of equivalent rank at Gilgil and Rongai in Rift Valley Conservancy will not issue charcoal movement permits and defer to their Ecosystem Coordinator in Elburgon, while the foresters in Kinamba and Msambweni in Coast Conservancy similarly defer to the Ecosystem Coordinator in Kwale. According to the regulations, such upwards referral is not necessary, but on the rear of the pre-printed movement permits it is written 'may only be issued by the Zonal Manager'<sup>13</sup>. The origin and legal validity of this supplementary instruction is unknown and it is applied inconsistently. Where enforced, it introduces an additional bureaucratic hurdle to the transportation of charcoal that inevitably increases the risk of non-compliance. A charcoal transporter from Nanyuki, for example, upon finding that the local forester will not issue a movement permit, is referred to the KFS Ecosystem Coordinator in Nyahururu. Given that his charcoal load is probably bound for Nairobi, he is likely to opt for non-compliance and illicit payments to police along the journey rather than spending time and money travelling well off his usual route to Nyahururu, especially given that the authorising forester may not even be present. Clearly the inability or refusal of most local foresters to issue permits to move charcoal becomes a constraint on the industry and increases the probability of non-compliance.

The regulations do not prescribe a validity period for movement permits, but in practice they are usually issued for a one, two or three day window and must bear the registration number of the vehicle being used. Every load of charcoal requires a separate permit. Each application therefore necessitates a separate and potentially time-consuming trip to an office of KFS, often at Ecosystem (County) level, while the transporter must be on stand-by at the production site for immediate mobilisation.

These transport controls make it particularly cumbersome for charcoal to be moved in small volumes, for example by pick-up, given that each load and each vehicle requires a separate permit. This is typically charged at a flat-rate (notwithstanding the bag-based fee stipulated in the FSGO) and therefore has a more significant impact on unit costs for smaller loads – a KES 2,000 transport charge for a lorry carrying 230 bags adds only KES 8.7 per bag, but the same fee for a pick-up carrying 30 bags would add KES 67 per bag.

This is a particular problem for the re-distribution of charcoal from wholesaling points in towns and cities, for which permits for onward movement are simply evaded. This provides ample room for corrupt police officers and council askaris to extract bribes from urban charcoal distributors. The regulations would be a significant barrier to any company considering supplying premium or branded charcoal in small volumes to urban consumers, given that their delivery vehicle would need a fresh movement permit every day and would still be continually harassed.

<sup>&</sup>lt;sup>12</sup> The latest FSGO was approved by the KFS Director on 12<sup>th</sup> April 2010 and published in Kenya Gazette Supplement no. 132 on 28<sup>th</sup> September 2012.

<sup>&</sup>lt;sup>13</sup> KFS Zonal Managers are now called Ecosystem Coordinators.

The KFS regulations give no movement permit exemptions for the carriage of small volumes of charcoal. However, there are further stipulations in this regard pre-printed on the permits themselves, albeit introducing as much confusion as clarification. On the front of the permit it is stated that there 'should be more than three bags' while on the rear it is written 'this permit does not apply to small quantities (less than three) bags'. So the carriage of precisely three bags falls into a legal grey area.

In practice it seems possible to avoid movement permits altogether for any quantity of charcoal transported by bicycle, motorbike, donkey or private car, regardless of what the regulations may say or what may be printed on the permit form. This confusion over what exactly is permissible leaves significant room for interpretation (and inevitably corruption). It also perhaps explains the widely held belief that charcoal for 'personal use' is exempted from movement controls. Legally this is not the case, but the 'loophole' permitting one or two (or possibly three) bags to be moved without a permit is routinely exploited by transporters using fleets of bicycles, motorbikes or donkeys to ferry charcoal to urban markets.

The movement of charcoal is also subject to payment of cess to the County government<sup>14</sup> where it originates. The fee is determined independently by each County and at present tends to be KES 20 per bag, translated to a flat fee of KES 1,000 or 2,000 per load.

Finally, the transportation of charcoal is subject to significant extra-legal payments to police officers at road blocks, regardless of whether the transporter is in possession of a movement permit, certificate of origin, producer's receipt and cess receipt. Bailis (2005) recorded payments totalling KES 30,000-34,000 at 15 checkpoints between Narok and Nairobi, representing 26% of the final charcoal retail price. A Junbe 2013 study for KFS by Camco Clean Energy recorded payments of at least KES 24,000 per lorry at 16 checkpoints between Bissel and Nairobi's Ngara market. A producer in Baringo interviewed during this study reported bribes totalling KES 11,000 to transport a load of charcoal to Nairobi in 2012, which added almost KES 50 to the cost of each bag.

Corruption on Kenya's roads is institutionalised and the amount of money expected at each checkpoint is well known by regular transporters. Therefore while these payments may be significant, they are a relatively predictable cost of doing business for those who transport charcoal regularly. On the Namanga route (and presumably others) there is also a well-established system of 'escorts' where bribed police officers accompany lorries for sections of the journey to indicate to their colleagues at the roadside that the driver should not be stopped again on that particular stretch<sup>15</sup>.

For those who transport charcoal infrequently and irregularly, the situation is less predictable. Their vehicles and drivers are unfamiliar to the police, and vice versa. The cost of corruption is therefore a variable factor. This is a particular problem for private landowners as they are not charcoal producers by profession and tend to produce on a one-off basis, becoming vulnerable to this unpredictability. The natural tendency of hired transporters in these cases is to charge an excessively high haulage fee to cover themselves against the unpredictable nature of the 'charges' that will be levied on them. This penalises charcoal from private land as it is more likely to be carried by transporters who move charcoal only occasionally and will charge more, whereas charcoal from community or public land is more likely to be carried by seasoned transporters who will charge less.

An example is a sporadic producer of charcoal in Baringo from invasive *Prosopis juliflora* who sells no more than two lorry-loads per year of 230 bags. He has been offered a price of KES 1,100 per bag for this sustainably-produced charcoal by a well-known meat-roasting establishment in Nairobi, but has been quoted such a high price by a transporter due to the unpredictable nature of police corruption on the journey to Nairobi that he instead plans to sell the whole load to a dealer in Nakuru. Nairobi consumers are therefore denied the opportunity to buy this traceable, sustainable produced charcoal because of police corruption, not the rules of KFS or NEMA.

<sup>&</sup>lt;sup>14</sup> Formerly County Council.

<sup>&</sup>lt;sup>15</sup> Pers. comm., E. Ekakoro, Camco Clean Energy. Confirmed with concealed video recording.

It is noteworthy that corruption does not appear to be a factor for buyers of charcoal from Kakuzi Ltd. near Thika, who mostly take delivery in their own company lorries with employed drivers. It is reported that branded vehicles from well-known companies with articulate drivers can to a certain extent avoid the type of corruption suffered by the majority. This offers some encouragement to those interested in developing a more modern and formalised sector of the industry.

Lastly, this discussion of corruption is not meant to imply that charcoal transporters are always targeted by the police without merit. There are inevitably cases where movement permits are abused and transporters knowingly move charcoal illegally, having determined that the cost of corruption is lower than the cost of compliance. Nevertheless, it is also clear that compliance is effectively impossible at present due to the overlapping EMCA and KFS rules and the bureaucracy around acquiring movement permits, and it is also known that even a fully compliant load of charcoal is viewed by the police as an opportunity to extract corrupt payment. In Kwale County, for example, lorries carrying charcoal from the registered Msambweni CPA with legitimate movement permits issued by the KFS Ecosystem Coordinator<sup>16</sup> are still targeted by police on the Lunga Lunga-Likoni road. If a bribe is not forthcoming then the lorry will be threatened with detention until 18:00, the cut-off time for movement specified in the regulations, which the driver can only avoid with up-front payment of a 'release fee'. Police corruption is therefore a pervasive and troubling barrier to the legally compliant industry.

#### 2.1.4 Charcoal trade and retail

Section 15(2) of the 2009 regulations makes it illegal to trade in charcoal from unlicensed producers. Wholesalers and retailers of charcoal are also expected to keep records of the sources of their charcoal, including certificates of origin and movement permits. Given that KFS has yet to licence any producers, these rules make all wholesaling and retailing of charcoal technically illegal at present. Even if producers *were* being licensed, however, it would still be extremely difficult to enforce the requirements, particularly at retail level.



There are other branches of government responsible for regulating wholesale and retail trading enterprise,

A charcoal depot in Eastleigh, Nairobi: should buy only from licensed producers

and for ensuring that commercial licenses are acquired, taxes are paid and goods meet specified quality standards for consumers. Once charcoal has left its point of origin and enters the domain of commercial trade, it is unclear that KFS has either the means or the mandate to enforce controls on how it is sold. Under the new draft National Forestry Bill, however, it is the intention of KFS to introduce regulation of wood products right to the consumer along a six-point 'chain of custody', a move that is not only unnecessarily harsh but also likely to be un-implementable in the case of charcoal trade.

#### 2.1.5 Regulatory situation in other countries

#### Introduction

Charcoal regulations in most sub-Saharan African countries bear a close resemblance to those in Kenya and reflect similar principles rooted in pre-independence forestry law. In general, an original objective of controlling the exploitation of government-owned forests through tight regulation of charcoal production by the state forest service has been transferred almost unchanged to community and private land. The result, as in Kenya, tends to be laws that are comprehensive but difficult to

<sup>&</sup>lt;sup>16</sup> Albeit not in possession of a production permit, in common with all transporters in the country.

enforce, given that state forest agencies have limited resources, private producers are widely dispersed and many of them produce charcoal only occasionally.

It would not be helpful to catalogue the legal situation pertaining to charcoal in the many other countries with laws similar to those in Kenya, as they too are struggling with the mass illegality of the industry and offer few pointers towards a more progressive regulatory framework. The experiences of Namibia and Brazil are slightly different, however, and may provide more helpful direction.

