

OUR ADVOCACIES

a. Food Waste for Energy

In Nigeria, there is a huge kilogram of “waste” food items from Nigerian retail food stores, restaurants, and homes. From available data, food waste is the single largest component of municipal solid waste going to landfills and that landfills are the third largest source of methane in Nigeria. Methane has been implicated in the cause of global warming versus climate change. One mitigation approach is to reduce the amount of food waste discarded into landfills by communities/states/and federal government mandating the diversion of primarily organics from landfills. Organics are good feedstock for biogas production systems.

Many food production plants, universities, restaurants (drumstix, Mr Biggs, Kfc), big hotels (e.g Transcorps, Sheraton), hospitals, wastes from whey, residuals from bakery/brewery/winery, fats, oils, cow dungs, etc generate considerable volumes of organic wastes. All of these organic wastes can be economically converted to biogas which is one of the recommendations of the W.H.O for home cooking instead of the use of firewood, coal and kerosene that cause health hazards and bad environmental effect. Biogas can also be used for electricity supplies and home heating.

Key federal and state government agencies that are responsible for this initiative are both ministries of environment, agriculture and finance. Their joint efforts will:

- a. Reduce food loss and waste,
- b. Recover wholesome food for human consumption, and
- c. Recycle food waste to other uses including animal feed, composting, and energy generation.
- d. Employment chains (Direct, indirect and induced) in the collection and sorting of wastes as feedstock, transportation of the feedstock to the biogas production site, distribution and income generation from the users of the biogas.

b. BRIQUETTE AS A COOKING FUEL FOR COOKSTOVES IN NIGERIA.

Background:

More than 65% of Nigerians live in the rural Nigerian communities where access to modern energy for heating, cooking and electricity are practically zero. In fact, it is not an exaggeration that this % represents the poorest Nigerian people. These people rely solely on biomass (firewood, charcoal, animal dung, crop wastes) and coal-burning for household energy needs for lighting, cooking and heating. Majority of those exposed are women, who are normally responsible for food preparation and cooking, and infants/young children who are usually with their mothers near the cooking area.

The use of these biomass leads to serious levels of indoor air pollution many times higher than international ambient air quality standards allow for, exposing poor women and children on a daily basis to a major public health hazard. Large numbers of people are exposed on a daily basis to harmful emissions and other health risks from biomass and coal-burning, which typically takes place in open fires or low-efficiency cookstoves with inadequate ventilation.

This exposure increases the risk of important diseases including pneumonia, chronic respiratory disease and lung cancer (charcoal only), and is estimated to account for a substantial proportion of the burden of diseases in Nigeria. Evidence is also emerging that consistent exposure may increase the risk of a number of other important conditions, including tuberculosis TB, low birth weight, and cataract. Other important direct health impacts of this biomass burning for household energy use among the poor include burns to children and injuries to women from carrying firewood. Furthermore, a range of inter-related quality of life, economic and environmental consequences of household energy use impact on health through such factors as the time women spend collecting scarce firewood fuel, and restrictions on educational and economic activity.

What is Briquette?

Briquette is a mechanical pressed block of flammable matter used as fuel for cooking. Briquette is a form of clean alternative energy for both cooking and bakery. Common types of briquettes are charcoal briquettes and biomass briquettes. Emphasis in this paper is on biomass briquettes. Briquette machine, also known as briquette press or briquetting press, is mainly used to

process wood or forest waste and agricultural residues into briquettes. Briquettes made from briquette machine are combusted as renewable fuel replacing traditional fossil fuel. The biomass fuel features low investment, high thermal efficiency, easy storage and transportation as well as sustainability. Biomass briquettes are made from agricultural waste and are a replacement for fossil fuels such as oil or coal, and can be used to heat boilers in manufacturing plants, and also have applications in Nigerian industries. Biomass briquettes are a renewable source of energy.

