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WPS/02/24

# Augmenting The Economic Sustainability of the Briquettes as an Energy Source - The Role of Financial Institutions

Agnes Noelin Kasirye Nassuna (PhD), Makerere University Business School  
Edith Mwebaza Basalirwa (PhD), Makerere University Business School  
Joseph Mukasa, Makerere University Business school

**UBA Research Department**  
Working Paper Series

June 2024



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### **Uganda Bankers Association**

Plot 2702, Block 244 Nyangweso Road  
Off Kironde Road, Tankhill Muyenga, Uganda  
P.O. Box. 8002, Kampala  
secretariate@ugandabakers.org  
www.ugandabakers.org

## 1.0 INTRODUCTION

**T**oday's environment is threatened by drastic climatical changes including drought, heavy rains, soil erosion, floods among others that threaten both human and business survival (Matata and Adan, 2018; Biasutti, 2019). This is partly explained by human encroachment on the environment through cutting down of trees which depletes the green environment and emissions of greenhouse gases emitted from industries (O'Connor et al, 2014). The overcutting of trees has been attributed to the use of charcoal and firewood which is the dominant cooking energy source in Africa (Chidumayo and Gumbo, 2013). This threatens the environmental, social, and economic sustainability of our planet.

Sustainability is the ability of the firm or people to survive successfully using the current resources without depriving the future generation from the necessary resources for their survival (Purvis et al, 2019). Sustainability has three main pillars, that is environment sustainability that focuses on conserving biological and physical systems, social sustainability which focuses on preserving people, their social life and overall welfare and economic sustainability which focuses on maximizing income both in the present and in the future (Hansmann, Mieg and Frischknecht, 2012; Eizenberg and Jabareen, 2017)). In addition to the environmental, social, and economic pillars of sustainability, Razaee (2016) adds, the pillars of governance and ethical sustainability. The governance pillar focuses on compliance, good use of power or authority and risk management in order to maximize shareholder value both in the short and longrun while the ethical pillar focuses on how humans ought to live within specific, rules, regulations and incentives that help them to connect to other humans, animals, plants and future generations so that they are not marginalized or unfairly treated (Levesque, 2019; Amantova-Salmane, 2015).

Globally, efforts have been undertaken to promote the sustainability of the economies, businesses and individuals and protect the environment (Gennari et al., 2015). Such efforts include the enactment of the 5 focus points of sustainability that is planet, people, prosperity, peace and partnership and the sustainable development goals SDGs, (Hongbo, 2015). In line with the SDG 7 which aims at ensuring access to affordable, sustainable, and modern energy, there are deliberate efforts to reduce the use of charcoal or firewood and resort to the use of renewable energies for cooking. Such energies include the use of solar sources, use of gas cookers and the use of briquettes which is the gist of this paper.

Briquettes are small cooking bricks that can be made from compressing various waste local materials for examples sawdust, leaves, forest waste, sugarcane waste, bamboo waste, paper waste, wood shavings, pine etc., (Mugabi & Kisakye, 2021; Tumutegyereize, 2016). Briquettes play an important role in ensuring sustainability because they use biomass waste which helps to reduce the volume of waste, and reduce the cutting of trees, leading to a reduction in deforestation.

Furthermore, the lower the emission of gases into the environment indirectly preserving the quality of the air for breathing (Mugabi and Kisakye, 2021). In addition, briquettes are more energy efficient compared to charcoal and firewood since they have a higher calorie value and burn more efficiently (Oteu, et al, 2024).

Despite the role of briquettes in promoting sustainability, there are various challenges that may deter them from achieving economic sustainability and fulfilling their role. Such challenges include the high cost of the machinery used, the high

cost of registration and meeting quality standards, and the lack of enough space and land to allow expansion among others (Emwamu, 2023; Asamoah et al., 2017; Mwapamba et al, 2013). There is therefore needed to ensure access to green financing and non-financial support from financing institutions and other partners to enable them to achieve economic sustainability. The key question addressed by this paper, therefore is how financial institutions can support the briquettes businesses and enterprises to gain economic sustainability.