#### Namibia

One of the more progressive legal environments in Africa can be found in Namibia. The country's charcoal industry is one of the best-organised in Africa and most commercial charcoal is made from bush encroachment species such as *Acacia mellifera*. The majority of Namibia's charcoal is produced on privately owned land and charcoal is not generally associated with deforestation, but with the removal of unwanted bush on beef production farms<sup>17</sup>. Namibia's amended Forest Act no. 13 (2005) differs in small but significant ways from the Kenyan regulations:

- the land owner is the usual applicant for a charcoal production permit, rather than the producer, although a producer may also apply if they can show satisfactory evidence of the landowner's permission;
- production permits are valid for 6 months, giving producers an opportunity to work efficiently, at scale and without interruption;
- production and transport permits may be issued by all forestry offices countrywide, demonstrating decentralised authority and a business-friendly outlook;
- transport permits are valid for 14 days, giving producers plenty of time to load and move their goods; and
- if the registration number of the transporter's vehicle is not known, a transport permit can still be issued but will instead bear the name of the transport agent.

Although the regulatory principles are similar to those in Kenya, the laws have been framed around private land ownership and the opening up of livestock grazing areas on a sustainable basis. This has led to a more streamlined and implementable set of rules.

As in Kenya, Namibia's environmental legislation overlaps to some extent with the charcoal regulations. The country's Environmental Management Act (2007) specifies that land owners who wish to produce charcoal are obliged to conduct an EIA because their operations include the clearance of forest areas. They may also fall under Atmospheric Pollution Prevention Ordinance (1976). However, the decision to require an EIA or not rests with the Directorate of Environmental Affairs and each case is handled on merit<sup>18</sup>. In principle, if a charcoal project is to be located in an environment that is not particularly sensitive (such as a typical bush-encroached farm), an EIA will probably not be needed. However, if sensitive species or habitats are at risk, then a site-specific EIA is likely to be required. There is clearly a pragmatic and business-friendly approach to EIAs that takes into account the specifics of the applicant's location. Similar flexibility would be helpful in Kenya in the interpretation of EMCA's stipulations regarding EIAs.

#### Brazil

Another country worth comparing with Kenya is Brazil, the world's largest charcoal producer with annual output of over 13 million  $t^{19}$ . Most charcoal in Brazil is used by industry and an interesting feature is the shared responsibility for sustainable sourcing between consumers and producers, in contrast with the Kenyan situation where the burden of compliance is placed entirely on producers and transporters.

<sup>&</sup>lt;sup>17</sup> www.fao.org/docrep/004/x6760e/x6760e03.htm

<sup>&</sup>lt;sup>18</sup> Dieckmann & Muduva, 2010.

<sup>&</sup>lt;sup>19</sup> www.blueeconomy.eu/m/articles/view/Charcoal-Part-1-The-Market

In the largest charcoal-producing state of Minas Gerais, a 'forest replacement fee' must be paid by enterprises that consume wood from unmanaged native forests. Meanwhile consumers of wood from plantations or managed forests (usually large companies in the pulp, paper, and iron and steel industries) are exempted and often have their own plantations. In other words there is a direct financial incentive for large consumers to buy charcoal from plantations or from managed forests on private land. The forest replacement fee is paid either to a tree-farming programme run by the State Forest Institute (IEF) or to a registered Forest Replacement Association (FRA).

The IEF is a decentralised agency that maintains a network of tree nurseries and an outreach programme in 13 administrative regions of the state. The majority of small consumers prefer to channel their fees through IEF as they see local results. A portion of the fee is used to promote native tree planting on small- and medium-sized farms, though the majority is used for fast-growing exotics such as eucalyptus and pine.

The most active FRA in Minas Gerais is the Steel Industry Association for Forest Promotion (ASIFLOR), an association of 16 medium-sized iron and steel companies that are significant consumers of charcoal. ASIFLOR aims to replace the 40% share of members' charcoal consumption that still originates from native forests with farm-sourced wood. Since 2003, it has worked with IEF in a public-private afforestation partnership that has resulted in the planting of nearly 110,000 ha of eucalyptus for charcoal production, through more than 4,000 farmers.

Minas Gerais recently introduced an updated Forest Law to further regulate the charcoal industry<sup>20</sup>. The law seeks progressively to reduce the consumption of charcoal originating from native vegetation by steel mills, factories and lime burners. These large consumers are permitted to use a maximum of 15% of charcoal from native forests up to 2013, reducing to 10% by 2017 and 5% after 2018. Companies failing to meet the targets will be required to pay double or triple forest replacement fees. The law is not only intended to protect the environment, but also to enhance opportunities for farmers by further increasing demand for wood products from private plantations.

Meanwhile no permit is required for charcoal production under the new law, in contrast with Kenya and other African countries. The IEF must simply be informed of the location and volume of wood to be harvested.



Eucalyptus plantation near Itatinga, São Paulo state (forets2011.cirad.fr)

Transport of charcoal in Minas Gerais still requires permission and the IEF is introducing satellite tracking of vehicles transporting charcoal. However, the transport permit may be obtained electronically on a website managed by the state treasury and the application process is straightforward.

Transferring the Brazilian experiences to Kenya would not be entirely appropriate, because the main consumers in Brazil are industrial and their consumption takes place at point sources where monitoring of inbound charcoal deliveries is relatively straightforward, compared with the highly dispersed nature of consumption in Kenya. Nevertheless, interesting elements of the Brazilian model include:

the elimination of production licences for charcoal in Minas Gerais;

<sup>&</sup>lt;sup>20</sup> Legislative Assembly of Minas Gerais, 2009.

- the use of fees paid by large charcoal consumers to support investment in private forestry by farmers, the state forest agency and the consumers themselves;
- the use of the market and fiscal penalties to drive a more sustainable production model and stimulate farm forestry; and
- the rapid, on-line processing of applications for movement permits.

#### 2.2 Charcoal production case studies

#### 2.2.1 Introduction

The target group for this study is *companies and individuals who aspire to produce charcoal legally as part of a planned system of resource management on their own land*. This disparate group have one thing in common: they all make charcoal as a *by-product of their core business*. Not a single landowner was found to burn charcoal as a primary product from their land, regardless of the location or size of holding. This is a crucial finding of the study: in spite of the record size of the charcoal market and all-time high prices for charcoal, charcoal making is not the most economically attractive activity for any landowner<sup>21</sup>.

This section describes a number of land-use combinations from which charcoal is generated as a byproduct that illustrate this principle. The names of the companies and landowners have been omitted to preserve commercial confidentiality.

#### 2.2.2 Beef cattle operation, Laikipia

A 6,500 ha ranch north of Nanyuki raises Boran cattle at 1,700-1,800 m in an area with 500-550 mm annual rainfall. The climax vegetation is mixed acacia woodland dominated by *A. drepanolobium*, *A. gerrardii* and *A. nilotica*, interspersed with *Balanites aegyptiaca*. The property is fenced against game and dedicated to beef production. The owner uses dry season burning and charcoal production as active land management tools to maintain the quality of the pasture. A team of 15 charcoal burners operates permanently on the property, moving in a block-wise fashion in a managed 15 year rotation. The team uses earth kilns to produce charcoal and remits KES 60 to the owner for each bag produced. A foreman is responsible for paying the team so there is no direct employment arrangement between the land-owner and the producers. The foreman sells the charcoal at KES 800 per bag to a transporter who moves it by car to a dealer in Nanyuki. The bags are very large, perhaps 70 kg, as the producer is trying to minimise his costs under the price-per-bag payment arrangement.

The land owner previously wrote to the DEC for permission to produce charcoal for pasture improvement and was being issued with 6-month licences by the District Environment Officer (interestingly not the forester). However, on expiry of the last permit he wrote once more to the DEC and has yet to receive a response. The transporter meanwhile has no movement permit as was told he would have to acquire it in Nyahururu, 160 km away, and understandably found this unworkable as he only moves the charcoal a short distance to Nanyuki. In any case the permit would not serve his needs as each load requires a separate document and he moves eight bags at a time up to three times per day.



Charcoal burning on cattle ranch, Laikipia

<sup>&</sup>lt;sup>21</sup> Conversely, charcoal-making *is* an attractive economic activity for large, organised groups of non-landowners exploiting under-priced resources on other people's property. This is a separate but crucial challenge in need of new approaches.

Trees are not clear-felled during the operation, as the retention of gladed woodland offers optimal grazing conditions. All *A. nilotica* are left untouched and *A. xanthophloea* are only pruned. Remnants of thorn branches are scattered on bare ground to protect against erosion and sun-drying, helping with the regrowth of grass. The owner believes that the land is *more* economically productive after charcoal burning, offering a win-win for himself and the charcoal producers, while meeting some of Nanyuki's fast-growing energy needs. Yet this sustainable and well-managed operation is technically 'illegal' due to the unresponsive DEC and impractical movement rules.



Area of land recently charcoaled: gladed woodland is retained



Bare soil 'mulched' with thorns to encourage re-vegetation

### 2.2.3 Mixed beef, game and tourism operation central Rift Valley

A large property at 1,800-1,900 m in the central Rift Valley is managed for cattle, game and tourism. The area receives around 900 mm of rain per year. As part of a finely-tuned pasture and browse management system, the owner has an on-going programme to clear 800-1,000 ha of shrubs and mid-size trees each year, mostly fast-growing *Acacia xanthophloea*, on a rotation of approximately ten years. With the exception of some sections of the property being opened up for wheat cultivation, the woodland is not clear-felled and about 20% of the vegetation is retained for shade and aesthetics.



