

Proceedings of National Charcoal Forum

Access and Exclusion along the Charcoal Commodity Chain in Ghana-Ax Project



Tropenbos Ghana

2018

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NATIONAL CHARCOAL FORUM

1.0 INTRODUCTION

1.1 Background and Rationale

Considering the dynamics of charcoal production in Ghana and its poor governance regime, it has been suggested that intense efforts and sustained multi-stakeholder dialogue is necessary to achieve sustainable production¹. Key among such efforts is the generation and dissemination of evidence-based information on the trade and related issues including policy and institutional practices. It is also necessary to identify and tap into efficient and reliable funding to sustain these efforts and stakeholders' interest towards developing a more robust and resilient charcoal sub-sector.

In response to this suggestion, the DANIDA funded Ax charcoal research project dubbed: 'Property, Access and Exclusion along the Charcoal Value Chain in Ghana' has a component on charcoal forums, where research information and experiences of practitioners are shared. Developments in the sub-sector are also shared with stakeholders. The 2018 forum builds on previous ones held in July 2015 and November 2017.

As the third in the series of forums under the Ax project, this year's forum purposely provided avenues for much wider stakeholder groups to hear, probe and provide feedback on research findings and give feedback on developments in the sub-sector. This was intended to validate the research findings and experiences of actors along Ghana's charcoal commodity chain. It further offered stakeholders the opportunity to interact among themselves, register their grievances for redress; subsequently, this will lead to broader and richer inputs to policy discussions towards the development of sustainable charcoal value chain in Ghana.

1.2 Structure of the Forum

This year's national forum, unlike previous ones, was not held in Accra, the national capital. It was rather held at a district capital, Kintampo. This was first to situate the forum closer to conditions within the specific charcoal producing communities and subsequently to allow for the participation of a lot more stakeholders, especially practitioners from the district and community levels. It also afforded the opportunity for actors from the district and community levels to interact with national level players. The rationale was also to test the feasibility of instituting and/or replicating such charcoal forums in other major charcoal producing areas across the country. Being a major charcoal producing district in Ghana² and focus research area for the Ax project, Kintampo was considered ideal for sharing the research results and sub-sector developments. (*refer to annex I for programme details*).

¹ United Nations (UN) (2014b) NAMA Study for a Sustainable Charcoal Value Chain in Ghana, UNDP; Stakeholder Recommendation form National Charcoal Forum, 2017-Ghana

² Nketiah, S.K., & Asante, J. (2018). Estimating national charcoal production level in Ghana. Tropenbos Ghana

1.3 Participants

A total of ninety-seven (97) participants attended the national forum; they were made up of stakeholders from various charcoal producing communities together with regulatory institutions {i.e. Forestry Commission (FC) and Environmental Protection Agency (EPA)}, policy makers and representatives from selected District Assemblies, the media, Civil Society Organizations (CSOs), academia and research institutions. Land owners and traditional authorities were also present. The participants list is attached as Annex 2.

2.0 FORUM PROCEEDINGS

2.1 Welcome Address

The Forum was officially opened with a Welcome Address by Mrs Mercy Owusu-Ansah (Director of Tropenbos Ghana). Her address gave the context and content of the Ax project and what it intends to achieve. She also highlighted some emerging sub-sector developments and their intent towards sustainable charcoal production including the Draft Biofuel Policy, National Appropriate Mitigation Actions (NAMA) on charcoal and related practical issues. She further acknowledged the presence of all stakeholders and called on them to participate effectively in the proceedings. She added that through effective participation, stakeholders could contribute useful experiences and information to inform ongoing charcoal policy dialogue.



2.2 Presentations and Discussions

After the introductory session, a representative of the Environmental Protection Agency (EPA) made a presentation on national strategies towards sustainable charcoal production. The presentation also covered regulatory requirements for charcoal production in Ghana. Specifically, it was indicated that, commercial charcoal production requires environmental permit/certificates

to ensure compliance to specified social and environmental standards. He bemoaned the fact that only a few of the numerous charcoal dealers currently comply with the laid down requirements. Stakeholders, especially charcoal producers in response hinted that, regulatory requirements on charcoal production by the EPA, FC, District Assembly (DA), Energy Commissions (EC) and other state agencies are more oriented and favorable to large scale producers. Small-scale and subsistence producers find it difficult to meet such regulatory requirements. They therefore requested for a regulatory regime that takes into account the conditions and needs of the small-scale and subsistence producers; this, they argued will make for easy compliance.

Taking advantage of the presence of the duty bearers {FSD, DA, Ministry of Food Agric (MoFA)} and traditional heads and land owners, actors in the charcoal trade, (i.e. producers, merchants and transporters) seized the opportunity to share their grievances and challenges for direction and/or redress. Key among them included:

- ✚ Access to resources for woodlot establishment: Charcoal producers with interest in woodlot establishment lauded government/FC support (supply of seedlings) for woodlot establishment. However, they hinted of their inability to access and transport the seedlings from the FSD nurseries to their respective communities owing to long distance and the attendant high cost of transport. As a remedy, the FSD and future initiatives on woodlot establishment were advised to consider establishing tree nurseries within the respective communities. Aside guaranteeing easy access to seedlings for woodlot establishment, establishing nurseries in communities will also afford locals opportunity to develop and/or strengthen their capacities and skills in nursery establishment and management. This will position communities and individuals to effectively apply such skills in food, cash and tree crop production.
- ✚ Non-uniform and inequitable land tenure regime: Considering that land remains core to any undertaking including tree planting, conditions and regulations governing its access and use largely determine the success or otherwise of such undertakings. Evidence suggests that, clear and unambiguous land tenure regimes guarantee long term investment with more equitable benefits to stakeholders. Stakeholders at the forum however testified of dwindling interest in tree planting or woodlot establishment due to poorly defined access to land and inequitable tree benefit sharing systems. Stakeholders therefore appealed for a uniform land tenure regime across the landscape; there were also calls for well-defined and equitable tree benefit sharing system to attract individuals and/or group investment in tree planting for charcoal production.
- ✚ Multiple and exorbitant charges by institutions and groups: From sourcing trees for charcoal to the consumption end of chain, producers, merchants and transporters are levied by several formal and informal institutions. Though some of these levies as explained are justifiably legal, others remain contentious owing to ill-defined institutional mandates in

terms of regulating charcoal production. In effect, institutions and organized groups device means of profiting from the charcoal trade. For instance, whereas traditional institutions largely control access to trees for charcoal production, the DA and FSD largely monitor and charge levies from charcoal transportation. Actors along the chain complain of these multiple charges which increase their costs. They therefore demanded a clearly defined fiscal obligations regime.

