

Online Catalogue:

LOCAL SUSTAINABLE SOLUTIONS IN EAST AFRICA - Cooking

www.localsolutions.inforse.org

Collection of Successful Cases of Sustainable Energy and Climate Solutions in Kenya, Uganda, and Tanzania.

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Aniga Energy Efficient Cookstoves





Why to choose this solution?

The Aniga cookstoves are efficient, affordable, and have been improved to reduce their average wood consumption, which will in the long run reduce deforestation. More immediately, with proper venting, it reduces dependence on and health damages from open-fire cooking, which otherwise often subjects women and children to bouts of coughing and eye irritation.

Savings per day or production:

The stove uses around a third of the wood consumed by a traditional cooking fire. It saves up to 50% of the fuel.

Cost in money and in own time to construct:

The stoves are sold at a price between KSh 1500 - 2000 (USD 15 - 20).

Lifetime:

10 years.

Maintenance needed:

Repair of the clay liner as needed.

Resources needed in use:

Fuelwood.

Problems and limits:

The stove produces some smoke, therefore good ventilation is needed in the kitchen.

Where and how can you get it or make it?

It is available at Aniga Community Based Organization (CBO) in Seme sub-county, Kisumu County, Kenya.

Skills needed to produce, install. maintenance, use:

Production of the stoves requires training in stove production, done by Carbon Zero (Kenya). Use of the stoves requires only a short introduction.

How to use it:

To be added.

How to maintain it:

To be added.

Climate effect (if any):

The use of stoves reduces carbon emissions and saves about 50% of fuelwood. Hence, fewer trees are cut.

Why is it successful?

Successful because they are affordable, and lower than an open fire in smoke generation. The raw materials

are available locally in Kisumu.

If you can make it, a short description, typical problems, materials needed:

It is a simple process that involves sourcing sand from the lake shores as well as buying a few bags of cement and the metallic parts. Manufacture involves kneading clay, mixing concrete, and binding these to come up with the stoves.

How to make it (if possible):

To be added.

How is it delivered and by whom?

The Aniga Women Initiative has more than 50 members, who make energy-saving cooking stoves and sell them directly to consumers at affordable prices. The women have been trained on stove production, marketing, and promotion.

Successful financial model

Support for development: Financial support, and training by the UK organisation Global Footsteps.

What policies and strategies helped the success?

Effective collaboration among the women in Aniga Women Initiative, and effective collaboration between the Aniga women members and the UK-based international organization, Global Footsteps. Thorough training in stove production and marketing.

More info:

https://anigawomeninitiative.or.ke/shop/environment/cookstoves/ and
https://global-footsteps.org/index.php/2020/05/04/aniga-women-initiative/ .
https://co2balance.wordpress.com/2016/06/14/making-it-work-local-community-engagement-and-leadership/

Sources:

Aniga Women Initiative, Seme, Kisumu, 40100, Kenya. Tel: + 254 717-103667, E-mail: info@anigawomeninitiative.or.ke

Case uploaded:

2020-09-30

Efficient Fish-Frying Firewood Stove (SAFISTO)





Why to choose this solution?

SAFISTO is an efficient firewood stove designed for fish-frying purposes. Fish is a product that can spoil very fast, particularly in the tropical heat along the coastal districts. Fish-frying in Tanzania is one of the industries known to consume a significant volume of wood. Firewood is one of the main sources of energy for fish processing. The type of stoves used is an open fire which consumes a lot of firewood. SAFISTO stove has thermal efficiency ranging from 50% to 60% as opposed to a three- stone fireplace with thermal efficiency ranging from 10% to 15%. SAFISTO stove reduces firewood consumption by 50% and also has the ability to take smoke out from the kitchen. Furthermore, SAFISTO reduces usersâ€™ risk of burns.

Savings per day or production:

SAFISTO reduces firewood consumption by 50% per day compared to three-stone fire places.

Cost in money and in own time to construct:

SAFISTO can be constructed in different sizes. It is built using burnt bricks, sand, lime, cement, and wire mesh. Local masons charge labour between 60,000 TSh to 75,000 TShs (USD 26-32) per stove. Materials for constructing a SAFISTO that is 100 centimeters wide costs about 250,000 TSh (USD 108). Construction takes about two to three days.

Lifetime:

SAFISTO can last for more than three years if properly used and maintained.

Maintenance needed:

The chimney chamber needs to be cleaned regularly to avoid tar clogging and requires occasional repair in case of cracks in the stove.

Resources needed in use:

The stove use firewood.

Problems and limits:

Requires dry firewood chopped into medium size pieces. Performance of the stove might be affected if dimensions are not observed and followed during construction.

Where and how can you get it or make it?

The stove is available in Tanzania, designed and promoted by TaTEDO.

Skills needed to produce, install. maintenance, use:

Construction of SAFISTO stove requires skilled masons. Major repair and maintenance may also require skilled masons; otherwise, the trained operator may clean the chimney and do minor maintenance of the stove.

How to use it:

To be added.

How to maintain it:

To be added.

Climate effect (if any):

Contributes to reducing GHG emissions from wood sources. Reduces the amount of firewood required for fish-frying, leading to a reduced number of trees harvested for firewood demands.

Why is it successful?

SAFISTO achieves efficient firewood combustion and maximizes heat transfer to the fish-frying pan.

If you can make it, a short description, typical problems, materials needed:

N/A

How to make it (if possible):

How is it delivered and by whom?

Main actors include TaTEDO, local trained artisans, fish processors and beach management units (BMUs). BMUs are involved in mobilizing the fish processors within their localities and in monitoring the performance of thestoves. TaTEDO is responsible for awareness-raising, stove demonstrations, and capacity-building of ToTs on construction and maintenance of the stove. Whenever new inquiries are received, the trained ToTs become responsible for providing the service.

Successful financial model

Grant and subsidies through the project were used to disseminate the SAFISTO during its introduction to the local communities.

What policies and strategies helped the success?

The role of improved cookstoves is realised in the national Energy policy of 2015, Tanzania SE4ALL action agenda, draft Biomass Energy Strategy (BEST), and the draft Energy Efficiency Strategy of 2018. Also, there has been support from various development partners.

More info:

https://www.tatedo.or.tz/

Sources:

TaTEDO, MbeziJuu, Mpakani Road, Goba, House No GOB/KZD/883, P. O. Box 32794, Dar es Salaam, Tanzania. Tel: +255 738-201498, E-mail: energy@tatedo.or.tz.

Case uploaded:

2020-09-17

Jiko Tosha





Why to choose this solution?

The multi-purpose fuel cooking stove (Jiko Tosha) is an improvement on the currently available rocket stoves that use a single type of fuel, either firewood or charcoal. Jiko Tosha stove accommodates the use of several fuel forms, animal wastes, firewood, charcoal/briquettes, sawdust, biogas, and LPG. Any of these will work in the same stove unit. The Jiko Tosha stove was born out of shortcomings identified in the stoves existing in the market. Its advantages are that it reduces indoor emissions, provides a safe and healthy environment to the consumer, accommodates more than one fuel source according to availability, and ensures that the users have access to economical and affordable cooking technology.

Savings per day or production:

Savings of about 70% of charcoal consumption per day for a normal family.

Cost in money and in own time to construct:

Costs KSh 5000 (About USD 50).

Lifetime:

About 5+ years.

Maintenance needed:

F&M Industries does not have local technicians throughout Kenya. If a part of the stove breaks or gets damaged, it can be shipped to the F & M manufacturing plant in Nairobi for repairs. To move the product from one place to the other, manufacturers use an existing local transport system. Replacements for all the components of the stove are available.

Resources needed in use:

Manufacturers specify that this four-in-one clean-energy stove was designed to use gas, charcoal briquettes, sawdust, or firewood as cooking fuels.

Problems and limits:

Safety concerns when using the product with biomass or charcoal as fuel are primarily related to harmful emissions of carbon dioxide, carbon monoxide, and sulfur dioxide, along with gas leakage during use with gas fuel. Another significant safety concern is domestic accidents such as accidental burning or spill-overs.

Where and how can you get it or make it?

The product is available at F & M industries along Lunga Lunga Rd, Industrial Area, Nairobi, Kenya. The users can purchase the product directly from the manufacturer and also buy online through the F & M industries website.

Skills needed to produce, install. maintenance, use:

The Jiko Tosha is manufactured in Kenya by a locally trained workforce. The manufacturing site consists of an assembly line and works on a batch production basis. Most of the parts are manufactured with power hand

tools, welding machines, and a semi-manual pressing machine, except for the outer casing and combustion chamber, which are manufactured using a sheet-metal-rolling machine. The use of the finished product requires a short introduction.

How to use it:

Jiko Tosha when using gas- https://youtu.be/2TAnT8oeBDw and Jiko Tosha when using firewood-https://youtu.be/w_bziRiCx3o and Jiko Tosha when using charcoal briquettes-https://youtu.be/U8h42ZeHLgk .

How to maintain it:

To be added.

Climate effect (if any):

Testing carried out by the Kenya Industrial Research and Development Institute (KIRDI) on the stove CO2 and particulate emissions (g/MJ delivered to pot) determined that, while using LPG as fuel, the CO2 emissions were very low (0.38). When tested using charcoal, the stove emissions were average and fairly good (9.09) respectively. Source: https://www.engineeringforchange.org/solutions/product/jiko-tosha/

Why is it successful?

Its success lies in functioning as a four-in-one stove that can run on gas, charcoal briquettes, sawdust, or firewood, hence not limited to one particular fuel type. This product is known for bringing immense savings and higher efficiency.

If you can make it, a short description, typical problems, materials needed:

The Jiko Tosha is a multi-fuel cookstove that integrates traditional components of a rocket stove with single-burner gas-stove components. Rocket-stove design contributes an insulated combustion chamber, elevated steel grate, ash collector, and cast-iron pot support; gas stoves inspire the single-burner stove components such as an LP burner and LP regulator. The design also includes a stainless-steel adaptable fuel bed for briquettes and charcoal. Specifications; Height: 30 cm Outside diameter: 26 cm, Weight: 5.807 kg.

How to make it (if possible):

https://youtu.be/FKLnsrWguvI

How is it delivered and by whom?

The product can be obtained directly from the manufacturer (F&M Industries) and it can be delivered to customers through courier service provided by F&M Industries Ltd. Users can also obtain the product from local Cooperative societies (SACCOS), through which they can pay for the product in installments.

Successful financial model

Testing by organizations like Kenya Industrial Research and Development Institute (KIRDI), Training and monetary support by Kenya Climate Innovation Center.

What policies and strategies helped the success?

Complies with the following cookstove rating for the International Workshop Agreements as a streamlined process of the International Organization for Standardization (ISO):O. Emissions: LPG (Tier 5), Charcoal (Tier 2) PM Emissions: LPG (Tier 4), Charcoal (Tier 3) Thermal Efficiency: LPG (Tier 5), Charcoal (Tier 3).

More info:

Read more: https://www.fmindustries.co.ke/index.php/homeup . F&M Industries Ltd is developing a bigger version of the Jiko Tosha named Biko Tosha Max, the aim of the design is to be better suited for institutional use.

Sources:

F&M Industries Ltd. Lunga Lunga Rd, Godown No. 105, Narobi. http://jikotosha.co.ke/, Tel: + 254 720 338108.

Case uploaded:

2020-09-08

KIDT Briquettes Energy Saving Stove





Why to choose this solution?

Energy saving stove make cooking comfortable and economical as it uses little amount of briquettes fuel with provision to take out smoke through chimney.

Savings per day or production:

Save energy by 60%, 1-2kg of briquettes is enough per day for a normal family.

Cost in money and in own time to construct:

The household energy saving stove cost 1,500,000/=Tshs. To build energy saving stove made of bricks, cement and lime takes three weeks (one week for construction, another week for watering the stove and one week left to dry).

Lifetime:

5 to 10 years without major repair

Maintenance needed:

After 5 years, repair of plastic nylon is needed.

Resources needed in use:

Rice husks briquettes

Problems and limits:

Since Energy saving stove constructed by KIDT is permanently fixed, no flexibility to move it from one place to another.

Where and how can you get it or make it?

It is available at Kilimanjaro Industry Development Trust (KIDT) Moshi- Kilimanjaro in Tanzania.

Skills needed to produce, install. maintenance, use:

Construction require skilled and well-trained artisans.

How to use it:

https://youtu.be/P0gRFVG5840

How to maintain it:

N/A

Climate effect (if any):

The stove can reduce wastage by 60% leading to reduced demand for fuelwood. The stove also use briquettes made form rice husks which is renewable resource. The stove save up to 50 kg of wood charcoal per day for a school.

Why is it successful?

It is successfully because it is useful for household and institutional as it consumes little amount of briquettes compared to traditional stove. It also reduce cooking time and contribute to efforts to reduce deforestation.

If you can make it, a short description, typical problems, materials needed:

Briquettes should be used as directed by KIDT officials, avoid the use of large quantity that will result into unwanted high temperature

How to make it (if possible):

https://kidt-vtc.blogspot.com/

How is it delivered and by whom?

KIDT conducts training and seminars on importance, how to use and maintaining energy saving stoves. Production of bricks and construction of stove is done by KIDT to ensure quality control

Successful financial model

Cost for construction and maintenance are paid by customer

What policies and strategies helped the success?

Global interest on overcoming deforestation. Tanzania Forest Policy 1997 and Bioenergy Strategy (BEST) 2015 which identify promotion of improved cook stove as a means to address wastage of biomass due to use of inefficient technologies

More info:

njaujean@mail.co.tz

Sources:

KIDT- Kilimanjaro Industrial Development

Case uploaded:

2022-05-02

Okoa V5 Efficient Household Firewood Stove





Why to choose this solution?

Okoa V5 is an efficient firewood stove designed for household cooking purposes. The Okoa V5 stove has thermal efficiency ranging from 50% to 60% as opposed to a three-stone fireplace with thermal efficiency ranging from 10% to 15%. Okoa V5 reduces firewood consumption by 50% and also has the ability to remove smoke from the kitchen.

Savings per day or production:

Okoa V5 reduces firewood consumption by 50% per day as compared with a three-stone fireplace. It also accommodates more than one pot at a time. Use of a V5 reduces the time required for cooking and lessens indoor air pollution.

Cost in money and in own time to construct:

Field experience shows that local masons charge between 25,000 TSh to 30,000 TSh (USD 10.75 to 13) per stove. Okoa V5 is constructed using burnt bricks, sand, and cement, costing about 200,000 TSh (USD 86). Construction of the Okoa V5 stove takes one to two days.

Lifetime:

When mud is the material used to make the stove, its life span is estimated to be one year, increasing to two years if burnt bricks are used.

Maintenance needed:

The chamber of the chimney needs to be cleaned regularly to avoid tar clogging. The stove requires repair in case cracks emerge.

