

A few Global Resolve Projects

[The Twig Light: wood-burning power for off-grid communities](#)

A wood-powered flashlight lights up off-the-grid communities with steampunk [spirit](#) (if not its [aesthetic](#)). The Twig Light turns fire on its head: Instead of using fire for light, it locks its biomass inside an opaque box where its flames heat a generator that powers a bank of LEDs.

Students and faculty from Arizona State University are testing their invention in rural Ghanaian villages. For the people in those communities, wood is a familiar power source. Electric lights are scarce and so is electricity., but cell phones are abundant. That's one of the idiosyncrasies of development – electronics are cheap, but power plants aren't.

Gel Fuel Production in Domeabra



Related Links:

[Read Brian McCollow's blog on Summer 2009 Ghana trip](#)

[Read the Ghana Initiative Post-trip Report](#)

[Read the Gel Fuel Status Report](#)

GlobalResolve is undertaking an innovative project to produce and sell ethanol gel fuel in the village of Domeabra and the surrounding area of Kumasi, Ghana. Gel fuel has many benefits when compared to other common fuel sources in Ghana: wood, charcoal or dung. These include a reduction in indoor air pollution, and the accompanied health effects, the stimulation of local economic activity through the production of feedstock to produce the fuel, and the creation of an alternative energy product that can be marketed throughout the region.

GlobalResolve is partnering with the paramount chief of Domeabra, Nana Frimpong Afoakwa, to establish a production facility in the village, provide loans to local farmers, and to market and sell the fuel in the surrounding regions. This pilot project will also produce information and training opportunities that will allow for the establishment of similar village-scale production centers throughout central Ghana.

Progress

In September 2008 engineering students and faculty at Arizona State University (ASU) installed an ethanol production system in Domeabra. The equipment was designed and manufactured at ASU with support from the National Collegiate Inventors and Innovators Association (NCIIA).

The system incorporates all the necessary equipment to produce ethanol from corn, sugar cane, or rice and to gel the ethanol to make it an effective cooking fuel.

The village has begun producing ethanol from locally-acquired corn. Once the plan reaches full capacity, approximately 500,000 gallons per year, Global Resolve will work with the chief to market and sell the fuel through local distribution networks. Some of the fuel will be consumed by area residents, and the remainder will be shipped to the large urban area of Kumasi, where the fuel will be marketed and sold along with a cook stove that is currently being developed by GlobalResolve with funding from the Women & Philanthropy group at ASU.

Ongoing Research

Engineering students at Kwame Nkrumah University of Science and Technology (KNUST) in Kumasi, Ghana are currently undertaking research to measure the emissions of ethanol gel fuel as compared to the other common fuel sources in Ghana: charcoal, wood, and liquid petroleum gas (LPG). Global Resolve is also partnering with the Kumasi Institute of Technology, Energy and Environment (KITE), an NGO in Ghana that seeks to enhance the energy resources of the country, to coordinate a country-wide market assessment and field study of gel fuel in Ghana.

- **Water System in Fawomanye**



Related Links:

[View a video feature on this project](#)

When GlobalResolve visited the village of Fawomanye in May 2007 the residents were taking their water from a highly polluted runoff pond. The pump in the village yielded only brackish water, so it was clear that an alternative source of clean water was desperately needed. GlobalResolve set about designing a low-energy, low-cost solution that could purify the water from the local pond.

The DewVap water purification system uses the processes of condensation and evaporation to produce up to 250 liters of clean water per day. The system requires little energy and is made from materials that can be acquired in Ghana. Students and faculty at ASU are currently working on improving the efficiency and performance of the DewVap system and are planning to finish a prototype by spring 2008.

In the meantime, GlobalResolve received over \$5,000 in donations from three local churches to subsidize water filters for the villagers in Fawomanye. The ceramic filters serve as a temporary remedy for the water problem.

Jatropha Biodiesel in Biemso, Ghana



GR is partnering with KNUST and the village of Biemso, Ghana, to help create a biodiesel business based on the development of a Jatropha plantation, nursery and processing center. The village of Biemso has allocated several hectares to this project and would like to expand. The first harvest of Jatropha fruit was made in summer 2008.

Biemso wants to create a nursery to provide other plantations with Jatropha seedlings and build an oil extraction facility to process the harvest for shipment to customers. GR is helping the village by raising capital for the nursery and processing, and developing a business plan for the venture. Using teams of honors students in W.P. Carey School of Business, GR is creating both short and long term plans for success. Additionally, GR is partnering with KNUST to submit research proposals to use the Jatropha harvest to power university vehicles on campus in an experiment using raw Jatropha oil instead of more expensive refined biodiesel.