Charcoal kilns and A. xanthophloea on mixed cattle/game ranch, Rift Valley

The smaller-sized wood is sold as firewood while anything over 18 cm in diameter is hauled to a central area and converted to charcoal using seven, brickbuilt beehive kilns. The kilns achieve conversion efficiency of 23% and produce high grade, dust-free charcoal. It is packed in measured 40 kg bags and sold at KES 850 to transporters, who sell it on to dealers in Nakuru. Annual output is currently around 110 t and is expected to rise to 190 t.

The landowner does not have a production licence but believes that the transporters who buy the charcoal do sometimes acquire movement permits. Once more, this is a sustainable operation that

improves the productivity of the land for the owner's core businesses while generating significant quantities of high quality charcoal. However, there is no value addition or premium branding, and once the charcoal leaves the property it is indistinguishable from charcoal produced unsustainably on public or community land.

#### 2.2.4 Dairy cattle operation, Kilifi

A 1,200 ha dairy operation at the coast manages an estimated 4,000 mature *Azadirachta indica* (neem) trees that have been planted along the boundaries of pasture paddocks. The trees are selectively pruned when their branches cast shade on the edges of the fields. The prunings are sold as firewood to the associated dairy operation at KES 3,000/t or converted to charcoal and sold at farm

gate at KES 700 per 42 kg bag. The farm previously operated brick kilns at a central yard but found it uneconomic to haul wood from the fields back to a central point by tractor, so the charcoal is now produced *in situ* using large earth kilns that yield up to 40 bags per charge. The charcoal burners are salaried company employees as this is an internally-run operation.

The owners have never approached government for a production permit, although their charcoaling operation is well known locally to KFS and NEMA. Once again, this is a sustainable operation that supports the owner's core business and provides fuel for the local population, but technically operates outside the law. There is, again, no product differentiation or value addition. Also notable is the previous use of brick kilns which have been abandoned in favour of a cheaper and more mobile system, suggesting that conversion efficiency is not necessarily the most important consideration for a private landowner making charcoal and that costs of operating more efficient technology must be balanced against benefits

#### 2.2.5 Arable farming operation, Rift Valley

A 1,200 ha mixed wheat and maize farm in the central Rift produces charcoal at 2,000 m above sea level in an area with 900 mm annual rainfall. Land is cleared rotationally for new planting every ten years or so. To prepare the land for ploughing, the owner invites mobile gangs to remove the trees - a mixture of acacias, thorn scrub and occasional planted eucalypts. They operate independently but are required to give him 20% of all the charcoal produced. They sell the rest at KES 600 per bag to bicycle and motorcycle transporters, who move it to the Nakuru-Eldoret road where it is sold on to traders.



Logs stacked for charcoaling during land clearing at Rift Valley arable farm

The gangs rent chainsaws for tree felling and use pangas to re-size the wood. They construct earth kilns that usually produce 9-10 bags at a time over a 6-8 day burn, although some opt for smaller kilns that burn in a matter or 2-3 days if they need faster cash turnover.

The landowner's objective is to clear land as quickly as possible for maize planting, so the charcoal burners provide him with a useful service while profiting from 80% of the charcoal they produce, with no raw material cost. The owner has no production licence and the charcoal is transported without movement permits, given that the nearest forester will not issue these permits and refers enguiries to Elburgon.

The owner previously built a brick beehive kiln and produced branded charcoal with a machine-sewn label on each sack. However, he could not find customers willing to pay a premium to cover the additional costs of hauling wood to the kiln site and using higher quality packaging, so he reverted to the mobile gang system and the brick kiln now lies unused. Again, the experience shows that efficiency is only one consideration in charcoal production and may be outweighed by other factors.



Disused brick kiln, converted to worker housing

#### 2.2.6 Forestry operation, Thika

A major agri-business northeast of Nairobi runs a commercial forestry operation at 1,400-1,500 m with 1,000 mm average annual rainfall. The main outputs are transmission poles, fence posts and heat-treated palettes, with firewood and charcoal produced from rejected eucalyptus stems and cracked

butts. The company operates up to four beehive kilns located at a central yard at 30% efficiency to produce high grade charcoal free of soil and dust that is sold at KES 750 per 35-37 kg bag<sup>22</sup>. A flower farm and Nairobi hotel account for the majority of purchases and are issued with movement permits by the local KFS officer. They report no problems with roadside corruption. The company has no production licence but operates transparently and is fully open to KFS and KEFRI, which have sent various study teams to the operation.

In spite of high demand for its charcoal, the company has reduced annual output from 30,000 bags to less than 5,000 bags as it has become more efficient in its forestry operations and has introduced a production line for heat-treated palettes, thereby generating much less waste. Output is predicted to decline further to as few as 3,000 bags once the sawmill is upgraded and more waste is eliminated. This is a question of simple economics: the company's timber retails for around KES 35,000 per solid cubic metre (cu.m.), poles for around KES 25,000/cu.m., charcoal for KES 4,100/cu.m. and firewood for KES 2,700/cu.m. in commercial sizes (above 3" diameter)<sup>23</sup>. Clearly it makes sense to market



Beehive kiln and eucalyptus logs at forestry operation near Thika

as much wood as possible in the form of poles and timber, with woodfuel sales being a last option.

The company is frequently cited as a model charcoal producer – and indeed its forestry operation is modern and efficient. However, with annual output of just 175 t it is a relatively small supplier and it would be encouraging to see more private landowners making charcoal in this way from commercial forestry by-products.

#### 2.2.7 Lessons from case studies

#### Charcoal is invariably a by-product

The case studies illustrate how charcoal from private land is usually a by-product of the owner's main economic enterprise. This is self-evident for a cattle ranch or arable farm, but even for a commercial forestry business it does not appear viable to set aside land for woodfuel production alone.

This was confirmed by a farm owner at Njoro, who is progressively converting pasture to tree plantations and calculates that he would have to charge KES 1,500 per bag to cover the costs of establishing and managing a eucalyptus plantation purely for charcoal. With local farm-gate prices averaging KES 700-800 per bag, this would not be commercially viable so he is concentrating instead on the production of poles and fence posts from clonal eucalypts, and will make charcoal from substandard wood.

Similarly, a well-known Nairobi restaurant with a meat roasting operation co-founded an NGO in the 1990s known as the Woodlands 2000 Trust to support farmers in Kajiado to establish tree plantations on their land for charcoal production. The operation was partly donor-financed and was intended to generate sustainably produced charcoal for the restaurant's own use, while providing partner farmers with a lucrative commercial opportunity. In fact, as the trees matured, their owners found it more attractive to sell them as building poles and the anticipated flow of charcoal did not materialise.

The economics are unchanged from the 1980s, when Baobab Farm near Mombasa established *Casuarina equisetifolia* plantations in abandoned limestone quarries owned by the Bamburi Cement company and invested in mobile metal kilns to convert the wood to charcoal on a seven year harvesting rotation. In fact it turned out to be more profitable to fell the trees after two years and

<sup>&</sup>lt;sup>22</sup> *E. grandis* produces lighter charcoal and *E. paniculata* gives heavier charcoal.

<sup>&</sup>lt;sup>23</sup> Woodfuel prices have been standardised in solid cu.m. equivalent, but firewood is sold in loose stacks of 3 cu.m. (equivalent to 2.34 solid cu.m.) and charcoal is sold in bags of 35 kg (equivalent to 0.1825 cu.m.).

market the wood as poles for the construction industry, and the charcoal project was abandoned<sup>24</sup>. Even today, the cement company manages 768 ha of casuarina plantations and finds it more costeffective to sell the stems as poles and any by-product as firewood, rather than producing charcoal<sup>25</sup>.

A similar picture dominates across the country: poles, posts and timber are more valuable forestry outputs than woodfuel. In the few cases where plantations appear to have been set up exclusively for charcoal production, closer investigation usually reveals the influence of a donor or NGO, which subsidises the financial shortfalls. For example, *Acacia polyacantha* plantations were established on farms in Nyanza under the Policy Innovation Systems for Clean Energy Security (PISCES) project funded by the UK Department for International Development, and were not the result of a calculated commercial decision by the landowners.

The attractiveness of dedicated charcoal plantations is likely to decline further as the price gap with pole wood and timber continues to grow. The deteriorating condition and diminishing size of Kenya's state-owned plantations has led to a growing shortage of domestically-produced poles and timber, prompting a growth in investment by private landowners in plantation forestry. The price gap between these high value commodities (which can only be produced from mature, well managed trees) and charcoal (which can be produced from small stems, branches and wood from community land) means that the establishment of plantations dedicated to charcoal production is likely to become even less attractive in relative terms than plantations for pole and timber production.

These findings are relevant when it comes to formulating policy: landowners do not set aside land for charcoal production and are even less likely to do so in the future. Charcoal is a by-product of other, more lucrative enterprises. Regulations should therefore not assume that landowners are, by profession, charcoal-makers or that they would find it attractive to allocate blocks of land for charcoal production. Regulations need to reflect commercial realities where landowners produce charcoal only as a side-line. They require a licensing process that is localised, efficient and cheap, commensurate with the relatively low value they assign to their charcoal operations relative to their core business(es).

#### There are numerous workable models of cost-sharing

Landowners have developed a number of models for charcoal production, from fully internalised operations based on paid company labour to out-sourced operations run by itinerant gangs. The latter has a number of variants – the case studies above include one approach where the land-owner retains one bag in five and another where he is paid KES 60 per bag produced. In another instance on a Laikipia ranch the owner brings charcoal burners onto his land and buys charcoal from them at KES 300 per bag and sells it on to transporters at KES 500.

Again, this has policy implications: there is no single production model that applies in all cases and it therefore seems appropriate from a regulatory point of view that it should be the land-owner, rather than the producer, who applies for and is granted the right to make charcoal. They can then determine which model of production and benefit-sharing works best for achieving their objectives, whether that be land clearing, pasture improvement or simply waste utilisation. It would not make sense for a third party to apply to produce charcoal and then to be permitted to do so on multiple properties, given the inevitable monitoring difficulties this would introduce.