- ✚ Enhanced access to charcoal information: Participants, especially actors along the charcoal commodity chain and some local level stakeholders indicated that not until the Ax charcoal forums, most actors were oblivious of happenings along the chain; most of them hinted of their exclusion from charcoal discussions. In effect, their needs and concerns are barely considered and addressed in the charcoal policy discourse. Stakeholders therefore called for the institutionalization and broadening the scope of the forum to bridge the information gap between and among stakeholders at all levels.

With these revelations, the forum committed to engaging the appropriate authorities through the Ax project implementing partners towards addressing challenges typical of actors along the commodity chain.

The session was followed by two presentations on the preliminary results from the PhD studies under the Ax project. The first was by Mr. Lawrence Brobbey on the “Economic importance of charcoal to rural livelihoods in Ghana”³. This study ascertained the sources and proportion of household income contributed by charcoal, its contribution to subsistence and cash income as well as its gap-filling and safety-net function.

The second presentation titled; “Profit distribution along the charcoal commodity chain in Ghana”⁴ was by Frank K. Agyei (PhD candidate). This study identified beneficiaries of profits along the charcoal value chain. Key among them are charcoal merchants, transporters, wholesalers, producers, and retailers. Chiefs/ landowners, state institutions were also noted to benefit from profits from charcoal industry.

In another study that estimated annual national charcoal production in Ghana⁵ by Tropenbos Ghana, it was revealed that more than 600,000 metric tons of charcoal was produced in 2016. Brong Ahafo emerged as the major producing region, with Kintampo (22.05%), followed by Bole (14.23) and Atebubu (12.14) as the leading charcoal producing forest districts in Ghana. It was further noted that, charcoal is produced and transported throughout the year with May and June being the peak periods, witnessing more than 10% each of the annual national production. Mr.

³ Brobbey L.K., Hansen C.P., Boateng K., & Pouliot M. (2019). The economic importance of charcoal to rural livelihoods: Evidence from a key charcoal-producing area in Ghana. *Forest Policy and Economics*, 101, 19-31

⁴ Agyei, F.K., Hansen, C.P., & Acheampong, E. (2018). Profit and profit distribution along Ghana’s charcoal commodity chain. *Energy for Sustainable Development*, 47, 62-74

⁵ Nketiah, S.K., & Asante, J. (2018). Estimating national charcoal production level in Ghana. *Tropenbos Ghana*.

Asante Joseph (Project Officer-Ax Project) presented a framework for estimating national annual charcoal production; he pointed out that the framework could be used each year to monitor trends in production. To this end, he called for a more effective institutional collaboration, especially from the Energy Commission, Forestry Commission, Ghana Statistical Service and the MMDAs.

2.3 Closing Remarks

Prof. Kyereh Boateng (KNUST), gave the Closing Remarks; he highlighted some key issues including stakeholder concerns on regulatory requirements for charcoal production that would require prompt attention. He entreated stakeholders to give more attention to charcoal related issues given its contribution to rural livelihoods, household energy and revenues but not without perceived negative environmental impacts.

The District Chief Executive (DCE) of Nkoransa North District lauded the efforts of the project in reaching out to many stakeholders on topical charcoal issues. On behalf of the participants, the DCE reiterated the call for the institutionalisation of the forum to serve as a platform for actors in the charcoal trade to air their grievances for redress.

2.4 Assessment of the Forum

The objectives of the National Charcoal Forum held at Kintampo in 2018, were largely realized: all the key stakeholders were represented; participation was very good as the preliminary results from the PhD studies under the AX project were presented to the participants; stakeholders could also easily relate the research findings to their realities in charcoal production; the practitioners also shared their practical experiences and lessons as well as their challenges with participants for possible redress by the appropriate institutions where required. The participants found the Forum very relevant and useful; they called for its institutionalisation.

3.0 ACKNOWLEDGEMENTS

The Tropenbos Team is grateful to DANIDA for the funding support for the AX – project. Our gratitude also goes to the numerous stakeholder groups and individuals who participated in the Forum and those who assisted in the data collection by the PhD researchers. Finally, the Charcoal Forum has contributions from the entire AX Project Team, particularly the PhD Researchers, for which Tropenbos is very grateful.

ANNEXES

Annex I: Programme for the National Charcoal Forum

Property, Access and Exclusion along the Charcoal Commodity Chain in Ghana

National Charcoal Forum

Date: 13th September 2018

Venue: Kintampo

Time	Activity	Lead
9:00 - 9:30	Arrival and registration	TBG
9:30 - 9:35	Opening Prayer	
9:35 – 9:45	Welcome/ Statement on project background, progress and context	TBG
9:45 -10:00	Brief on sub-sector developments (national - NAMA on charcoal)	EPA
10:00 10:20	Local actions/initiatives on charcoal production (DAs perspective)	
10:20 -10:40	Determinants of charcoal production and trade	Lawrence
10:40 - 11: 00	Questions	TBG
11:00 – 11:20	Profit distribution along the charcoal commodity chain in Ghana	Frank
11:20 -11:40	Questions	TBG
11:40 – 12:10	Snack break	All
12:10 - 12:30	Estimating national charcoal production in Ghana.	TBG
12:30 - 12: 50	Questions	TBG
12:50 – 13:55	Plenary discussions (stakeholders’ perspective on implications of key study findings and recommendations on charcoal practices)	TBG
13:55 - 14:00	Closing remarks	TBG
14:00	Departure	All