Resources needed in use:

The stove uses firewood. Okoa V5 can be constructed in different sizes. Okoa V5 can be built using local materials including, e.g., clay, anthill soil, rice husks/ grasses/pieces of sacks, and sawdust/ashes. It can also be built using burnt brick, sand, and cement. Sometimes, depending on user needs, ceramic tiles are used for finishing. Materials used for the construction of the stove need to be prepared in advance.

Problems and limits:

Requires firewood that is dry and that has been chopped into small pieces. The stove may not light well if the firewood used is not well dried. Performance of the stove might be affected if dimensions are not observed and used in construction.

Where and how can you get it or make it?

The stove is available in Tanzania, promoted by TaTEDO.

Skills needed to produce, install. maintenance, use:

Construction of the Okoa V5 stove requires skilled masons. Major repair and maintenance may also require a skilled mason. Otherwise, the trained operator may clean the chimney and do minor maintenance of the stove.

How to use it:

https://www.youtube.com/watch?v=95oNeWyA7KI&feature=emb_rel_pause

How to maintain it:

The chamber of the chimney needs to be cleaned regularly to avoid tar clogging. The stove requires repair in case cracks emerge.

Climate effect (if any):

The Okoa V5 stove contributes to reducing GHGs emissions by reducing the amount of firewood required for cooking, leading to reduced harvesting of biomass.

Why is it successful?

The Okoa V5 stove achieves efficient firewood combustion by maximizing heat transfer to the food being cooked. Hence, firewood consumption is reduced. Reduced household energy budgets for cooking lead to reduced deforestation.

If you can make it, a short description, typical problems, materials needed:

Not relevant, needs a skilled technician.

How to make it (if possible):

Not relevant.

How is it delivered and by whom?

Capacity-building on technical, business, and managerial issues is offered to masons. Masons are identified at the village level, then trained to construct, repair, and maintain the stove. They are also provided with the stove manual and with tools such as moulds. Trained masons provide such services to the community at a cost which is normally agreed with villagers during the introduction of the stove to the village.

Successful financial model

A market-based approach is used to disseminate the technology. TaTEDO plays a part in monitoring, especially the quality of the stoves.

What policies and strategies helped the success?

The Tanzania National Energy Policy of 2015, Tanzania SE4ALL action agenda, Tanzania Nationally Determined Contribution (NDCs), Draft Biomass Energy Strategy (BEST) and the draft energy efficiency strategy of 2018 recognize the role of improved cookstoves as one of the primary interventions to enhance energy efficiency. In addition, there have been various supports in terms of finance and technical know-how from development partners.

More info:

http://www.tatedo.or.tz

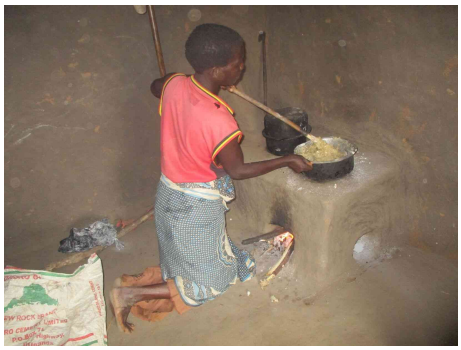
Sources:

TaTEDO, MbeziJuu, Mpakani Road, Goba, House No GOB/KZD/883, P. O. Box 32794, Dar es Salaam, Tanzania. Tel: +255738-201498, E-mail: energy@tatedo.or.tz .

Case uploaded:

2020-09-26

Rocket Lorena Two-Pothole Stove


Why to choose this solution?

The Rocket Lorena stove uses 50% less firewood compared to a three-stone cookstove. It cooks faster, since the fire is confined inside the stove, and produces less smoke. It is also easier to use than a three-stone fireplace, since the air inlet built into the stove eliminates the need to blow at the flames to keep the fire burning. It is safer to use, and it is affordable, since locally available materials are used. It also retains heat for a long time after cooking.

Savings per day or production:

According to Mrs. Mayanja Eva (a user trained by JEEP), the rocket Lorena stove uses 4-6 pieces of firewood for one to have a complete meal cooked. It saves energy and time because it has two potholes compared to the traditional (open) 3-stone fire stove. The Rocket Lorena stove is safe because, when it is made, an insulator i.e. dry grass is used, which creates air pockets. Hence, when cooking this prevents heat loss.

Cost in money and in own time to construct:

It costs between USh 20,000 - 30,000 (USD 5-8) to construct.

Lifetime:

4-6 years, unless it is left in rain or wet conditions.

Maintenance needed:

Any cracks must be repaired.

Resources needed in use:

Fire wood.

Problems and limits:

Produces smoke if constructed with no chimney.

Where and how can you get it or make it?

Skills needed to produce, install. maintenance, use:

Production needs a skilled/trained potter and maintenance and use needs a short introduction only.

How to use it:

How to maintain it:

Climate effect (if any):

Saves 50% of emissions, about 1.5 tons carbon-dioxide equivalent/year if saving is 2.5kg wood/day and there

is deforestation in the area Keeps heat for a long time.

Why is it successful?

It is made using locally available materials.

If you can make it, a short description, typical problems, materials needed:

Needs a skilled potter to construct using anthill soil, dry chopped grass / saw dust, water, and moulds.

How to make it (if possible):

How is it delivered and by whom?

Successful financial model

What policies and strategies helped the success?

NGO programs and support from development partners in training sessions.

More info:

JEEP, 7 Miles, Gayaza Rd, Kyanja, Kampala, P. O. Box 4264, Uganda. Phone: +256 (414) 578 316. E-mail: info@jeepfolkecenter.org, Web: https://jeepfolkecenter.org/

Sources:

Case uploaded:

2020-09-15

Rocket Stove by Caritas, Kitui





Why to choose this solution?

The stove emits less smoke, and consumes less firewood compared to the traditional stoves or cooking on three-stones. So it reduces incidences of diseases caused by smoke, and reduces work using it.

Savings per day or production:

This energy-saving Rocket stove reduces firewood consumption as it uses firewood in a smaller percentage.

Cost in money and in own time to construct:

With a subsidy from the Kitui Diocese, each stove costs KSh 3200 (about USD 32).

Lifetime:

About 5+ years.

Maintenance needed:

Repair the concrete part of the stove when broken.

Resources needed in use:

The stove uses firewood.

Problems and limits:

It Produces some smoke, so good ventilation is needed in the kitchen, the best is a kitchen hood. Some very poor households cannot afford the cost paid to the artisan after construction. As the training is donor dependent, there is a fear that once the project phases out, reaching out to other areas becomes a major challenge.

Where and how can you get it or make it?

Available in Kitui county and Maralal in Samburu county Kenya.

Skills needed to produce, install. maintenance, use:

Construction and maintenance of these Rocket stoves requires a well-trained artisan. The use requires a short introduction only.

How to use it:

To be added.

How to maintain it:

To be added.

Climate effect (if any):

The stove emits less smoke (black carbon smoke) and uses half the firewood of open fires or traditional fireplaces, which contributes to reduced climate change.

Why is it successful?

Because it uses less firewood, it takes women and children less time to fetch firewood, leaving them with more time for other activities. It also is easier to use, is relatively affordable, and emits less smoke.

If you can make it, a short description, typical problems, materials needed:

A standard rocket stove requires 50 bricks, a wheelbarrow of sand, ash, a bag of red oxide, and water.

How to make it (if possible):

To be added.

How is it delivered and by whom?

The stoves are constructed by Catholic Church in Kenya through Caritas departments in the dioceses, Kitui County and the Diocese of Maralal.

Successful financial model

Training the community, subsidy from the Kitui Diocese, successful partnerships, and support for development.

What policies and strategies helped the success?

Community sensitization by bishops and priests through groups such as Catholic women and men associations, Active campaigns for the stoves.

More info:

https://www.americamagazine.org/politics-society/2019/10/10/caritas-kitui-kenya-provides-energy-saving-cookstoves

Sources:

Caritas Kitui, Kenya. https://caritaskenya.or.ke/ Tel: +254 727 802810

Case uploaded:

2020-09-08

SeTa Improved Institutional Firewood Cookstoves (SeTA-IIFC)





Why to choose this solution?

SeTa-IIFC is an efficient firewood stove designed for institutions as well as for small and medium enterprises (SMEs) such as schools, colleges, prisons, hotels, restaurants, and any other mass- cooking places. The cookstove has a thermal efficiency of 54.82 %, which means it has the ability to reduce fuel consumption by more than 70% compared to three-stone fireplaces (TIRDO, 2020). The reduction of fuel consumption also implies that the stove contributes to a reduction of the institutionâ€™s cooking-energy budgets, allowing less time to be spent in cooking and contributing to environment conservation.

Savings per day or production:

According to evidence from stove users, the SETA-IIFC has the ability to save more than 70 % of fuel. For example, Mnolela Secondary school in Lindi Region, before it started using SETA-IIFC, required about 430 pieces of firewood each day for preparation of studentsâ€™ meals. Switching to the SETA-IIFC dropped that amount to 57 pieces per day. It means that if trees of 16 inchesâ€™ diameter at breast height (DBH) are harvested for firewood, this one institution reduces forest-harvesting from 2 trees to 0.25 trees per day.

Cost in money and in own time to construct:

The SeTA-IIFC is available in different sizes. According to the price list of 2020, the stove of 25 liters costs TSh 1,200,000 (USD 550), the 50 liters stove is TSh 1,600,000 (USD 730), a stove of 100 litres costs TSh 2,300,000 (USD 1045), and a stove of 200 liters costs TSh 3,500,000 (USD 1,600). The prices also include a stainless-steel pot. The fabrication of SeTA-IIFC stove and of its pot take about 5 days.

Lifetime:

The durability of SeTA-IIFC is more than 10 years.

Maintenance needed:

The chimney chamber needs regular cleaning to avoid accumulation of soot.

Resources needed in use:

Firewood or wood briquettes are used as fuel.

Problems and limits:

It requires a special pot, which means the pot has to be fabricated together with the stove. Bottom of the stainless steel pot has to be 3 mm thick to ensure its longevity.

Where and how can you get it or make it?

It is available at SEECO Company, Tanzania.

Skills needed to produce, install. maintenance, use:

The fabrication and assembling of the stove require skilled technicians. Major repair and maintenance may also require skilled technicians.

How to use it:

https://www.youtube.com/watch?v=PHzxpHBjrqk

How to maintain it:

Climate effect (if any):

The SeTA Improved Institutional Stove contributes to forest conservation. It reduces greenhouse-gas emissions, since the amount of firewood used for cooking is reduced.

Why is it successful?

It succeeds because the stoves have high efficiency due to good design for heat transfer, increased surface area for heat exchange, high efficiency of the combustion chamber for reduction of harmful emissions, and reduction of heat-energy loss by application of ceramic fibre blanket to areas where heat exchange take place.

If you can make it, a short description, typical problems, materials needed:

It needs a skilled technician to make it.

How to make it (if possible):

Not relevant.

How is it delivered and by whom?

SETa-IIFC is manufactured and delivered to end users by SEECO company.

Successful financial model

Support from development partners facilitated on-site placement of infrastructure, purchasing of some machines, marketing, awareness-raising, and training of the technicians. Income generated from sales of stoves covers the operational costs.

What policies and strategies helped the success?

The Tanzania Biomass Energy Strategy (BEST) and SE4All Action Agenda support production, business and utilization of efficient biomass stoves.

More info:

SEECO Company. Email: bioenergy@seeco.co.tz
https://sescom.co.tz/about-us/19-improved-and-modern-institutional-firewood-stoves-seta-is

Sources:

TaTEDO, MbeziJuu, Mpakani Road, Goba, House No GOB/KZD/883, P. O. Box 32794, Dar es Salaam, Tanzania. Tel: +255 738-201498, E-mail: energy@tatedo.or.tz, http://www.tatedo.or.tz

Case uploaded:

2020-09-29

Shielded Firewood Cookstove





Why to choose this solution?

The Shielded Cookstove saves firewood compared to a three-stone fireplace and produces much less smoke. The Shielded Cookstove makes cooking easier, since one does not need to keep blowing air to sustain the fire or to monitor the burning all the time. The Shielded Cookstove can be designed in such a way that it can use charcoal, briquettes or firewood, thus accommodating varying fuel sources in the local communities. It is movable, such that one can cook within the kitchen or outside the kitchen. The design minimises accidents and burns, since it is insulated and structured for safety.

Savings per day or production:

The Shielded Cookstove saves three times the amount of firewood than cooking on three-stones. It uses 3-5 pieces of firewood to cook a complete meal for a normal family.

Cost in money and in own time to construct:

The stove costs USh 10,000-20,000 (USD 2.7-5.5). It takes about 3-5 hours for a skilled person to construct a shielded cookstove.

Lifetime:

5 years, if it does not fall down during moving and is not left outside during raining.

Maintenance needed:

In case of any crack developing on the stove, fill it with a piece of soil that that was used during construction. This is encouraged to be done between the time of construction to the time when the stove is completely dry and even during the period of stove usage.

Resources needed in use:

Dry pieces of firewood, charcoal, or briquettes.

Problems and limits:

Smoke production depends on the nature of fuel used. However, this stove reduces the smoke as much as possible. Good kitchen ventilation is important, and users should always use dry firewood. There are quality problems with potters that do not follow precise guidelines and measures to make it correctly, which results in consumersâ€™ feeling discouraged about the use of shielded cook stoves.

Where and how can you get it or make it?

JEEP promotes these stoves through training of trainers (TOTs) in various parts of Uganda. Contact us to get you to our nearest service provider (TOT) to your location.

Skills needed to produce, install. maintenance, use:

Production needs a skilled person; maintenance and use need short introduction only.

How to use it:

Not relevant.

How to maintain it:

Not relevant.

Climate effect (if any):

Reduces greenhouse gas emissions around 1,4 tons CO2/year.

Why is it successful?

It is successful because of its efficiency, limited smoke (cleaner) and affordability. It is also portable, which means that one can use it both in the kitchen and outside the kitchen.

If you can make it, a short description, typical problems, materials needed:

Needs a skilled person to make. Materials needed to make it include; dry grass, leaves, sawdust, coffee husks, rice husks, water and anthill, clay soil.

How to make it (if possible):

To be added.

How is it delivered and by whom?

Business model is production by TOTs (Trainers of Trainers) who will build these stoves in the homes of those who will have picked the interest in the energy saving shielded stove. The price of the stove will like be negotiable depending on the distance moved, availability of materials, assistance given and financial status of someone. Skilled potters / TOTs are also crucial in maintaining the quality.

Successful financial model

Support for development, trainings, and establishment of organised TOTs union.

What policies and strategies helped the success?