## 2.0 ECONOMIC SUSTAINABILITY AND ITS RELEVANCE

This paper focuses on economic sustainability as it is at the core of the achievement of the other sustainability pillars. Economic sustainability refers to the ability of the business to continue operating successfully both in the short run and longrun, (MollenKamp et al, 2023; Purvis et al, 2018). Therefore, to be economically sustainable businesses needs to ensure that they will have adequate financial and non-financial resources into the far future by ensuring both short term and long-term profitability (Purvis et al, 2018). Hansmann et al (2012) explains that economic sustainability is at the core of the business sustainability agenda as it helps to integrate and draw synergies from all the pillars of sustainability, enhancing the social and human capital of future generations. Economic sustainability should be one of the core objectives of any business because it enhances the profitability consistently which enables achievement of the short term and long-term objectives of any business, it helps is mitigating risks that may arise, and thus helps in creating competitive advantage (Zhong and Wu, 2015;). Economic sustainability can also be seen as a core business strategy that may support businesses in meeting stakeholder expectations, creating value, innovating, and achieving long term growth (Şahin and Çankaya, 2020; Ukko et al, 2020). It is therefore important that businesses in the briquettes sector are supported to achieve economic sustainability so that they are able to play a role in achieving environmental and social welfare within the economies they are operating in.

### 3.0 EFFORTS OF FINANCIAL INSTITUTIONS TO PROMOTE SUSTAINABILITY

A lot of efforts have been undertaken to support businesses and individuals in the energy conservation and in renewable energies (Kelkar, 2024; UNEP, 2023; Batsukh et al, 2019). One of the key tools used by financial institutions to promote sustainability is green financing. According to UNEP (2023), Green financing refers to the provision of capital for investment in order to support activities that reduce the emission of greenhouse gases so as to reduce their effects on the climate and people and protect the environment. It involves the provision of loans or investment for projects or businesses that provide environmentally positive activities such as construction of green infrastructure, production of ecologically friendly goods, financing of public green policies and enhancing of the green financial system (Lindenberg, 2014; Park and Kim, 2020). The various products under green financing include green loans, green mortgages, green credit cards and the setup of green banks specifically for supporting the usage and growth of renewable energy products (Zanizeni, 2019;

Shipalana, 2023; Kelkar, 2024). Additionally central banks can also play a vital role by coming up with monetary and fiscal policies that are geared towards promoting sustainable finance and green financing (Volz, 2017; UNEP 2023).

In Uganda, various interventions by the government and the financial sector have been undertaken to promote the green economy and green financing. At the national level such interventions include the enactment of several laws, rules, and regulations for example the National Climate Change Policy (NCCP, 2015), Nationally Determined Contributions (NDC, 2015), National Adaptation Plan (NAP) Road map (2015), Uganda Green Growth Development Strategy (UGGDS, 2017/18-2030/31), and the National Climate Change Bill, (NCCB, 2020). In addition, there has been a suggestion of issuing of green bonds by Uganda development Bank though these are not yet fully implemented (SEED, ACODE and NPA, 2022). At financial institutions level, green financing products for example solar loans are being offered.

## 4.0 METHODOLOGY USED AND KEY FINDING IN RELATION TO FUNDING CHALLENGES FOR BRIQUETTES ENTREPRENEURS

### 4.1 Methodology

This paper is extracted from a wider study by the authors (2024) titled “The sustainability of charcoal alternatives as a cooking energy - A focus on briquettes in Uganda”, the authors (2024). The study, among other objectives, investigated the opportunities and challenges of briquettes entrepreneurs in striving to stay economically viable while providing environmental and social sustainability. It applied a qualitative case research design and used an exploratory approach. It was conducted in greater Kampala in the districts of Wakiso, Mukono and Kampala. It focused on the 12 cases of key entrepreneurs identified purposively focusing on those who had been in the briquettes space for more than a year and are actively engaged in the briquettes making and selling. Data was collected using an interview guide and analyzed using coding, theming, and matrices to compare and contrast them with the help of Ms. Word and Excel programs.

### 4.2 Findings and their discussion

#### 4.2.1 Opportunities and Challenges within the Briquettes Sector

The findings of the study indicated that there were various opportunities within the briquettes space that can benefit the current and potential briquettes entrepreneurs to enable them grow while staying competitive and sustainable. The opportunities

cutting across all the cases included - availability and abundance of raw materials within the communities they were operating in, availability of cheap labour and training opportunities, the monopolistically competitive nature of the market with few competitive players, growth, and expansion opportunities, increasing demand for their products and favorable government policies and political environment. One of the key issues highlighted was the directive by the president of Uganda in 2023 banning the cutting down of trees for charcoal production in some parts of Uganda. Other opportunities mentioned were the high innovation and technological transformation in the sector. Such opportunities provided them with the propensity to improve their performance and become economically sustainable. The briquettes sector has the potential to grow and act as a key tool in turning many African countries including Uganda into a green sector (Mugabi and Kisakye, 2021; Econstan, 2023)

However, the findings also revealed that there were various challenges threatening the enterprises within the briquettes sector including expensive processing machines, low awareness within the population about briquettes, wrong mindset from some people, and lack of finances to expand and adopt technology (Emwamu, 2023, Asamoah, 2017). As explained by Mwapamba et al (2013), such challenges threaten the competitiveness of the briquettes’ businesses and thus their ability to attain economic sustainability.