Annex II: List of participants for the National Charcoal Forum held at Kintampo

<i>Seq.</i>	<i>Name</i>	<i>Address/Occupation</i>	<i>Contact</i>
1	<i>Sarpong Akwesi</i>	<i>Bomini</i>	<i>0244855240</i>
2	<i>Nicholas Antwi</i>	<i>Bosomkese</i>	<i>0249037144</i>
3	<i>Manu James</i>	<i>Bomini</i>	<i>0557835520</i>
4	<i>Kofi Agyei</i>	<i>Bomini</i>	<i>0544375829</i>
5	<i>Stephen Okyere</i>	<i>Bomini</i>	<i>0249539031</i>
6	<i>kofi Gyare</i>	<i>Bomini</i>	<i>0544375829</i>
7	<i>Habib Bolo</i>	<i>Bomini</i>	<i>0248565049</i>
8	<i>Salifu Abdul Razak</i>	<i>Kawampe</i>	<i>0249659301</i>
9	<i>Asumah Adam Braimah</i>	<i>Kintampo South D/A</i>	<i>0244014057</i>
10	<i>Samuel Abisgo</i>	<i>Kintampo South D/A</i>	<i>0208288577</i>
11	<i>Ellen Suamea</i>	<i>KSDA</i>	<i>0276045362</i>
12	<i>Awomah Twu</i>	<i>GNFS</i>	<i>0200502266</i>
13	<i>Adu Kumi</i>	<i>GNFS</i>	<i>'0243063871</i>
14	<i>Hon Gifty Akosa</i>	<i>Nkwanta North DCE</i>	<i>0244057873</i>
15	<i>Nyarko ay</i>	<i>MCD Kintampo</i>	<i>0244726307</i>
16	<i>Annor Shadrack</i>	<i>KSDA</i>	<i>0508124801</i>
17	<i>Bismark Kyeremah</i>	<i>NNDA</i>	<i>0501350437</i>
18	<i>Adamah Abraham</i>	<i>Sabule</i>	<i>0540547248</i>
19	<i>George Donkor</i>	<i>Sabule</i>	<i>0548571997</i>
20	<i>Kwaku Mensah</i>	<i>Sabule</i>	
21	<i>Awudu Asheitu</i>	<i>Sabule</i>	
22	<i>Nana Solomon Nsiah</i>	<i>Sabule</i>	
23	<i>Adenyoh Victor</i>	<i>EPA</i>	<i>0501680679</i>
24	<i>Christopher</i>	<i>Miawani</i>	<i>0502488698</i>
25	<i>Kawbenaa Salifu</i>	<i>Dabaa</i>	<i>0506767707</i>
26	<i>Kwabena Ampofo</i>	<i>Miawani</i>	
27	<i>Leticia Koko</i>	<i>Mansie</i>	<i>0505988602</i>
28	<i>Kofi Akyeremu</i>	<i>Mansie</i>	
29	<i>James Kewa</i>	<i>Mansie</i>	
30	<i>Nana Dau II</i>	<i>Cheranda</i>	<i>0246494232</i>
31	<i>Yaw Dapaah</i>	<i>Cheranda</i>	<i>0246943134</i>
32	<i>Ignatius Bakyaderi</i>	<i>Dabaa</i>	<i>0209373104</i>
33	<i>Isaac Aniwal</i>	<i>Driver-KNUST</i>	<i>0559503751</i>
34	<i>Kojo-Torlan</i>	<i>Miawani</i>	
35	<i>Inusah Shaibu</i>	<i>Kawampe</i>	<i>0243332513</i>
36	<i>Ibrahim Amina</i>	<i>Kintampo</i>	<i>0240168665</i>
37	<i>Mercy Owusu-Ansah</i>	<i>Director TBG</i>	

38	<i>Uzmaa Tahiru</i>	<i>Kawampe</i>	<i>0244236064</i>
39	<i>Mariatu Seidu</i>	<i>Kawampe</i>	
40	<i>Kande Amandu</i>	<i>Kawampe</i>	
41	<i>Asante Joseph</i>	<i>TBG</i>	<i>543852742</i>
42	<i>Mustapha Maria</i>	<i>Kawampe</i>	
43	<i>Gladys Falah</i>	<i>Kunsu</i>	<i>0247189996</i>
44	<i>Margreat Dahe</i>	<i>Kunsu</i>	<i>0554372229</i>
45	<i>Adamah David</i>	<i>Mansie</i>	<i>0549062573</i>
46	<i>Kintor Samuel</i>	<i>Cheranda</i>	<i>0245620499</i>
47	<i>Kwame Winta</i>	<i>Cheranda</i>	<i>0245675787</i>
48	<i>Pingnaa Dikple</i>	<i>Dabaa</i>	
49	<i>Osei Kwame George</i>	<i>N.N.D.A (Driver)</i>	<i>02475093787</i>
50	<i>Sulemana A. Rafu</i>	<i>Kawampe</i>	<i>0247883147</i>
51	<i>Mohamed Aramani</i>	<i>Kawampe Chief</i>	<i>0546904385</i>
52	<i>Baba Krashe</i>	<i>Kawampe</i>	<i>0209343633</i>
53	<i>Seidu Eliasu</i>	<i>Kawampe</i>	<i>0202034646</i>
54	<i>Alhasa Tahiru</i>	<i>Miawani</i>	<i>0208181076</i>
55	<i>Paul Dorety</i>	<i>Dabaa</i>	<i>0247485894</i>
56	<i>mohammed Sani</i>	<i>Jema</i>	<i>0209337118</i>
57	<i>Felicia Sanibor</i>	<i>Miawani</i>	<i>0548541045</i>
58	<i>Peter Frimpong</i>	<i>Drumankse</i>	<i>0249653262</i>
59	<i>Adu-Bimpong</i>	<i>Drumankse</i>	<i>0208152120</i>
60	<i>Kwaa Emmanuel</i>	<i>Bone</i>	<i>0553964284</i>
61	<i>Mathew Gyan</i>	<i>Bomini</i>	<i>0556077608</i>
62	<i>Isaac Gyamfi</i>	<i>Drumankse</i>	<i>0246245481</i>
63	<i>kwabena Awade</i>	<i>Drumankse</i>	<i>0553367472</i>
64	<i>Sampson Drawe</i>	<i>Drumankse</i>	<i>0241307647</i>
65	<i>Seidu Abdul-Aziz</i>	<i>Kawampe</i>	<i>0244886596</i>
66	<i>Justice Tawiah Lanton</i>	<i>Mansie</i>	<i>0201693795</i>
67	<i>Abdulai Kwameyu</i>	<i>Kawampe</i>	<i>0261199259</i>
68	<i>Bra Kofi</i>	<i>Kawampe</i>	<i>0550922124</i>
69	<i>Donkor David D</i>	<i>Sabule</i>	<i>0243153426</i>
70	<i>Opoku Mensah Alex</i>	<i>Mansie</i>	<i>0206720369</i>
71	<i>Awuah Daniel</i>	<i>Nkoranza North</i>	<i>0242755233</i>
72	<i>Banie Beyom</i>	<i>Kunsu</i>	<i>0557099202</i>
73	<i>Gyan Gideon</i>	<i>Drumankse</i>	<i>0241671087</i>
74	<i>Nicholas Owusu</i>	<i>K.M.A</i>	<i>0243175126</i>
75	<i>Abraham Tetteh</i>	<i>M.K.Z</i>	<i>0548870030</i>
76	<i>Osei-Owusu</i>	<i>Chief Drumankese</i>	