Government has set strict laws against deforestation. The government has encouraged the researchers / NGOs / CSOs to come to come up strategies of minimising wood (fuel) consumption during the cooking. Additionally, many actors from the private sector are taking part in the fight for climate change and are trying their best to promote efficient clean energy technologies.

More info:

Read more: JEEP, 7 Miles, Gayaza Rd, Kyanja, Kampala, P.O. Bpx 4264, Uganda. phone: +256 (414) 578 316 E-mail: info@jeepfolkecenter.org. Web: https://jeepfolkecenter.org/

Sources:

Support for development, trainings, and establishment of organised TOTs union.

Case uploaded:

2020-10-15

Upesi Stove





Why to choose this solution?

The Upesi Stove meets the needs of its users for a clean, efficient, and fast-cooking stove that saves 40% firewood and that produces upto 60% less smoke compared to the three-stone open fire.

Savings per day or production:

Savings of up to KSh 7,200 (USD 72) per year. Rural wages average KSh 600 (USD 6) per month. KSh 20 (USD 0.20) on firewood per day.

Cost in money and in own time to construct:

Costs KSh 1000-4000 (USD 10-40).

Lifetime:

4 years.

Maintenance needed:

Occasional repair of ceramic liners.

Resources needed in use:

Dry firewood; can also burn crop waste, such as maize stalks and cobs, and animal dung.

Problems and limits:

Produces some smoke, so good ventilation is needed in the kitchen.

Where and how can you get it or make it?

Skills needed to produce, install. maintenance, use:

The production of ceramic liners requires pottery skills and training in stove installation. The ceramic liners are bought by marketing groups or installers. The ceramic liner is then installed into a hearth made from mud and stone.

How to use it:

https://youtu.be/TRXP8l4MKfc

How to maintain it:

Not relevant.

Climate effect (if any):

Fuel savings of 90 kg per month for each household using Upesi stoves, representing 40 % savings in fuel use, which can have a positive environmental and climate effect in terms of less felling of trees.

Why is it successful?

It is efficient, low in smoke, and affordable. The manufacturers are also known to the local market for the

quality of their products.

If you can make it, a short description, typical problems, materials needed:

Materials needed include clay liner, water, flat or round stones, anthill soil, and either murram or a mixture of soft sub-soil, sand and ash. It needs a skilled potter to make it.

How to make it (if possible):

To be added.

How is it delivered and by whom?

A number of organisations involved in renewable energy purchase the products directly for onward selling. In total, the group has 42 stable customers who purchase from them on a regular basis. Global Village Energy Partnership (GVEP) also facilitates networking for all players in the value chain, in order to ensure effective reach of energy products to the market. They have links with artisans in Kisumu town who buy their stoves in bulk. Actors or intermediaries involved in the marketing chain include stove producers, distributors, retailers, promoters, and installers.

Successful financial model

What policies and strategies helped the success?

The marketing strategy was based on insights gained from a visit to an ITDG / Practical Action stove project in Sri Lanka by produce and sell the stoves commercially within rural areas.

More info:

http://www.bioenergylists.org/stovesdoc/Kenya/05_Kenya.pdf , https://youtu.be/TRXP8l4MKfc .

Sources:

Keyo Pottery Women Group, Kisumu, Kenya.

Case uploaded:

2020-08-18

Wisdom Stove (Malaika Jiko, MJ/M2)





Why to choose this solution?

The MJ and M2 cookstove models are TLUD (Top Lift Upward Draft) gasifier biomass cookstoves. Using a few small sticks of firewood, the stove burns the wood, converting the smoke into a synthetic gas, which burns with minimal emission and a clean flame, allowing efficient cooking. As the wood burns, it is converted to charcoal through a thermal process called pyrolysis. The user thus produces charcoal while cooking with firewood. The charcoal continues to burn in the stove, which provides heat for extended cooking or can be saved for future use.

Savings per day or production:

According to the manufacturer, this cookstove saves up to 75% of fuel and also creates significant cost savings (1 sack of charcoal in KSh = cost of one MJ).

Cost in money and in own time to construct:

The Wisdom TLUD gasifier stove retails at KSh 3,500.00 (USD 35) and is exempt from Value Added Tax (VAT), a ruling made by the government of Kenya in June 2016.

Lifetime:

5 Years.

Maintenance needed:

The ceramic chamber can be replaced.

Resources needed in use:

The stove burns sticks of firewood (ideal wood is dry and broken into matchbox-sized pieces), maize comb, crostems, coffee husks, or dried biomass briquettes.

Problems and limits:

Wisdom also links up with Micro Finance Institutions (MFIs) to get access to more consumers, but unfortunately the MFI would not let Wisdom contact these customers directly to gauge end-user feedback, and this resulted in poor after-sales support. Wisdom teamed up with a Savings And Credit Cooperative Society (SACCO); however, this relationship also ended when it was found that the SACCO was not carrying out a key component of sales (stove demonstrations), which resulted in lack of understanding by end-users on how to use the stove correctly.

Where and how can you get it or make it?

The stoves are manufactured and distributed by Wisdom Innovations. The manufacturing facility is based in North Kinangop (Nyandarua County) in Kenya and expansion plans are currently on-going in Zimbabwe. The company has sold stoves all over the country, but decided to focus on four specific counties - Nakuru, Nyandarua, Narok, and Kiambu - in line with their current production capacity. It is possible to contact local technicians through customer care (contacts below).

Skills needed to produce, install. maintenance, use:

Production and maintenance require engineering skills and training in metal crafts. The user manual for Malaika Jiko stove is available in both English and Kiswahili. Instructions on how to use the MJ stove are available on the webpage of WisdomStoves.

How to use it:

https://youtu.be/d7ZitRn4Nnw

How to maintain it:

To be added.

Climate effect (if any):

The stove burns the wood, converting the smoke into a synthetic gas which burns with minimal emissions and a clean flame.

Why is it successful?

It burns with minimal emissions and clean flame, allowing efficient cooking. As the wood burns, it is converted to charcoal which continues to burn in the stove, and provides heat for extended cooking or can be saved for future use. Eliminates wait time for cooking, greatly reduces destruction of wood growth compared with current methods of charcoal production, and greatly reduces harmful smoke.

If you can make it, a short description, typical problems, materials needed:

The MJ is placed on top of a traditional improved Kenya jiko with a ceramic insert. Make sure the fit is snug and secure. Doors on the two stoves should be aligned and open. The M2 works independently, as the design includes a ceramic insert.

How to make it (if possible):

https://youtu.be/QrSHJFNqAFI

How is it delivered and by whom?

The company uses two business models; direct sales and low-cost credit. The stoves are distributed through microfinance institutions, SACCOs, dairy co-operatives/societies, and other organized groups. The stoves are delivered along with a training and follow-up session. Because the Wisdom Stove works quite differently from many other improved cookstoves available in the market, the company recognises the need for behavioural change by end-users, who are usually women. Most of their sales are done through referrals from satisfied end-users.

Successful financial model

Wisdom has established strong partnerships with many organisations, such as Kenya Forest Service and Kenya Climate Innovation Centre (KCIC). The SACCO provides, among other services, technical support, market platforms, networking opportunities, training, and mentorship, as well as an office space in Nairobi.

What policies and strategies helped the success?

Exempt from Value Added Tax (VAT), a ruling made by the government in June 2016 that has facilitated the growth of the innovative clean cookstoves (ICS) sector. Constant consumer awareness-raising and training is their priority, and they take pride in maintaining continuity with all their customers.

More info:

https://wisdomstoves.org

Sources:

Wisdom Stoves Kenya, P.O box 71, North Kinangop 20318, Kenya. Tel: +254 723241907.

Case uploaded:

2020-08-24

Burn Jikokoa







Why to choose this solution?

Burn Jikokoa are Rocket-type cookstoves for burning charcoal. They are long-lasting, use about 50% less charcoal, and cook faster than the ordinary Jiko. The Jikos come with a no-mess ash tray and reduce carbon-dioxide emission for a cleaner cooking environment. They have non-slip pot stands which grip all sufurias (cooking pot) firmly to ensure that you have a safer cooking experience. Available in black and red.

Savings per day or production:

Jikokoa uses about 50% less charcoal than the ordinary Jiko equivalent.

Cost in money and in own time to construct:

The Jiko costs KSh 3,500 (USD 35).

Lifetime:

3-4 Years, a 1-year warranty from date of purchase.

Maintenance needed:

Repair of broken parts.

Resources needed in use:

Charcoal.

Problems and limits:

The price of a Burn Jikokoa is a barrier for low-income households.

Where and how can you get it or make it?

Are available countrywide through an online selling platform called Jumia and also in the local supermarkets. The manufacturing facility for Jikokoa is situated at Ruiru town in Kiambu county, Kenya.

Skills needed to produce, install. maintenance, use:

Parts are installed by skilled certified technicians. Use of the Jiko requires a short introduction only.

How to use it:

Video: https://youtu.be/ZdBJ9G40GEs https://youtu.be/ufwU1WtFXpQ

How to maintain it:

Not relevant.

Climate effect (if any):

According to tests conducted by Berkeley Air and the University of Nairobi, the Jikokoa reduces PM 2.5 emissions by about 65% compared to the improved ceramic Jiko. They also use about 50% less charcoal, thereby reducing the number of trees cut. One Jikokoa stove reduces greenhouse emissions by up to 4.46 tons of CO₂ /yr.

Why is it successful?

Successful because they are fuel efficient, long lasting, and provide a cleaner cooking environment.

If you can make it, a short description, typical problems, materials needed:

Not relevant.

How to make it (if possible):

For illustration https://youtu.be/9LKP49NJMi4 and https://youtu.be/HRx2BhrJp3o

How is it delivered and by whom?

Business model is produced by skilled technicians. The facility has employed over 300 people, 60% of whom are women. Consumers can purchase online or through the organization through 180 distributors, including all of the major supermarkets and various small kiosks. Burn Jikokoa has a customer-service representative available for telephone contact.

Successful financial model

The Jikokoa has all the attributes, design, and pricing to produce the right packages for the customers. Over 900,000 sold since 2014.

What policies and strategies helped the success?

Burn followed Global Alliance for Clean Cookstoves design and performance standards of improved cookstoves.

More info:

https://youtu.be/9LKP49NJMi4 and https://youtu.be/HRx2BhrJp3o . https://burnstoves.com/, https://burnstoves.com/products/charcoal-stoves/jikokoa-classic

Sources:

BURN Stoves manufacturer. To view working models, visit site at the address: Go Downs 8-11, New Horizons Industrial Park, Ruiru, Kenya. P. O. Box 1921-00232. Phone: +254 706 585 629. Email: kenya@burnmfg.com. and globalsales@burnmfg.com.

Case uploaded:

2020-08-19

Efficient Household Charcoal Stove / SeTa-mkaa (2nd generation)





Why to choose this solution?

SeTa-mkaa is an efficient charcoal-burning stove designed for household cooking purposes. The cookstoves have a thermal efficiency of 50.8 % (TIRDO, 2021), which means they can consume less fuel than traditional metal stoves. Reduction of fuel consumption contributes to a reduction of household cooking-energy budgets.

Savings per day or production:

The material used in SETA-mkaa to conserve heat is a fiber blanket. The efficiency of SETA-mkaa stove is almost twice that of an improved charcoal stove made with clay liner. It can save more than 50% of fuel which would have been required to prepare meals per day.

Cost in money and in own time to construct:

According to the SEECO company 2020 price list, the stove is sold TSh 150,000 (USD 66). Fabrication of one piece of SeTA-mkaa stove is estimated to take half a day.

Lifetime:

The durability of SeTA-mkaa ranges from five to seven years.

Maintenance needed:

May need to repair the firing chamber in case it is overheated and damaged.

Resources needed in use:

Seta mkaa can use either wood charcoal or briquettes.

Problems and limits:

Pot bottoms of less than 2.5mm may melt with time due to high heat produced by the SeTa-mkaa stove.

Where and how can you get it or make it?

It is available in Dar es Salam, Tanzania through SEECO Company.

Skills needed to produce, install. maintenance, use:

Production of SeTA-mkaa, major repairs and maintenance requires skilled technicians.

How to use it:

https://www.facebook.com/watch/?v=521607365242679

How to maintain it:

Climate effect (if any):

SeTA mkaa stove uses less charcoal, therefore contributing to forest conservation by virtue of using fewer trees over time.

Why is it successful?

The design succeeds because of the stovesâ€™ high efficiency due to good design for heat transfer, increased surface area for heat exchange, high efficiency of the combustion chamber for reduction of harmful emission, and reduction of heat energy loss by application of ceramic-fibre blanket to areas where heat exchange takes place.

If you can make it, a short description, typical problems, materials needed:

Some of the materials needed include thick sheet iron and ceramic-fibre blanket. Several types of machines are required for cutting, moulding and joining different parts of the stove.

How to make it (if possible):

Not relevant, needs a skilled technician.

How is it delivered and by whom?

The business model involves production that starts at the workshop as well as marketing which is undertaken by SEECO social enterprise to ensure sales and continuous supply of quality stoves. Distribution goes through company sales points, and stove sales agents located in various locations within the country.

Successful financial model

Support from a development partner has been utilized as capital for purchasing some machines, for market promotion, for awareness-raising and for training of the three technicians.

What policies and strategies helped the success?

The production and marketing of improved cookstoves is supported by sectoral policies of business, environment, forest, and SMEs. Biomass Energy Strategy and SE4All Action Agenda (Tanzania) support the use of improved cookstoves.

More info:

SEECO Company, Email: bioenergy@seeco. co.tz, https://www.facebook.com/SEECOtz/, http://www.tatedo.or.tz

Sources:

TaTEDO, MbeziJuu, Mpakani Road Goba House No GOB/KZD/883, P. O. Box 32794, Dar es Salaam, Tanzania. Tel: +255 738-201498, E-mail: energy@tatedo.or.tz .

Case uploaded:

2020-09-26

Improved Charcoal Baking Oven (ICBO)





Why to choose this solution?

The Improved Charcoal Baking Oven (ICBO) is an efficient charcoal-fueled oven designed for households, institutions, and SMEs for baking bread, cakes, other foodstuffs such as nuts (groundnuts, cashew-nuts, etc.), potatoes, and bananas. The oven has the advantage of less charcoal consumption due to its ability to conserve heat. This ICBO also serves other purposes like cooking, heating, roasting, and baking.

Savings per day or production:

The oven has a thermal efficiency of 30 %. For less than half an hour, it uses only 600 grams of charcoal to bake 12 loaves of bread of 400 grams each.

Cost in money and in own time to construct:

The ICBO is available in different sizes. According to the price list of 2020, the small oven, which accommodates 12 bread loaves, costs TSh 350,000 (USD 152). The medium size, which accommodates 24 bread loaves, costs TSh 500,000 (USD 220). Local artisans take about a week to manufacture one oven.

Lifetime:

The ICBO, used intensively, can last for 5 years and for more than 10 years if used minimally.