A summary of the findings is presented in the matrix table below: -

**Table 1: Opportunities and Challenges Faced by Briquettes Entrepreneurs**

Case	Opportunities	Challenges
<b>B001</b>	<ul style="list-style-type: none"> <li>▪ Affordable training opportunities</li> <li>▪ Availability of ready market in existing communities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Low demand due to low awareness</li> <li>▪ Small room for storage</li> <li>▪ Limited space</li> <li>▪ Expensive machinery</li> </ul>
<b>B002</b>	<ul style="list-style-type: none"> <li>▪ Abundance of raw materials</li> <li>▪ Availability of cheap labour</li> </ul>	<ul style="list-style-type: none"> <li>▪ Slow adoption to use of briquettes</li> <li>▪ limited awareness about the briquettes</li> <li>▪ low quality machinery</li> <li>▪ High cost of good quality machinery</li> <li>▪ Limited availability of some component raw materials</li> <li>▪ Production methods that are easily affected by routine weather changes.</li> <li>▪ Lack of effective product distribution processes</li> </ul>
<b>B003</b>	<ul style="list-style-type: none"> <li>▪ Availability of ready market in existing communities</li> <li>▪ Being a highly innovative enterprise</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lack of knowledge of product usage by some of the customers</li> <li>▪ Wrong mindset about briquettes by potential customers</li> <li>▪ Underutilization of existing machinery</li> <li>▪ Inconsistent demand for the briquettes</li> <li>▪ Corruption</li> <li>▪ Low adoption to technology</li> </ul>
<b>B004</b>	<ul style="list-style-type: none"> <li>▪ Competition is low.</li> <li>▪ Availability of ready market in existing communities</li> <li>▪ The presidential directive banning charcoal burning.</li> <li>▪ Higher cost of other alternatives</li> </ul>	<ul style="list-style-type: none"> <li>▪ limited awareness about the briquettes</li> <li>▪ Lack of knowledge of product usage</li> <li>▪ Lack of regulated product standards</li> <li>▪ High carbonizing cost</li> <li>▪ Wrong mindset about briquettes by potential customers</li> <li>▪ No practical support given yet to the enterprise</li> </ul>
<b>B005</b>	<ul style="list-style-type: none"> <li>▪ Availability of ready market in existing communities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Low adoption to technology</li> <li>▪ Wrong mindset about briquettes by potential customers</li> <li>▪ Lack of regulated product standards</li> <li>▪ Low production</li> </ul>
<b>B006</b>	<ul style="list-style-type: none"> <li>▪ Competition is low.</li> <li>▪ Government is advocating for green energy</li> </ul>	<ul style="list-style-type: none"> <li>▪ Wrong mindset about briquettes by potential customers</li> <li>▪ Low production</li> <li>▪ limited awareness about the briquettes</li> </ul>
<b>B007</b>	<ul style="list-style-type: none"> <li>▪ Abundance of raw materials</li> <li>▪ government is advocating for green energy.</li> <li>▪ Growing demand</li> </ul>	<ul style="list-style-type: none"> <li>▪ Low production</li> <li>▪ High taxes on processing machinery</li> <li>▪ High cost of capital</li> </ul>



