

Youth**Action**Net®

# CASE STUDY SERIES

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**KingFire Energy Solutions:**

*OFFERING SUSTAINABLE ENERGY  
IN UGANDA*

*A partnership between:*



GEORGETOWN UNIVERSITY

School of Foreign Service  
Global Human Development Program



## **Introduction**

*This is one of a series of case studies produced by students enrolled in the Global Human Development Program at Georgetown University through its partnership with the International Youth Foundation (IYF). Students enrolled in a course exploring the role of social enterprises and social entrepreneurs were paired with young leaders of social ventures identified through the IYF's YouthActionNet® program. The students were given the assignment of analyzing the venture's assets, successful methodologies, and opportunities for investment to increase impact. Through this experiential learning process, the student consultants gained hands-on experience and exposure to the needs of social enterprises. The ventures, too, benefited from student insights into their strengths, areas for growth, and recommendations for enhancing their impact and sustainability. The Georgetown practicum is part of YouthActionNet's larger efforts to partner with institutions of higher learning around the globe to integrate social change into the academic experience and career interests of students.*

## **International Youth Foundation**

*The International Youth Foundation (IYF) invests in the extraordinary potential of young people. Founded in 1990, IYF builds and maintains a worldwide community of businesses, governments, and civil society organizations committed to empowering youth to be healthy, productive, and engaged citizens. IYF programs are catalysts of change that help young people obtain a quality education, gain employability skills, make healthy choices, and improve their communities.*

[www.iyfnet.org](http://www.iyfnet.org)

## **YouthActionNet®**

*Since 2001, YouthActionNet, a program of the International Youth Foundation, has provided founders of social ventures, ages 18 to 29, with the training, networking, coaching, funding, and advocacy opportunities they need to strengthen and scale their impact. These young social entrepreneurs have pioneered innovative solutions to critical local and global challenges, resulting in increased civic engagement, improved health, education reform, economic opportunity, environmental protection, and more inclusive societies. Our work is carried out through a network of 23 national and regional youth leadership institutes that collectively support over 1,350 young social entrepreneurs globally.*

[www.youthactionnet.org](http://www.youthactionnet.org)

## **Global Human Development Program at Georgetown University**

*The Global Human Development Program of Georgetown University is home to one of the world's premier master's degree programs in international development. An innovative, academically rigorous skills-based graduate program, the Master of Global Human Development degree prepares the next generation of development professionals to work with public sector agencies, private businesses, and non-profit organizations that advance development. Through coursework, extracurricular activity, and practical fieldwork experiences, our graduates develop the insights, skills, and experiences necessary to become leaders in development and make a difference in our global community.*

<https://ghd.georgetown.edu>

## INTRODUCTION

### ***Meet Catherine Nakitende, Founder of KingFire Energy Solutions***

Catherine Nakitende started as an entrepreneur while attending primary school and staying with her aunt in Kyetume, Mukono. Six-year-old Nakitende asked if she could sell some of her aunt's pancakes at school and the next day she started her first business venture selling pancakes at Kyetume Church of Uganda Primary School. Since then, Catherine has explored various business ideas including providing food services to construction workers and liquid soap manufacturing. In 2009, she heard about the use of briquettes to provide clean energy. Her entrepreneurial attitude led her to borrow USh1,000 (US\$0.27) from her sister to buy cassava flour that she mixed with banana peelings and other bio-degradable items to make briquettes. Several modifications later and after a round of pilot testing, she made a higher quality product and formed KingFire Energy Solutions.



She is focused on the triple bottom-line approach of creating value in social, economic, and environmental levels through her business venture. Besides her acumen for business, she has the ability to form networks through various partners and international organizations as evident from the number of awards she has received. She has won the Commonwealth Youth Award for Excellent Development Work, the Seed Africa award, and has become a SET Africa Fellow. She has 13 years of work experience across several fields along with a Certificate in Leadership Education from George Wythe University, a Diploma in Computer Networking from Makerere University, a Diploma in Computer Science from Allison Online Study, and a Bachelors in Computer Studies from The University of the People.

### **KingFire Energy Solutions is creating sustainable sources of energy in Uganda**



#### ***The Problem***

Wood charcoal is used for traditional forms of cooking and is generally the easiest available form of charcoal, since wood is found in abundance across East Africa. However, with rising deforestation in Uganda and population growth, the supply is reducing and demand is increasing. Statistics show that in 1990, Uganda had a forest woodland cover of 45%, but by 2010, forest cover was reduced to 14%.<sup>1</sup> Approximately 96% of the total energy consumed in the country is from wood. Stoves and other wood-burning technologies, are rudimentary and thus wasteful in terms of energy loss.<sup>2</sup> Wood has become expensive, leading to higher wood charcoal prices, and families have less income for health and supplemental nutrition products for children. Additionally, wood charcoal which is made from uncarbonized processes and produces smoke causing respiratory diseases among household members.

