SOURCES OF WOOD FOR CHARCOAL PRODUCTION IN ASANTEKWA AND NKWANTA

International conference

Sustainable Woodfuel Value chains in Africa:Governance, Social, Economic and Ecological Dimensions

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Outline

- Introduction
- Methodology
- Summary of findings

Introduction

- In recent times, government agencies have taken interest in developing a policy for the charcoal sector, and several policy documents have come out (eg UNDP, 2013, EPA, 2016: Forestry Commision, 2013,2016 Renewable Energy Act, 2011; Energy Commission,2006, 2010) which assume that charcoal is produced from forested lands and not from farms and fallow lands and that every tree specie is used to produce charcoal.
- This is articulated without reference to evidence-based research and detailed case studies of how charcoal is produced in specific localities and the extent to which charcoal is a by-product of farming activities, as suggested in much of the literature on its production in Africa(Cline cole,1987, 1990; Amanor et al.,2005: Bailis, 2005).
- They present narratives of decline to justify state intervention

- The research focused on charcoal burning in two highly contrasting charcoal producing rural settlements in the Kintampo North Metro, in the Bono East Region of Ghana. Asantrkwa, a community of small land area and a relatively high population, 1543 inhabitants, and Nkwanta, a settlement with relatively vast land and low population, 475 inhabitants

Introduction

- .While only the indigenes (Mo people) are engaged in charcoal burning in Nkwanta, several ethnic groups participate in charcoal burning in Asantekwa – Mo 70%, Dagati 11%, Dagomba 8%, Chakosi 6%, Sssala 3% and Ewe 2%.

- Charcaol was most important for people within the age brackets of 45 – 54 and 55 – 64 years in Asantekwa. while in Nkwanta the majority of the respondents were in the 35 – 44 and 45 – 54 age brackets.

- Charcoal burners have a detailed knowledge of trees, and can identify the best species for making charcoal. Traders in charcoal also have a detailed knowledge of the best species for charcoal, the different properties of different species, and can identify particular charcoal species from lumps of charcoal in sacks.

- Therefore based on these observations this paper seeks to present an overview of the state of charcoal production and the existing availability of trees for charcoal production from an analysis of what trees farmers claim to be exploiting for charcoal and their perceptions of the abundance of the main charcoal species on their farms , and from traders' analysis of the contents of bags of charcoal offered for sale on the market.

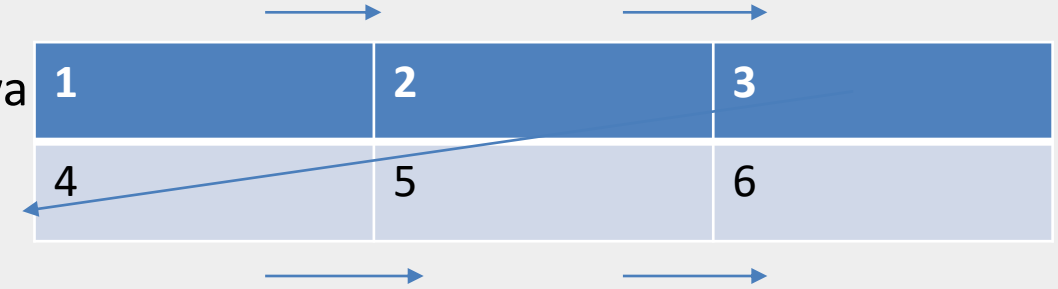
Methodology

- Questionnaire survey of charcoal burners (n = 330) including 20 chainsaw operators.
- Participant observation (including 64 uncovered kilns)
- Market study (n = 22 merchants)

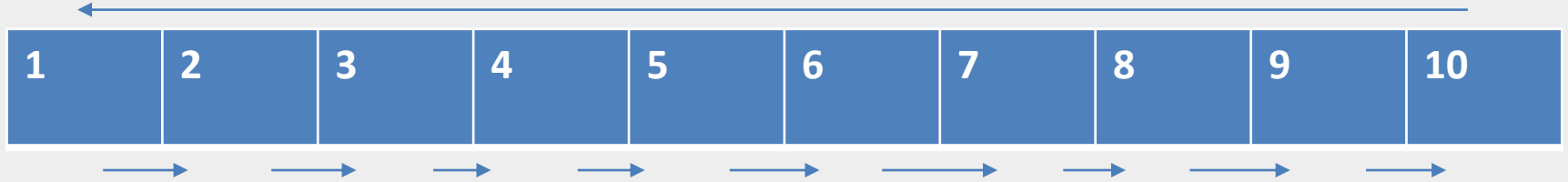
How charcoal is integrated in the farming system

- Charcoal is integrated with farming.

