

Process. The volcanic rocks are extracted from the surface of the mountains. The rocks are cut into different sizes to suit the end users' stove. The rocks are dipped into hot water for a few minutes, and later left to dry. This process prevents the rocks from sparking when lit up. Rocks take at least a week to dry.

Uganda turns to volcanic rocks as substitute to charcoal

Substitute. Unlike charcoal which burns completely, the same rocks can be burnt several times without losing its power, writes Paul Tajuba.

Denis Matembe's daily job entails lighting a charcoal stove and roasting chicken on a barbecue wire mesh.

The word veteran aptly describes him because he has been in this business of roasting chicken in Wandegaya, a Kampala City suburb, for more than 10 years.

Matembe's work starts at 4pm when he lights the stove. The process goes on until late in the night. For many years, the charcoal consumption was one sack for every week, depending on the quality of the charcoal.

Good quality charcoal is one that will stay on the stove for long hours before being reduced to ash. That quality is dependent on the kind of tree from which the charcoal was made, such as mvule, mango, Shea nut, among others but government has banned cutting down these trees for charcoal.

In 2016, however, Matembe's boss, Joseph Kalema, got to hear of the "wonder rocks" that reportedly had the ability to work as substitutes for charcoal.

Kalema, who runs 10 chicken roasting stoves in different parts of Kampala and spends at least Shs600,000 on charcoal per month, was told that he stood a chance of reducing the charcoal bill by more than 75 per cent.

Any businessman in the same trade would have jumped at the prospect of cutting on the charcoal consumption and the corresponding increase in profitability.

"The cost of charcoal continues to increase yet the quality is poor. When I heard about the volcanic rocks that can work like charcoal, I rushed to find out if it can work for me," Kalema says.

He bought a modern charcoal stove to replace the old one. The biggest challenge then was to get Matembe, who had been using the charcoal stoves, to prepare those salacious tasting pieces of roast chicken for years, to drop the old ways and adopt the new.

"It sounded ridiculous and unbelievable. How can stones cook?" Matembe

remembers asking his boss then.

Well, old dogs can learn new tricks if they have the will and are availed the opportunity to do so.

How the rocks work

Just like when charcoal is used, rocks are put in the stove to full capacity. Charcoal dust are then spread on top of the rocks. Chops of pine tree or those from any other highly flammable species are then put in the middle of the rocks and lit up with a match.

Within a few minutes, the rocks catch fire and it spreads throughout the stove. The fire from the rocks burns more than that of charcoal.

Rose Twine, the founder of Eco Stove, a company promoting the use of volcanic rocks in the country, says they have employed 17 women groups in Kisoro District, each with a membership of 12 people, to extract the rocks and sell them to her company.

The women are given startup capital and training on how to dig up the rocks, among others, by the company. The women's group sell the extracted rocks measured in trucks. Currently, the group extracts rocks from the surface of the mountains.

Twine sends trucks that transport the rocks from Kisoro to Kampala.

When the rocks are transported to Kampala, they are stored at the company factory in Bujuku, on Mityana Road. From there, the rocks are cut into different sizes to suit the end users' stove. If the rocks are to be used in institutions, they are normally bigger

FOREST COVER

Between 1990 and 2005, natural forest estate outside protected areas reduced by 35 per cent (from 3.46 million hectares in 1990 to 2.3 million hectares in 2005). A 2017 Joint Water and Environment Sector Review Report now estimates the country's forest cover at nine per cent. The decline has mainly been blamed on the country's dependency on fuel wood to cook and power small industries.



Busy. Employees of Eco Stove park volcanic rock pieces into polythene bags at the company premises in Kampala recently.

compared to those for domestic use.

The rocks are dipped into hot water for a few minutes, and later left to dry. This process prevents the rocks from sparking when lit up. According to Twine, using cold water delays the rocks' process of drying up. Rocks take at least a week to dry.

The rocks do not work in any stove and Twine says the technology in their stove is what makes the rocks to burn. The Eco Stove has an internal air system that helps heat up the volcanic rocks.

The stove is also fitted with on and off switches that enables the rocks to burn when turned on, and cool and return to their natural state when turned off.

The stove is solar-powered and comes with ports for plugging in radios, phone charges and lights.

Unlike charcoal which burns completely, the same rocks can be burnt several times without losing its power.

"Volcanic rocks can burn for months, but eventually, they will lose the power. When they lose the power, you add few new ones on your stove and again cook," Twine says.

Domestic stoves go for at least Shs200,000 with rocks. A "bag" of the rocks go for Shs35,000 for domestic use and can last up to six months.

For people near the volcanic rocks, they can extract the rocks and use them directly, according to Twine.