Maintenance needed:

After two years, repair of the firing chamber might be necessary for an oven which has been used intensively. Regular cleaning of the baking chamber after baking is always required.

Resources needed in use:

Charcoal or charcoal briquettes as fuel.

Problems and limits:

Compared to an electric oven, there is a need to get used to the charcoal oven in regulating temperature for perfect results.

Where and how can you get it or make it?

It is available at SEECO Company, Dar es Salaam in Tanzania. The stove can be ordered from the SEECO company.

Skills needed to produce, install. maintenance, use:

Fabrication and repair of the oven requires skilled artisans. Use of the oven requires short training.

How to use it:

https://www.youtube.com/watch?v=YQBfRM81fzQ

How to maintain it:

Climate effect (if any):

ICBO uses less charcoal compared to traditional ways of baking. It contributes to forest conservation, as it reduces the amount of fuelwood which would have been required for baking where normal stoves are used.

Why is it successful?

It succeeds, in part, because it is suitable for small scale-baking businesses. It can be used in areas where there is no- or unreliable electricity. The ICBO has a high potential for generating income for users while cutting energy budgets, saving time, reducing emissions, and conserving forests.

If you can make it, a short description, typical problems, materials needed:

Making it needs a skilled technician.

How to make it (if possible):

How is it delivered and by whom?

The business model starts with production at the workshop and marketing by SEECO Company that ensures sales and maintains a continuous supply of quality ovens. SEECO either supplies the oven to end-users or distributes to end-users through sales agents. This is followed by training on how to use and maintain the oven. The main actors are the company, transporters, sales agents, and end-users including households, institutions and SMEs.

Successful financial model

Initial capital for infrastructure development, including the workshop buildings and equipment, partly was covered by grant funds. Operational costs are recovered from revenue generated through selling of ovens.

What policies and strategies helped the success?

The Tanzania Biomass Energy Strategy (BEST) and Sustainable Energy for All (SE4All) Action Agenda support development of the biomass-energy sector on demand- and supply sides. For many years, the sector also has been receiving great support from donor communities.

More info:

SEECO Company, E-mail: bioenergy@seeco.co.tz. https://www.facebook.com/SEECOtz/ , https://sescom.co.tz/seeco . http://www.tatedo.or.tz

Sources:

TaTEDO, MbeziJuu, Mpakani Road Goba House No GOB/KZD/883, P. O. Box 32794, Dar es Salaam, Tanzania. Tel: +255 738-201498, E-mail: energy@tatedo.or.tz

Case uploaded:

2020-09-26

Jiko Bora





Why to choose this solution?

The Jiko Bora stove is a metal ceramic charcoal-burning stove with efficiency ranging from 35% to 44% compared favorably to traditional charcoal stoves whose efficiency ranges from 18% to 22%. The higher efficiency of the Jika Bora stove contributes to reduced charcoal consumption.

Savings per day or production:

Savings of 50 % charcoal compared to traditional metal charcoal stoves.

Cost in money and in own time to construct:

The stove is available in various sizes, ranging from 9, 10, 11, 14, 18, and 22 inches in diameter. Depending on the size of the stove, the prices of the stoves start at 15,000 and can run up to TSh 150,000 equivalent to USD 6.5 to 65. The stoves have ceramic or clay liners enclosed with a metal body. The process to make the stove involves preparing the clay liner, partial sun drying, hardening by firing in the kiln, making the outer metallic body, and assembling the two parts together. Normally, preparation of liner and cladding (metal part) is done by two different production sections. It is estimated that producing one stove might take about 2 hours.

Lifetime:

1-4 years, unless dropped, overloaded with charcoal, or water poured frequently.

Maintenance needed:

If the clay liner breaks while the outer metallic part is still strong, it is possible to replace new one.

Resources needed in use:

Charcoal is the material needed to fuel the stove.

Problems and limits:

Where and how can you get it or make it?

Available in Tanzania, produced by SEECO company and other local entrepreneurs.

Skills needed to produce, install. maintenance, use:

Production requires a skilled potter and trained sheet-metal workers. To produce Jiko Bora stoves, 3-5 days of workshop training are needed. Maintenance and use require only a short introduction.

How to use it:

https://www.facebook.com/TaTEDO/videos/778253385604075

How to maintain it:

Climate effect (if any):

The stoveâ€™s higher efficiency rating reflects engineered improvement over previous models in its more effective conversion of charcoal to heat. Its emissions of smoke and of greenhouse gases are lower than those of older types of stove. Use of Jiko Bora also reduces the amount of charcoal that would have been required for cooking in traditional stoves, thus contributing to reduced deforestation.

Why is it successful?

It is successful because it is more efficient than traditional stoves in fuel consumption, thus saving money which would have been required to purchase charcoal. Increases in the prices of charcoal and of other fuels, particularly in urban areas, also motivates buyers.

If you can make it, a short description, typical problems, materials needed:

Sheet-iron, pottery-clay soil, and insulation/binding material (mixture of cement, vermiculate/rice ashes and water), along with training.

How to make it (if possible):

Requires short trainings.

How is it delivered and by whom?

The main actors in the supply chain for Jiko Bora include suppliers of raw materials, stove producers (SEECO, Sahara, etc.), stove sales agents, and end- users. Producers normally sell Jiko to the sales agents and then end-users buy from the sales agents. It is also possible for end-users to buy direct from the company. Sales agents are available everywhere in the country.

Successful financial model

Initial support was provided by development partners. In the past, the sector received some support from development partners, including investment capital to establish stove-production workshops, capacity-building, stove demonstrations, and awareness-raising. Development partners have also supported advocacy work and development of national strategies, guidelines, and laws.

What policies and strategies helped the success?

Charcoal Policy Study (World Bank 2009); Biomass Energy Strategy of Tanzania (2014), which has the ambitious target of reducing urban charcoal demand by 50% by 2030; and Sustainable Energy for All Action Agenda of 2015, with a goal of enabling more than 75% of the population in Tanzania to use cleaner cooking solutions by 2030. Stakeholders in the sector have also established the Clean Cooking Alliance of Tanzania (CCAT), which intends to coordinate the sector.

More info:

SEECO Company, E: bioenergy@seeco. co.tz , https://www.facebook.com/SEECOtz/ and https://www.facebook.com/TaTEDO/videos/778253385604075 .http://www.tatedo.or.tz

Sources:

TaTEDO, MbeziJuu, Mpakani Road, Goba, House No GOB/KZD/883, P. O. Box 32794, Dar es Salaam, Tanzania. Tel: +255 738-201498, E-mail: energy@tatedo.or.tz,

Case uploaded:

2020-08-27

Jiko Tosha





Why to choose this solution?

The multi-purpose fuel cooking stove (Jiko Tosha) is an improvement on the currently available rocket stoves that use a single type of fuel, either firewood or charcoal. Jiko Tosha stove accommodates the use of several fuel forms, animal wastes, firewood, charcoal/briquettes, sawdust, biogas, and LPG. Any of these will work in the same stove unit. The Jiko Tosha stove was born out of shortcomings identified in the stoves existing in the market. Its advantages are that it reduces indoor emissions, provides a safe and healthy environment to the consumer, accommodates more than one fuel source according to availability, and ensures that the users have access to economical and affordable cooking technology.

Savings per day or production:

Savings of about 70% of charcoal consumption per day for a normal family.

Cost in money and in own time to construct:

Costs KSh 5000 (About USD 50).

Lifetime:

About 5+ years.

Maintenance needed:

F&M Industries does not have local technicians throughout Kenya. If a part of the stove breaks or gets damaged, it can be shipped to the F & M manufacturing plant in Nairobi for repairs. To move the product from one place to the other, manufacturers use an existing local transport system. Replacements for all the components of the stove are available.

Resources needed in use:

Manufacturers specify that this four-in-one clean-energy stove was designed to use gas, charcoal briquettes, sawdust, or firewood as cooking fuels.

Problems and limits:

Safety concerns when using the product with biomass or charcoal as fuel are primarily related to harmful emissions of carbon dioxide, carbon monoxide, and sulfur dioxide, along with gas leakage during use with gas fuel. Another significant safety concern is domestic accidents such as accidental burning or spill-overs.

Where and how can you get it or make it?

The product is available at F & M industries along Lunga Lunga Rd, Industrial Area, Nairobi, Kenya. The users can purchase the product directly from the manufacturer and also buy online through the F & M industries website.

Skills needed to produce, install. maintenance, use:

The Jiko Tosha is manufactured in Kenya by a locally trained workforce. The manufacturing site consists of an assembly line and works on a batch production basis. Most of the parts are manufactured with power hand

tools, welding machines, and a semi-manual pressing machine, except for the outer casing and combustion chamber, which are manufactured using a sheet-metal-rolling machine. The use of the finished product requires a short introduction.

How to use it:

Jiko Tosha when using gas- https://youtu.be/2TAnT8oeBDw and Jiko Tosha when using firewood-https://youtu.be/w_bziRiCx3o and Jiko Tosha when using charcoal briquettes-https://youtu.be/U8h42ZeHLgk .

How to maintain it:

To be added.

Climate effect (if any):

Testing carried out by the Kenya Industrial Research and Development Institute (KIRDI) on the stove CO2 and particulate emissions (g/MJ delivered to pot) determined that, while using LPG as fuel, the CO2 emissions were very low (0.38). When tested using charcoal, the stove emissions were average and fairly good (9.09) respectively. Source: https://www.engineeringforchange.org/solutions/product/jiko-tosha/

Why is it successful?

Its success lies in functioning as a four-in-one stove that can run on gas, charcoal briquettes, sawdust, or firewood, hence not limited to one particular fuel type. This product is known for bringing immense savings and higher efficiency.

If you can make it, a short description, typical problems, materials needed:

The Jiko Tosha is a multi-fuel cookstove that integrates traditional components of a rocket stove with single-burner gas-stove components. Rocket-stove design contributes an insulated combustion chamber, elevated steel grate, ash collector, and cast-iron pot support; gas stoves inspire the single-burner stove components such as an LP burner and LP regulator. The design also includes a stainless-steel adaptable fuel bed for briquettes and charcoal. Specifications; Height: 30 cm Outside diameter: 26 cm, Weight: 5.807 kg.

How to make it (if possible):

https://youtu.be/FKLnsrWguvI

How is it delivered and by whom?

The product can be obtained directly from the manufacturer (F&M Industries) and it can be delivered to customers through courier service provided by F&M Industries Ltd. Users can also obtain the product from local Cooperative societies (SACCOS), through which they can pay for the product in installments.

Successful financial model

Testing by organizations like Kenya Industrial Research and Development Institute (KIRDI), Training and monetary support by Kenya Climate Innovation Center.

What policies and strategies helped the success?

Complies with the following cookstove rating for the International Workshop Agreements as a streamlined process of the International Organization for Standardization (ISO):O. Emissions: LPG (Tier 5), Charcoal (Tier 2) PM Emissions: LPG (Tier 4), Charcoal (Tier 3) Thermal Efficiency: LPG (Tier 5), Charcoal (Tier 3).

More info:

Read more: https://www.fmindustries.co.ke/index.php/homeup . F&M Industries Ltd is developing a bigger version of the Jiko Tosha named Biko Tosha Max, the aim of the design is to be better suited for institutional use.

Sources:

F&M Industries Ltd. Lunga Lunga Rd, Godown No. 105, Narobi. http://jikotosha.co.ke/, Tel: + 254 720 338108.

Case uploaded:

2020-09-08

Wisdom Stove (Malaika Jiko, MJ/M2)





Why to choose this solution?

The MJ and M2 cookstove models are TLUD (Top Lift Upward Draft) gasifier biomass cookstoves. Using a few small sticks of firewood, the stove burns the wood, converting the smoke into a synthetic gas, which burns with minimal emission and a clean flame, allowing efficient cooking. As the wood burns, it is converted to charcoal through a thermal process called pyrolysis. The user thus produces charcoal while cooking with firewood. The charcoal continues to burn in the stove, which provides heat for extended cooking or can be saved for future use.

Savings per day or production:

According to the manufacturer, this cookstove saves up to 75% of fuel and also creates significant cost savings (1 sack of charcoal in KSh = cost of one MJ).

Cost in money and in own time to construct:

The Wisdom TLUD gasifier stove retails at KSh 3,500.00 (USD 35) and is exempt from Value Added Tax (VAT), a ruling made by the government of Kenya in June 2016.

Lifetime:

5 Years.

Maintenance needed:

The ceramic chamber can be replaced.

Resources needed in use:

The stove burns sticks of firewood (ideal wood is dry and broken into matchbox-sized pieces), maize comb, crostems, coffee husks, or dried biomass briquettes.

Problems and limits:

Wisdom also links up with Micro Finance Institutions (MFIs) to get access to more consumers, but unfortunately the MFI would not let Wisdom contact these customers directly to gauge end-user feedback, and this resulted in poor after-sales support. Wisdom teamed up with a Savings And Credit Cooperative Society (SACCO); however, this relationship also ended when it was found that the SACCO was not carrying out a key component of sales (stove demonstrations), which resulted in lack of understanding by end-users on how to use the stove correctly.

Where and how can you get it or make it?

The stoves are manufactured and distributed by Wisdom Innovations. The manufacturing facility is based in North Kinangop (Nyandarua County) in Kenya and expansion plans are currently on-going in Zimbabwe. The company has sold stoves all over the country, but decided to focus on four specific counties - Nakuru, Nyandarua, Narok, and Kiambu - in line with their current production capacity. It is possible to contact local technicians through customer care (contacts below).

Skills needed to produce, install. maintenance, use:

Production and maintenance require engineering skills and training in metal crafts. The user manual for Malaika Jiko stove is available in both English and Kiswahili. Instructions on how to use the MJ stove are available on the webpage of WisdomStoves.

How to use it:

https://youtu.be/d7ZitRn4Nnw

How to maintain it:

To be added.

Climate effect (if any):

The stove burns the wood, converting the smoke into a synthetic gas which burns with minimal emissions and a clean flame.

Why is it successful?

It burns with minimal emissions and clean flame, allowing efficient cooking. As the wood burns, it is converted to charcoal which continues to burn in the stove, and provides heat for extended cooking or can be saved for future use. Eliminates wait time for cooking, greatly reduces destruction of wood growth compared with current methods of charcoal production, and greatly reduces harmful smoke.

If you can make it, a short description, typical problems, materials needed:

The MJ is placed on top of a traditional improved Kenya jiko with a ceramic insert. Make sure the fit is snug and secure. Doors on the two stoves should be aligned and open. The M2 works independently, as the design includes a ceramic insert.

How to make it (if possible):

https://youtu.be/QrSHJFNqAFI

How is it delivered and by whom?