#### Technology choice lies with the producer

There are many methods of producing charcoal and the choice of carbonisation technology will reflect a balance between capital cost<sup>26</sup>, conversion efficiency, carbonisation speed, labour requirement and raw material haulage cost. Three private producers were visited who had invested in brick kilns but subsequently abandoned them, based on their own practical experiences when comparing the costs of wood haulage to a central point versus the efficiency gains realised with the permanent kiln. While

<sup>&</sup>lt;sup>24</sup> Pers. comm., René Haller, Baobab Trust.

<sup>&</sup>lt;sup>25</sup> Pers. comm., Sabine Baer, Lafarge Ecoystems.

<sup>&</sup>lt;sup>26</sup> A brick kiln of 4 m diameter will cost at least KES 100,000 (KES 30,000 for the technician and KES 70,000 for materials) and up to KES 250,000 if a third party is contracted to build it.

it is not disputed that a brick or metal kiln will produce a higher quality charcoal that is uncontaminated with soil and has lower volatile content, it is the buyer who will decide whether this justifies a higher purchasing price and the producer who will weigh this offer against the added costs of producing the better fuel in a more efficient way.

The 2009 regulations require applicants to describe the technology they intend to employ for charcoal making, presumably because KFS would like to specify that 'modern' kilns should be used. However, the choice of technology should be a matter for the land owner. In the same way that government would not dictate the type of processing equipment to be used by a sawmill, dairy farmer or flower grower, it is not the state's role to legislate the method of wood carbonisation to be adopted by a charcoal producer on private land, provided that no other rules (such as those concerning air pollution) are breached.

#### Premium bulk marketing does not pay its way

While the issue of marketing is discussed in more detail in the next section, the case studies suggest there is currently no price advantage to be gained by producers branding their charcoal as 'sustainable' or 'legally-compliant' when it is sold in bulk. Private landowners all currently sell their charcoal at 'farm gate' and those who may have tried to differentiate their product and charge a higher price have eventually stopped doing so. They have found no added value in trying to transport charcoal themselves or connecting with more discerning markets.

This is not necessarily a problem. Rather than private landowners producing a differentiated product that costs more and targets selective consumers, they are now producing charcoal in large volumes for the mass domestic market at prices that have become competitive with charcoal from community and public land. The price gap between 'bush charcoal' and charcoal from private land has closed dramatically, presumably due to depletion of community-managed resources, meaning that private producers can now compete directly on price and quality in the mass market.

This is a recent phenomenon. In the early 2000s the break-even price for charcoal produced at Kakuzi was KES 240 per bag, while charcoal sourced illegally from the nearby Tana River valley was available at only KES 150 per bag – over 40% cheaper<sup>27</sup>. Kakuzi's product was seen as a costly premium option. Nowadays, however, the Kakuzi price of KES 750 per bag is virtually on a par with roadside prices of bush charcoal in the Makuyu area. The company cannot fulfil all its charcoal orders and has been able to increase prices twice in the last 12 months with no apparent effect on demand.

High charcoal prices are no longer confined to Nairobi, where an average 36 kg bag now wholesales for KES 1,000-1,100. A bag of equivalent size wholesales for KES 900-950 in Mombasa and at a similar price in Nakuru. There are now attractive markets in many regional centres for charcoal from private land that offer a good deal for the land owner, the transporter and the dealers, without having to apply premium branding. This means that private landowners are now making a direct and meaningful contribution to meeting the country's basic energy needs and are not catering for a niche, elite market segment.

There are nevertheless still price advantages to be gained by breaking charcoal down into smaller bag sizes and targeting high-end consumers directly with a retail proposition. This is an opportunity to which private landowners are well suited, as this market segment will be sensitive to packaging, positioning, quality and origin, much more than price, and this places landowners who can offer traceable sourcing at an advantage. This opportunity is discussed further below.

#### Landowners and charcoal producer groups interact for mutual benefit

The study was to seek the opinions of private landowners on '*potentially mutually beneficial linkages with small-scale charcoal producers in CPGs and CPAs.*' In practice few landowners are familiar with these terms and most have never worked with registered groups of producers. The CPA and CPG structure is being externally imposed to legitimise charcoal producers under the 2009 regulations.

<sup>&</sup>lt;sup>27</sup> Pers. comm., Paul Epsom, General Manager, Forestry & Livestock, Kakuzi Ltd.

There is nevertheless significant mutual benefit to be realised by landowners and itinerant groups of charcoal producers from working in partnership. The producers provide a tree harvesting service and are typically given the majority of the charcoal produced, while the landowners provide raw material and benefit from a share of the charcoal or its value. These relationships work well without external facilitation or regulation. There seems no reason to impose a particular system of grouping or affiliation on producers.

#### 2.3 Charcoal markets

#### 2.3.1 Introduction

The Brazilian experience highlights the potential for market forces to drive a more sustainable and legally compliant charcoal value chain. The study therefore included consultations with charcoal traders and commercial buyers to explore the opportunity for developing more discerning segments within the market to stimulate the production of differentiated, legally complaint charcoal. As discussed above, however, this is initially likely to be a small and specialised section of the industry as the majority of private landowners are finding the mass market attractive at current prices and see no need to incur the additional cost and complexity of differentiated branding.

Two main niche opportunities were explored. The first was Kenya's hospitality industry, including hotels, restaurants, camps and lodges. The second was the local retail sector, with a focus on supermarkets and service stations.

#### 2.3.2 Hospitality industry

It had been postulated that an environmentally-aware section of the hospitality industry might be interested in buying a differentiated charcoal product that would come with assurances of legal compliance and environmental sustainability. With a critical mass of buyers demanding legality and evidence of origin, this might justify the cost of compliance and differentiation on the part of some producers. However, this hope proved to be somewhat naïve as any business is ultimately driven by its consumers, and Kenyan consumers are largely unconcerned with the environmental credentials of the companies they patronise. The link between a hotel guest or restaurant customer and the type of charcoal used in the kitchen is very indirect, and there are currently no establishments catering for the domestic market interested in profiling the environmental credentials of their procurement policies to customers as part of a marketing proposition. Price is therefore the key factor governing charcoal sourcing in the industry, with a ceiling in Nairobi of KES 1,000-1,100 for a typical 35-37 kg bag at the point of delivery from an inbound transporter. There is no appetite among buyers to pay even 10% more per bag, given that their own customers have no interest in their sourcing arrangements.

The situation is slightly different in the international tourism sector, where some properties market themselves to visitors who specifically wish to patronise camps and lodges that practice low-impact tourism. Eight properties have achieved the Gold rating of Ecotourism Kenya in recognition of their efforts to minimise environmental impacts, including in their choice of energy. However, the level of charcoal consumption in such establishments tends to be low because



Chardust briquettes, in wholesale and retail packaging

they have few beds and usually cook with bottled gas. Most also already buy their charcoal from Kakuzi Ltd. or use environment-friendly briquettes from Chardust Ltd.<sup>28</sup>

<sup>&</sup>lt;sup>28</sup> <u>www.chardust.com</u>

The scale of the additional market opportunity in this sub-sector is therefore very limited. Nevertheless, the potential exists for any responsible supplier of sustainably-sourced charcoal to be profiled via Ecotourism Kenya's Green Directory, linking them to interested buyers.

#### 2.3.3 Retail sector

In the retail sector there is a more significant opportunity. A 2012 Citi Group study ranked Kenya the second most developed retail market in sub-Saharan Africa, with about 30% of retail shopping now done in formal outlets<sup>29</sup>. According to the Kenya Economic Survey 2012, the retail and wholesale sector has grown by 19% in five years, becoming the second largest driver of economic growth after transport and communication. Supermarkets continue to grow their market share and penetration as they become the preferred shopping outlet for middle and high-income consumers in towns. The 'big four' supermarket chains had 138 branches in March 2013<sup>30</sup> and this is rising fast. Kenyan consumers are also increasingly aspirational in their purchasing selections, with mid-income consumers notably focused on status purchases<sup>31</sup>. Non-grocery products have been gaining market share<sup>32</sup>.

Under these conditions there is clearly an opportunity to market charcoal through formal outlets to middle-class consumers, not primarily as an environmentally-responsible product, but as a clean-packaged, convenient, aspirational commodity for leisure use, where price is a relatively minor consideration. This opportunity was confirmed during consultations with two of the largest supermarket chains (Nakumatt and Uchumi) and one of the petroleum companies (Total Kenya), who were all interested in stocking charcoal provided that it complied with Kenya Bureau of Standards (KeBS) requirements for quality and packaging. In fact Nakumatt already stocks one brand of wood charcoal but this is reportedly unpopular due to dusty, low quality packaging, which fails to differentiate it from the roadside equivalent.

There is only one other consumer-ready charcoal brand in the market at present, produced by African Forest (Soysambu) under the 'Wildly Good' brand name and stocked by six outlets in Nairobi. African Forest cite the KFS movement regulations as a key barrier to market growth, as their local forester will not issue movement permits and the cost and time (typically four days) required to acquire a permit from 60 km away in Elburgon is not justified by the small volumes currently transported. The company is also constrained by the small size of its operation, which could probably not cope with large repeat orders from a supermarket chain. The fear of corruption en route to Nairobi is also a major concern and an unpredictable element in product costing. Nevertheless, the experiences of one company should not be seen as indicative of the nature of the potential opportunity.



'Wildly Good' branded charcoal

Meanwhile the retail of charcoal through service stations is common practice in Europe and South Africa, and is a proposition that would interest at least one of the petroleum companies operating convenience stores in Kenya. However, this model is less attractive for suppliers than the supermarket option because service stations are independently franchised and all products must be delivered to the individual outlets. For a bulky, low value commodity such as charcoal it would be hard to sustain a delivery operation on this basis, particularly as shelf space at the outlets is minimal so they would require frequent (perhaps daily) re-stocking.

