

## Assessing the Competitiveness of Green Charcoal Energy as an Alternative Source of Cooking Fuel in Uganda

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**Abstract :** Wood charcoal and firewood are the primary sources of energy for cooking fuel in most Sub-Saharan African countries, including Uganda. This leads to unsustainable forest use and to rapid deforestation. Green charcoal (made out of agricultural residues that are carbonized, reduced in char powder, and glued in briquettes, using a binder such as sugar molasse, cassava flour or clay) is a promising and sustainable alternative to wood charcoal and firewood. It is considered as renewable energy because the carbon emissions released by the combustion of green charcoal are immediately captured again in the next agricultural cycle. If practiced on a large scale, this has the potential to replace wood charcoal and stop deforestation. However, the uptake of green charcoal for cooking remains low in Uganda despite the introduction of the technology 15 years ago. The present paper reviews the barriers to the production and commercialization of green charcoal. The paper is based on the study of 13 production sites, recording the raw materials used, the production techniques, the quantity produced, the frequency of production, and the business model. Observations were made on each site, and interviews were conducted with the managers of the facilities and with one or two employees in the larger facilities. We also interviewed project administrators from four funding agencies interested in financing green charcoal production. The results of our research identify the main barriers as follows: 1) The price of green charcoal is not competitive (it is more labor and capital-intensive than wood charcoal). 2) There is a problem with quality control and labeling (one finds a wide variety of green charcoal with very different performances). 3) The carbonization of agricultural crop residues is a major bottleneck in green char production. Most briquettes are produced with wood charcoal dust or powder, which is a by-product of wood charcoal. As such, they increase the efficiency of wood charcoal but do not yet replace it. 4) There is almost no marketing chain for the product (most green charcoal is sold directly from producer to consumer without any middleman). 5) The financing institutions are reluctant to lend money for this kind of activity. 6) Storage can be challenging since briquettes can dissolve due to moisture. In conclusion, a number of important barriers need to be overcome before green charcoal can become a serious alternative to wood charcoal.

**Keywords :** briquettes, competitiveness, deforestation, green charcoal, renewable energy

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