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<sup>1</sup> African Journal of Ecology 48(4):853 - 859 · December 2010

<sup>2</sup> Energy Poverty in Uganda; Africa Institute for Energy governance,  
[http://www.academia.edu/10373089/ENERGY\\_POVERTY\\_IN\\_UGANDA\\_THE\\_ROLE\\_OF\\_RENEWABLE\\_RESOURCES](http://www.academia.edu/10373089/ENERGY_POVERTY_IN_UGANDA_THE_ROLE_OF_RENEWABLE_RESOURCES)

## The Solution

KingFire Energy Solutions has introduced charcoal briquettes as a replacement to wood charcoal. The business operates as an urban recycling social enterprise in Kampala, using organic waste bio-mass materials to produce charcoal briquettes. With charcoal briquettes, it costs just USh143 (US\$0.04) to cook a traditional meal of maize and beans for a standard household of 5 people, nine times cheaper than cooking the same meal with charcoal (USh 1075 or US\$0.30) and 15 times cheaper than cooking with kerosene (USh 2150 or US\$0.60).



Additionally, KingFire Energy Solutions works with the urban poor communities to increase disposable income by providing employment through the production of briquettes and selling of improved cook stoves to retailers, households, and institutions. Traditional consumers of wood charcoal are turned into prosumers, producing and consuming the charcoal briquettes. The business also promotes waste management in urban areas through awareness campaigns on recycling and afforestation in local communities. The briquettes, which are smokeless, also contribute to an overall reduction in carbon emissions and improve the health of the household members.

*Figure 1: Six main objectives of the KingFire ecosystem*

Ensure 150 households routinely use their products monthly

Recruit and ensure that 3 institutions like schools or hospitals routinely use their products monthly

Train 6500 youth and women in briquette making

Empower 30 women's groups in Kampala and rural regions to start production and distribution

Establish a garbage recycling plant; that recycles 600kg per day

Plant 10,000 trees as one of the ways to reduce greenhouse gas emissions

## Operational Model

KingFire Energy Solutions is a for-profit enterprise that generates revenue through the production and sale of briquettes using various distribution networks. 80 farmer cooperatives and women's groups deliver the raw material to the production facility in the city of Kampala, Rwamwanja refugee settlement, and Kyangwali refugee settlement. In the settlements, 27 groups produce both stoves and briquettes. The briquettes are made from combined, raw material from different regions in Uganda and then provided to agents, one community member, or members of youth or women's group that receive a commission on the sale of the briquettes. In addition to selling the briquettes, these same groups also train community members on how to produce and use briquettes and stoves as well. KingFire Energy Solutions also uses a network to increase sales to



institutions like schools and hospitals. Energy 4 Impact, a non-profit organization committed to expanding access to energy in Africa, provides low-interest loans to institutions that desire to purchase KingFire's stoves but lack the funds to do so. The loans are processed through Centenary Bank in Uganda and transferred directly to KingFire.

## KEY ASSETS AND SUCCESSFUL METHODOLOGIES

### *Focus on The Ecosystem*

Bigger organizations like Green Bio Energy may have higher sales, but KingFire Energy Solutions has a unique service proposition with a focus on the entire ecosystem, including a diversified product list of solar lamps and clay-stoves. KingFire Energy Solutions has evolved from manufacturing and distribution of briquettes to providing various other services that address the issue of energy poverty. The objective is to target the end-user through a diversified portfolio which provides briquettes, stoves, and solar energy products including lamps. With improved stoves, the briquettes burning time is slower and saves more energy than using traditional cooking stoves. Households using kerosene for lighting are now using solar lamps distributed by KingFire, further reducing the use of wood charcoal and reducing the household consumption cost on lighting and cooking.

Additionally, the business focuses on building complementary services to generate raw material for the briquette-production process, such as setting up a garbage gasification recycling plant that generates power to the people at the BoP and afforestation in the communities.



### *Focus on Partnerships and Community Engagement*

Catherine has been able to create a strong network of supporters both at the international and local level. Locally, KingFire works with youth and women's groups in the production of briquettes, the distribution of finish products, and the recycling of waste to generate bio-mass for raw material.

Partnerships at the local level help the business achieve scale along and have positive effects, such as employment for youth and women. To achieve this outcome, the business holds community workshops to raise awareness and ask community groups to partner. Once a partnership has been established, training sessions provide community members with the skills required in sales and distribution of the finished products. For every product sold, the agents earn a commission from KingFire Energy Solutions.

## OPPORTUNITIES FOR INVESTMENT

The organization currently faces competition from various early stage organizations like Appropriate Energy Saving Technologies (AEST) Limited and USAID-funded Eco-fuel. These competitors are at

any early stage, and currently there is not a single trusted brand of briquettes, so to be successful, KingFire Energy Solutions should build a market position and must focus on customer acquisition.