<sup>&</sup>lt;sup>29</sup> www.businessdailyafrica.com/Supermarkets-expansion-squeezes-out-small-traders/-/539546/1528410/-/r4knkkz/-/index.html

<sup>&</sup>lt;sup>30</sup> The 'big four' are Nakumatt, Tuskys, Naivas and Uchumi. <u>www.businessdailyafrica.com/Corporate-News/Naivas-steps-up-expansion-with-upmarket-store/-/539550/1711210/-/w09ethz/-/index.html</u>

<sup>&</sup>lt;sup>31</sup> www.euromonitor.com/non-grocery-retailers-in-kenya/report

<sup>&</sup>lt;sup>32</sup> www.euromonitor.com/retailing-in-kenya/report

The opportunity for retail sales through supermarkets is nevertheless real and is waiting to be exploited by a company prepared to make the investment and take the risk. Once this opportunity was established through one or more of the major chains and the supplier had built up storage capacity in Nairobi, with a regular round of deliveries, it would be worth considering service stations as supplementary outlets.

#### 2.4 Industry harmonisation

#### 2.4.1 Introduction

The study was to investigate the justification and potential for developing a charcoal industry association, industry standards or shared branding. These are all strategies for harmonisation that might be adopted by the private sector in a particular industry to promote common interests:

- an **industry association** would typically provide a shared platform for advocacy by commercial players when there is an agreed need to lobby around particular issues for a more favourable business environment;
- **industry standards** might be developed by commercial players to improve the quality and reputation of their businesses and products, or by government to protect consumers; and
- **shared branding** could bring together the marketing strengths of many small companies to achieve greater overall sales impact.

In principle it would be for industry players themselves to determine which of these strategies might make commercial sense. So, for example, while government might be keen on catalysing an industry association to provide a convenient channel of communication to multiple players, this may not be an attractive proposition from the businesses' point of view unless there were specific issues of mutual concern that they felt could be advanced under a unified umbrella.

#### 2.4.2 Industry association

The study has noted the large number of private landowners producing charcoal in Kenya and their common desire for light regulation and business-friendly policy. However, none of them are dedicated charcoal producers and their area of commercial overlap is therefore small. As explained, they produce charcoal as a subsidiary output of diverse core businesses that include arable farming, livestock rearing, forestry or a combination. Therefore, apart from the fact that they may produce charcoal from time to time as a by-product of tree felling or pruning for other purposes, they lack a coherent shared interest around charcoal with common advocacy objectives. The issue of charcoal is simply not significant enough for any of them to justify the effort and expense of forming and sustaining a stand-alone charcoal industry association.

A similar outcome was experienced by the Kenya Forests Working Group, which tried to start a charcoal sub-committee in the early 2000s. It petered out after a few months as commercial players found no particular issues around which to coalesce and no clear commercial value in participating. Nevertheless, if any private producers felt differently there would of course be nothing preventing them from forming an industry grouping in some form and this should be actively supported.

#### 2.4.3 Industry standards

One area where harmonisation would clearly be useful in the short term is in the setting of product standards. Consumers have a right to be protected from potentially harmful products and producers can benefit by the outlawing of sub-standard competition. KeBS standards are specifically designed for products retailed directly to end consumers and do not apply to business-to-business sales.

Standard-setting for charcoal is in fact already underway through the provisional adoption by KeBS of South African National Standard no. 1399 for charcoal and charcoal briquettes. In brief, the standard for wood charcoal specifies that:

- at least 90% of pieces should be between 9.5 and 106 mm in size
- not more than 7.5% of pieces should be less than 9.5 mm size, after a prescribed drop test
- moisture content should be below 10%
- volatile matter content should be below 20%
- ash content should be below 5%
- fixed carbon content should be above 75%.

These standards are not difficult to meet for charcoal of reasonable quality and their adoption for formal retail sales could play a useful part in bringing legally compliant charcoal into the mainstream economy in appropriately labelled packaging with the KeBS standardisation mark.



#### 2.4.4 Shared branding

Shared branding can provide further assurance to consumers that a product or range of products meets defined criteria not covered under KeBS accreditation, such as ethical or environmental standards. For example, several Kenyan agricultural and horticultural commodities have been awarded fair trade status by Fair Trade Africa, which has representation in Nairobi<sup>33</sup>. A small number of these products (mainly tea, coffee and chocolate) are also retailed in the local market. However, there is no fair trade standard for charcoal and no plan to develop one<sup>34</sup>. The size of the Kenyan market for ethically produced goods does not yet justify the expense of developing such a standard unilaterally.



Wild Living's FSC-certified briquettes

An existing standard designed specifically for forest products is available from the Forest Stewardship Council (FSC) and has been met by Wild Living Resources in Kilifi for its 'Makaazingira' charcoal briquettes<sup>35</sup>. However, with an annual re-certification cost of GBP 1,200 (according to Wild Living), this is an expensive standard to maintain. Such costs are hard to justify for charcoal destined for the domestic market, where price and quality are valued by consumers over sustainability and ethics. Indeed, Wild Living report that they are considering not renewing their FSC certification as income from

briquette sales cannot support the cost. FSC certification is perhaps best-suited to high value timber products.

Ecotourism Kenya operates an independently audited eco-rating system for hotels, camps and lodges, which will soon be expanded to cover tour operators. It also produces a Green Directory<sup>36</sup> of producers and suppliers of 'green' products or services. The latest (2010) edition includes Chardust Ltd. as a supplier of charcoal briquettes, but no supplier of standard wood charcoal. There is an opportunity here for a potential charcoal supplier to advertise their credentials and reach an environmentally-aware section of the hospitality industry, although the scale of the opportunity may initially be rather small for the reasons outlined above.



The cheapest and arguably most effective form of branding for a company supplying legally compliant charcoal may be self-certification through clear and informative labelling on the product itself. *Wildly Good* charcoal already bears a label describing the product's origin and environmental credentials. Such labelling is probably the most cost-effective branding approach at present, until such time as the charcoal market becomes more sophisticated and discerning, at which point an externally verifiable branding standard might be justified.

<sup>&</sup>lt;sup>33</sup> See <u>www.fairtrade.or.ke</u>

<sup>&</sup>lt;sup>34</sup> Pers. comm., Rachel Wandia, Market Development Manager, Fair Trade Africa, Nairobi.

<sup>&</sup>lt;sup>35</sup> See <u>www.wildlivingresources.org/charcoal</u>

<sup>&</sup>lt;sup>36</sup> See www.ecotourismkenya.org/downloads/greendirectory\_2010

## **3 BARRIERS TO GROWTH**

#### 3.1 Introduction

This report has highlighted the opportunity for producing charcoal in Kenya on private land to supply a rapidly growing market that is delivering record prices. With the depletion of woody resources on community land and restrictions on woodfuel production on public land, the future for charcoal production is likely to be increasingly dominated by private producers. It is therefore imperative for the security of Kenya's future energy supply that barriers to the legal compliance of charcoal produced on private land are addressed and as far as possible eliminated, so that this important and promising opportunity can be unlocked.

Based on the proceeding discussion and consultations with industry players during the study, the following four barriers can be identified:

- a) Uncertainty over rules
- b) Fear of enquiring
- c) Disproportionate cost of compliance
- d) Movement difficulties

#### 3.2 Uncertainty over rules

There is widespread confusion over what exactly is expected of a private landowner who wishes to produce and transport charcoal. Few have heard of the 2009 regulations and even those familiar with the requirements are discouraged from applying by a lack of clarity and the potentially burdensome nature of compliance. For example:

- May private landowners apply in their own names if they do not have a company?
- Is an EIA required to produce charcoal, and what form should it take?
- Are applicants required to specify exact numbers of trees, species and estimated charcoal yields in order to comply?
- If they plan to use earth kilns, might their application be rejected?
- Which 'local environment committee' is expected to give a recommendation, and what form should this take?
- What is a 'reforestation or conservation plan' and what form should it take?
- Who will receive and process applications?
- What is the realistic timeframe for a response?
- What rights does a producer have if a response is not forthcoming?
- If the response is positive, what is likely to be the nature of the production licence? e.g. will it be time-bound or will it give a ceiling in terms of land area to be exploited or charcoal tonnage to be produced?
- Who will monitor production and how?
- What type of record-keeping will be expected? etc

For most producers, making charcoal as a peripheral enterprise, the regulations are seen as heavyhanded, complex and essentially unworkable. The failure of KFS to issue any licences would appear to confirm this perception.

Due to uncertainty over which rules apply or a belief that compliance with the 2009 regulations is unlikely to be possible, some landowners choose to inform their District Environment Committee of their charcoal-making activities instead. Others do not. DECs occasionally issue an authority to produce charcoal or they may fail to respond. Most charcoal production on private land is therefore continuing in a legal vacuum. This does not mean that it is unsustainable or undesirable. Simply that it is frequently taking place without the permission (and sometimes knowledge) of government.

#### 3.3 Fear of enquiring

Where the rules to produce or transport charcoal are unknown, there is widespread fear among landowners of making an enquiry. They are afraid that asking the authorities whether they can make charcoal or how they might go about submitting a request to do so risks 'opening a can of worms'. They might be turned down, told not to proceed until authorised, asked to prepare a dossier of materials and submit a lengthy application, or see their request escalated to senior levels of KFS or NEMA from where it may never return.

