

POSSIBLE STOVE OPTIONS FOR HAITI

LuciaStove

Stove Features:

- Stove is designed to not need wood or charcoal. It converts biomass to a gas with the same energetic content of LPG
- It is carbon negative (when using the stove, the user sequesters more CO₂ than they produce)
- User can add fuel while cooking
- The biomass feed rate is 300 g for 1.5 hours of cooking time on a low setting and 1.5 kg for one hour on the highest setting
- Very light

Fuel options

They have successfully used the following list of fuels to create inert biochar with these stoves.

- Peanut shells, Rice husks, Corn stalks, Corn cobs (without seeds), Straw, Karite shells, Almond husks, Almond shells, Various nutshells (including: coconut, walnut, pistachio, pecan), Small branches, Pigeon pea stalks, Non-edible agricultural plant mass, Spoiled grain products no longer suitable for human or animal consumption, Wheat chaff, Post brewery products, Animal waste, Bamboo, Pelletized grasses, Kenaf, Sawdust, Wood shavings, Lumber yard scrap, Used vegetable oil

The end product of the combustion process is biochar, and can be used as:

- A soil amendment to help maintain the viability of soils. This helps plants become established even in depleted soils and allows poor soils to be restored. Its porous physical structure provides spaces for microbes to grow. These microbes break down organic matter in soils and assist in fixing Nitrogen.
- A mode of carbon sequestration. A core component of mitigating climate change is the sequestration of CO₂. Biochar, when properly created, is inert and holds CO₂ in the soil, preventing it from being released into the atmosphere.

Other Benefits

- As a retail item, the LuciaStove is intended for lots of 500 or more, and has a focus to set up micro industries in communities. WorldStove constructs the base components and then works with local liaisons to set up small manufacturing plants. These plants do not require welding, riveting or drilling. They serve as a skill based income generating activity for the community. They provide the instructions and guide for assembly of additional stove parts and will work with local groups to set up the plant, and to adapt the LuciaStove to local cooking needs. For numbers greater than 500, the price drops significantly.
- Local production can be done with either traditional techniques or high tech factories.



- Could provide more than 10,000 permanent jobs in Haiti for women and the recently disabled over a 2-5 year period.
- Increases available daily family income by over 40%, in fuel cost savings alone.
- Provides better nutrition
- Would help to eliminate the dependence on coal, wood, or imported fuel Haitian families
- Could help improve soil fertility and aid reforestation efforts
- The stove product could be used as a possible export to Central and South America.
- May help Haiti generate around \$35,753,575 USD annually in carbon credits
- In addition to the creation of jobs for women, the recently disabled, and people currently working in the charcoal and stove industries, jobs are also being created with the manufacture of pellets and briquettes.



Cost:

- \$35 - \$40 USD and can be supplemented by micro-finance programs

Website:

- <http://worldstove.com/products/luciaStove-for-developing-nations/>

Establishing a LuciaStove Manufacturing Hub:

- ◆ Five Step System
 - Step 1: Local group wanting this Stove Hub provides building, and personnel, WorldStove provides 3 Biucci (large institutional stoves) and 30 Beaner stoves (a small version of the LuciaStove) plus a small briquette press.
 - Step 2: Once the Stove Hub has demonstrated availability of all materials necessary to complete construction of 500 stoves, WorldStove will arrange for the first 500 critical components, necessary tools and a small pellet press to kick start the program.
 - Step 3: Before a large press (600kg per hour) is provided, the Stove Hub must demonstrate orders for stoves or fuel or having established a reliable demand for stoves.
 - Step 4: If they demonstrate that they are measuring, evaluating, and storing char, then Stove Hub can enter the carbon credit program.
 - Step 5: Once Stove Hub has collected 5 tons of char, WorldStove will help the Stove Hub develop a reforestation and soil restoration programs.

World Stove has completed a pilot project in Haiti and has plans to help establish a stove manufacturing-hub sometime soon.