The company uses two business models; direct sales and low-cost credit. The stoves are distributed through microfinance institutions, SACCOs, dairy co-operatives/societies, and other organized groups. The stoves are delivered along with a training and follow-up session. Because the Wisdom Stove works quite differently from many other improved cookstoves available in the market, the company recognises the need for behavioural change by end-users, who are usually women. Most of their sales are done through referrals from satisfied end-users.

Successful financial model

Wisdom has established strong partnerships with many organisations, such as Kenya Forest Service and Kenya Climate Innovation Centre (KCIC). The SACCO provides, among other services, technical support, market platforms, networking opportunities, training, and mentorship, as well as an office space in Nairobi.

What policies and strategies helped the success?

Exempt from Value Added Tax (VAT), a ruling made by the government in June 2016 that has facilitated the growth of the innovative clean cookstoves (ICS) sector. Constant consumer awareness-raising and training is their priority, and they take pride in maintaining continuity with all their customers.

More info:

https://wisdomstoves.org

Sources:

Wisdom Stoves Kenya, P.O box 71, North Kinangop 20318, Kenya. Tel: +254 723241907.

Case uploaded:

2020-08-24

BlueFlame BioGaz (Biogas) Digester







Why to choose this solution?

The BlueFlame BioGaz biogas-digesters are constructed from either concrete or plastic. They are safe to use for heating, for cooking, and for lighting. They can be used commercially or domestically. They also produce organic fertilizer that can be used safely and profitably in farmed fields. Such fertilizer is biologically very stable, and it has the following properties: very high nutrient content, very minimal pathogenic microorganisms, reduced odour, and ease of application because it is liquid.

Savings per day or production:

It saves the user the money that could have been used to pay for waste disposal. Moreover, it saves the user the money that could have been used to pay for commercial sources of energy. Such commercial sources of energy include LPG gas, electricity, charcoal, and firewood.

Cost in money and in own time to construct:

The price of a 4000-liter digester is KSh 75,000 (USD 750). Installation takes about 3 days.

Lifetime:

20 Years.

Maintenance needed:

BlueFlame energy solutions offers maintenance services for biogas systems to make sure they continue working to the satisfaction of our clients. It also rehabilitates non-working biogas systems to put them back into productivity.

Resources needed in use:

The bio-digesters accept any organic waste material, which may include biodegradable waste from industries and treatment plants, rotten food from shops and homes, biowaste that is given by consumers, sludge given from wastewater treatment plants, manure, and biomass from agriculture.

Problems and limits:

It is expensive; hence, most people are not able to afford it.

Where and how can you get it or make it?

Available at BlueFlame, a water- and energy- solutions company in Nairobi, Kenya. But they are also installed throughout Kenya. Interested clients can contact the BlueFlame company.

Skills needed to produce, install. maintenance, use:

Installation requires some training in engineering and biology; users receive a short introduction.

How to use it:

To be added.

How to maintain it:

To be added.

Climate effect (if any):

Not specified.

Why is it successful?

They succeed because they have a lifespan of over 20 years (long-lasting), they are easy to install, the plastic ones are portable, they come with a five-year warranty, and purchase comes with three months of free after-sales service.

If you can make it, a short description, typical problems, materials needed:

The biodigester consists of a sealed tank that holds biowaste and a means to collect produced gases. Use requires a way to mix the biomatter. One also needs to pipe off the gas and to dry off the effluent. When planning, one always needs to estimate how much organic waste can be collected in a day for putting in the tank and to consider which model of the digester is the best, as they are built differently (either concrete or plastic). One also must use adhesives and tools.

How to make it (if possible):

To be added.

How is it delivered and by whom?

The biogas digesters are delivered by skilled teams from BlueFlame Water and Energy Solutions Company. The field officers are contacted by clients who need the technology installed. The field officers then refabricate and install the system according to the clientâ€™s energy needs.

Successful financial model

Support for development, training, public relations, and successful partnerships.

What policies and strategies helped the success?

Kenya Biogas Programme (KBP), put in place to guide the operation.

More info:

https://www.blueflamebiodigesters.com

Sources:

Blueflame Water and Energy Solutions, Kahawa Sukari. Kahawa Sukari Avenue Nairobi, Kenya. Email: info@blueflamebiodigesters.com, Tel: +254 714 850418.

Case uploaded:

2020-09-14

Fixed Dome Biogas Plant





Why to choose this solution?

Biogas reduces the need for directly burning solid biomass fuels like firewood and charcoal and burns cleanly without producing smoke or ash. Biogas systems help make waste products productive, leading to improved health, better sanitation, and lower impact on the environment. Gases that are burned completely as fuel are not emitted into the atmosphere as GHGs.

Savings per day or production:

It saves money that could have been used to pay for commercial sources of energy or disposal of waste. Demand for firewood or charcoal and the workloads of women and children, are reduced by about 20% in households with biogas. Washing pots become an easier task in the absence of smoke and soot. Crop productivity improve due to use of slurry that remains after feedstock digestion.

Cost in money and in own time to construct:

It must be purchased due to the expertise and some materials required for construction. A biogas system of 9 m3 costs about TSh 2.5 to 3 million (USD 1080 to 1300). One mason takes five to seven days to construct a biogas system of 9 m3.

Lifetime:

About 20 years, if well operated and managed.

Maintenance needed:

Fermentation process needs a continuous supply of feedstock and water.

Resources needed in use:

Animal dung.

Problems and limits:

Capital investment for construction of biogas system is high making it un-affordable to low income families. The continuous supply of feed-stock and water to the biogas plant is a tedious work for the biogas owners.

Where and how can you get it or make it?

Skills needed to produce, install. maintenance, use:

Construction and installation of infrastructure to deliver gas needs a skilled mason and plumber, operation and maintenance needs a short training.

How to use it:

https://www.youtube.com/watch?v=XcBOy1R363c

How to maintain it:

https://www.youtube.com/watch?v=OYwUx5eOYEw

Climate effect (if any):

Biogas is a renewable source of energy and an efficient method for the conversion of biomass to energy. Renewable energies have always been identified as a prime source of clean energies that emit little or no net GHGs into the atmosphere. Biogas provides a means of mitigation to reduce the sources or enhance the sinks of greenhouse gases. One biogas installation saves an average of 8.5 tonnes of CO2 and 4,667 kg of wood per year.

Why is it successful?

Successful because it provides cleaner energy for cooking with low operation costs.

If you can make it, a short description, typical problems, materials needed:

Not relevant, needs a skilled mason to make it.

How to make it (if possible):

https://www.youtube.com/watch?v=PmBx5Zo8KZo

How is it delivered and by whom?

Through support of development partners, CSOs played major roles in awareness-raising, capacity building of local masons, technology dissemination, and advocacy. They also facilitated linkages of masons and potential consumers. Capital investment for a good number of biogas systems constructed initially was supported by grants. Ease of availability of masons has also contributed to the success.

Successful financial model

Subsidies were applied in most of the plants constructed under development projects. The simple payback period of a biogas installation varies between 2.5 and 9.5 years, depending on whether purchased charcoal or firewood, largely collected for free, is substituted.

What policies and strategies helped the success?

Biogas was introduced in Tanzania beginning in 1975. From 2009 to 2012, the Tanzania Domestic Biogas programme, coordinated by the government entity CAMARTEC, also contributed to initial efforts. After the program ended, further development was taken over by the private sector (the trained masons) and CSOs.

More info:

http://www.bibalex.org/Search4Dev/files/338190/171749.pdf

Sources:

https://www.tatedo.or.tz

Case uploaded:

2020-09-26

Fixed Dome Biogas Plant by Mchau





Why to choose this solution?

The solution provides alternative and clean energy for cooking instead of firewood and charcoal. Cow dung is the raw material used to feed the biogas plant to produce biogas which is used for cooking.

Savings per day or production:

Time and manpower which was earlier used to fetch firewood is now used to do something else. In a case where firewood was used, cost incurred per day was not less than 3000 Tshs.

Cost in money and in own time to construct:

The size of this Biogas is 4 m3 and costs Tsh.1,050,000. Construction of such biogas took about two (2) weeks.

Lifetime:

10 -20 years

Maintenance needed:

Biogas require daily feeding of the feedstock.

Resources needed in use:

Cow dung

Problems and limits:

Biogas plant require daily feeding of the feedstock, in some area where water is scarce becomes a challenge

Where and how can you get it or make it?

Available in livestock keepers regions of Tanzania. The technology is disseminated by TaTEDO, Carmatec, etc.

Skills needed to produce, install. maintenance, use:

Construction and maintenance of Biogas requires a skilled technician.

How to use it:

https://linksharing.samsungcloud.com/yWZtn03gD4tW

How to maintain it:

https://linksharing.samsungcloud.com/yWZtn03gD4tW

Climate effect (if any):

Biogas provide renewable source of energy free from GHG emissions and indoor air pollution.

Why is it successful?

After installation the operation costs is minimal

If you can make it, a short description, typical problems, materials needed:

Not applicable, needs a skilled technician

How to make it (if possible):

N/A

How is it delivered and by whom?

Community sensitization, availability of masons for installation of the biogas plant and provision of after sale services contributed to its success. Main actors in dissemination are CSOs, government agency, private sector and Faith Based Organizations. Almost all of them were involved in awareness raising, capacity building and installation of biogas systems.

Successful financial model

Involvement of private sector in the market chain

What policies and strategies helped the success?

The Tanzania Energy policy of 2015 focuses to encourage development and use of alternative energy to biomass for cooking. Also implementation of the Tanzania national Domestic Biogas programme

More info:

Email: ernestpmchau@gmail.com

Sources:

TaTEDO/Carmatec

Case uploaded:

2022-03-30

Fixed-Dome Biogas Plant by ECOSAFE Ltd





Why to choose this solution?

Clean energy, improved kitchen hygiene/ sanitation, and quality bio slurry (manure) that results in better yields (crops, fisheries, piggery) are co-benefits.

Savings per day or production:

Faster cooking saves time and money. For example, 1 kg of dry beans can be cooked in one hour with biogas (constant heat), which is not possible with firewood and charcoal. According to Mr Kasule, biogas user in Nakaseke, crop health and yields have improved since he started applying bio slurry to his banana crop, feeding it on his fish and pigs. Savings have occurred as a result of adopting this biogas energy option.

Cost in money and in own time to construct:

A 9 m3 biogas plant costs USh 1.8 million (approx. USD 493) and can be done in 7 days.

Lifetime:

25 years, according to ECOSAFE Ltd.

Maintenance needed:

0

Resources needed in use:

Small and medium farms for (zero-grazing) cows or pigs that can provide at least 75 kgs of cow dung per day.

Problems and limits:

Cost of setting up the biogas plant is expensive for many people. Managing biogas lamps, as moths and insects lead to tearing and breakages. High temperatures involved (650 to 700Â° C degree) mean generation of too much heat. Labour-intensive to sustain biogas production, as there must be daily stirring of feedstock dung in the mixing tank.

Where and how can you get it or make it?

ECOSAFE Ltd promotes the fixed dome biogas type biogas option.

Skills needed to produce, install. maintenance, use:

Persons must be trained and certified by Biogas Solutions Uganda Ltd in co-operation with Netherlands Development Organisation (SNV).

How to use it:

Video: https://www.youtube.com/watch?v=LuoqbV6AIAY

How to maintain it:

Climate effect (if any):

Smokeless homes with light from biogas as it reduces use of paraffin lanterns, one of the more frequent causes of fires in homes. Reduces use of firewood, which reduces cutting trees.

Why is it successful?

Cumulative fuel and other savings (fertilisers, medical etc.) of Ugshs 2,881,200 after 22 months of operation (Ecosafe Ltd) compared to 1.8 million Ugshs investment; Lifetime of 25 years means cumulative savings over a long period of time. Bio slurry (fertiliser by product) can be applied to crops for increased yields of up to 30%; insect repellant on bananas, oranges, coffee (Biogas Uganda Ltd & Sam Kasule); bio slurry is also an excellent nutritious feed for pigs -results in savings made on animal feeds; chicken manure, with its nuisance smell for urban farmers, can be used in recommended proportions as a source of feedstock for the biogas plant.

If you can make it, a short description, typical problems, materials needed:

Local materials needed: bricks, cement, gravel, metal fabrications, and skilled manpower.

How to make it (if possible):

Fine Biogas Solutions: https://vimeo.com/317936298

How is it delivered and by whom?

Involving micro-enterprises (like Ecosafe Ltd) for technical support to informal sectors and households in construction, operation, and maintenance of the fixed dome biogas plants; Ecosafe guarantee / customer care incentive for adoption, leading to other households getting interested in the biogas option.

Successful financial model

Renewable Energy Facility by Postbank provided opportunity for interested persons to acquire loans payable over a three-year period. ECOSAFE Ltd provided technical assistance and advice.

What policies and strategies helped the success?

ECOSAFE Ltd provides a one-year guarantee for the fixed dome biogas plant (with regular checks to secure proper use by the clients).

More info:

http://ecosafeltd.com/?service=fixed-dome-biogas-system

Sources:

Case uploaded:

2020-08-18

Flexi Biogas / FlexiTech







Why to choose this solution?

This technology minimizes reliance on firewood, makes cooking easier and produces less smoke (clean cooking) compared to ordinary cookstoves. It is helpful in solid waste management since it accepts a range of feedstocks, including biodegradable materials such as any animal dung (cow, pigs, sheep, goats, and rabbits), vegetable/kitchen waste, food waste, garden weeds, and market waste). The biodigester can help to control some economically harmful invasive plant species currently threatening crop security and public health.The systems that are designed to lower energy demands for daily household use are called "flexi domestic". They are installed in as few as three hours, produce gas in as few as three to five days, and run on any biodegradable material with no need for a cow. The larger-scale systems are built to meet bigger energy needs and are best suited to schools, hotels, churches, children group homes, and any other institutions with high energy demand; such larger systems are called T-rex.

Savings per day or production:

According to the Environmental Frame Conditions of Biogas Technology, this technology emits about 62% less carbon dioxide into the atmosphere. Flexi biogas domestic systems eliminate the task of firewood collection, so women gain three or four more hours a day for other activities. It saves the users about Ksh 500 (5 USD). Normally, the beneficiaries of this technology were spending over KSh 1000 (10 USD) per day on firewood to fry their fish, but now they spend only KSh 500 (5 USD).

Cost in money and in own time to construct:

The cost varies, as the domestic version (with capacity of 6 m3) costs KSh 75,000 (750 USD) and the large model costs (9 m3) is priced at KSh 90,000 (900 USD). It takes two to three hours for the Flexi domestic biogas digester to be prefabricated and installed, and about 6 days for the large commercial model.

Lifetime:

10 years.

Maintenance needed:

It is easy to maintain. It only requires feeding the system regularly with water and with feedstock materials (biodegradable materials such as any animal dung (cow, pigs, sheep, goats, and rabbits), vegetable/kitchen waste, food waste, garden weeds, and market waste), depending on gas usage. It also needs regular checking for any leakages and to be sure that the water pumps are in good working order.