77	<i>Richard Karikari</i>	<i>FC-(TIDD)</i>	<i>0243441201</i>
78	<i>K. Bamabo</i>	<i>FC - (TIDD)</i>	<i>0277395491</i>
79	<i>Anthony Duah</i>	<i>EPA</i>	<i>0501301616</i>
80	<i>Nana Owusu Pinkra</i>	<i>Chief</i>	<i>0203248866</i>
81	<i>Kwame Junior</i>	<i>Kintampo</i>	<i>0246403757</i>
82	<i>Fofu K. Emmanuel</i>	<i>Assemblyman Cherenda</i>	<i>0205670391</i>
83	<i>Obonepon Danso-Ahiam II</i>	<i>Dromankese Hene</i>	<i>0247878984</i>
84	<i>Lawrence K. Brobbey</i>	<i>KNUST</i>	
85	<i>Frank Adjei</i>	<i>KNUST</i>	
86	<i>Akoto Sarfo</i>	<i>UENR-Sunyani</i>	<i>0207772981</i>
87	<i>Nana Yaw Damp. II</i>	<i>Mo Tadtional President</i>	<i>0246781278</i>
88	<i>Nana Kyeam Kese</i>	<i>Mo Tadtional Council</i>	<i>0243259070</i>
89	<i>Nana Kwasin Baah</i>		<i>0540622818</i>
90	<i>Seth Ampong</i>	<i>Mo Traditional Area</i>	<i>0208931837</i>
91	<i>Nabi Mathew</i>	<i>Nkoranza North District Assembly</i>	<i>0551965525</i>
92	<i>Ahmed Issifu</i>	<i>Nkoranza North District Assembly</i>	<i>0208908887</i>
93	<i>Antwi-Asare Isaac</i>	<i>FSD</i>	<i>0246428960</i>
94	<i>Edmund Opoku Antwi</i>	<i>FSD</i>	<i>0244043657</i>
95	<i>Emmanuel Acheampong</i>	<i>FRNR, KNUST</i>	<i>0243412179</i>
96	<i>Kyere Boateng</i>	<i>FRNR, KNUST</i>	<i>0244636669</i>
97	<i>Abdul-Aziz Yakubu</i>	<i>MPO</i>	<i>0244967316</i>

The economic importance of charcoal to rural livelihoods in Ghana



Lawrence K. Brobbey

PhD Fellow

• Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
• and University of Copenhagen, Denmark



Outline of presentation

- Background
- Problem statement
- Aim and Objectives
- Methodology
- Data Collection and Analysis
- Results
- Conclusion
- Recommendations



Background

- Charcoal is the major source of energy for heating and cooking for 80% of urban households in developing countries (Arnold *et al.*, 2006; Zulu and Richardson, 2013; IEA, 2014).
- Charcoal income contributes:
 - US\$650 million p.a. to the Tanzanian economy – i.e. 6 times the combined value of coffee and tea (World Bank, 2009).
 - 3.5% of the GDP of Malawi (Zulu, 2010).
 - to poverty reduction, employment creation; and household income generation (Khundi *et al.* 2011; Ainembabazi *et al.* 2013; Obiri *et al.* 2014)

Background

- Many narratives are associated with charcoal production and its livelihood and environmental impacts.
 - deforestation and forest degradation
 - temporary bans on production and efforts to substitute charcoal with LPG as a results of emerging “fuelwood crisis” scenarios (Ribot, 1999)
- Recent studies however portray charcoal production as an important livelihood option for rural households
 - E.g. 35% of charcoal producers in the forest savannah transition zone of Ghana depend entirely on charcoal for household income, 64% combined it with agriculture, and the remaining 1% combined it with petty trading (Obiri *et al.*, 2014) .

Problem statement

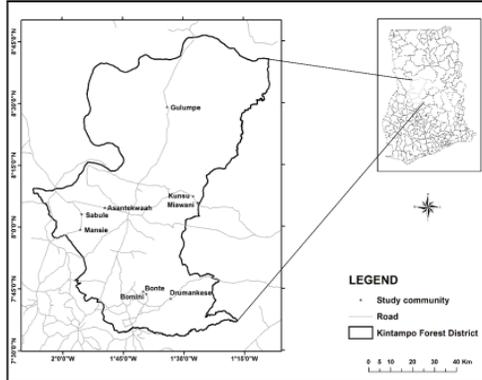
- Few studies have quantitatively investigated the contribution of charcoal to rural livelihoods
- Most studies have estimated the contribution of charcoal to household income from perceived share of overall income.
 - this approach is inaccurate as households may face difficulties appropriately estimating a share in commonplace diverse livelihood portfolios comprising of both cash and subsistence incomes.
 - It may lead to both over or under estimation of the contribution of charcoal
 - Studies that are quantitative typically have very small sample sizes and only sampled charcoal producers thereby restricting the possibility for generalisation

Aim and Objectives

- Overall aim is
 - to advance our understanding on the reliance on charcoal incomes by rural households in Ghana through a detailed quantitative study
- Specific objectives are to:
 1. ascertain the sources and proportion of rural household income in a key charcoal producing area;
 2. ascertain the role and importance of charcoal to subsistence and cash income in rural households;
 3. investigate the gap-filling function of charcoal to rural households; and
 4. investigate the “safety-net” function of charcoal to rural households that face economic shocks.

Study area

- Kintampo Forest District
- Largest charcoal producing district in Ghana
 - Accounts for 22% of total charcoal produced in Ghana
- Study conducted in 10 communities
 - Asantekwaah
 - Bomini
 - Bonte
 - Cheranda
 - Drumankese
 - Gulumpe
 - Kunsu
 - Mansie
 - Miawani



Methodology

- Stratified random sampling
- Quantitative data – adapted PEN questionnaire
 - Household survey in 400 HHs with ODK Collect
 - Collected cost and income on all sources of household economic activities
 - Agriculture – crops, livestock, livestock products
 - NTFPs – processed and unprocessed environmental/forest products
 - Rural businesses
 - Wage work
 - Remittances, rent, gift, gov't support
- Qualitative data
 - Village meetings
 - PRA – seasonal calendar, resource map



Data Analysis

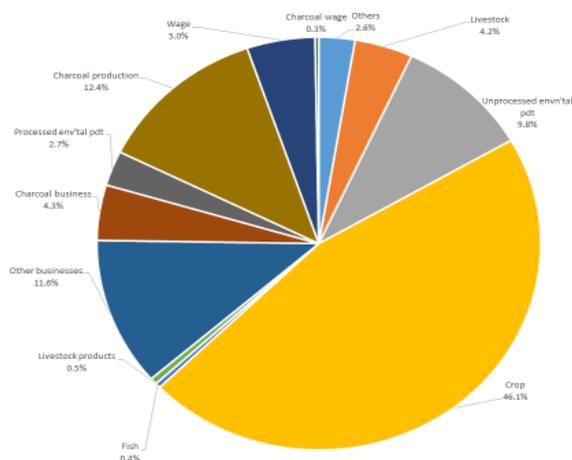
- Net income calculated as gross income less the total costs of all purchased inputs
- All income values converted to per capita income using the modified OECD adult equivalent scale
- HHs divided into 4 income quartiles based on their adjusted per capita incomes.
- ANOVA to determine whether means of the different income sources were significantly different between pairs of identified groups: e.g., between income quartiles
- Chi-square used to analyse categorical data