This fear appears well founded. For example, a landowner at Rongai made a written request to his local forester to pollard *A. xanthophloea* in cattle paddocks to produce charcoal, but received a formal refusal and a declaration that harvesting indigenous trees is 'illegal'. An invitation to the forester to visit the property and inspect the operation was declined. This placed the landowner in an impossible situation as to go ahead would be in contravention of a direct instruction, yet he envisaged a sustainable operation and genuinely sought to comply with any reasonable regulations that might be in place. Not to mention that there is in fact no rule forbidding the harvesting of indigenous trees on private land. He will now simply prune the trees and burn the branches as firewood, wasting a valuable resource that could have been converted sustainably to high grade charcoal.

A further example may be found in Taita-Taveta County, where Wildlife Works Carbon is well-known as the implementer of the world's first REDD<sup>37</sup> project to be issued Voluntary Carbon Units under the Voluntary Carbon Standard. Wildlife Works made an enquiry to the local KFS officer in March 2012 seeking clarification on whether a charcoal production licence would be required for the production of briquettes from charred twigs and shoots harvested sustainably from within one of the conservancies it manages<sup>38</sup>. Despite the fact that others (e.g. Wild Living in Kilifi) have been exempted from such a requirement, Wildlife Works was told by the Ecosystem Coordinator that a production permit would indeed be required under the 2009 regulations. The company therefore commissioned a costly EIA and submitted a comprehensive application dossier to the FCC at Conservancy level in May 2012. It is still awaiting a decision on whether it may proceed. This is a high profile venture widely profiled by KFS and explicitly committed under its business model to sound environmental management. If it cannot get approval to produce char then it is hardly surprising that smaller and less well-connected landowners adopt a cautious approach to even making enquiries about the charcoal rules.

Many landowners feel that the best course of action is to go ahead without asking and to out-source the production and movement of charcoal to others. They feel that any attempt to seek clarity or to request permission could result in undue attention and lead to over-regulation, and indeed this does seem to be the reality.

#### 3.4 Disproportionate cost of compliance

The tendency for landowners to produce charcoal as a peripheral enterprise to clear land, improve pasture or add value to waste has been explained in some detail. However, the 2009 Charcoal Regulations were designed for groups or firms producing charcoal as a full-time activity and are therefore a poor match for occasional or one-off producers. Land-owners cannot justify going through the time-consuming process of acquiring licences for an activity that takes place only infrequently or is marginal to their core business.

The complexity of the regulations reinforces this conclusion. The regulations set a high bar in terms of legal compliance and give the impression that charcoal producers must be tightly controlled to avoid

<sup>&</sup>lt;sup>37</sup> REDD (Reducing Emissions from Deforestation and Degradation) is a climate change mitigation strategy introduced by the United Nations to create an incentive for developing countries to protect, better manage and wisely use their forest resources. REDD strategies aim to make forests more valuable standing than they would be cut down, by creating a financial value for the carbon stored in trees.

<sup>&</sup>lt;sup>38</sup> Although the proposed char-producing area is under the management of Wildlife Works Carbon, it is excised from the Project Accounting Area (the area that is managed for carbon crediting purposes).

irresponsible behaviour. Yet most private landowners have a strong vested interest in managing their land and resources sustainably. In common with KFS, they wish to see a modern, regulated and sustainable industry. They will not behave irresponsibly if given the opportunity to do so, and need not be so closely controlled through a demanding set of rules. It is nevertheless important to point out that landowners' behaviour will only be self-regulating if the burden for legal compliance is transferred to them, and away from producers and CPAs/CPGs.

#### 3.5 Movement difficulties

There are several barriers to the movement of charcoal that concern private landowners. The first is the apparent inability of most local KFS officers to issue movement permits, usually necessitating a costly and time consuming visit to the office of the Ecosystem Coordinator. This lack of delegation is particularly troublesome when the Coordinator is located far away and when the quantity of charcoal to be moved is small.

A second barrier is the lack of clarity over what is required to obtain the movement permit, given that the regulations make its issuance conditional on the approval of a production licence, yet none of the latter have been issued. In theory this invalidates all movement permits, though in practice they are apparently still issued and 'legal'. The price of the permit is similarly unclear, as the FSGO stipulates a price of KES 20 *per bag* while KFS staff frequently impose a charge *per load* (usually KES 1,000 or 2,000). Further confusion exists around the movement of small quantities of charcoal, for which the regulations officially allow no exceptions whereas the permits introduce a confusing cut-off in the small print that may apply to either three bags or four bags. Even this threshold is frequently interpreted in practice as allowing the unregulated movement of any charcoal that is carried by a donkey or two-wheeled vehicle. In other words there is a high degree of vagueness around the movement rules that inhibits the efficient and transparent costing of a formalised charcoal enterprise.

The requirement for a permit to move even small volumes of charcoal by vehicle is prejudicial to any business that may consider retailing charcoal in small package sizes through supermarkets, an opportunity that appears to be commercially attractive. It would be impractical and expensive for an urban distributor to acquire a daily movement for distributing re-packaged charcoal to a network of urban outlets. In fact this was attempted in 2010 by a distributor seeking to bring sustainably sourced *Prosopis juliflora* charcoal to Nairobi from the Bura Irrigation Scheme on the Tana River. He transported a lorry-load of charcoal to a storage depot in Ruiru, with the appropriate movement permit and cess receipt from Bura, but was required to obtain additional permits each time he tried to move a few bags of charcoal from Ruiru to Nairobi for retail customers. This rendered the business unviable and he brought no more charcoal from Bura<sup>39</sup>.

However, by far the largest concern of private landowners considering the movement of charcoal is police corruption. The police on the roadside do not appear to differentiate between charcoal being moved illegally and charcoal being transported with a KFS permit. This makes any transport of charcoal cumbersome and expensive, particularly give the fact that the level of bribery is unpredictable for those who transport charcoal only occasionally (as explained in 2.1.3). Fear of corruption is a significant barrier to potential producers of legally-compliant charcoal who might otherwise consider moving it to high value markets, hence the general tendency to sell the charcoal at farm-gate and leave its transport to specialised lorry operators.

Branded vehicles carrying a movement permit and a seller's receipt can to a certain extent reduce the level of bribe demanded. Bribe avoidance can be enhanced by carrying charcoal in readily identifiable pre-printed sacks. However, this approach might not be sustainable if the transport of the product on a given route was to become more frequent. It also seems punitive for a producer to have to pack charcoal in special bags merely to avoid corruption when that charcoal is entirely legally compliant.

<sup>&</sup>lt;sup>39</sup> Pers. comm., Murray Combes.

### 4 **RECOMMENDATIONS**

The study does not propose a raft of complex recommendations; evidence suggests that the more complex the regulatory environment, the lower the probability of compliance and the greater the difficulty of enforcement. Just two broad recommendations are therefore put forward.

#### 4.1 Use existing environmental legislation to regulate charcoal production on private land

EMCA (1999) established a functional system for the authorisation of consumptive natural resource utilisation on private land through DECs. This adequately covers charcoal production. Landowners are required to explain the proposed activity and provide reasonable justification to the DEC, and the NEMA and KFS officers – who are usually familiar with the area and the applicant – can give an expert opinion to their fellow committee members. They may choose to visit the site beforehand to ascertain certain details and to verify whether the proposed activity may contravene any particular EMCA stipulations. While it is acknowledged that DECs are not always effective and may in future be superseded by County-led environmental institutions, for the time being DEC approval is relatively fast, efficient and business-friendly, and decentralised to sub-County level. It is a good fit for charcoal production on private land, which is a minor and peripheral activity for most landowners and therefore requires 'light touch' regulation. DECs can revoke any licence if they become dissatisfied with the way a particular land owner is behaving.

There seems to be no merit in a further layer of regulation under the Forest Act, except in gazetted reserves where KFS clearly has a mandated obligation to control utilisation. It is therefore suggested that the charcoal regulations run their lawful course with the expiry of the current Forest Act and are not revised or reintroduced once the new Act becomes law in 2014. It is noteworthy that the draft National Forestry Bill under discussion appears to remove the licensing obligation for charcoal produced on private land and the stringent 'chain of custody' requirements that will in future apply to forest products from public land. This proposal may therefore already have a certain level of support.

If Counties wish to add particular legislation concerning charcoal then they have the authority to do so at their own discretion. This includes the right to retain, remove or modify the system of cess payment for charcoal, which they may continue to find a useful source of income.

#### 4.2 Eliminate movement permits charcoal from all sources

Movement permits were introduced to control the extraction of charcoal from gazetted forest reserves, but have never been effective in achieving that objective. It is not possible to control the movement of a commodity that has already been produced, packed, loaded and despatched to market, meaning that any attempt to regulate the movement of charcoal is akin to 'chasing meat to rebuild a cow', as one senior KFS officer put it. In other words it is an impossible and ultimately pointless effort, and cannot lead to better control over production. Issuance of a movement permit is automatic once a production permit and certificate of origin have been obtained, making this third piece of paper redundant as it has no separate qualifying requirements.

The control over the movement of charcoal (and indeed other wood products) is also an anomaly that lacks logic. If a farmer was to grow maize or fruit he would require no special permit to transport it, and the situation should be no different for charcoal. The removal of movement permits for charcoal is therefore proposed. Any person transporting charcoal will still be able to produce evidence of its origin - if required - in the form of the supplier's receipt.

Removal of movement permits would make transport of charcoal much easier and would liberalise the trading opportunity for private landowners. It would be of particular benefit for facilitating the movement of charcoal within towns and cities from depots to retailers, opening up an opportunity for the unconstrained re-distribution of charcoal from wholesalers for delivery to up-scale retail outlets in small bag sizes.

