

Energy Efficient Firewood Stoves

Cooking for most of households in Tanzania is basically fuelled by burning wood. Open fire places are most common traditional technology used by majority of people in Tanzania. One of the problems of cooking over an open fire place is the increased health problems caused by the smoke, particularly lung and eye ailments, but also birth defects. Replacing the traditional three-stone fire-place with an energy efficient firewood stove with chimney for venting the smoke out of the house can dramatically contribute to the improvement of family's health.

Energy efficient firewood stoves and improved woodfuel saving stoves are terms used to describe stoves designed for reducing woodfuel in households, institutions and business enterprises settings to reduce the health impacts of smoke from open fires. Energy efficient firewood stoves are of three types depending on type of construction materials and their costs. These are Kuni Chache stoves, low cost mud stoves (Ukombozi) and improved okoa firewood stoves.

Kuni-Chache Firewood Stoves

There are two designs of Kuni Chache stoves called Kuni Moja and Kuni Mbili Stoves. These are simple designs made by putting together ceramic liners and metal cladding (outer metal part) to produce a firewood stove that is more efficient than traditional three-stone open fireplace. It has a distinctive conical shape, with different diameters at the top compared to bottom of the stove.



These designs burn the firewood (or other fuel) more efficiently with firewood consumption reduction rate of almost 50 percent. Only one or two pieces of firewood are inserted in the fire chamber during cooking and which means reducing number of bundles of firewood consumed by open three stone fire-places.

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Low Cost Mud Stoves (Ukombozi)

The low cost mud stoves (also known as Ukombozi Stoves) are mostly constructed for household uses by clay soil (anti hill soil). Other raw materials for constructing these stoves are ash, stones, Okra (or mlenda) leaves, water and fresh cow dung. All these materials are locally available and can be obtained from rural areas freely.



Earth wall is made by mixture of soil and ashes and strong materials around the pot. Surrounding fire with wall of clay soil protects the fire from the wind. The combustion chamber with chimney shape greatly increase amount of heat that gets into the pot due to chimney effect and insulation materials on the wall helps to reduce heat loss. The stove can as well reduce firewood consumption by more than 50 percent depending on firewood moisture content and tree species.

Improved Okoa Firewood Stove

Okoa are other types of firewood stoves promoted by TaTEDO. These stoves can reduce firewood consumption by more than 65 percent. Basically, construction costs for building Okoa stove depend on the price of raw materials which include cement, lime, sand and iron bars. Labour costs depend on the negotiation between stove masons and the beneficiary and size of the stove. Okoa 1 type costs less compared to okoa 2 and okoa 3.



Okoa 1

The stove is made of stones or bricks depending on availability of these materials in the particular area. The stove is used for cooking and heating. It has a chimney for expelling the smoke out of the kitchen. The stove can be used in households,

institutions and business centres

Okoa 2

This stove was improved from okoa 1 and apart from bricks, stones and chimney, okoa 2 has additional feature of water tank. It is possible to use this stove for cooking, heating and boiling water for different domestic purposes.



The stove can be used for cooking and heating in the households and business enterprises.

Okoa 3

Okoa 3 is a multipurpose firewood technology used for cooking, heating, baking and boiling water.



The structure has three cooking pot plates, a chamber for baking bread, cakes, etc and a tank for boiling water. Okoa 3 is meant for institutions and business enterprises (especially food vendors).

Benefits

It has been proven that the energy efficient firewood stoves burn woodfuels more efficiently. Important features of these stoves include a chimney to expel the smoke and fire chamber designed for burning woodfuel efficiently.

The main objective of most energy efficient firewood stoves is to reduce the pressure placed on natural forests by reducing the amount of wood the stoves consume. As noted, firewood consumption reduction rates range from more than 50 to 65 percent.

The money, a household spends on firewood means less money being available to be spent on food, education, and medical care; so saving through energy efficient stoves is seen as a way of boosting household income.

The negative impacts which is reduced by using energy efficient firewood stoves which include fuels consumption reduction, changes to the kitchen environment (e.g. use of a chimney), saving time for firewood collection and changes to user behaviour (e.g. drying firewood before use, increased women and men discussion in the kitchen because of clean air due to less smoke in the kitchen, etc).

Most of stove masons are engaged in the business of constructing and selling energy efficient firewood stoves. Advantage of this business is that all raw materials are locally procured from the local shops and some are freely obtained from the target areas. Therefore, stove entrepreneurs can make a lot of money from the business of constructing and using these stoves in households, business entities (restaurants, hotels, tie and dye, etc) and institutions (school, health centres, prisons, etc).

About TaTEDO

TaTEDO is a sustainable modern energy national development NGO based in Dar es Salaam, Tanzania with more than 19 years actively involved in the sustainable modern energy development projects and programmes in the rural areas.

Vision

Poverty free and self-reliant communities in Tanzania accessing sustainable modern energy services

Mission

To advance popular access to sustainable modern energy technologies in marginalized communities in Tanzania, through energy technological adaptations, capacity building, community mobilization and advocacy for increased access to sustainable energy services, poverty reduction and self reliance.

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TaTEDO- Centre for Sustainable Modern Energy Expertise



ENERGY EFFICIENT FIREWOOD STOVES (Kuni Chache, Ukombozi and Okoa)

Use Energy Efficient Firewood Stove for Saving Woodfuel and Money, Mitigating Environmental Adverse Effects and Reducing Poverty



A woman in Kilimanjaro cooking in Improved Woodfuel saving stove constructed through voluntary market project

*Those who succeed are those who walk through the door of opportunity when it swings open. If you are looking for a legitimate way to success, pass through the door of producing or using **energy efficient firewood stoves**.*

*Don't let fear of business risks overcome your success!
Start with this idea today.*