Benefits of Briquette

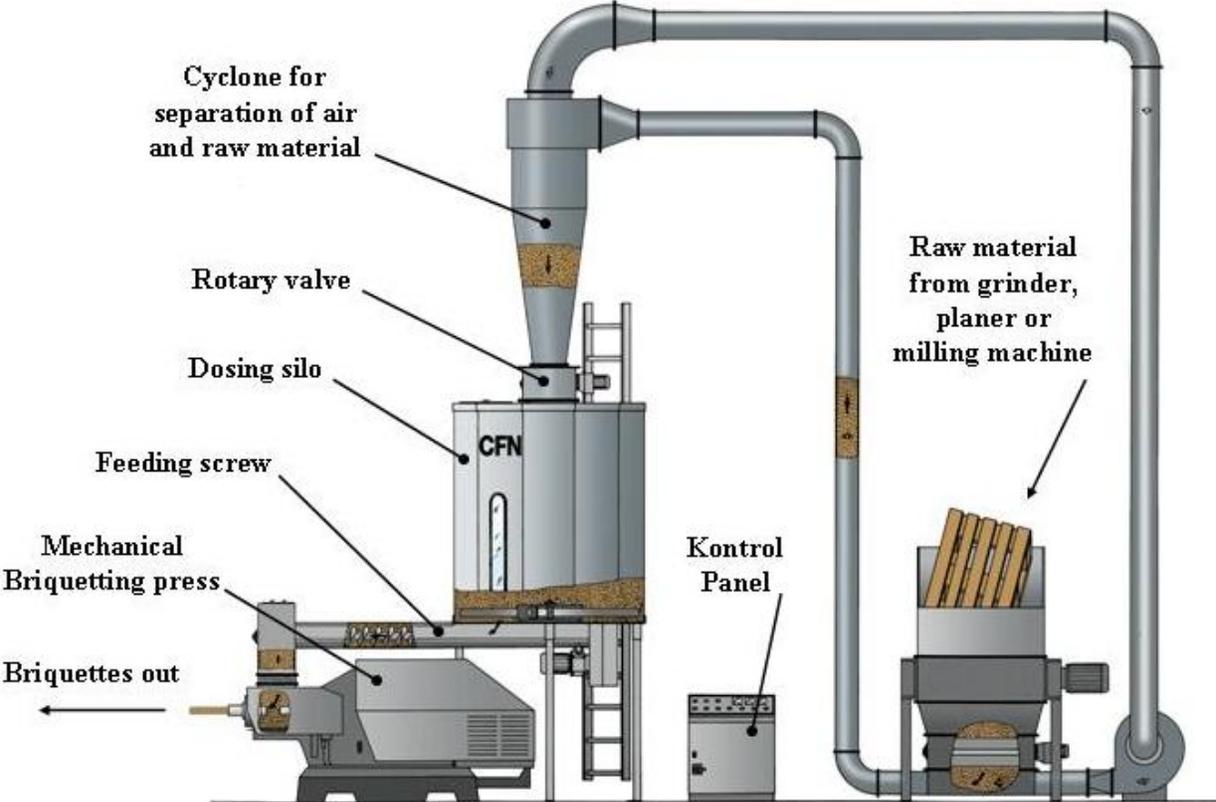
Key community benefits include:

- a. Reduced indoor air pollution
- b. Enhanced agricultural productivity
- c. Reduced consumption of and therefore reduced expenditure on firewood
- d. Improved sanitation and time saved for women who are generally tasked with collecting firewood.
- e. Improving the health conditions of both women and children by reducing respiratory illnesses and other diseases associated with using unclean traditional firewood as fuel for cooking.
- f. A new business for profit is created that guarantees local or community employment.

Approach to Solution:

A wide range of interventions can reduce the excruciating impact of indoor air pollution in Nigeria. Collection of municipal biomass wastes and rural agricultural wastes, converting them to briquette fuel for use in an improved clean cookstove reduces the emission hazards and health impacts of the Nigerian people that depend on unprocessed cooking fuel using inefficient cookstoves. From our experiences at Zenith Agroethanol Nigeria Limited, such intervention requires full participation of local people (particularly women), collaboration between government agencies with responsibility for agriculture, finance, health, energy, environment, housing, planning etc., and with emphasis on market sustainability. One of such interventions is the use of different biomass wastes to produce this briquette as fuel in improved cookstoves in Nigeria.

Briquette Making Machine



Palletising Briquette



Biomass “WASTES” For Producing Briquette in Nigeria:

- a. Sawdust
- b. Rice husk
- c. Cassava peels
- d. Shredded paper
- e. Agricultural wastes
- f. Charcoal
- g. Corn stovers
- h. Elephant grass
- i. Wheat wastes
- j. Sugarcane wastes
- k. Palm kernel shells

Identified Market For Briquette In Nigeria

- a. Home cooking in all the 774 local government in Nigeria
- b. Bakeries
- c. Prisons and boarding schools and any other places where large cooking is required.
- d. Industrial fuel source for boilers and the other heating purposes.

RECOMMENDATIONS FOR THE SUCCESS OF COOKSTOVES INTERVENTION IN NIGERIA:

The success of this intervention at any level of government or private sector, the following are important:

- a. Awareness/Policy creations. (If intensive and persuasive sensitization is not done, before cookstoves distribution, the project may fail!) Such awareness will sensitize the rural dwellers about living environment (better ventilation) and

cookstoves user behaviour (keeping children away from smoke during peak cooking times).

b. Effective distribution of the cookstoves and proper documentation of the beneficiaries for tracking purposes that can lead to carbon credit (CDM).

c. Formation of state and geopolitical markets for these modern cookstoves.

d. Business activation that will spur regional production of these cookstoves and their accompanying fuels must be considered.

e. Cookstoves design must meet local community's conditions.

f. No cookstoves without barcode or batch number should be received during cookstoves procurement receipt to store or during distribution to the beneficiaries so as to allow 2-ways traceability in the event of product recall.

g. There must be a national clean cookstove launching that will bring all the Commissioners of environment from the 36 states, national assembly and presidency to a forum to see and believe in this direction.

h. It makes a lot of senses to consider producing both cookstoves and fuels within the 6 geopolitical zones in Nigeria through Private sector. This will create employment value chain and guarantee a sustainable development. This is a non-oil business opportunity for Nigerians.

i. Regionalise the cookstoves distribution to the beneficiaries among the 6 geopolitical zones. For instance it makes sense to develop the use of improved firewood stoves, in the Northern (NW, NE, few states in NC) Nigeria than distributing LPG there. Similarly LPG can be localized to SS, SW,SE. It is in the northern Nigeria that we have extreme poverty, diseases, illiteracy, acute insecurity, deforestation and adverse weather conditions.