# ANNEX A: ABRIDGED TERMS OF REFERENCE

#### Background

The Government of Finland and the Government of Kenya are executing the Implementation Phase of "Miti Mingi Maisha Bora (MMMB) – Support to Forest Sector Reform" programme. The programme's overall objective is "a reduction in poverty through ensuring that the forest sector contributes effectively and sustainably to improving the lives of the poor, restoring the environment and aiding the economic recovery and growth of Kenya within the context of Vision 2030". The Programme purpose is: "Improved forest and woodland management and utilization practices, and a transformation of policy and institutional arrangements to serve the needs of communities, the private sector, civil society and the government". The programme is has four components, namely: i) Support to forest sector policy development and co-ordination processes, ii) Support to implementation of KFS institutional change processes, iii) Support to management and utilization of gazetted forest reserves, and iv) Forest-based enterprises developed. Three institutions – the Ministry of Forestry and Wildlife (MFW), the Kenya Forest Service (KFS) and the Kenya Forestry Research Institute (KEFRI) are responsible for the programme's implementation.

Component 4 of the MMMB Programme is concerned with improved livelihoods in ASALs through sustainable production and trade in bio-energy and other forest products. It focuses on facilitating the development of viable forestry enterprises that are engaged in sustainable management of woody resources on private and trust lands. The immediate objective for the programme period 2009-2014 is increased income to farmers and communities through production, processing and marketing of wood and non-wood forest products.

Charcoal is a key energy resource in Kenya, providing domestic energy for the majority of urban households and a large share of rural households. The demand for charcoal is increasing with rapid urbanisation and a sustainable supply needs to be established to support national economic growth and the alleviation of poverty in rural supply zones. The charcoal industry creates jobs for wood producers, charcoal producers, transporters and vendors and is estimated to employ over 700,000 people, who in turn support over two million dependants. Yet it has a negative image and operates largely informally, thus limiting its ability to modernise, attract investment, create formal employment opportunities and operate optimally.

The KFS push to date has been to form Charcoal Producer Groups and in turn Associations for charcoal burners who are out in the range producing charcoal. It is expected that through these formal structures, better inputs in terms of efficiency, natural resource management and value chain support will be possible. This is in line with prescriptions in the "Charcoal Rules" that target the rural poor.

KFS is one of the actors striving to support the development of a modern and formalised charcoal industry in Kenya. In order to contribute to the evolution of the industry from its current marginalised and quasi-legal state to this more desirable outcome, it is proposed that a study is conducted of industry players (producers, traders and buyers) who are already known to be committed to sustainable production and legal compliance, in order to document their experiences and opinions on the path to legitimisation, modernisation and sustainable growth across the industry as a whole.

The producer focus will be on registered enterprises selling through formal sales outlets, identifying those who share a philosophical commitment to ecological sustainability and legal compliance. The main markets considered will be supermarkets, large shops and service stations, as well as key buyers known to value traceability and legality (likely to include selected enterprises in the hospitality and tourism industry).

#### Purpose

This study will determine what businesses aspiring to produce and sell charcoal legally are currently experiencing and what they see as the main hurdles to growth. The findings will contribute to the development of policies and regulations that are business-friendly and can help streamline the path towards more players becoming legitimate, legally compliant and modern in their approach.

Recommendations on improving sector efficiencies whilst observing the complex framework of private and corporate interests will be developed and presented. The possibility of forming a "sustainable charcoal industry group" will also be explored, including why this has not happened to date, and recommendations put forward regarding the feasibility of working towards industry standards and associated branding.

#### Approach

The consultant(s) must inform themselves of the Baseline Assessment of Cross-Cutting Development Issues and Governance Assessment of the Forest Sector studies in the preparation and realisation of their work.

#### Tasks

- identify a sample of charcoal producer enterprises (including those compliant in the past or aspiring for compliance), who are not captured under the current Charcoal Producer Association formation drive by KFS. These may be of either medium or large size, the important factor being their interest and ability in producing sustainability and in compliance with prevailing regulations;
- assess their business models, main markets and probable market share;
- analyse legal and regulatory requirements to produce and market charcoal in Kenya by comparing these to established and functional systems from other countries; establish the sample producers' experiences in seeking to comply with requirements;
- seek their opinions on the potential and barriers to growth of a more modern, regulated, sustainable charcoal industry;
- seek their opinions on potential mutually beneficial linkages with the newly created CPGs and CPAs (i.e. links to the generally small scale enterprises);
- interview a selection of charcoal traders (e.g. supermarkets) and commercial buyers (e.g. in the hospitality industry) to determine what barriers they face in acquiring or trading in compliant charcoal;
- investigate the justification and potential for developing an industry association, industry standards and/or shared branding;
- document and disseminate findings to stakeholders, via a workshop, including the enterprises consulted, relevant government agencies (including Ministry of Energy, KFS and KEFRI) and selected NGOs.

#### **Expected Outputs**

- Analysis of the findings from the specific tasks above;
- Summary of barriers to growth of a modern, regulated charcoal sub-sector among those aspiring to be compliant, with proposed mitigation measures;
- Proposals for any changes deemed necessary to current regulations and fees;
- Conclusion on the justification and potential for establishing industry standards and possible shared branding, including any new industry grouping and how this might be facilitated;
- Depending on the previous conclusions, drafting of proposed standards (e.g. for production, labelling, marketing, export or for the fuel itself, in addition to any state regulations);
- A set of recommended contributions for inclusion in an anticipated charcoal policy brief.

# ANNEX B: STUDY ITINERARY

# First Kenya mission, June 2013

Wed 5 June	Fly UK-Kenya. Overnight Nairobi.
Thu 6 June	Meet Wildlife Works Carbon (in Nairobi). Fly to Mombasa and overnight.
Fri 7 June	Meet KFS (Mombasa), Wild Living Resources (Kilifi) and Baobab Trust (Bamburi). Overnight Mombasa.
Sat 8 June	Phone interview with Mareco Ltd. (Nairobi). Mission planning and document review. Overnight Mombasa.
Sun 9 June	Drive Mombasa-Maungu and overnight.
Mon 10 June	Meetings and site tour with Wildlife Works Carbon. Phone interview with Kakuzi Ltd. (Makuyu). Overnight Maungu.
Tue 11 June	Drive Maungu-Kinango and meet KFS. Continue to Diani and meet Kenya Calcium. Drive to Lunga Lunga and meet KFS with members of Charcoal Producer Association. Return to Mombasa and overnight.
Wed 12 June	Meet Lafarge Ecosystems (Bamburi) and Kilifi Plantations. Return to Mombasa and fly to Nairobi. Overnight Nairobi.
Thu 13 June	Meet staff of MMMB, KFS and KEFRI (Karura). Meet Global Village Energy Partnership and Africa Solar Designs (Kilimani). Overnight Nairobi.
Fri 14 June	Meet Machakos & Makueni Farmers Association (Karen) and Green Africa Foundation (Kenyatta Conference Centre). Overnight Nairobi.
Sat 15 June	Attend and give presentation at AGM of Machakos & Makueni Farmers Association (Acacia Camp, Hopcraft Ranch, Athi River). Overnight Nairobi.
Sun 16 June	Meet Cookswell Jikos (Lower Kabete). Drive Nairobi-Nakuru and overnight.
Mon 17 June	Meet Timsales (Elburgon), Delamere Estates (Soysambu), African Forest (Soysambu) and Kenya Forests Working Group (in Nakuru). Overnight Nakuru.
Tue 18 June	Phone interview with Veg-Pro Kenya (Naivasha). Meet Forest Action Network (in Naivasha). Attend session of Forest Bill validation workshop (Simba Lodge, Naivasha). Drive to Nairobi and meet CAMCO Clean Energy. Overnight Nairobi.
Wed 19 June	Visit Kakuzi Ltd. (Makuyu). Meet Laterre Clean Energy (in Lang'ata). Phone interview with Acacia Natural Resource Consultants (in Nakuru). Overnight Nairobi.
Thu 20 June	Meet Kenya Bureau of Standards (South C). Meet various MMMB staff and debrief (Karura). Overnight Nairobi.
Fri 21 June	Fly Kenya-UK

# Second Kenya mission, July 2013

Mon 8 July	Fly UK-Kenya. Overnight Nairobi
Tue 9 July	Meet Kenya Hotelkeepers & Caterers Association (Mombasa Road), MMMB/KFS (Karura) and Tamarind Group (Westlands). Overnight Nairobi.
Wed 10 July	Meet Uchumi Supermarkets (Yarrow Road), Nakumatt Holdings (Road C), Burn Manufacturing (Lavington) CAMCO Clean Energy (Kilimani) and Takachar (Kilimani). Overnight Nairobi.
Thu 11 July	Meet Ecotourism Kenya (Upper Hill). Drive Nairobi-Marigat and meet Cummins Cogeneration. Drive to Baringo and meet RAE Trust. Overnight Baringo.
Fri 12 July	Drive Baringo-Rongai and your charcoal operations at Eccles Farm and Gogor Farm. Continue to Njoro and overnight.
Sat 13 July	Tour Kembu Farm charcoal operation (Njoro). Drive Njoro-Rumuruti and visit Ol Maisor Ranch. Continue to Suyian Ranch (Laikipia) and overnight.
Sun 14 July	Drive Suyian-Nanyuki. Compile notes and plan itinerary. Overnight Nanyuki.
Mon 15 July	Drive Nanyuki-Timau and visit Kisima Farm. Drive Timau-Rumuruti and meet District Forest Officer. Continue to OI Ari Nyiro and visit Laikipia Nature Conservancy. Overnight OI Ari Nyiro.
Tue 16 July	Drive OI Ari Nyiro-Mogwooni Ranch and tour charcoal operation. Continue to Nairobi and overnight.
Wed 17 July	Meet KFS and MMMB staff (Karura), and Total Kenya (Limuru Rd). Overnight Nairobi.
Thu 18 July	Meet Cheli & Peacock Trust (Wilson Airport) and Chardust (Hardy). Overnight Nairobi.
Fri 19 July	Document review and afternoon meetings at MMMB (Karura). Overnight Nairobi.
Sat 20 July	Final data collection and preliminary analysis. Cross-check with ToR for missing data. Overnight Nairobi.
Sun 21 July	Fly Kenya-UK