Resources needed in use:

The system runs on all biodegradable materials such as any animal dung, vegetable/kitchen waste, food waste, garden weeds, market waste.

Problems and limits:

Potential customers often cannot afford them. There also is a lack of community familiarity with the benefits of biogas as a cooking option.

Where and how can you get it or make it?

The source, an eco-resource center, is situated at Ngong road, Mwitu Close (no 33), Karen, Nairobi, Kenya. In Kenya, Biogas International has installed the technology in Kakuma, Samburu, and Dunga in Kisumu as well as in Moi and Pwani Universities. Reference: Domnic Kahumbu Wanjihia, biogas international chief executive officer.

Skills needed to produce, install. maintenance, use:

Engineering skills and biological skills are required to install, along with a short course of training. An operation guideline is available at http://biogas.co.ke/wp-content/uploads/2018/06/Operation-Guide-Book.pdf for the users.

How to use it:

Video https://vimeo.com/366478108

How to maintain it:

https://vimeo.com/366479658

Climate effect (if any):

Saves about 62% of carbon dioxide emissions.

Why is it successful?

It succeeds because it is clean, environment-friendly, often affordable, sustainable, and simple to operate/maintain a biogas system. It also can be made to be portable, and the feedstocks are readily available.

If you can make it, a short description, typical problems, materials needed:

Assembling materials and ground-leveling are required, but trained personnel also are needed.

How to make it (if possible):

https://vimeo.com/366503023

How is it delivered and by whom?

The Flexi biogas is installed by skilled team employed by Biogas International Limited (BIL). The field officers are contacted by clients who need the technology installed. They then refabricate and install the system according to the client energy needs.Their customer support is always available to answer the clients questions and queries.

Successful financial model

Support for development, training courses, public relations; successful partnerships with various organizations and institutions like Kenya Association of Manufacturers (KAM), UNICEF, Moi, and Pwani Universities, among others.

What policies and strategies helped the success?

Kenya Biogas Programme (KBP), put in place to guide the operation.

More info:

http://www.biogas.co.ke

Sources:

Visit Flexi Biogas Solutions Eco-resource Center at Ngong road, Mwitu Close (No. 33), Karen, Nairobi, Kenya. Email: info@biogas.co.ke or biogasinternational@yahoo.com. Phone: +254-722 700 530

Case uploaded:

2020-08-19

Jiko Tosha





Why to choose this solution?

The multi-purpose fuel cooking stove (Jiko Tosha) is an improvement on the currently available rocket stoves that use a single type of fuel, either firewood or charcoal. Jiko Tosha stove accommodates the use of several fuel forms, animal wastes, firewood, charcoal/briquettes, sawdust, biogas, and LPG. Any of these will work in the same stove unit. The Jiko Tosha stove was born out of shortcomings identified in the stoves existing in the market. Its advantages are that it reduces indoor emissions, provides a safe and healthy environment to the consumer, accommodates more than one fuel source according to availability, and ensures that the users have access to economical and affordable cooking technology.

Savings per day or production:

Savings of about 70% of charcoal consumption per day for a normal family.

Cost in money and in own time to construct:

Costs KSh 5000 (About USD 50).

Lifetime:

About 5+ years.

Maintenance needed:

F&M Industries does not have local technicians throughout Kenya. If a part of the stove breaks or gets damaged, it can be shipped to the F & M manufacturing plant in Nairobi for repairs. To move the product from one place to the other, manufacturers use an existing local transport system. Replacements for all the components of the stove are available.

Resources needed in use:

Manufacturers specify that this four-in-one clean-energy stove was designed to use gas, charcoal briquettes, sawdust, or firewood as cooking fuels.

Problems and limits:

Safety concerns when using the product with biomass or charcoal as fuel are primarily related to harmful emissions of carbon dioxide, carbon monoxide, and sulfur dioxide, along with gas leakage during use with gas fuel. Another significant safety concern is domestic accidents such as accidental burning or spill-overs.

Where and how can you get it or make it?

The product is available at F & M industries along Lunga Lunga Rd, Industrial Area, Nairobi, Kenya. The users can purchase the product directly from the manufacturer and also buy online through the F & M industries website.

Skills needed to produce, install. maintenance, use:

The Jiko Tosha is manufactured in Kenya by a locally trained workforce. The manufacturing site consists of an assembly line and works on a batch production basis. Most of the parts are manufactured with power hand

tools, welding machines, and a semi-manual pressing machine, except for the outer casing and combustion chamber, which are manufactured using a sheet-metal-rolling machine. The use of the finished product requires a short introduction.

How to use it:

Jiko Tosha when using gas- https://youtu.be/2TAnT8oeBDw and Jiko Tosha when using firewood-https://youtu.be/w_bziRiCx3o and Jiko Tosha when using charcoal briquettes-https://youtu.be/U8h42ZeHLgk .

How to maintain it:

To be added.

Climate effect (if any):

Testing carried out by the Kenya Industrial Research and Development Institute (KIRDI) on the stove CO2 and particulate emissions (g/MJ delivered to pot) determined that, while using LPG as fuel, the CO2 emissions were very low (0.38). When tested using charcoal, the stove emissions were average and fairly good (9.09) respectively. Source: https://www.engineeringforchange.org/solutions/product/jiko-tosha/

Why is it successful?

Its success lies in functioning as a four-in-one stove that can run on gas, charcoal briquettes, sawdust, or firewood, hence not limited to one particular fuel type. This product is known for bringing immense savings and higher efficiency.

If you can make it, a short description, typical problems, materials needed:

The Jiko Tosha is a multi-fuel cookstove that integrates traditional components of a rocket stove with single-burner gas-stove components. Rocket-stove design contributes an insulated combustion chamber, elevated steel grate, ash collector, and cast-iron pot support; gas stoves inspire the single-burner stove components such as an LP burner and LP regulator. The design also includes a stainless-steel adaptable fuel bed for briquettes and charcoal. Specifications; Height: 30 cm Outside diameter: 26 cm, Weight: 5.807 kg.

How to make it (if possible):

https://youtu.be/FKLnsrWguvI

How is it delivered and by whom?

The product can be obtained directly from the manufacturer (F&M Industries) and it can be delivered to customers through courier service provided by F&M Industries Ltd. Users can also obtain the product from local Cooperative societies (SACCOS), through which they can pay for the product in installments.

Successful financial model

Testing by organizations like Kenya Industrial Research and Development Institute (KIRDI), Training and monetary support by Kenya Climate Innovation Center.

What policies and strategies helped the success?

Complies with the following cookstove rating for the International Workshop Agreements as a streamlined process of the International Organization for Standardization (ISO):O. Emissions: LPG (Tier 5), Charcoal (Tier 2) PM Emissions: LPG (Tier 4), Charcoal (Tier 3) Thermal Efficiency: LPG (Tier 5), Charcoal (Tier 3).

More info:

Read more: https://www.fmindustries.co.ke/index.php/homeup . F&M Industries Ltd is developing a bigger version of the Jiko Tosha named Biko Tosha Max, the aim of the design is to be better suited for institutional use.

Sources:

F&M Industries Ltd. Lunga Lunga Rd, Godown No. 105, Narobi. http://jikotosha.co.ke/, Tel: + 254 720 338108.

Case uploaded:

2020-09-08

Takamoto Biogas






Why to choose this solution?

Provides reliable biogas energy to small-scale dairy farmers in Kenya. Also minimizes reliance on firewood. Cooking with this biogas is easier, clean, quick, efficient, and convenient.

Savings per day or production:

More trees are conserved, households spend less purchasing charcoal and LPG for their cooking needs, and less time is spent by women and children in collecting firewood.

Cost in money and in own time to construct:

A customer pays KSh 100,000 (USD 1,000.00) for one system, with an initial payment of KSh 15,000 (USD 150). The remainder, KSh 85,000 (USD 850), is then paid in installments of KSh3,000 per month with no interest or security required until one fully acquires the kit. System installation normally takes one to two days.

Lifetime:

Related appliances, such as kitchen gas burners, and desulphuriser, which remove bad odours, are replaceable every two years. There is also on-site training for the users on maintenance.

Maintenance needed:

Replacement of appliances such as kitchen gas burners, de-sulphurisers which remove bad odour. There is also an on-site training for the users on maintainance.

Resources needed in use:

A farmer or buyer only needs to have a sustainable source of dung and sufficient water in order to process biogas through the digester.

Problems and limits:

High initial installation cost of biogas deters many low-income earners. Poor quality of installations done in the past by other individuals and companies led to failed systems and gave the technology a bad name. Lack of awareness about the use and benefits of biogas technology and a shortage of trained installers have been other issues that Takamoto has faced.

Where and how can you get it or make it?

Available at the head office in Githunguri town in Kiambu County, and from their warehouse in Karatina, Nyeri County.

Skills needed to produce, install. maintenance, use:

Installation requires skilled technicians. There is on-site training on operation and maintenance. Internship programs where fresh graduates are trained and then attached to customers in specific areas over a three-month period are also provided.

How to use it:

https://youtu.be/8ZM0fiwu0Is

How to maintain it:

Not relevant.

Climate effect (if any):

More trees are conserved hence, deforestation is reduced. The system is also able to save about 4.5 tons of C02-equivalent methane emissions that would have been released to the atmosphere had the cow dung been left to decompose in the open.

Why is it successful?

The system is very economical and there is readily available feedstock. Cost-friendly installation and affordable labour. Successful partnership with the number of local Savings and Credit Cooperative Societies (SACCOs) and Micro-Finance Institutions (MFIs) has increased uptake through credit facilities.

If you can make it, a short description, typical problems, materials needed:

A typical system comprises one 12m3 Balloon-Bag Digester, one double-burner cooker, and sufficient piping for the entire system.

How to make it (if possible):

https://youtu.be/-MPR2_Mckr8

How is it delivered and by whom?

Takamoto biogas company has employed Kenyans as technicians and sales people, 25% of whom are female. Technicians help with installations and repairs. Takamoto currently focuses on the lease-to-own model, which is working well. To support sales, the company engages seven sales agents, each with a monthly target of six systems, which they sell on a commission basis. Once the sale is made, the customer is assigned a unique account number that enables Takamoto to track the operational and financial status of the installation. System costs can vary due to the associated additional transport, labour, and other site costs.

Successful financial model

There is an internship programme offering training whereby fresh graduates are trained, then attached to customers in specific areas over a three-month period, to work closely with the farmers and to support them in biogas system operations. All Takamoto records/transactions are maintained electronically. A customised online software application manages all customer data including financial transactions, repairs, and maintenance with ease, then sends automatic alerts to the office during various stages of installation.

What policies and strategies helped the success?

Successful partnership with Kenya Biogas Programme (KBP), which provides technical support to biogas entrepreneurs and offers them a marketing platform by creating awareness and linking them up with potential clients. Successful partnership with a number of local Savings and Credit Cooperative Societies (SACCOs) and Micro-Finance Institutions (MFIs) has increased uptake through credit facilities.

More info:

http://www.takamotobiogas.com/

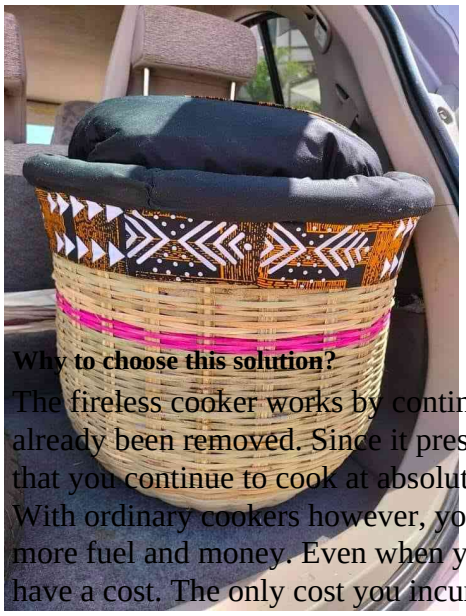
Sources:

Takamoto Biogas. Githunguri opposite Penko Petrol Station. Kenya. Tel: +254 738689788

Case uploaded:

2020-08-24

Fireless Cookers Food Warmers by Tangeni Crafts, Kenya





Why to choose this solution?

The fireless cooker works by continuing the process of cooking for a long time after the source of heat has already been removed. Since it preserves the heat and keeps it from getting lost in the environment, it means that you continue to cook at absolutely zero cost, while the heat is released very slowly as the food cooks. With ordinary cookers however, you still need the source of heat to continue the cooking, thereby expending more fuel and money. Even when you simmer the food on the stove, the lower amounts of heat released still have a cost. The only cost you incur with the fireless is the cost of purchasing it, which is very reasonable when compared to the years of use and hundreds of meals you will cook in it.

Savings per day or production:

It cuts down the cost of fuel consumption upto 50% depending on your volume of cooking. You redeem approximately 50% of your cooking time. Therefore you are able to focus on other chores or whatever needs your active attention. You are assured that your cooking is safe and healthy for your family. High nutrients reserved in slow heat cooking. It can be used for over 10 yrs. It does not a regular need fixing or replacement. Incase it does, we can still do the fixing.

Cost in money and in own time to construct:

It varies with size and the cost of the materials. The range is between Ksh. 1200 (12 USD) to Ksh. 5000 (50 USD). It takes between 2 to 3 hours making a single fireless cooker when all the materials are readily available.

Lifetime:

10 years on the minimum.

Maintenance needed:

It does not require much maintenance apart from light cleaning with a wet cloth and putting it on the sun to dry. (Note: only when it requires cleaning, e.g, if there is some spill in the fireless cooker.)

Resources needed in use:

None.

Problems and limits:

Financial constraints to those who know their advantage and would like to have one. Lack of appreciation and awareness from the community on the benefits of the fireless cookers.

Where and how can you get it or make it?

Available at Tangeni Crafts stores, also delivered countrywide on order

Skills needed to produce, install. maintenance, use:

Knitting, attention to detail.

How to use it:

How to maintain it:

Climate effect (if any):
It is 100% environmentally friendly since there are no emissions when using this technology.

Why is it successful?
Because they are made from readily available materials, they are affordable.

If you can make it, a short description, typical problems, materials needed:
Fireless cooker is an insulating basket made from locally available materials.

How to make it (if possible):

How is it delivered and by whom?
Deliverd countrywide by Tangeni Crafts.

Successful financial model

What policies and strategies helped the success?

More info:
https://web.facebook.com/search/top?q=tangeni%20crafts

Sources:
Betty Okello, Founder Tangeni Crafts. Email:betikwambs@yahoo.com Tel: 0708926643

Case uploaded:
2023-03-20

Efficient Electric Pressure Cookers (EPCs)







Why to choose this solution?