Results

- 1.1 Sources and proportion of household income
- 1.2 Contribution of charcoal to subsistence and cash income
- 1.3 Gap-filling function of charcoal
- 1.4 Safety-net function of charcoal

1.1.1 Sources and proportion of household income

- Crop is the primary source of income and accounts for 46% of total rural HH income.
- Charcoal is second and accounts for 17% of total HH income – i.e., 4.3% from charcoal businesses, 12.4% from charcoal production, and 0.3% from charcoal wages.



1.1.2 Income share, by income quartile

Income source	Low income HH (n=100)	2 (n=100)	3 (n=100)	High income HH (n=100)
Total income	286.76 ^a	605.67 ^a	1,145.04	3,427.90
Charcoal business	1.91 ^a (0.7%)	0.85 ^a (0.1%)	33.39 ^a (2.9%)	467.45 ^a (13.6%)
Charcoal production	32.39 ^a (11.3%)	71.05 ^a (11.7%)	134.38 ^a (11.7%)	515.24 ^a (15.0%)
Charcoal wage	0.55 (0.2%)	0.78 (0.1%)	7.07 (0.6%)	5.00 (0.1%)
Crop	147.80 ^a (51.5%)	332.29 ^a (54.9%)	554.69 ^a (48.4%)	1,009.59 ^a (29.5%)
Fish	0.92 (0.3%)	0.82 (0.1%)	11.43 (1.0%)	3.17 (0.1%)
Livestock	13.41 (4.7%)	22.67 (3.7%)	46.58 (4.1%)	152.15 (4.4%)
Livestock products	2.12 (0.7%)	3.53 (0.6%)	6.20 (0.5%)	6.26 (0.2%)
Processed env pdts	5.87 ^a (2.0%)	13.10 ^a (2.2%)	34.29 ^{ab} (3.0%)	126.68 ^{ab} (3.7%)
Rural businesses	12.78 ^a (4.5%)	26.27 ^a (4.3%)	156.41 ^a (13.7%)	821.93 ^a (24.0%)
Unprocessed env. pdts.	46.09 ^a (16.1%)	72.35 ^a (11.9%)	83.37 ^a (7.3%)	135.21 ^a (3.9%)
Wage	10.52 ^a (3.7%)	46.35 ^a (7.7%)	53.78 ^{ab} (4.7%)	132.35 ^a (3.9%)
Other incomes	12.39 ^a (4.3%)	15.62 ^a (2.6%)	23.46 ^{ab} (2.0%)	52.89 ^a (1.5%)

- Highest income HHs obtained 15times higher income (i.e. \$515.24) from charcoal production than lowest income HHs (\$32.39).
- Income share from charcoal production among first three income quartiles range from 11-12%, but raised to 15% for the highest income HHs
- High income HHs obtain higher income from charcoal business

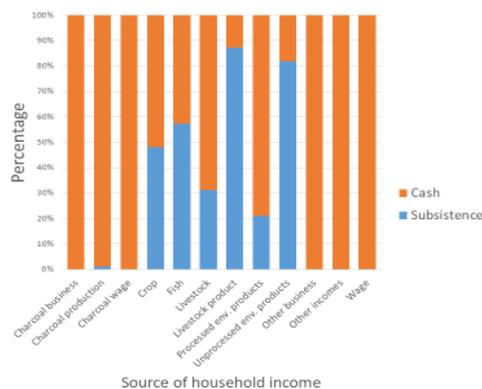
1.1.3 Participation in charcoal related activities

Activity	Income quartile				Total
	1	2	3	4	
Charcoal business	6 (17%)	3 (8%)	9 (25%)	18 (50%)	36 (9%)
Charcoal production	59 (24%)	65 (26%)	62 (25%)	64 (26%)	250 (63%)
Charcoal wage	8 (30%)	4 (15%)	7 (26%)	8 (30%)	27 (7%)
No charcoal activity	36 (27%)	35 (26%)	35 (26%)	30 (22%)	136 (34%)

- Few HHs engage in charcoal business, but derive a higher income
- 75% of high income HHs involve
- 250 out of 400 HHs (63%) produce charcoal
- approximately equal number of HHs (i.e. 24-25%) across income quartiles are engaged in charcoal production
- Only one-third of HHs have no charcoal related income

1.2 Contribution of charcoal to subsistence and cash household incomes

- Charcoal basically provides cash income
- charcoal business provides significant cash incomes to the highest income households
 - the combined cash incomes from charcoal business and production is more than double the cash income share from crops
- Crop income is equally divided between cash and subsistence income



1.3 Gap-filling function of charcoal

Reasons	Income quartile				Total
	1	2	3	4	
1. No other income source	17 (33%)	14 (28%)	12 (24%)	8 (16%)	51 (27%)
2. Other income sources not sufficient	17 (24%)	18 (25%)	17 (24%)	19 (27%)	71 (38%)
3. Income from charcoal more profitable	7 (11%)	16 (24%)	17 (26%)	26 (39%)	66 (35%)
Total	41	48	46	53	188

- 188 out of the 250 charcoal producing HHs (75%) indicated that charcoal is of seasonal importance to them
- But charcoal fills income gaps of 122 HHs (49%)
- Majority of low income HHs has no other source of income at certain times of the year compared to the high income HHs
- Higher share of the highest income HHs produce charcoal to supplement households incomes

Recommendations

1. Policies, local or national, put in place to ban or reduce charcoal production, and often implemented with short notice, have serious implications for rural livelihoods, and if implemented, need to be prepared well in terms of their livelihood effects, and not implemented over night.
2. Policy makers should identify and target the poor in any pro-poor natural resource based interventions to avoid elite capture by the rich.
3. This study should be repeated in a medium or less charcoal producing area in order to assess the difference in reliance on charcoal.
4. Further studies should be conducted on the determinants on charcoal income to understand why some HHs rely more on charcoal than others.

