

THE AFRICA WE WANT

Wood fuel as an energy source has disastrous consequences on African environment and climate. How best can we reverse the trend?

SITUATION

According to the World Future Council, about 80% of households in Africa rely on charcoal as a primary source of energy and the continent consumes more than 23 million tons of charcoal annually. The charcoal business has put deforestation into an overdrive worsening the already the already dangerous climate change effects in Africa.

According to Lee White a climate change expert, once Africa boasted seven million square kilometers of forests but a third of it has been lost and most of it to charcoal.

Charcoal is made from wood which is burnt in low oxygen environment and the process removes water, methane, hydrogen and tar from wood which results into small portions of char that are almost pure carbon which are used to generate heat mainly for cooking purpose. Charcoal is a more efficient source of power than using regular wood because it doesn't produce smoke and it is easy to transport however the process of charcoal burning wastes 60% of wood and only 40% is retained as char which makes it environmentally hazardous.

According to Food and Agricultural Organization, Africa generates only 5% of total electricity in the world and that is why majority of Africans especially in sub-Saharan Africa can't access electricity. On the other hand, charcoal is readily available in every corner of the continent and cheaper compared to Kerosene, cooking gas and electricity.

The charcoal business is also booming because ways of life have changed due to urbanization and high population growth rate in African countries turning for charcoal to supplement or as the main source of power and income.

In Tanzania alone, the charcoal industry while largely informal, it was valued at US\$ 150 million by 2009 and the market has grown exponentially over time. In Uganda where a half of the forest cover has been lost in the past 30 years, charcoal production yields over 20,000 jobs and generates approximately US\$ 30 million annually and in Kenya it is almost ten times that figure.

The booming business is literally fueling economies of many nations in Africa and in the last 20 years, charcoal production risen in African countries by some estimates doubling and people making money as producers and resellers in this very business.

PROBLEM STATEMENT

Charcoal is a popular and lucrative power source that has serious devastating effects for Africa because it has accelerated deforestation. Deforestation is a massive problem with wide range of related impacts that will increase the dangers being brought by climate change.

According to World Health Organization, smoke from fires that burn solid fuel like wood are killing more than 10,000 people a day globally which surpasses deaths resulting from AIDS, malaria and tuberculosis combined. The Christian aid agency estimates that 182 million

people in Africa are at risk of dying as a consequence of climate change by the end of the twenty first century. Meanwhile, Oxfam believes that climate change is frustrating the efforts of millions of people on the African continent to escape poverty because majority of Africans rely on Agriculture which is highly affected by climate changes.

Unfortunately, the regulation of charcoal industry in most African nations has been spotty at best and nonexistent in most places.

PROPOSED SOLUTION

Embracing the alternative charcoal briquettes that are made from all biodegradable waste materials.

PROCEDURE

- Biodegradable waste materials like peelings from cassava, banana, potatoes among others, banana stems and fibers, maize cobs, sawdust, slashed grass, leaves and other household wastes excluding metals, plastics and polythene are collected.
- They are then dried for 1 to 2 days to reduce the moisture content and placed in a metallic container where they are burnt in limited oxygen supply to get char.
- Char is mixed with a clay soil suspension and a boiled suspension of cassava flour (porridge-like) in a kilogram ratio of 5:4:1. The importance of clay soil is to increase weight and heat retention plus durability of the briquettes while cooking. The cassava flour is used because it contains starch that helps to bind the mixture of clay and char together for easy molding into different desired shapes.
- The molded mixture(briquettes) are dried for 1-3 days and then ready for use or marketing.

WHY BRIQUETTES

- First and foremost, they are easy to make, take little time to be ready compared to charcoal and all material requirements are readily available in all households.
- They are long lasting compared to charcoal during cooking and they preserve heat which makes them economical for households besides being environmental friendly.
- The process of making briquettes requires little capital plus physical energy and this implies that women can also get involved in such an income generating activity. This can reduce on the income inequalities between men and women by addressing the women's exclusion from economic opportunities. This can therefore be a platform for uplifting the status of women in Africa.
- The briquettes offer the most appropriate solution to charcoal burning compared to most existing solutions that have not been effective like sensitization of masses on importance of forests and regulation of the business because they don't offer a feasible alternative source of power leaving only charcoal as an option.
- The briquettes are also a solution to waste management in households and this therefore can help improve sanitation in households and communities. It can also reduce on bills spent by households on waste disposal as well as reducing government expenditure on waste management.

PLAUSIBLE CHALLENGES AND THEIR MANAGEMENT.

- Procuring a metallic container implies financial capital however once obtained it lasts longer which makes it economical. For cassava flour it is cheap about less than a dollar for one kilogram as starting capital.
- Some waste materials used in making briquettes like banana and sweet potato peelings are also used as animal feeds which might pose competition. However other biodegradable waste materials are readily available and in most cases the urban and rural poor population don't rear domestic animals.
- Clay soil is only accessible to people near wetlands and other waterbodies. This may therefore require transport costs to acquire clay by the people who are distant from waterbodies. However, after accumulating enough capital and increasing production, this becomes a trivial challenge

Instantaneously the economic benefit of charcoal must be substituted with new development options, sustainable energy choices must be brought to rural and poor populations to curb the disastrous impact of charcoal. By considering this proposal, approximately four million hectares of forests felled every year for charcoal will be saved, climate change threats will be substantially reduced and **The Africa We Want** that harmonizes economic development plus environmental conservation will be achieved.

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