

Considerations in the Selection and Use of Energy Saving Stoves

Internal Lifeline Fund
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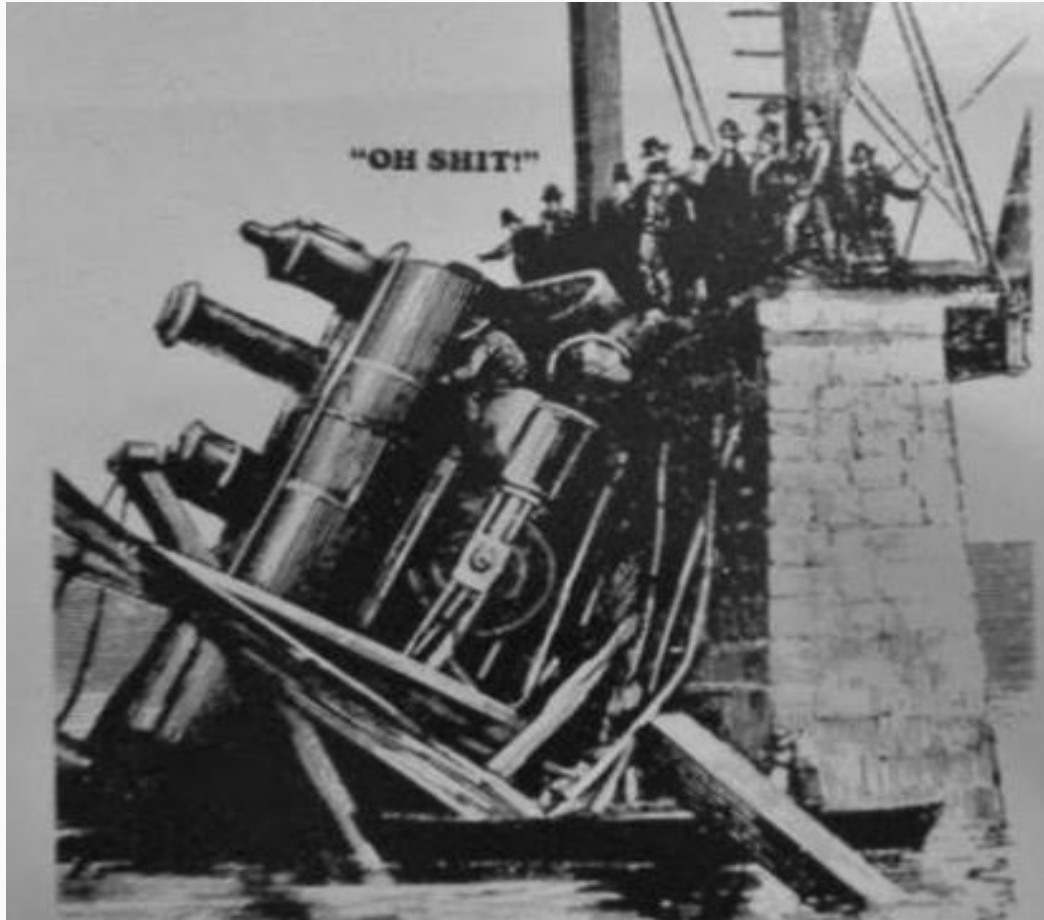
LifeLine & (Fuel Stove) Efficiency: Why it Matters

Humankind's evolution is existentially linked to fire & water. And yet today, over 2 Billion people do not have access to safe and sustainable water, heat or cooking solutions. The economic, ecologic and human opportunity costs of this historical inequity are devastating. The good news is that economically scalable solutions exist and this historical gap in the market can be bridged.

Mission:

Lifeline develops and promotes technology, financing and distribution systems that deliver economical, safe water and cooking solutions in historically underserved communities.

From Aid to Development



Efficiency

- Either transfer of heat (firepower) to the saucepan
 - or fuel savings compared to the specific baseline
 - Baseline = widely used unimproved cookstoves in the region
 - Different testing methodologies (WBT, CCT, KPT and others, mostly regional methods)
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- Charcoal making in Uganda has an efficiency of roughly 10% (100 kg of wood -> 10 kg of charcoal)
 - Fuel efficient charcoal stoves have an thermal efficiency of 40 to 50% in simmering



Cookstove Selection Criteria

- Efficiency
- Durability
- Safety

- Affordability
- Usability / acceptance
- Firepower / people served



Successful implementation

“I think the most important message is that the [ILF stove] is a great success within the refugee context ...However we also wanted to provide you the feedback from the field that lots of stoves are not being used or not efficiently being used. This is often due to a lack of end-user training by the disseminating NGO. Their activities are of course often not within your hands. But maybe when they purchase the stoves you could offer them to add some end user training on site.”

- Oct. 2017 donor feedback from Rhino and Imvepi camps, Uganda



1. EcoSmart Wood Stove (EWS)

The EWS is designed to fit the needs of rural villagers and refugees. Lifeline has demonstrated adoption rates as high as 90%+ with the EWS because it requires little to no change in cooking behaviors. The EWS uses the same fuel to which consumers are accustomed, enables cooking from the seated position, and is suitable with a wide range of saucepans.