Safety-net function of charcoal

- 312 HHs (78%) reported facing one form of shock or another
 - Crop failure, illness and cattle invasion were the frequently reported shocks.
 - Charcoal production appears to be the most frequently mentioned coping strategy against shocks.
 - Increase production of crops is second
 - HHs that had their farms destroyed by cattle had higher income from charcoal production (\$265.00) than those whose farms were not destroyed by cattle (\$177.55).
 - HHs that experienced crop failure and illness however had lower income from charcoal production than their cohorts that did not experience these shocks

Conclusion

- Charcoal is second after crop income, but contrary to earlier studies, high income HHs obtain higher income from charcoal than low income HHs.
- Charcoal business is an important source of rural activity, but trading in charcoal is dominated by high income HHs.
- Charcoal basically provides cash income and also fills seasonal income gaps of HHs.
- Rural HHs use multiple strategies to cope with shocks, but charcoal production appears to be the dominant coping strategy.

2

Thank you



Access Analysis: Profits along the charcoal commodity chain in Ghana



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A Case to think with

- **Charcoal commodity chain**
 - Subsistence and commercial purposes
 - Reuter (2009) estimates 450,000 & 2 million
 - Characterized by productive and profitable economic activities (Obiri et al. 2014; Dear 2005).
 - Most actors do not benefit; skew distribution
- **Research objectives**
 - the profit distribution along the charcoal commodity chain and the means actors benefit



Methods – study area/actors



1. Three communities

- Kawampe
- Asantekwa
- Dromankese

2. Three cities

- Kumasi
- Accra
- Takoradi

3. Direct and indirect actors

- Producers, merchants, transporters
- Wholesalers, retailers
- District Assembly, Forestry Commission (FSD), Chiefs & landowners, Police service

Methods – approach

1. Commodity chain analysis

- Prices, cost, quantities handled (2016)
- Surveys

2. Access mapping

- Theory of access (Ribot and Peluso 2003)
- Interviews, informal conversations, observations, site visits, etc.

3. Field data collection occurred over a period of five months in 2017

- 590 surveys and interviews

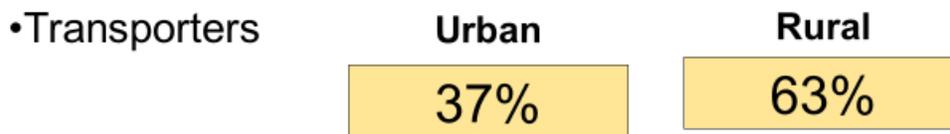
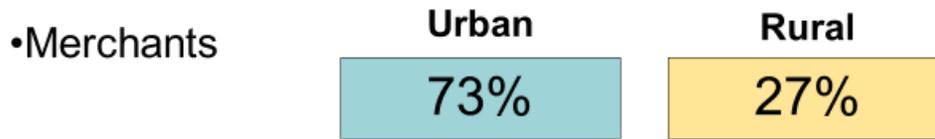
Profit distribution in market

Actors	Market share	Avg. Profit/person/ Ghs	Distribution within group
Retailers	2%	962	Even
Wholesalers	5%	2,581	Even
Transporters	51%	28,098	Skewed
Merchants	39%	21,689	Skewed
Producers	4%	2,071	Even

Income to institutions

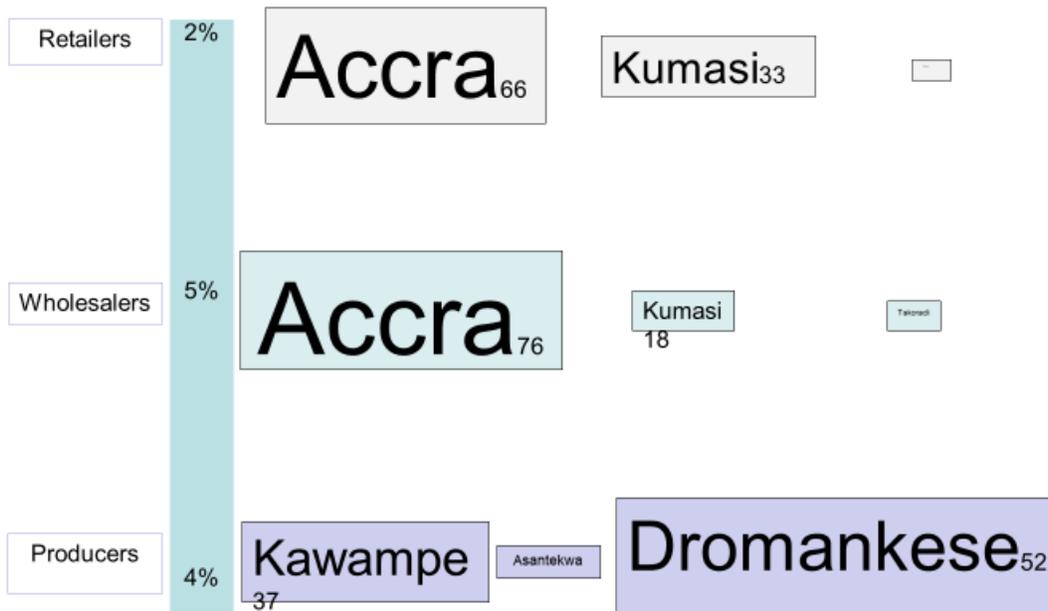
Actors	Income (Ghc)	Percent
Chief/Landowners	26,670	5
District Assembly	130,536	22
Forestry	435,120	73

Rural - Urban distribution



Font-scaled Profit Distribution by region

Avg/profit/person (percent)



Explaining Distribution: Means Of Benefit

1. Chiefs/landowners/Villages

- Direct access to farmlands/natural stands
- Villagers involvement in production and trade
- Chiefs and landowners charge rents
- Villagers provide rooms for migrants



2. Charcoal producers

- Forming strong ties with merchants
 - Fund to finance the production
 - Markets
- Access to labor (family members & friends)
- Strong ties with chiefs and landowners
- Knowledge of charcoal production
- Physical strength/health

▪ Intra group---producers

- Access to unpaid labor
- Not funded by merchants
- Market/road side price



3. Merchants

- their control over charcoal production (through control over finance), markets (control of buyers), and leverage over prices
- access to information on production sites
- access to credit
- social relations with urban wholesalers and retailers, and transporters.

▪ Intra group---Merchants

- 'police' producers
- Transport
- Quality charcoal



4. Transporters

- Social ties with merchants
- Access to credit

▪ Intra group---transporters

- Type of vehicle
- Merchants
- Own the vehicle
- Family members (wives)



5. Wholesalers and Retailers

- social ties they cultivate with merchants
- Manipulation of weighs
- Social ties with users

▪ Intra group--Wholesalers & Retailers

- Quality charcoal
- Constant supply—many customers
- Storage space



Policy implication: property rights and access

1. Not just one ... but multiple mechanisms at play

- Villagers direct control reap small portion if they don't have other means

2. how can greater profits be reaped and retained locally?