- Asantekwa



- Nkwanta



Farm plots structure: This is a method developed by Amanor (2008)

- Yam farmers usually stake their yams on small trees
- Many of the trees are often burnt to prevent shading and competition with the yams
- The burnt trees are used for charcoal after the harvest of the yams.

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Pic 2: Showing trees stake with yams on Mr Kiwaa's farm in Asantekwa

Pic 3: Dry wood on a groundnut farm waiting to be cut for charcoal in Nkwanta

Table 2: Charcoal burners sources of wood for charcoal

Table 1:Sources of wood for charcoal in Asantekwa and Nkwanta

Source of wood	All communities		Asantekwa		Nkwanta	
	No	%	No	%	No	%
From farm	233	70.6	152	76.0	81	62.0
From fallows	28	8.5	9	4.5	18	14.0
Forest	-	-	-	-	-	-
Sacred groove	-	-	-	-	-	-
Farm and fallows	49	14.8	25	12.5	25	19.0
Fallows and others	13	3.9	7	3.5	6	5.0
Farm, fallows and others	3	1.0	3	1.5		
Others	4	1.2	4	2.0		
Total	330	100	200	100	130	100

The Best Tree Species used for Charcoal Production in Asantekwa and Nkwanta

- The best types of trees or the trees that make the best charcoal are; portrodom(*Erythrophleum africanum*),suom(*Vitellaria paradoxa*), kane (*Anogeissus leiocarpus),* krekekye/buame(*Prosopis africana*), krebente (*Lophira lanceolata*), hinla*(Burkea africana*), twima (*Pterocarpus erinaceous*), sasu(*Terminalia macroptera and Terminalia avicennioides*), yereyere(*Phyllanthus discoides*), dimbal(*Cassia sieberiana*), borgor (*Pseudocedrella kotschyi*), and nam (*Ditarium microcarpum*). The rest are bull(*Manilkara multinervis),* butuo (*Carapa procera*), taw((*Isoberlinia doka*), sorpung(*Acacia Senegalensis*), hologna(*Pericopsis latifolia)* and vonkpu(*Erythrophleum suaveolens).* They are best species because the charcoal is hard, heavy, burn slowly and have high heat intensity.

- Charcoal burners also considered the volume of charcoal produced per quantity of wood in assessing quality. Most charcoal burners value krekekye/buame(*Prosopis africana*), twima (*Pterocarpus erinaceous),* kane (*Anogeissus leiocarpus) and* sasu(*Terminalia macroptera)* for their high volume of charcoal yields .

- Tree species that are very good for charcoal but very poor for firewood - Hinla *(Burkea Africana)* and Daseuma (*Hymenocardia laxiflora*). There are also trees which are very good firewood species and very poor or bad for charcoal for example pru(*Ficus exasperata*), while yereyere(*Phyllanthus discoides*) is very good for both charcoal and firewood.

Cont.

- Workerbility – Sorgbuine (Acacia spp) and *Diospyros mespiliformis:* Bad wood (eg *D. oliveri and Parkia spp)*

- In the Kiintampo market,the prime charcoal species are also categorized into two groups – the very heavy and hard ones (ie elite species) for example, portrodom(*Erythrophleum africanum)*, dry suom(*Vitellaria paradoxa*) ,vonkpu(*Erythrophleum suaveolens)*, and kano(*Diospyros mespiliformis*) they produce heavy and hard charcoal; and the heavy ones - kane(*Anogeissus leiocarpus)*, twema(*Pterocarpus erinaceous)*, krekekye(*Prosopis africana*),bull(*Manilkara multinervis)*, butuo(*Carapa procera*), dimbal(*Cassia sieberiana*), sasu(*Terminalia macroptera)*, hinla(*Burkea Africana).*

- Charcoal merchants in the Kintampo market also assessed or evaluated the quality of charcoal based on the heating/energy requirements of given end uses in addition to the inherent properties of the charcoal (eg heavy/light, high / low heat intensity, slow or steady/ fast combustion charcoal).