Dimensions:	31 cm x 28 cm (diameter x height)
Weight:	Roughly 20 kg
Efficiency:	WBT: average, approx. 30%
Fuel savings:	40% and up (compared to a 3 stone fire)
Average Life:	2-3 years
Warranty:	none
Price:	UGX 16,000 ex factory UGX 21,000 delivered anywhere in Uganda including a small user training, additional software packages available (extensive user training, kitchen management, training of entrepreneurs in sales and/or minor repairs etc.). Bulk sale discounts available.



2. Shielded EcoSmart Wood Stove (shielded EWS)


The shielded EWS is a further development based on the EWS. The main difference is the metal housing of the stove body, providing more stability and durability by supporting the clay structure. The metal jacket also creates a better appearance. This stove can be individually branded or customized and has one year warranty on production faults.

Dimensions:	31 cm x 28 cm (diameter x height)
Weight:	Roughly 20 kg
Efficiency:	WBT: average, approx. 30%
Fuel savings:	40% and up (compared to 3 stone fire)
Average Life:	3-5 years
Warranty:	1 year
Price:	<p>UGX 22,000 ex factory UGX 27,000 delivered anywhere in Uganda including a small user training, additional software packages available (extensive user training, kitchen management, training of entrepreneurs in sales and/or minor repairs etc.) Bulk sale discounts available.</p> <p><i>This stove can be branded/customized according to the clients wishes</i></p>




3. Okelo Kuc Charcoal Stove (Okelo Kuc)

The Okelo Kuc was named by the users and was the first charcoal stove locally produced in northern Uganda. The translation of the name is “peace bringing stove.” A metal cylinder serves as the housing for the clay insulated body. The clay grate disc holds the charcoal in position while a round of clay bricks provides the insulation to the sides to direct the heat mainly to the saucepan. This stove is produced in 3 different sizes. Size 1 (small) is designed to cook for families up to 6 people, size 2 (medium) made for families up to 10 people and size 3 (large) is designed to cook for families up to 14 people.

Dimensions:	28/29/31 cm x 25/25/27 cm (small/medium/large, diameter x height)	
Weight:	between 11 kg (small) and 15 kg (large)	
Efficiency:	WBT: average 30%	
Fuel savings:	40% and up (compared to an ordinary, inefficient stove)	
Average Life:	3-5 years	
Warranty:	1 year	
Price:	Small: UGX 18,500 retail price Medium: UGX 22,000 retail price Large: UGX 25,000 retail price Whole sale prices are available.	

4. EcoSmart Charcoal Stove (ECS)

The ECS is an improved Okelo Kuc stove. Instead of a clay sprocket and clay bricks, its combustion chamber is a monolith clay bowl (liner), surrounded by a layer of insulation to increase the heat retention and to hold the liner in the correct position. This stove is actually produced in 3 different sizes. Size 1 (small) is designed to cook for families up to 6 people, size 2 (medium) made for families up to 10 people and size 3 (large) is designed to cook for families up to 14 people. The planned bigger sizes, up to size 6, are planned for restaurants and other institutional users in urban areas where firewood can't be used (e.g. inside malls etc.).

Dimensions:	26/28/30 cm x 23/24/25 cm (small/medium/large, diameter x height)	
Weight:	between 10 kg (small) and 13.5 kg (large)	
Efficiency:	WBT: average 30%	
Fuel savings:	40% and up (compared to an ordinary, inefficient stove)	
Average Life:	3-5 years	
Warranty:	1 year	
Price:	Small: UGX 18,500 retail price Medium: UGX 22,000 retail price Large: UGX 25,000 retail price Whole sale prices are available. <i>This stove can be branded/customized according to the clients wishes.</i>	

5. Institutional Stoves (IS)

The IS will be made highly customized. Sizes start with a single flame for a 10 L saucepan on charcoal or firewood and are customizable to furnish full kitchens with several 500 L saucepans, grill(s) and baking oven(s) included. The front finish will always be with hollow/selected (hard) bricks, the top finish will be done according to the wishes of the customer (cement plaster, clay tiles, ceramic tiles, terrazzo etc.). All corners and saucepan holes are generally reinforced with angle iron bars to protect them.

Dimensions:	Individual, depending on the saucepan size, the number of flames and customer wishes
Weight:	Same as dimensions
Efficiency:	WBT: depending on the specific construction, usually between 25% and 40% on average
Fuel savings:	between 50% and 70%, depending on the specific construction and operation
Average Life:	10 - 15 years
Warranty:	2 years standard, up to 10 years premium
Price:	depending on the specific construction





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Thank you!

Contact

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Institutional Stove Testing for inclusion into the Green School NAMA



Stove Type	n	Mean Specific fuel consumption (g of firewood/kg of posho)	Standard Deviation of Specific fuel consumption (g of firewood/kg of posho)	Cooking Time (min)	Fuel Savings
AES	5	100	4.8	106	41%
ILF	5	82	18.2	108	51%
TSF	6	168	13.3	110	
CEFA	3	128	10.7	103	24%
EUf fixed	3	122	32.3	106	27%
PETSD	3	103	10.9	130	39%
Sessa Fixed	2	105	30.8	144	37%
BM mobile	5	66	11.8	148	61%
EUf mobile	5	108	27.4	102	35%
Sessa Mobile	4	87	11.2	166	48%
Virunga Mobile	4	81	5.9	170	51%