- More attention should be paid to broader access mechanisms
- Producers: Access to credit, transport, market (buyers)
- Retailers: Quality charcoal, access to credit

Thank You

Estimating National Charcoal Production

Tropenbos Ghana

Outline



-
- Introduction
 - Methodology
 - Literature review
 - Pilot Study
 - Secondary Data
 - Validation Studies
 - Findings
 - Weight of a bag of charcoal
 - Carrying Capacity of Charcoal Trucks
 - National Charcoal Production
 - Survey Data
 - Corrected Production Figure
 - Discussions
 - Conclusions
 - Recommendations

Background



- Charcoal remains an integral part of developing economies energy demand.
- In Ghana, it provides domestic energy for cooking and heating to over 66 per cent of Ghana's households (HPC, 2010, cited in Energy Commission, 2014)
- Charcoal also provides energy for some commercial and light industrial activities
- It forms a key livelihood base for several rural households and key component of local government revenue e.g. Transition zone in Ghana
- Data is often hard to come by, despite its importance

Problem Statement



- Though an important commodity, the sub-sector remains poorly regulated
- In effect, actual level of production is thin (based on proxy indicators)
- Lack of information makes it challenging to make informed decisions for policy interventions and management practices
- More accurate estimates needed to serve as basis for informed discussions
- Hence the need for direct assessment methods

Objective



- Estimate national charcoal production
- Identify production hotspots
- Ascertain seasonal variations in production

Methods-1



➤ Preliminary Activities

- Desk Study
 - Expert interviews and consultations
 - Consent Secured
 - Pre testing Methodology
 - Reconnaissance Survey
-
- Data from District Assemblies' revenue database
 - Data from Charcoal Conveyance Certificates (FC/FSD)

Methods-2



☐ Source data /collection procedure (Primary)

➤ Weight distribution of charcoal Bags

- Weighed bags to ascertain average weights (Mini, Maxi, Jumbo)
- 3 main charcoal markets + 37 satellite/roadside markets across the country
- 814 bags (Mini-300, Maxi-500, Jumbo-14)

➤ Carrying capacity of charcoal conveying vehicles

- Stratified sampling (different truck sizes)
- 5 vehicles per stratum (from different producing areas)
- Physical counting of number of charcoal bags

➤ Data from mounted sentries

- Four (4) Sentries mounted at police checkpoints
- Each manned by a team of 4 on shift basis, 24 hours for 14 days

Map of Ghana Showing Data Collection Points



Methods-3



☐ Source data/ collection procedure

➤ Secondary Data

- Personal visits to all FSDs known for issuing CCCs
 - Required Information
 - ✓ Date of issue, source, destination, number of bags, CCC id number, vehicle model/number, estimated weight.
- Soft versions (checked with randomly selected CCC booklets for accuracy)
- Copies/photos of hardcopies taken and later entered in excel sheets

Methods-4 (Data Analysis)

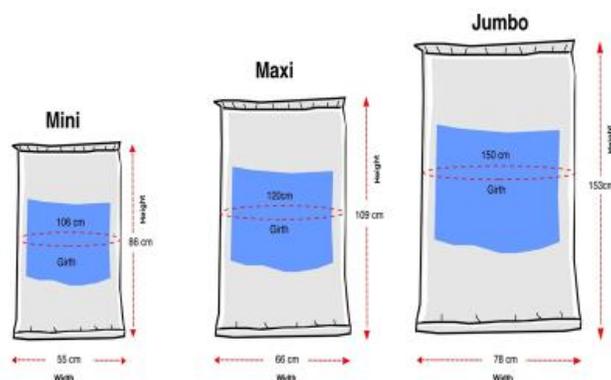


- CCC Data is for January - December 2016
- Data has been aggregated and analysed using Excel
- Data corrected
- Results are presented in charts and tables
 - production level per annum
 - monthly and seasonal variations
 - production per area, etc.

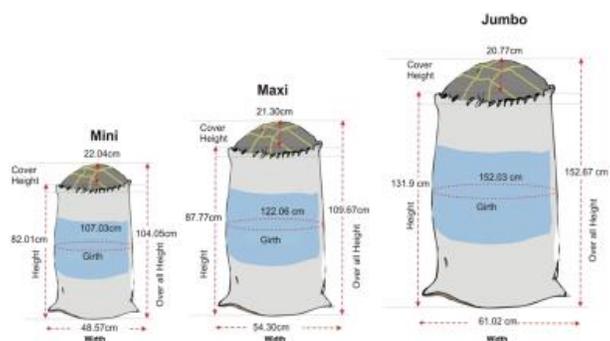


Results

Average Dimensions of Bags for Packaging Charcoal



Average Dimensions of Stuffed Charcoal Bags



Weight Distribution of Charcoal Bags

Bag Type	Mini Bag	Maxi Bag	Jumbo Bag
Sample size	300	500	14
Wt. Range, Kg	24-54.5	24-82	69-91
Mean Wt., Kg	37.9	53.8	82.0
Mode	36	59	82.5
Median	38	54.3	82.5
Std Deviation	7.2	11.5	5.9



Charcoal Truck Capacities: Standardized Versus Actual



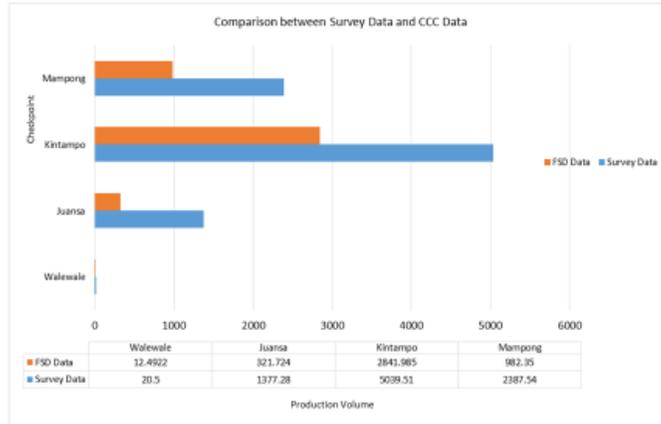
Model/ Type of vehicle	Standardised Capacity (No. of charcoal bags)	Actual Average Capacity (No. of Bags)	
		Mini Bags	Maxi Bags
Kia Rhino	300	336	310
Kia Mighty	160	162	140
Kia Bongo	110	102	85
Double Axle (Benz, MAN, DAF, etc)	450	485	420
Articulated Truck (Benz, MAN, etc)	600	620	602

