

Bio-alkanol gel fuel for rural household in the Lake Victoria Basin



Preamble

The clean energy potential in eastern Africa is sufficient to develop a strong economic, social and environmentally beneficial supply that can exceed regional energy needs, make significant progress in increasing energy access, and do so in a way that achieves environmental sustainability and a more diverse and vibrant private sector.

The Lake Victoria basin which is a significant water resource for the region is characterized by high rates of deforestation. Only 6% of rural households around the lake basin rely on modern fuels with the majority predominantly using solid fuel such as charcoal and firewood for their primary cooking needs. The resulting degradation of the catchment areas of Lake Victoria basin is a major threat to these resources and livelihoods. Moreover, firewood and paraffin which are popularly used by the rural households are a major source of indoor air pollution and are known to cause numerous respiratory ailments such as pneumonia, asthma and lung cancer among others.

To minimize reliance on wood-based fuel and paraffin, the project will commercialize a renewable biofuel known as 'bio-alkanol gel' made from fruit waste. The bio-alkanol gel also has the potential to repel mosquitoes that cause malaria. An enterprise will be established through which the gel will be commercially produced, and sustainable business models developed to scale the product to benefit rural household communities in the Lake Victoria basin, youth and women among others.

Technology

Bio-alkanol gel is a thick liquid fuel made from fruit waste and other biobased additives and binders. The resulting biomass from the production process will be processed into biofertilizer as a secondary product.

The gel burns with a clear flame without smoke or soot and is comparable in terms of cooking efficiency to gaseous cooking fuel such as LPG (Liquid Petroleum Gas). The gel fuel is reusable for subsequent fireplace sessions and attains optimum operating temperature in less than 1 minute after ignition. The gel works with existing fabricated stoves such as *moto poa* and *moto safi* stoves.

Local and Regional benefits

This innovation is seen as a long-term investment to complement daily household cooking practices by minimizing economic costs associated with potential health benefits and the time saved in cooking among others.

The bio-alkanol gel production process entails recycling of fruit waste which directly contributes to organic waste management for the region. Furthermore, the gel is an environmentally friendly alternative to traditional biomass fuels and will therefore minimize reliance on wood-based fuel and eventually reduce deforestation and harmful emissions into the atmosphere.

Project Partners

- Maseno University, Kenya
- Lake Basin Development Authority (LBDA), Kenya
- National Agricultural Research Organization (NARO), Uganda
- Tropical Pesticides Research Institute (TPRI), Tanzania

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