Stove Team International:

Stove Features:

- Light weight and portable
- Cool to the touch. This reduces the risk of burns to children and other individuals in the cooking area.
- Reduces wood consumption by 60%
- Uses twigs and corn cobs
- May be more desirable for users – due to its more permanent feel and ability to cook larger and/or multiple items



Company Features:

- Factories can be set up locally, providing employment opportunities to the communities they operate in.
- They use a business model to increase the sustainability of their operations.
- They currently operate in El Salvador, Guatemala, Honduras and Nicaragua.

Cost:

\$20 - \$40 (The stove costs about \$40 to produce but is subsidized by various organizations, bringing the costs down to \$20 for the end user.)



Website: <http://www.stoveteam.org/index.html>

Stovetec Wood Stove:

Stove Features:

- Very light, Cool to the touch
- Reduces emissions by 50-75%
- Uses 40-50% less fuel
- Light weight and portable
- 23,900 BTU of Cooking Power
- Rugged cast iron stove top available in two sizes
- Easy to clean steel body
- Sturdy, heat resistant handles
- Comes with an adjustable pot skirt
- Aside from wood, this stove cooks with dried corn cobs, grass, roots, dung and other readily available biomass
- Can boil 5 liters of water in 20 minutes using three 4 cm in diameter, 30 cm long sticks of wood. One additional stick is enough to simmer for 45 minutes

Company Features:

- Company also has a two door model that allows for simmering after food has been cooked.
- When tested in February 2010 by USAID and UC Berkley with other fuel efficient stoves at Dadaab Refugee Camps in Kenya, StoveTec was rated first by most villages in fuel efficiency, safety, durability and ease of use.
 - o Report found here: http://stovetec.net/us/images/stories/USAID_DadaabFinal.pdf
- Lab and field tests in Uganda, Ethiopia and India show a savings of 50% of fuel wood, 70% of particulate matter, and 50% of carbon monoxide emissions compared to three-stone fires.
- Currently in use in India, Marshal Islands, Argentina, Chile, Nicaragua, Tanzania, South Africa, Uganda, Kenya, Ethiopia, and Nigeria.
- Future (2011) products from this company look very promising; see the link for information on their highly efficient fan stove: <http://www.stovetec.net/us/stove-products/fanstove>
- Won the Ashden Award for Sustainable Energy
- Started donating products to Haiti in February 2010
- Stoves are made of ceramic and produced in China, reducing the production costs and cost to consumers



Cost:

- \$3 - \$12 including shipping in large containers (depending on model and shipping costs)
- Details found at <http://www.stovetec.net/us/projects/22/14-humanitarian-projects>:

Specifications:

- Wood Stove
 - Stove Top Diameter: 24, 26, or 28 cm
 - Height: 28.6 cm
 - Weight 8.2 kg
- Wood-Charcoal Stove
 - Stove Top Diameter: 24, 26, or 28 cm
 - Height: 29.8 cm
 - Weight 8.6 kg

Website:

- <http://www.aprovecho.org/lab/index.php>
- Additional information: <http://www.stovetec.net/us/index.php>

Purchasing Stovetec Products:

Acquiring thousands of StoveTec Stoves is now done by placing an order through the company. This avoids the difficulties and risks of setting up a manufacturing facility in-country.

Stoves are shipped in 20-foot (holding 1,300 to 1,800 stoves) and 40-foot containers (holding 2,600 - 3,600 stoves) from Ningbo, China.



The prices for stoves range from \$3 - \$12 FOB, with shipping to port adding less than \$1 per stove. Distribution costs from the port closest to the intended location will vary.

Stoves arrive in a user friendly box with an optional user manual. The stove box and user manual can be tailored to local languages and color preferences for a reasonable fee.

Total cost including shipment of a 20-foot container is approximately \$8,000 for the StoveTec Stove Kit, \$14,000 for the StoveTec Wood Stove and \$17,000 for the StoveTec Wood-Charcoal Stove. Cost for a 40-foot container including shipment is approximately \$16,000 for the StoveTec Stove Kit, \$28,000 for the StoveTec Wood Stove, and \$34,000 for the StoveTec Wood-Charcoal Stove

NGOs working with these stoves in Haiti:

- [Ananda Marga Universal Relief Team](#) (AMURT)
- [International Lifeline Fund](#) (ILF)