In Tanzania, TaTEDO in collaboration with SESCOM (which is a social enterprise) are participating in the Modern Energy Cooking Services (MECS) program, which is led by Lough borough University and financed by UK Aid. The implemented activities include awareness raising, importation of EPC and spare parts, marketing, research, advocacy and lobbying for conducive policies for EPC and other clean cooking solutions. Most of the people do not consider electricity as a cooking fuel, as they perceive it to be expensive. After discovering that cooking using electric pressure cooker is relatively cheaper than LPG, charcoal and a hot plate, the adoption rate increased sharply. The increased awareness and capacity-building have contributed to addressing the knowledge gap, which exists in Tanzania.

Savings per day or production:

The cost saving depends on the price of the electricity. In Tanzania, the EPC was approximately 7 times cheaper than kerosene, 10 times cheaper than LPG, and 13times cheaper than charcoal for boiling heavy foods, based on 2020 market prices of the electricity.

Cost in money and in own time to construct:

EPC costs about twice as much as an electric hotplate. Market prices in Tanzania range from Tsh 180,000 to 250,000 (USD 77 to 107) for quality EPCs with capacities of 4- to 6 liters, depending on the point along the market chain at which the appliance is bought by end-user.

Lifetime:

About five to six years.

Maintenance needed:

Requires replacement of rubber seal on the lid after being used for some time.

Resources needed in use:

Electricity from grid, mini-grid, and solar home systems can be used.

Problems and limits:

Use only one type of pot. Not suitable for some food like nyama choma, chapatti, and deep frying. Looks complicated at first.

Where and how can you get it or make it?

Most of them are imported from China, Japan, South Africa, Europe, etc., and distributed by various companies including SESCOM in Tanzania. To produce EPCs, you need investment to establish a factory.

Skills needed to produce, install. maintenance, use:

EPCs are manufactured in factories and special engineering knowledge is required. Training is required to be able to provide after-sale services. Simple training/introduction is required on how to use EPCs.

How to use it:

It is good for cooking many types of food, e.g., meat, potatoes, and beans. A cookbook and several short films are available published by TaTEDO.

How to maintain it:

Climate effect (if any):

Saves forests by providing an alternative clean cooking solution. Avoids emissions from combustion of biomass. Decrease CO2 emissions, when the electricity used is from renewable sources.

Why is it successful?

A pressure cooker cooks 2-6 times faster than regular cooking as the temperature will be higher under pressure. The water starts to boil on higher temperature when the pressure is higher. The cooker is insulated, which increase the efficiency. SESCOM which is a social enterprise involved in promoting, importing, and marketing of EPCs, along with TaTEDO, which focuses on support services, i.e., research, awareness-raising, capacity- building, market development, and lobbying for conducive environments for EPCs under the support of a MECS programme financed by DFID. Awareness and capacity-building have contributed a lot in addressing the knowledge gap which exists in Tanzania. Most of the people do not consider electricity as a cooking fuel, as they perceive it to be expensive. After discovering that the use of EPCs is the cheapest way of cooking, the adoption rate has increased sharply.

If you can make it, a short description, typical problems, materials needed:

N/A

How to make it (if possible):

N/A

How is it delivered and by whom?

Main actors in the supply chain of EPCs include importer, distributors, retailers, and end-users. SESCOM imports EPCs directly from manufacturers and takes them to agents (distributors) and end- users. Some of the consumers of SESCOM EPCs are mini-grid developers who intended to introduce efficient electric appliances to the mini-grid customers.

Successful financial model

EPCs are delivered with a pay-as-you-go financing model to the mini-grid customers, whereas customers who cannot pay the whole price at once are linked to micro-financing institutions, which arrange for them to make payments on an installment basis.

What policies and strategies helped the success?

The National Energy Policy (2015) promotes energy efficiency and alternative energy (use of biomass for cooking). Micro finance Policy (2017) creates an enabling environment for an efficient and effective microfinance sub-sector in the country that serves the needs of low-income individuals, households, and enterprises. Other supportive strategies and regulatory frameworks include SE4ALL Action Agenda (2015), Electricity Act of 2008, Rural Energy Act of 2005, and Environmental Management Act 2004.

More info:

https://data.verasol.org/products/epc/sescom9?viewall=true ,
https://sescom.co.tz/news/24-tatedo-win-1st-for-the-2020-electric-pressure-cooker-competition and
https://tatedo.or.tz/attachments/article/43/Ecook%20Book%20(english).pdf

Sources:

TaTEDO, MbeziJuu, Mpakani Road Goba House No GOB/KZD/883, P. O. Box 32794, Dar es Salaam, Tanzania. Web: www.tatedo.or.tz Tel: +255 738-201498, E-mail: energy@tatedo.or.tz

Case uploaded:
2020-09-27

Fireless Basket Cooker / Flask (Hay Box)





Why to choose this solution?

It completes the cooking of food that has been partially cooked, and it acts as a food flask because it can keep food hot for more than 5 hours. It can be used to maintain the temperature of cold drinks. As such, it saves energy and time. The fireless basket cooker can be used to prepare beans, peas, groundnut sauce, beef, chicken, rice, matooke, Irish potatoes, sweet potatoes and cassava. Additionally, the basket can keep all types of food warm for a maximum of 8 hours.

Savings per day or production:

The warmth of the food can be retained by placing the cooking pot in the fireless basket cooker for as long as possible until your food is ready to be served. The basket can retain heat for a maximum of 8 hours.

Cost in money and in own time to construct:

The Hay Basket costs USh 35,000 - 55,000 (USD equivalent 9.5-15) and making a Hay Basket takes about 4 hours.

Lifetime:

3-7 years, depending on how it is handled.

Maintenance needed:

Washing of the cloth.

Resources needed in use:

No resources needed.

Problems and limits:

It can fail to perform cooking task if it is not well constructed. This can happen if the person who makes it, does not follow the instruction precisely.

Where and how can you get it or make it?

Use trained people to make it. You can also buy already made from established selling points, or make order at JEEP Folkecenter.

Skills needed to produce, install. maintenance, use:

Production needs a trained person.

How to use it:

The food needs to be half cooked on a stove and then it should be placed into the basket to get the boiling completed. Cooking time depends on the type of food. For example, rice should be boiled for 5 minutes on the stove and it will take 30 minutes to get ready in the basket. Beans and beef will take longer cooking time in the basket.

How to maintain it:

Not relevant.

Climate effect (if any):

It is 100% environmentally friendly since there are no emissions when using this technology.

Why is it successful?

It is easy and cheap to make and it is made using locally available materials.

If you can make it, a short description, typical problems, materials needed:

Cotton, basket, container e.g a sausepan, polythene, cotton cloth, thread and needle.

How to make it (if possible):

Not relevant.

How is it delivered and by whom?

It can be accessed from trained people who make it. You can also buy already made from established selling points or place an order at JEEP.

Successful financial model

Support for development, training, establishment of unions of makers, constructors.

What policies and strategies helped the success?

Funding from development partners and JEEP friends.

More info:

JEEP, 7 miles, Gayaza Rd, Kyanja, Kampala, P.O. Box 4264, Uganda, phone: 256 414 578 316. Email: info@jeepfolkecenter.org

Sources:

https://jeepfolkecenter.org/

Case uploaded:

2020-09-29

Fireless cookers / food warmers







Why to choose this solution?

The fireless cooker is an insulated basket made from locally available materials. It works by continuing the process of cooking for a long time after the source of heat has been removed. Since it preserves the heat, you continue to cook at no cost, while the heat is released slowly as the food cooks. With ordinary cookers, however, you still need the source of heat to continue the cooking, thereby using more fuel and money. If you already have a fire in the stove, you still can reduce fuel as you can prepare another dish on it, while the first dish is cooking further in the basket or bag. The cooked food is healthy as high levels of nutrients is kept during slow heat cooking.

Savings per day or production:

It cuts down the cost of fuel consumption up to 50% depending on your volume of cooking. You redeem approximately 50% of your cooking time. Therefore you are able to focus on other chores or whatever needs your active attention. You are assured that your cooking is safe and healthy for your family. High nutrients reserved in slow heat cooking. It can be used for over 10 yrs. It does not need a regular need fixing or replacement. In case it does, we can still do the fixing.

Cost in money and in own time to construct:

The costs varies with size and the cost of the materials. The basket cooker costs KSh 1400-4000 (USD 24-40) from size mini to extra large. The bag costs KSh 500-900 (USD 5-9). It takes 2- 3 hours to make it, when all the materials are readily available.

Lifetime:

5-10 years.

Maintenance needed:

It does not require much maintenance apart from light cleaning with a wet cloth and putting it on the sun to dry. (Note: only when it requires cleaning, e.g, if there are some spill in the fireless cooker.)

Resources needed in use:

None.

Problems and limits:

You start to prepare the food earlier, because it takes longer time. As an example the boiling time for rice is 5 minutes with 30-45 minutes in the bag/basket afterwards. It is also suggested to pre-soak specific types of food such as beans.

Where and how can you get it or make it?

They are used in Kenya in various parts of the country. The basket and the bag are both available at Tangeni Crafts stores, and are also delivered countrywide on order. The basket cooker is available in 6 sizes on order from Motozero. You can make it yourself.

Skills needed to produce, install. maintenance, use:

To produce, needed clothes and insulation material e.g. small pieces of clothes, or polystyrene pellets. You need to have sewing skills, and attention to detail. The fireless basket model, need a basket. To make a basket, you need weaving skills.

How to use it:

How to maintain it:

Climate effect (if any):

It is climate friendly technology. A food warmer used by a family in a year are: savings upto 0.5-1 tons of carbon emissions, upto 1000 liter water and reduction of indoor pollution upto 60%.

Why is it successful?

It is affordable for most people, and saves money. It is cheap, and have a nice colourful look. People can also make them themselves from local materials. There are cook books available, and a community to share knowledge.

If you can make it, a short description, typical problems, materials needed:

Fireless cooker is an insulating basket made from locally available materials.

How to make it (if possible):

How is it delivered and by whom?

Successful financial model

What policies and strategies helped the success?

More info:

Tangeni Crafts, Kenya: https://www.facebook.com/tangenicrafts/ Tel. +254 708 926643 Motozero, Kenya: https://www.motozero.co.ke/ Tel: +254 796 804 864

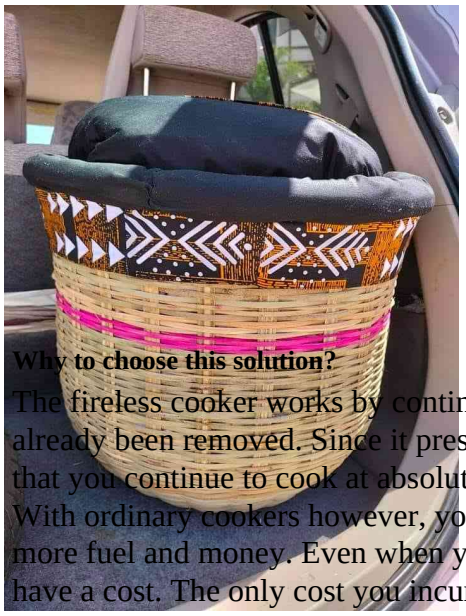
Sources:

Betty Okello, Founder Tangeni Crafts. Email:betikwambs@yahoo.com Tel:0708926643

Case uploaded:

2023-03-20

Fireless cookers / food warmers by Tangeni Crafts







Why to choose this solution?

The fireless cooker works by continuing the process of cooking for a long time after the source of heat has already been removed. Since it preserves the heat and keeps it from getting lost in the environment, it means that you continue to cook at absolutely zero cost, while the heat is released very slowly as the food cooks. With ordinary cookers however, you still need the source of heat to continue the cooking, thereby expending more fuel and money. Even when you simmer the food on the stove, the lower amounts of heat released still have a cost. The only cost you incur with the fireless is the cost of purchasing it, which is very reasonable when compared to the years of use and hundreds of meals you will cook in it.

Savings per day or production:

It cuts down the cost of fuel consumption upto 50% depending on your volume of cooking. You redeem approximately 50% of your cooking time. Therefore you are able to focus on other chores or whatever needs your active attention. You are assured that your cooking is safe and healthy for your family. High nutrients reserved in slow heat cooking. It can be used for over 10 yrs. It does not a regular need fixing or replacement. Incase it does, we can still do the fixing.

Cost in money and in own time to construct:

It varies with size and the cost of the materials. The range is between Ksh. 2000 (20 USD) to Ksh. 10000 (100 USD). It takes between 2 to 3 hours making a single fireless cooker when all the materials are readily available.

Lifetime:

10 years on the minimum.

Maintenance needed:

It does not require much maintenance apart from light cleaning with a wet cloth and putting it on the sun to dry. Note: only when it requires cleaning, e.g, if there are some spill in the fireless cooker.

Resources needed in use:

None.

Problems and limits:

Financial constraints to those who know their advantage and would like to have one. Lack of appreciation and awareness from the community on the benefits of the fireless cookers.

Where and how can you get it or make it?

Available at Tangeni Crafts stores, also delivered countrywide on order.

Skills needed to produce, install. maintenance, use:

Knitting, attention to detail.

How to use it:

How to maintain it:

Climate effect (if any):
It is 100% environmentally friendly since there are no emissions when using this technology.

Why is it successful?
Because they are made from readily available materials, they are affordable.

If you can make it, a short description, typical problems, materials needed:
Fireless cooker is an insulating basket made from locally available materials.

How to make it (if possible):

How is it delivered and by whom?
Deliverd countrywide by Tangeni Crafts in Kenya.

Successful financial model

What policies and strategies helped the success?

More info:
https://web.facebook.com/search/top?q=tangeni%20crafts

Sources:
Betty Okello, Founder Tangeni Crafts. Email:betikwambs@yahoo.com Tel: 0708926643.

Case uploaded:
2023-03-20

Haines-Copenhagen Solar Cookers





Why to choose this solution?

Solar cooking is the second-most preferred method of cooking at the Kakuma Refugee Camp, the Haines-Copenhagen solar cookers provide a reliable, inexpensive and durable cooking technology thereby reducing overreliance on firewood and charcoal.

Savings per day or production:

Savings on wood fuel and charcoal.

Cost in money and in own time to construct:

Costs KSh 2500 (USD 25).

Lifetime:

3-5 years with proper care.

Maintenance needed:

Wiping of the reflective material.

Resources needed in use:

Requires sunlight and cooking pots to use.

Problems and limits:

It cannot be used all the time especially at night and during rainy seasons. It is slow in cooking.

Where and how can you get it or make it?

It is available in Kakuma Refugee Camp, Kenya. There are other models like Haines 2.0.

Skills needed to produce, install. maintenance, use:

The cookers come with simple assembly instructions. They have color-coded snaps for quick assembly and instructions on how to use them.