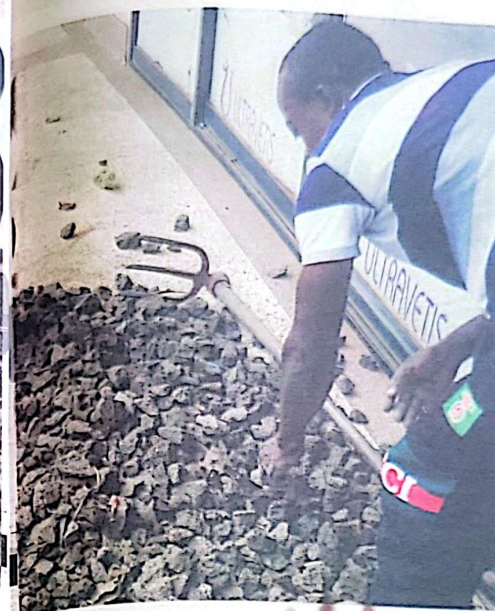
She says since the stove does not produce smoke, those using it are protected from indoor pollution.

"They (rocks) do not produce smoke,

90%

FUEL FOR COOKING. More than 90 per cent of the households in the country depend on firewood and charcoal as their source of energy for cooking.

COSTS. Domestic volcanic rock stoves go for at least Shs200,000 with rocks. A bag of the rocks go for Shs35,000 for domestic use and can last up to six months.



Innovative. A volcanic rock stove made by Eco Stove. PHOTOS BY PAUL TAJUBA

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It is a new thing and we have not done any research about it. We will get interested in it," CHRISTINE KALELO, THE NEMA DEPUTY EXECUTIVE DIRECTOR

SOURCES

Other initiatives for cooking

Although improved charcoal stoves save between 40 and 50 per cent of what three-stone traditional stoves consume, only about 10 per cent of Ugandans are using them.

An average household spends more than Shs2,000 on the main cooking fuel per day during the wet season and Shs1,942 during the dry season, according to a charcoal survey report done in 2017 by the ministry of Energy.

The report says 4,961 metric tonnes of charcoal is used in Uganda per day, with Kampala alone consuming 337 metric tonnes per day during the dry season and 1,017 metric tonnes during the rainy season.

New method. Volcanic rock stoves and volcanic rocks parked in polythene bags at Eco Stove premises.



Wonder rocks. Pieces of volcanic rocks ready for use in stoves.

More than 90 per cent of the households in the country depend on firewood and charcoal as their source of energy for cooking.

Christine Akello, the National Environment Management Authority deputy executive director, says currently, the authority is not regulating volcanic extractions.

"It is a new thing and we have not done any research about it. We will get interested in it," Ms Akello says.

Uganda uses six million tonnes of wood in brick burning. The bricks are mainly used to feed the growing construction industry. The brick making technology is inefficient in energy use and necessitates cutting of a big number of trees.

The tea industry, which is estimated to be growing at an annual rate of between two and four per cent, with an annual average production of 35,000 tonnes annually, consumes about 71,000 tonnes of wood. Processing of one kilogramme of tea requires about 1.5kg of wood.

One other heavy wood consumer is lime production. Although they are mainly on small scale, the sector consumes 270,000 tonnes of wood and 75 tonnes of charcoal annually. This means that every tonne of lime production requires 1.5 tonnes of wood.

The tobacco industry, estimated at an average production of 25,000 tonnes annually, consumes 200,000 tonnes of wood. The report further notes that sugar jaggeries consume 500 tonnes of wood and 2,000 tonnes of bagasse annually.

The 40,000 tonnes of oil produced annually by local oil companies require 17,000 tonnes of agriculture waste and 75,000 tonnes of wood. Another 224,000 tonnes of wood is used annually to smoke 20,000 tonnes of fish.



The wood consumed in confectionery industry is estimated at 313,000 tonnes of wood, another 200,000 tonnes and 50,000 tonnes of wood and charcoal, respectively, are consumed by 35,000 government recognised hotels.

With an estimate of 37,000 inmates annually, prisons consume 5,435 tonnes of wood, the hospitals consume 1,500 tonnes of wood and educational institutions are estimated to use 1.7 million tonnes of wood annually.

All this has been having a toll on Uganda's forest cover, but with the emergence of initiatives such as these wonder rocks, which are presenting the populace with alternative sources of energy, Paul Musamali, the acting executive director of the National Forestry Authority (NFA), is optimistic that the pressure that has been bearing down on the country's forests will drastically reduce.

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Will Uganda use these volcanic rocks as another clean energy at a cost-friendly price and one that will save forest cover?