# ANNEX C: PEOPLE CONSULTED

# Government of Kenya

Kenya Forest Service	Patr Jose Ded Nich Step Gitu Kala	ick Kariuki, Deputy Director, Extension eph Njigoya, Farm Forestry an Ndiritu, Head of Coast Conservancy holas Munyao, Deputy Head of Coast Conservancy ohen Kahunyo, Ecosystem Conservator, Nairobi County ma Mailotha, District Forest Officer, Laikipis West ama Ruwa, Forest Officer, Kinango sub-county s Tsuma, Forest Officer, Msambweni sub-county		
Kenya Forestry Research Inst. Nelly		y Oduor, Dep. Director, Forest Prods. Research Centre		
Miti Mingi Maisha Bora Zip programme Kei Ste No Jor		pporah Toroitich, Programme Manager eith Dolman, Chief Technical Advisor reffen Roettcher, Forest Livelihoods Advisor por Hussein, Component 4 Manager onathan Davies, Forest Policy & Legal Advisor		
Kenya Bureau of Standards Zach Josh		haria Lukorito, Principal Standards Officer nua Nyabicha, Quality Officer		
Private Firms				
Burn Manufacturing Kenya Ltd.		Eoin Flinn, General Manager, East Africa		
Camco Clean Energy Ltd.		Murefu Barasa, Programme Officer Emmanuel Ekakoro, Project Officer		
Chardust Ltd.		Elsen Karstad and John Njuguna, Directors		
Coast Calcium, Likoni		Abdul Latif Issak, Managing Director		
Cookswell Jikos		Teddy and Susie Kinyanjui, Directors		
Cummins Cogeneration Kenya Ltd		Damaris Akoth, Agronomist & Grants Manager		
Global Village Environment Partner	rship	Laura Clough, Technical Specialist, Yaron Cohen, Mareco Ltd (GVEP consultants)		
Laterre Clean Energy, Naivasha		Alistair Nicklin, Director		
Nakumatt Holdings Ltd.		Boniface Kaguara, Purchasing Officer		
Tamarind Group		Martin Dunford, Executive Director		
Timsales Ltd., Elburgon		Walter Ogada, Ops. Manager, Forestry Division		
Total Kenya Ltd.		Anthony Thuku, Diversification Manager Julien Dubout, Diversification Advisor		
Uchumi Supermakets Ltd.		Mercy Wangeci, Buying Assistant		

#### Landowners/charcoal producers

African Forest, Soysambu	Helen Thornton-Mutiso & Kenya Mutiso, Directors	
Delamere Estates Ltd., Soysambu	Tom Cholmondley, Director, Stephen Koigi, Manager Rolf Davey, former charcoal project manager	
Eccles Farm, Rongai	Toon & Lisa Hanegraaf, Owners	
Gogor Farm Ltd., Rongai	Hamish Grant, Managing Director	
Kakuzi Ltd., Makuyu	Paul Epsom, Gen. Manager, Forestry & Livestock Sammy Chege, Snr. Estate Manager, Forestry Joseph Mang'oka, Yard Manager	
Kembu (E.Africa) Ltd., Njoro	Andrew & Zoe Nightingale, Directors	
Kilifi Plantations Ltd., Kilifi	Warren Wilson, Manager	
Kisima Ltd., Timau	Daniel Kithinji, Forestry Manager	
Lafarge Ecosystems, Bamburi	Sabine Baer, Chief Operating Officer	
Laikipia Nature Conservancy	Kuki & Sveva Gallmann, Directors Paul Mugo, Education Officer	
Mogwooni Ranch Ltd., Laikipia	Jackie Kenyon, Director Munoru Tombiriri, charcoal foreman	
Ol Maisor Ltd., Rumuruti	Martin and Vanessa Evans, Directors	
Redwing Ltd., Menengai	Simon Sayer, Director	
Rehabilitation of Arid Environments Trust, Baringo	Murray & Liz Roberts, Trustees	
Suyian Ranch Ltd., Laikipia	Gilfrid Powys, Managing Director	
VegPro Kenya Ltd., Naivasha	Harry Milbank General Manager	
Wildlife Works Carbon, Maungu	Rob Dodson, Vice President, African Field Ops. Bryan Adkins, REDD+ Regional Engagement Director Martin Nyambu, Eco-charcoal Project Manager Fraser Smith, Conservation Landscape Manager	

#### **NGOs & Associations**

Baobab Trust, Bamburi
Cheli & Peacock Community Trust
Ecotourism Kenya

Forest Action Network, Njoro Green Africa Foundation

Kenya Assoc. of Hotelkeepers & Caterers Kenya Forests Working Group René Haller, Director

Chania Frost, Chief Operating Officer

Andrew Karanja, Eco-Rating Programme Officer Phoebe Munyoro, Public Relations Manager

Dominic Walubengo, Director

Jacqueline Kimeu, Project Officer Gladys Njeri, Assistant Project Officer

Mike Macharia, CEO

Rudolf Makhanu, National Coordinator

Kwale Woodfuel Conservation Association	Matheka Kieti, Chairman Hussen Mwarabu, Member
Machakos & Makueni Farmers Association	David Stanley, Treasurer Nigel Stanley, Asst. Treasurer, Various members
Mount Kenya Trust, Nanyuki	Susie Weeks, Executive Officer
Msambweni Charcoal Producers Association	Tsingwa Ndurya, Chairman, Mushini Mwamusya, Member
Rumuruti Community Forestry Association	Patrick Mwangi, Chairman
Sega Charcoal Producer Group, Lunga Lunga	Joshua Katiku, Chairman Ruphus Msangi, Treasurer Philip Musau, Secretary
Takachar	Kevin Kung, Founder
Wild Living Resources, Kilifi	Anthony Maina, Executive Director Moses Namanga, Project Officer

### ANNEX D: BIBLIOGRAPHY

Bailis, R. (2005) *Fuel from the Savanna: the Social and Environmental Implications of the Charcoal Trade in sub-Saharan Africa.* PhD dissertation, Energy & Resources, Univ. of California, Berkeley.

Dieckmann, U. and Muduva T. (2010) *Namibia's Black Gold? Charcoal Production, Practices and Implications.* Legal Assistance Centre, Windhoek.

Kalenda, M., Ngatia, J., Ng'oriareng, C., Simanto, O. & Oduor, N. (2012) *Available charcoal production technologies in Kenya*. Kenya Forest Service and Kenya Forestry Research Institute, for UNDP, Nairobi.

Legislative Assembly of Minas Gerais (2009) *New Forestry Law of Minas Gerais: Rural Producer Manual (in Portuguese).* Belo Horizonte, Brazil.

Mbuthi, P. (2009) *Integrated Woodfuel Development Strategy for Kenya 2008- 2012.* GEF/RETAP Biomass Project. Ministry of Energy, Nairobi.

Mugo, F. & Gathui, T. (2010) *Biomass energy use in Kenya*. Background paper prepared for International Institute for Environment and Development for international workshop on biomass energy, 19-21 October 2010, Parliament House Hotel, Edinburgh. Practical Action, Nairobi.

Mutimba, S. & Barasa, M. (2005) *National Charcoal Survey: Exploring the potential for a sustainable charcoal industry in Kenya.* Energy for Sustainable Development Africa (ESDA), Nairobi.

Njenga, M., Karanja, N., Munster, C., liyama, M., Neufeldt, H., Kithinji, J. & Jamnadass, R. (2013) *Charcoal production and strategies to enhance its sustainability in Kenya.* Development in Practice, 23(3), 359-371.

Oduor, N. (2012) Sustainable Feedstock Management for Charcoal Production in Kenya: Resources, *Initiatives and Options*. Working Brief prepared for PISCES by Practical Action Consulting Eastern Africa, Nairobi.

Oduor, N., Ngugi, W. & wa Gathui, T. (2012) *Sustainable Tree Management for Charcoal Production: Acacia Species in Kenya.* Prepared for PISCES by Practical Action Consulting East Africa, Nairobi.

Practical Action Consulting (2010) *Promoting Sustainable Charcoal Production and Marketing in Kenya: A Comparative Analysis through Participatory Market Mapping.* Prepared for PISCES by Practical Action Consulting Eastern Africa, Nairobi.

Republic of Kenya (1999) Environmental Management and Co-ordination Act. Act no. 8 of 1999.

(2005) The Forests Act. Act. No. 7 of 2005. (2009) The Forests (Charcoal) Regulations. (2010) Constitution of Kenya. (2012a) National Energy Policy, 3<sup>rd</sup> draft. Ministry of Energy, Nairobi. (2012b) Land Act. Act no. 6 of 2012. (2013) Forestry Bill (Mar 2013 draft). Kenya Forest Service, Nairobi.

Sepp, S. (undated) Shaping charcoal policies: context, process and instruments as exemplified by country cases. Eco Consulting Group for GIZ, Eschborn.

Standards South Africa (2008) *Wood charcoal and charcoal briquettes for household use: South African National Standard* 1399:2008. South African Bureau of Standards, Pretoria.

UNDP & Gallmann Memorial Foundation (undated) *The story of lelechwa (Tarconanthus camphoratus): A weed or a neglected economic resource?* UNDP, Nairobi.

wa Gathui, T., Mugo, F., Ngugi, W., Wanjiru, H. & Kamau, S. (2011) *The Kenya Charcoal Policy Handbook: Current Regulations for a Sustainable Charcoal Sector.* Prepared for PISCES by Practical Action Consulting East Africa, Nairobi.

\_\_\_\_\_\_ (2012) *The Kenya Charcoal Regulations Pocketbook.* Prepared for PISCES by Practical Action Consulting East Africa, Nairobi.