

Biomass at the Nexus: Research Fish Report

What were the most significant achievements from the award?

a. **New knowledge:** Demonstrating the importance of a bottom-up perspective on the nexus
In-depth qualitative research was conducted with a sample of low-income charcoal fuel users (18 households in Accra), and charcoal producers, sellers and transporters (20 interviews in total in the Volta Region). This work shows that the nexus between fuel (charcoal, in this case) and sustainability is more complex than implied by a top-down framing which points to a simple trade-off between fuel production and preservation of forest cover.

First, charcoal fuel-users recognised that they had a stake in the preservation of forest resources. Many had vague recollections of a media campaign launched by the government to curb unsustainable tree harvesting practices in the country. However, they were unconvinced that declining forest cover could be directly attributed to charcoal use for domestic cooking. They noted other trends including export of timber and the clearing of land for construction and farming purposes. They also highlighted the need to adopt and enforce better forest management practices to ensure the continued availability of tree stock for charcoal.

Second, our work unpacks a rarely-recognised nexus between charcoal fuel, local economies and social bonds. Charcoal is an invaluable resource for cooking, providing the flexibility that many low-income households in urban Ghana need to navigate the social and economic circumstances within which they operate. A low-cost, thriving and dependable local economy in charcoal allows largely female householders to be nimble in managing shifting needs and priorities. Trust and reciprocity built through repeated transactions between street-corner charcoal retailers (also mostly female) and household-users allow the latter to make use of informal 'credit' arrangements in times of financial stress.

Third, the traditional charcoal supply chain largely consists of small-scale producers, transporters and retailers operating a highly vibrant, resilient and flexible 'just-in-time' informal as well as formal economy. There is significant expertise that goes into maintaining supply despite multiple challenges of weather, resource availability and regulations. Despite an acknowledgment that the volume of charcoal being produced and transported has reduced over time, entrepreneurs maintain that the sector is still lucrative and is profitable as a livelihood activity.

Forth, some entrepreneurs are attempting to develop alternative charcoal value chains centred on 'waste' (e.g., briquettes of coconut residues) and on carbonising bamboo into charcoal. At present, the scale of these operations are a small part of the overall charcoal economy and more work is needed to investigate the future of these alternatives.

b. **New research question:** Is there a sustainable future for traditional biomass in the context of Sustainable Development Goal (SDG) 7 and the 'sustainable energy for all' (SEforALL) agenda?
Our project aimed to inform policy discussions around SDG7. These discussions are framed in terms of a need to move people away from traditional biomass fuels (of which charcoal is one) to more modern and 'clean' fuels. In this context, liquefied petroleum gas (LPG) is being promoted as a 'clean' fuel for cooking in many sub-Saharan African countries including Ghana. However, our work

shows that this imagined transition from 'traditional' to 'modern' fuels is unlikely to be straightforward, nor is it uniformly desired.

Charcoal is widely used across all parts of the socio-economic spectrum in Ghana; this is unlikely to change, given strong cultural preferences for preparation of staple foods (fish) using charcoal. LPG is not universally welcomed, given concerns about safety and cost. Even amongst householders who can afford (some) LPG, fuel stacking is common, i.e., charcoal is still used at particular times and for specific foods. At the same time, entrepreneurs highlighted the importance of traditional biomass fuels for income generating purposes expressing concerns that without charcoal, many households would be without vital income and unable to afford basic amenities such as food.

Future research might therefore re-assess the role of traditional biomass fuel in SE4All in different cultural contexts, unpacking the trade-offs between promoting a fossil fuel (LPG) as a clean fuel versus enhancing the overall sustainability (economic, socio-cultural, environmental) of a traditional one (charcoal and similar intermediate/processed solid fuels).

c. Research capacity: Strengthening capacity in science advice for energy policy in sub-Saharan Africa

Our third sector project partners, GHACCO and Gyapa, are already well-connected within the energy policy ecosystem in Ghana. With its focus on qualitative research, this project brought a new dimension to their expertise. Our meetings explored ways of bringing evidence gathered from ethnographic observations and semi-structured interviews to bear on quantitatively derived evidence and policy objectives. For example, in scoping work and subsequent fieldwork, we gathered evidence of stove-stacking (the use of traditional coal-pots alongside an improved stove) and fuel-stacking (the ubiquity of charcoal even in households with access to LPG). Neither of these practices are evident in highly structured questionnaire-based data which energy policymaking predominantly relies on. Our project therefore helped diversify the kinds of evidence that could be used to engage with energy policy and this data is currently being used to form a Policy Brief that will be circulated to policy circles in Ghana.