How to use it:

Kakuma refugee camp video: https://youtu.be/rnrIPdtuDsQ (not perfect film, just for illustration).

How to maintain it:

Not relevant.

Climate effect (if any):

Solar cookers produce no smoke, no carbon emission, and reduce deforestation in the region.

Why is it successful?

The solar cooker is low cost, lightweight, compact, easy to assembly, folds easily for storage, and durable so it can be used many years.

If you can make it, a short description, typical problems, materials needed:

The cookers uses the same reflective material as the regular Haines Solar Cooker, specifically, a Rogers metalized polyethylene terephthalate (MPET) foam reflector, and a cooking sleeve without the polycarbonate cover.

How to make it (if possible):

https://youtu.be/G18omu6kRis

How is it delivered and by whom?

The cookers are made in Kakuma by refugees from materials donated by Haines Solar Cookers. Fifty refugee women were trained to make the cookers, and they in turn trained the children during the solar cooking festival in which 500 schoolchildren participated.

Successful financial model

Support and training from partners like Haines Solar Cookers, Eco-mandate Foundation; Natural Resource and Waste Management Alliance. Solar- cooking festival increasing the uptake of solar cookers. In 2017, fifty refugee women were trained to make the cookers, and they in turn trained 500 school children during the Solar Cooker Festival at the Kakuma Refugee Camp. The high demand for solar cookers led to inception of a social enterprise.

What policies and strategies helped the success?

Successful partnerships between Haines solar cookers and Copenhagen solar cookers; solar-cooking festival for 500 schoolchildren, which increased the uptake of solar cookers.

More info:

https://www.hainessolarcookers.com/, https://youtu.be/G18omu6kRis, https://youtu.be/rnrIPdtuDsQ, https://www.facebook.com/ecomandate/, https://www.she-inc.org/?p=2538.

Sources:

Case uploaded:

2020-08-27

Parabolic Reflector Solar Cookers





Why to choose this solution?

Parabolic reflectors are among the most powerful solar cookers. They can be used for frying and fast cooking, and they complement other types of solar cookers that more suited for slow cooking. Like all solar cookers, there are no fuel costs or emissions from using it, and there are economic, health and environmental advantages particularly beneficial for women.

Savings per day or production:

Savings on wood fuel and charcoal.

Cost in money and in own time to construct:

It costs USh 700,000, (USD 195). No fuel cost.

Lifetime:

10-15 years with proper care.

Maintenance needed:

Wiping of the reflective material.

Resources needed in use:

Requires sunlight and cooking pots to use.

Problems and limits:

When there is no sun, it is intended to be integrated with cooking solutions that can work at night or during rains. It is generally more expensive than panel and box cookers, and requires more storage space.

Where and how can you get it or make it?

Available in stores in various villages. Solar Connect Association, Renewable Energy Centre, Bihaarwe, Masaka, Mbarara Road, Opposite Igongo Hotel, Mbarara, Uganda. T: +256 772 665 894, E: scacooking23@gmail.com

Skills needed to produce, install. maintenance, use:

How to use it:

The cookers come with assembly instructions. Training on how to use them is recommended. Proper safety such as sun glasses/sun protection and hot pads are recommended. Set matte-black cookware on pot stand. Point the cooker to the sun to collect and concentrate sunlight onto the cook pot. When cooking longer period, the cookers needs to be periodically reorientated towards the sun.

How to maintain it:

Climate effect (if any):

Solar cookers produce no polluting gas and carbon emission, and there is reduced deforestation in the region.

Why is it successful?

The cooking time is fast, like traditional stovetops. High temperatures (120â€“230 Â°C) allow for food to be fried, grilled, and boiled. There is no need of collecting or buying fuelwood. With its safe design, the cooker can be used over many years. The cost is low compared to the expense one would otherwise spend on firewood and/or charcoal as cooking fuel over time.

If you can make it, a short description, typical problems, materials needed:

How to make it (if possible):

How is it delivered and by whom?

Successful financial model

Several organisations have provided seed funding for Solar Connect Association (SCA) to promote, produce and market different types of solar cookers since 1994, which resulted to a market expansion. SCA produces different models of solar cookers, but the parabolic cooker is traded from China. SCAâ€™s fulltime employees are mostly women and include village women marketers who are trusted in their communities. They raise awareness through demonstrations and help SCA to generate revenue from sales that covers all expenses, which is reinvested to grow the business.

What policies and strategies helped the success?

More info:

https://solarcooking.fandom.com/wiki/Category:Parabolic_solar_cooker_designs, https://solarcooking.fandom.com/wiki/Solar_Connect_Association

Sources:

Solar Connect Association, Renewable Energy Centre, Bihaarwe, Masaka, Mbarara Road, Opposite Igongo Hotel, Mbarara, Uganda. T: +256 772 665 894, E-mail: scacooking23@gmail.com

Case uploaded:

2022-01-24

Solar Box Cooker





Why to choose this solution?

Solar cookers are an easy way to use less firewood and save money. Depending on the needs of the user one can also use this solution for drying and preserving farm produce.

Savings per day or production:

This solution saves the use of bio fuels and biomass for cooking up to 95% because it requires no fuels for heat generation.

Cost in money and in own time to construct:

The solar box costs between UGX 300,000 (boxed cooker) - 1,000,000 (more complex designs) approximately USD 82.19 - 277. It can also be constructed using local materials and a person can construct one for home use.

Lifetime:

The duration for this solution is around 10-30 years.

Maintenance needed:

Regulary clean the interior of the box after use.

Resources needed in use:

Good sunny weather, Knowledge of solar cooking, materials and market.

Problems and limits:

Requires Good Sunny Weather and knowledge on how to use the solar cooker. Cannot fry foods. In cultures and societies where frying is common, take up of solar cookers will be less as the cheaper models cannot fry foods.

Where and how can you get it or make it?

The solar box are sold at JEEP offices in Kyanja and online shopping platforms.

Skills needed to produce, install. maintenance, use:

Production requires technical training. There are no specific skills required to maintain or install the solar box; all you need is to be careful while handling it and always keep it clean. Using a black pot increases the efficiency.

How to use it:

How to maintain it:

Needs to be cleaned after cooking.

Climate effect (if any):

Solar box cookers produce no smoke and no pollution, hence reducing green house gas emissions by 90%.

Solar cookers lessen the demand for firewood, saving up to 1 ton of wood per year for each solar cooker.

Why is it successful?

JEEP promotes uses of renewable energy for cooking. It has promoted this solution and marketed it all over the country. JEEP carries out training, also encouraging youth to be creative and to start producing these boxes to earn some income, to make the solution cheaper, and to make it available to all kinds of people.

If you can make it, a short description, typical problems, materials needed:

It needs a skilled person to construct the product. To make this solar box, you need a box made out of an insulator, a glass pane or a transparent polycarbonate sheet. One needs to insulate the box more by adding a layer of insulating material plus a black cloth to cover the layer. The cover of the box should be made of a transparent material that can allow in sunlight and cover the box allowing very little or no air to enter the box while closed.

How to make it (if possible):

Not relevant.

How is it delivered and by whom?

It can be found/picked up at JEEP head office in Kyanja.

Successful financial model

Support from development partners.

What policies and strategies helped the success?

Support from development partners and government policies of waiving taxes on solar products.

More info:

http://solarcooking.wikia.com/wiki/Introduction_to_solar_cooking

Sources:

JEEP, 7 Miles, Gayaza Rd, Kyanja, Kampala, P. O. Box 4264, Uganda. Phone: +256 414 578 316. Email: info@jeepfolkecenter.org. https://jeepfolkecenter.org/

Case uploaded:

2021-03-16

Solar Box Oven (ULOG)





Why to choose this solution?

On sunny days, a solar box cooker reduces the use of firewood and the time collecting firewood, as well as saves money to buy firewood or charcoal. There is no smoke. The box cooker is an insulated box, with a reflector using the greenhouse principle. You can cook in multiple pots, and no need of steering the food. The ULOG solar ovens can be bought or made from local materials, according to a manual.

Savings per day or production:

The solar box cooker saves the use of fuel wood or charcoal on sunny days.

Cost in money and in own time to construct:

It costs as low as USD 60 to contruct depending on materials used. They can also be built by yourself according to instruction in a couple of days. There is a Do-It-Yourself manual, which is open source. The cooker consists of an insulated box with a transparent top allowing light in, and reflectors to collect more light into the box.

Lifetime:

Around 10-15 years.

Maintenance needed:

Regularly clean the reflectors, window, and interior of the box after use.

Resources needed in use:

No need of fuel.

Problems and limits:

It is not ideal to prepare meat and frying since it does not reach high temperatures enough. You cannot cook in cloudy and rainy days. Cooking takes longer time than cooking on fire.

Where and how can you get it or make it?

Skills needed to produce, install. maintenance, use:

How to use it:

Place black pots of food in the oven, close the oven and align the oven with the direction to the sun (shadow behind the cooker). Cooking usually take 1-3 hours. Optimizing it, turn the cooker to follow the sun every 20-60 minutes. It cooks well rice, stews, eggs, vegetables and East African foods as ugali, githeri, sukuma wiki.

How to maintain it:

Climate effect (if any):

Using solar cookers ovens on sunny days lessen the demand for firewood or charcoal, thus reduce CO2 emissions from cooking, and reduce deforestation.

Why is it successful?

It is a strong box, which manages well for long time.

If you can make it, a short description, typical problems, materials needed:

You can build it from local material such as Wood plate, glass, reflecting material (aluminium folie).

How to make it (if possible):

You can build it yourself. Do it Yourself Manual is available. See at the more info underneath.

How is it delivered and by whom?

You can buy it or you can build it yourself.

Successful financial model

You can buy it or you can build it yourself. Local production ensures good quality, keeps costs lower and supports the local economy. Ecomandate produces it in Kenya, by Kenyans, using materials available in Kenya, and for use in Kenya. The double sized model (see photo) is also produced and used in Kakuma refugee camp since 2018. This approach of local production building solar cooking capacity in Kenya is leading to increased accessibility and affordability of solar box ovens in Kenya.

What policies and strategies helped the success?

Advocating partners for solar cooking like Solar Cookers International are urging national governments to prioritize solar cooking in their national policies and in refugee camps.

More info:

https://ecomandate.com/ , https://solarcooking.fandom.com/wiki/ULOG_1.0 , https://solarcooking.fandom.com/wiki/Category:Solar_box_cooker_designs . DIY Manual: http://www.med.uni-magdeburg.de/~maercker/SolCook/slcot-en.html

Sources:

Solar Cookers International (SCI), Ecomandate Foundation, Mbagathi Road, Nairobi, Kenya. T: +254 729 001702, ecomandatefoundation@gmail.com

Case uploaded:

2021-03-15

Solar Cooker Cookit





Why to choose this solution?

This solar cooker is made of durable cardboard and foil shaped to reflect maximum sunlight onto an enclosed cooking pot. It is easy and simple to use. It is an affordable, effective, and convenient solar cooker. With a few hours of sunshine, the CooKit makes tasty meals for five to six people at gentle temperatures, cooking food and preserving nutrients without burning or drying out. The solar cooking process is smokeless, reducing pollution, respiratory diseases, and eye irritation.

Savings per day or production:

CooKit saves more than four times its value in fuelwood each year. With careful use and storage, a CooKit can be used for two years, reducing fuelwood consumption by two tonnes. Reduces pressure on forests for firewood and charcoal.

Cost in money and in own time to construct:

CooKits are produced from a wide variety of materials at a cost of KSh 300-700 (USD 3.00- 7.00).

Lifetime:

With careful use and storage, a CooKit can be used for two years.

Maintenance needed:

Storing the CooKit in a safe place away from moisture and animals, preferably indoors. Allowing plastic bags to air-dry or gently wipe dry with a towel. The CooKit is compact and portable. When not in use, it can be simply folded lengthwise into thirds or folded flat into a 33 cm (13 in) square.

Resources needed in use:

Sunlight, a cooking pot and lid, plastic bags or pyrex bowls as a greenhouse.

Problems and limits:

Can be blown away on a windy day but added weights e.g., stones can easily hold the cooker in place (as pictured above).

Where and how can you get it or make it?

Originally designed by Solar Cookers International (SCI), people can make CooKits using open source design plans. You can also buy CooKits from NGOs using them in your own country. In Kenya, CooKits are used in Lower Nyakach, and are available from the organization â€œFriends of The Oldâ€•.

Skills needed to produce, install. maintenance, use:

Brief training on how to construct and use the CooKit require only a short introduction.

How to use it:

To be added.

How to maintain it:

To be added.

Climate effect (if any):

CooKit can be used for two years, reducing fuelwood consumption by two tonnes. It reduces pressure on forests for firewood and charcoal, hence helps to reduce climate change.

Why is it successful?

It is successful because the card stock and reflective material are available locally (sometimes as recycled material such as the inside of snack bags for the reflective material). It is easy to make and use, the fuel (sunlight) is free of charge and abundant, and it is portable. The CooKit Solar Cooker was launched in 2005 in several refugee camps in Chad, which made it well known. Using the Cookits resulted with that women and children no longer had to leave the camp to get firewood, and were not exposed to risking being raped, harassed and murdered. It also reduced the use of fuel wood in the dry region, and the time women spent on cooking on open fires.

If you can make it, a short description, typical problems, materials needed:

Cardboard (3x4 feet or 1x1.3 meters); aluminum foil; white glue; water. There is a handbook published by Solar Cookers International that includes detailed plans for building a CooKit.

How to make it (if possible):

https://youtu.be/yykfL6pYbBQ

How is it delivered and by whom?

Local entrepreneurial groups can easily use open- source design plans to launch CooKit production, sales, and distribution. For instance, CooKits have been distributed directly to beneficiaries (such as elderly community members) by community-based organizations. Complementary technologies, such as a Water Pasteurization Indicator (WAPI) and an insulated basket (fireless cooker) may be bundled with a CooKit and cookware.

Successful financial model

Because the CooKit is so affordable and easy to make, families can make one and start experiencing savings in fuel costs right away. These savings could even then be used towards purchasing other models of solar cookers.

What policies and strategies helped the success?

Localleaders (especially women) leading byexample and demonstrating use with local foods in the local language. Training and follow up and community support/involvement (many women in a community having access to solar cooking). Women taking pride and ownership in the CooKits, for example, by adding a fabric liner around the edges to make it sturdier and more visually appealing.

More info:

Solar Cookers International (SCI), https://solarcooking.fandom.com/wiki/CooKit, List of NGOs where you can buy it: https://solarcooking.fandom.com/wiki/CooKit#NGOs. Handbook â€œHow to Make, Use and Enjoyâ€•:
https://www.solarcookers.org/files/7914/5687/8521/How_to_make_use_understand_English_Update.pdf and Cookbooks available from https://www.solarcookers.org/resources/download

Sources:

Case uploaded:

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