- Charcoal burners exploit a broad range of tree species for charcoal – over 38 species.

The actual species of trees exploited by farmers

- The prime species are available and are used to stake yams.
- The prime species dominate the contents of kilns

- The prime species belonging to the Leguminosae (such as *Prosopis africana Pterocarpus erinaceous,Detarium microcarpum Parkia spp* and *Pericopsis laxiflora*) and Combretaceae families (eg *Anogeissus leiocarpus*, *Terminalia macroptera*, *Terminalia laxiflora*, *and Combretum micrantha)* are abundant on the farm landscape

- In Ghana and elsewhere Amanor (1994;1996) and Felker (1980) attributed the abundance of leguminous trees to their role in maintaining soil fertility of agro-ecosystems for which reason farmers nurture, preserve and managed them on their farms.

Pic. 4:Showing the abundance of prime charcoal species on Kweku Nsoah's new yam farm in Nkwanta

Pic 5: Showing mainly Anogeissus in uncovered kiln on Mr Joe Manuh's farm in Asantekwa

Dan Table 2: The different tree species contained in sampled charcoal sacks in the Kintampo market

Tree species in each bag	Number of bags	Number of tree species
A. leiocarpus, B. Africana, P. erinaceous, D. microcarpum, P. latifolia	66	6
A. leiocarpus, B. Africana, T. macroptera, P. erinaceous, P. africana	63	5
A. leiocarpus, B. Africana, P.discoides, C.sieberiana,	67	4
A. leiocarpus, T. macroptera, P. erinaceous, L. lanceolata, P. kotschyi	58	5
A. leiocarpus, T. macroptera, P. erinaceous, L. lanceolata, A. senegalensis.	64	5
Total	318	

Table 3: The tree species composition of sampled bags of charcoal

General source								Asantekwa area					
Bag1		Bag2		Bag3		Bag4		Bag1		Bag2		Bag3	
Tree species	%	Tree species	%	Tree species	%	Tree species	%	Tree species	%	Tree species	%	Tree species	%
Kane **Hinla** **Tweema** **Nam** **balaseau**	80 10 5 3 2	Kane kreketse tweema sasu	60 10 25 05	kane hinla tweema sasu kerebent	70 15 7 4 3	Kane soum Hinla Tweem yereyere	55 10 15 10 5	kane hinla tweema sasu kerebent	70 5 15 5 5	kane hinla tweema sasu kerebent	50 10 15 15 10	tweema sasu kereben dimbal	40 20 10 30
Total	100		100				10		10		100		100

Table 3 shows that *Anogeisus leiocarpus*, *Burkea Africana Pterocarpus erinaceous*, *Terminalia macroptera*, *Detarium macrocarpum*, *Lophira lanceolata* were present in almost all the sampled bags. The table also shows that *Anogeisus leiocarpus* was the dominant tree species in most of the bags.

A section of the Kintampo charcoal market

A charcoal merchant and her sorters in the Kintampo market

Two charcoal merchants confirming the species of a lump of charcoal

A senior charcoal merchant explaining the difference between *Anogeissus* and *Acacia senegalensis* during a session of our analysis of charcoal in the market

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Conclusion

Base on the evidence that:

- Most of the species considered best charcoal species are used in actual production; and
- most of the species considered best for charcoal also dominate the contents of charcoal bags sold on market, there is no crisis of charcoal production. Other studies in West Africa corroborate this view (eg Cline cole, 1987; Cline cole et al., 1990; Benjaminsen, 1997; Ribot, 1999).
- While this is not a generally shared perspective, most studies posting a crisis in charcoal, often assume this from expansion in demand from charcoal rather than engaging in empirical studies of the actual charcoal resources being transacted and the continued availability of these resources. For instance, it is stated the *Anogeissus*, the best charcoal species, has become under threat, without any evidence. Yet this research shows that *Anogeissus* is still widely available and an important part of charcoal production. Evidence from the market suggests that the dominant species continue to be *Anogeisus leiocarpus*, *Burkea Africana Pterocarpus erinaceous*, *Terminalia macroptera*, *Detarium macrocarpum*, *Lophira lanceolata*, *Cassia sieberiana*,*Acacia senegalensis and Phyllanthus discoides* . Thus the evidence points to the conclusion that charcoal resources are not under threat from over-exploitation.

THANK YOU