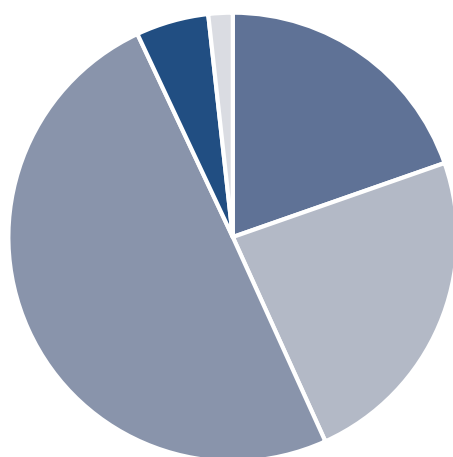
### ***Get Smart About Sales People***

Briquettes are at a nascent stage of technology development and product awareness. Thus, a salesperson must be experienced to effectively market the product to a cost-sensitive end-user market. The high-quality and reduced cost of briquettes compared to wood charcoal are major benefits of the product, and salespersons in the distribution network need to properly promote those assets.

The returns could be higher with more experienced sales staff or if the current salespeople had more robust training sessions. Additionally, since the product is new and people are accustomed to using wood charcoal, the agents need to market the product better to increase growth.



***Figure 2: Capital raised by KingFire***



- Owner's equity
- Financial Institutions
- Relatives & friends / donors
- Seed Initiative
- Common wealth

### ***Increase Sales of Smokeless Kilns***

According to a 2013 UNDP report,<sup>3</sup> 90% of the Ugandan population uses fire-based cook stoves or traditional kilns. Smokeless kilns, currently being manufactured by KingFire Energy Solutions, can save up to 30% of the charcoal used by households over the traditional kilns. An analysis of capital raised by KingFire shows that almost 50% comes from donations through friends and family. In addition to the introduction of experienced sales personnel and improved capacity-building sessions of the youth and women's groups, KingFire Energy Solutions can become self-sustainable by generating revenue through the sales of briquettes and cook-stoves. The portable smokeless kilns reduce emissions of harmful black carbon and other pollutants, and reduce the amount of fuel needed. While traditional kilns use eight to twelve kilograms of wood to produce one kilogram of charcoal, the improved kilns only need three to four kilograms.

<sup>3</sup> Nationally Appropriate Action Plan, UNDP, 2013, [http://www.undp.org/content/dam/undp/library/Environment%20and%20Energy/MDG%20Carbon%20Facility/CharcoalNAMASTudy\\_9Jan2013.pdf](http://www.undp.org/content/dam/undp/library/Environment%20and%20Energy/MDG%20Carbon%20Facility/CharcoalNAMASTudy_9Jan2013.pdf)

The competitive landscape in the clean cooking sector consists of several briquette-producers, while fewer competitors are focused on producing clean and smokeless kilns. Currently, there is no single trusted brand and few competitors are spread out in different parts of Uganda. Additionally, KingFire Energy Solutions production facility is in Kampala, the capital of Uganda, with a majority of the end-users located in Kampala, saving cost involved with transportation of smokeless kilns. Kingfire Energy Solutions is aiming to increase production by automating the production facility, but currently lacks the necessary large-scale funding. To achieve the large gap in capital, the business could focus on the production and sales of smokeless kilns. The profit margins on kilns are higher compared to the sales of briquettes and the sale of kilns provides higher marginal returns to input cost when compared to the sale of briquettes. Additionally, the smokeless kilns manufactured by KingFire Energy Solutions are built with locally sourced material and labor, creating a positive impact on local employment. The increase in profits from the sale of smokeless kilns could be used to automate the production facility, make the business self-reliant, and increase the production of both briquettes and smokeless kilns. The increase in production with economies of scale would further reduce the input costs, thus providing higher returns and making the organization sustainable.



## CONCLUSION

The organization is led by a dynamic leader who realizes the huge market opportunity in the production and sales of briquettes and smokeless kilns. The geographic location in Kampala with a focus on locally sourced material and strong community engagement for distribution gives KingFire Energy Solutions a comparative advantage in the market.

As the next step, Catherine Nakitende must focus on building the overall capacity of her team with a special focus on capacity building of the sales personnel. This focus stems from the need to acquire customers faster than the competitors and build the company into a trusted brand. To reach the goal of automating the production facility, the business must expand the manufacturing and sales of smokeless kilns. KingFire Energy Solutions has the potential to build a niche in the green charcoal industry in Uganda with a focus on high quality briquettes and smokeless kilns.

## FURTHER INFORMATION ABOUT KINGFIRE ENERGY SOLUTIONS

- [KFES Website](#)
- [KFES Facebook Page](#)
- [Business Accelerator](#)
- [Daily Monitor Article](#)
- [Common Wealth Youth Finalist](#)
- [Featured in Clean Cook Stoves Website](#)

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