Survey Data versus CCC Data

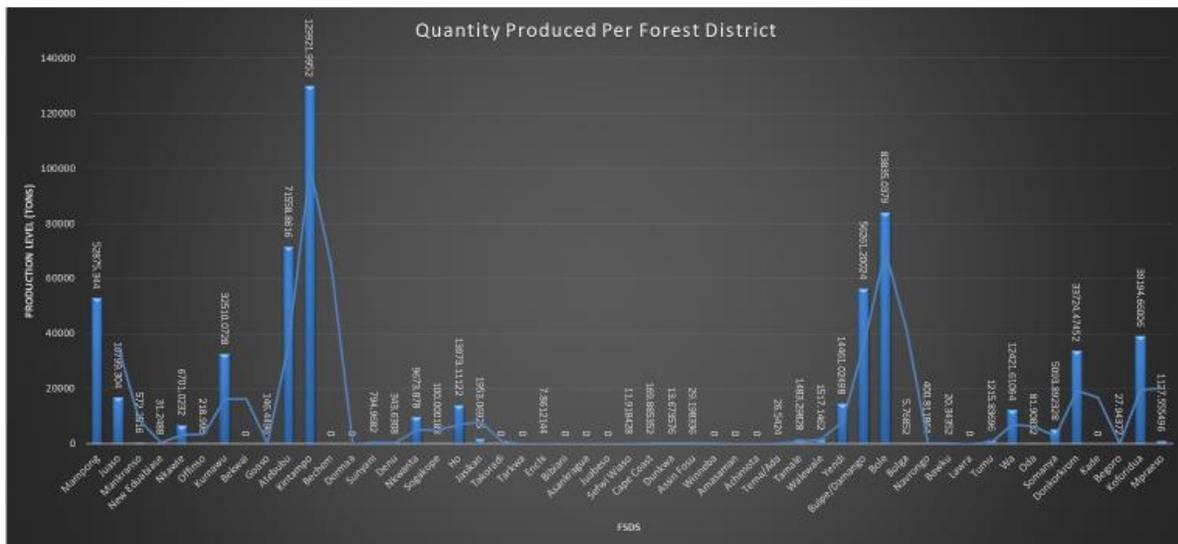


District	CCC Data, Tons	Survey Data, Tons	Correction Factor
Mampong	982.35	2387.54	2.43
Kintampo	2841.95	5039.51	1.773
Juansa	321.72	1377.28	4.281
Walewale	12.50	20.50	1.64
Totals	4158.52	8824.83	2.12

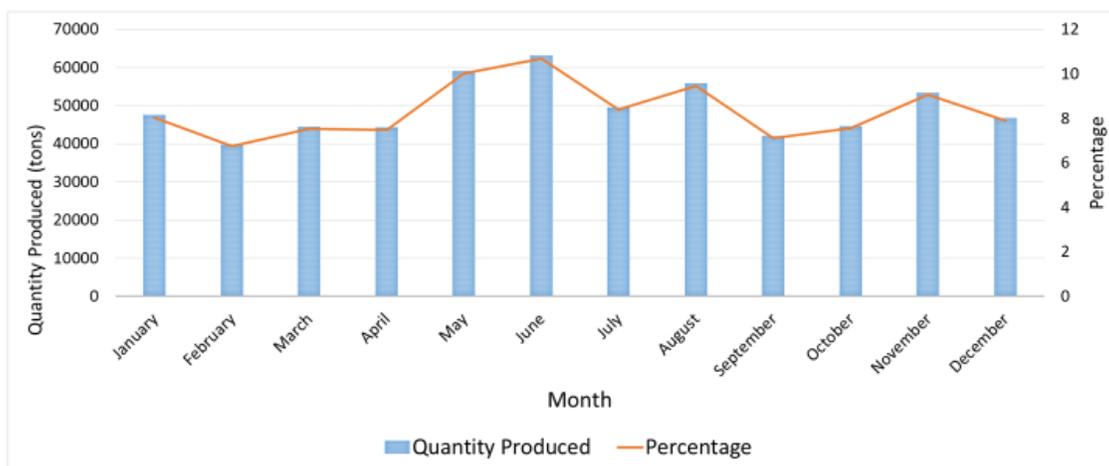
Survey Data compared with Data from the CCC



Annual Charcoal Production Per Forest District



Monthly National Charcoal Production



Estimates of Annual Charcoal Production

- Total annual charcoal production: **589,891.86 Tons**
- Charcoal captured in the survey is 2.12 times that from CCC

Reasons for the variance

- Time and duration
- Packing factor
- Survey was for 24 x 7 versus only working hours (8 hrs) for CCC
- Relied on actual count as against standardised carrying capacity
- Regular activity versus study situation

Summary of the Findings

- A total of 589,891.864 tons of charcoal was 'produced' in 2016
- Brong Ahafo is the major producing Region accounting for 34.35%
- Northern is 2nd with 26.74%
- Western Region had the least, 0.003%; followed by Greater Accra (0.005%)
- Insignificant flows from: Lawra, Kade, Bekwai, Dormaa, Bechem, Amasaman, Achimota, Winneba, Takoradi, Tarkwa, Bibiani, Asrankagua and Juabeso

Summary of the Findings

- Kintampo is the highest accounting for 22.05 %, followed by Bole and Atebubu accounting for 14.23% and 12.14% respectively.
- May and June had the highest movements representing over 10%
- February had the least (6.74%)
- Three (3) main bag sizes are used: Mini, Maxi and Jumbo
- Mean weights of the 3 Charcoal bags: 37.94 kg, 53.80 kg and 82.00 kg
- Charcoal is transported throughout the year irrespective of season (wet or dry); but movement is higher in the 'wet' season

Recommendations: Estimating Annual Charcoal Production



- FSD has a system in place to capture transportation of charcoal
- But the current system captures only 47% of what is transported
- Data capture needs to be more rigorous and thorough
- Need for Institutional collaboration – FC, Energy Commission, CEPS, Police and District Assemblies (MMDAs)
- Periodic assessment to validate the data would be helpful
- Need for strategy to capture smaller-scale charcoal production/ movement, especially in Central and Western Regions



Limitations and Assumptions



- The study does not capture charcoal produced and consumed in the producing areas
- This is assumed to be insignificant
- It also does include small scale production which does not enter the main stream
- This will include production from mill residues, 'subsistence' production, etc
- It is assumed there is no stock-piling, i.e. overtime, there is a flow
- The correction factor has been estimated using only 4 check points
- Study covered only one year, no trend analysis to confirm seasonality, but indicative
- Forest Districts boundaries not coincident with Administrative boundaries