Our academic partner, Dr Temilade Sesan (University of Ibadan) also gained from this project which contributed to her successful application to the International Network for Science Advice (INGSA) Research Associate Grant targeted at early-mid-career researchers in LMICs. This grant will focus on the evidence/policy interface around sustainable energy in Nigeria.

How might the findings be taken forward and by whom?

- a. **Government policy-makers in Ghana:** There is an opportunity for policy-makers in the Energy Commission and Forestry to creatively engage charcoal users as partners in implementing sustainable practices rather than viewing charcoal use as an anachronistic practice to be eliminated and modernised. Our work shows that their interests are broadly aligned with those of charcoal users who see government as a legitimate enabler of sustainable charcoal production in the country. Our household respondents emphatically lay the responsibility for sustainable charcoal production at the feet of the government. Likewise, entrepreneurs involved in traditional charcoal production explained that despite hearing of more 'sustainable' production methods, there was no support, advice or incentive from government to change their existing practices. The enforcement of a regulatory code

mandating the replanting of harvested trees was the measure most commonly advocated. Respondents noted that there is little incentive for private actors to safeguard the future of the commons if they perceive that doing so will conflict with their personal interests, hence their willingness to ascribe authority to the government in this area.

Further, many of the respondents do not see the inherent conflict between charcoal production and afforestation that is usually implied by policy actors. Those respondents see it instead as a matter of adopting and enforcing better forest management practices to ensure the continued availability of tree stock for charcoal. Government is seen as a legitimate enabler of sustainable charcoal production in the country. When asked if they were aware of any past or current government regulation regarding charcoal production and use in the country, most of the respondents in the sample replied in the negative. However, when it came to the question of who ought to be in charge of monitoring the harvesting of forest resources for charcoal production, the respondents emphatically lay the responsibility at the feet of the government.

- b. **International energy-policy makers promoting SE4All:** There is a need for this initiative to reconsider the value of some forms of traditional biomass for reasons outlined in our findings (embedded cultural preferences, link with thriving small-scale economies, and value for low-income urban householders), and develop ways of enhancing the overall sustainability of these biomass economies.

In other words, even though the incentives on both sides may differ, the interests of the government and international community in preserving forests can be said to be broadly aligned with those of charcoal users. There is an opportunity here for policy makers to creatively engage users, producers, transporters etc. as partners in the implementation of sustainable practices on the basis of this common ground they share, rather than viewing them as an anachronistic demographic to be brought in line with modernity.

- c. **Research funders:** Funding is often centred around 'challenges' defined in the global North which is not always translatable / amenable to the co-production of research aims and objectives. More funding is needed to support the development of trans-disciplinary research capacity in qualitative methods, and capacity in translating such evidence grounded in genuine realities in ways that can be acknowledged and acted upon by governments.

Impact

Third sector: Research capacity within the third sector was enhanced as the Ghana Alliance for Clean Cookstoves and Fuels (GHACCO) undertook a significant part of the fieldwork, focusing on qualitative interviews with small-scale entrepreneurs attempting to produce and sell charcoal from alternative sources (coconut husk and associated waste; bamboo), and with government representatives. Through this they have gained an in-depth understanding of challenges facing the alternative charcoal value chain, and how government might support this sector. The lead partner from GHACCO has presented these findings at meetings involving stakeholders in the clean energy sector in Ghana; a summary is forthcoming in the next edition of the Ghana Sustainable Energy for All (SEforAll) newsletter.

For Gyapa Enterprises, the research conducted for this project by our academic partner (Dr Sesan, University of Ibadan) amongst low-income householders in Accra has provided independent confirmation of the robustness of their higher-efficiency Gyapa stove. In a context where charcoal is indispensable for cooking, the Gyapa stove helps householders reduce daily fuel costs and the periodic cost of replacing the traditional coal-pot.

Higher Education: Inter-disciplinary research capacity in academia has been enhanced through collaborating with a Ghanaian academic partner (Ho Technical University - formally Ho Polytechnic-located in the Volta Region). Dr Divine Novieto was responsible for collecting 'traditional' charcoal value chain data including qualitative interviews with charcoal producers, transporters and sellers and these findings are to form the basis of a co-authored peer-review publication.

Government: Key findings from this project were presented at a meeting in Accra (September 2017) with representatives from the Ghana Energy Commission, the Council for Scientific and Industrial Research and a member of an alternative charcoal value chain enterprise. On the basis of this meeting, the project team has been invited to contribute to discussions around the Energy Commission's draft bioenergy policy for Ghana. A policy brief from this work is currently being finalised.