<b>B008</b>	<ul style="list-style-type: none"> <li>▪ Growing demand for the briquettes</li> <li>▪ government is advocating for green energy</li> </ul>	<ul style="list-style-type: none"> <li>▪ Limited business capital</li> <li>▪ Low production</li> <li>▪ Lack of effective product distribution processes</li> </ul>
<b>B009</b>	<ul style="list-style-type: none"> <li>▪ Exposure to new technologies</li> <li>▪ Engagement in collaboration and networking</li> <li>▪ Growing demand for briquettes</li> <li>▪ Increasing demand for the product</li> <li>▪ Availability of cheap labour</li> </ul>	<ul style="list-style-type: none"> <li>▪ Poor business location</li> <li>▪ Costs associated with business formalization.</li> <li>▪ Growing risk of business fraudsters</li> <li>▪ High cost of adapting new technologies</li> <li>▪ Lack of effective product distribution processes</li> </ul>
<b>B010</b>	<ul style="list-style-type: none"> <li>▪ Growing demand for the product</li> <li>▪ Opportunity to innovate</li> </ul>	<ul style="list-style-type: none"> <li>▪ Inconsistent supply of some raw materials</li> <li>▪ Underutilization of existing machinery</li> <li>▪ Reduction in prices of other energy alternatives.</li> </ul>
<b>B011</b>	<ul style="list-style-type: none"> <li>▪ Abundance of raw materials</li> <li>▪ Availability of agricultural waste</li> </ul>	<ul style="list-style-type: none"> <li>▪ limited awareness about the briquettes</li> <li>▪ Limited funding</li> <li>▪ High cost of capital</li> <li>▪ High labour cost</li> </ul>
<b>B012</b>	<ul style="list-style-type: none"> <li>▪ Availability of cheap labour</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lack of appropriate machinery</li> <li>▪ Lack of safety measures at work</li> <li>▪ Limited business capital</li> </ul>

*Source: Primary Data Collected by the Authors*

#### **4.2.2 Role of Financial Institutions in Supporting the Briquettes Sector.**

In order to overcome the challenges especially of the high costs of operations, limited business capital and be able to increase production and expand, briquettes entrepreneurs can be assisted by financial institutions. The financial institutions can offer a variety of products that are geared towards the renewable energy sector. Such products include green loans which enable clients buy products that protect the environment and also those who wish to invest in green products such as renewable energies as articulated by Kelkar (2024). Such products are normally offered at a more friendly and lower rate and thus can benefit the briquettes entrepreneurs. In addition,

there is need for green banks in the country which could be started by the private sector or by the government. Literature notes that such financial institutions are set up to specifically gear funds to increase investment in renewable energy and other environmentally focused products and services (Park and Kim, 2020; Kelkar, 2024). Park and Kim (2020) also explain that financial institutions can help mitigate the risks that emerge out of climate change and support the reallocation of resources to climate sensitive initiatives. This paper urges that financial institutions in Uganda can do the same for the briquettes sub sector in Uganda which will reduce the use of charcoal and firewood.

As seen in the results above, briquettes awareness and usage among the population in Uganda is still low which creates a challenge of low demand for the briquettes products. Financial institutions can partner with the briquettes' entrepreneurs and support awareness campaigns as well as offer specific green loans to those acquiring who wish to set up energy saving stoves and use briquettes plus assisting in capacity building. This is well supported in literature where it is explained that capacity building and formation of partnerships are key strategies financial institutions can undertake to intervene into the sustainability campaigns in the countries where they operate (Batsukh et al., 2019; UNEP, 2023; Kelkar, 2024)

The financial sector stakeholders also have a role to play in enhancing the growth of the briquettes sector. This is mainly through improving the current policy framework to create favorable regulations for special financial institutions for example green banks and also encourage the existing financial institutions to venture more in green financing while assisting them to mitigate with the resulting operational and environmental risk. As explained by Volz (2017), central banks in African or developing countries have a role to play in enhancing green financing by coming up with policy frameworks that are favorable for investments in renewable energies and other environmentally friendly initiatives.

## 5.0 CONCLUSION, POLICY IMPLICATIONS, AND AREAS FOR FURTHER RESEARCH

### 5.1 Conclusion

There is need for financial institutions to work closely with the entrepreneurs within the briquettes space to hand pick them and enable them grow. This will make a tremendous contribution to the green movement not only in Uganda but in Africa and the entire world.

### 5.2 Policy implications

There is need to improve the strategic policy framework on green financing that was developed by NEMA and the Uganda Ministry of Water and Environment to deliberately target the briquettes sector and be specific on how it can be supported. Using this framework, the financial institutions working with the line ministry should increase financing opportunities for entrepreneurs in the sector.

There is also need for public – private partnerships between the government, the financial institutions, and the briquettes key stakeholders to provide more green financing geared towards access to capital financing for the sector.

Government should also attract international investors into the briquettes sector so as to increase the number of players and therefore efficiency and low-cost products. Such investors could also include financing institutions that focus mainly on provision of green financing so as to increase availability of funds to promote the briquettes and other related sectors.

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Plot 2702 Block 244 Nyangweso Road off Kironde Road Tankhill Muyenga P.O. Box 8002, Kampala  
Tel: +256 312 343 400, Email: [secretariat@ugandabankers.org](mailto:secretariat@ugandabankers.org), [www.ugandabankers.org](http://www.ugandabankers.org)