Urban Pathways

BioCooker-A circular energy solution for clean cooking, clean water and agriculture in rural areas, Malawi

Participants and roles

1. RISE (Research partner – support testing activities in the demonstration):
2. Make it Green (SME): responsible for providing test units of the BioCooker, blueprints for the local production, supervision and checks of the production, as well as organizing the fuel chain.
3. Going Green (local partner): will manufacture the BioCooker locally according to blueprints work with the distribution, training and supervision on how to properly use the cookstove.

Context, motivation and objectives

1. BioCooker converts biomass fuels, producing heat for cooking and biochar. The biochar is used as an affordable water purification system and enriching soil for agriculture. The BioCooker has also USB ports to provide electricity. The demo will provide a circular & sustainable business model with high replication potential, to be available to local entrepreneurs.
2. The objective of the Malawi demo innovation is: to adapt and validate the BioCooker to a small-scale and commercial product, in order to be easily implemented in the selected region.; to develop a local material supply chain by testing new biomass alternatives for the selected regions to reduce deforestation and pressure in forest; to enhance the recovery of nutrients by producing secondary bio-products: soil improvers as biochar and to develop new value chain and a circular business models for local entrepreneurs, supporting them in an acceleration process.

Challenge

1. The traditional use of biomass in everyday household work is associated with significant negative environmental and health effects because of indoor air pollution.
2. The adoption of clean and efficient cooking technologies requires attention to how to bring the stove adoption to scale. Adoption is affected by various factors that cut across the value chain. Therefore, the challenge is to implement the stoves fired with sustainable biomass and render tangible health, environmental, and social benefits to the target populations.

Innovative approach and contribution to the project

The innovative approach is to develop a cooking stove with several values to be used in a circular business model and consider a sustainable biomass supply.

Expected results

1. A more cost-effective biomass cooking solution that is affordable, is less time consuming, produces a low carbon footprint and creates a valuable byproduct.
2. A local supply chain using biomass residues rather than naturally occurring biomass, to reduce deforestation and ease the pressure on the local environment.
3. Better indoor air quality in terms of tar particles, and consequently better health

Sustainability, replicability

The demo will provide a circular and sustainable business model with high replication potential, to be available to local entrepreneurs. The demo solution will have a direct positive impact on the Sustainable Development Goals:2. Zero Hunger; 3. Good Health and well-being; 7. Affordable and clean Energy; 11. Sustainable cities and communities; 12. Responsible consumption and production; 13. Climate action

Expected impacts

1. Family/Community: Reduced cost of cooking, income from biochar, decreased health problem as eye irritation from smoke and the use of cleaner water, generate fertilizers from biochar, opportunity to use a variety of feedstock (biomass)
2. Environment: Mitigate air-born soot (5-10% of man-made global warming), sequester carbon, reduce deforestation and pressure in forest, improve the soil structure and drought resistance
3. Economy: Improve financial situation in rural areas, improve health and living condition of rural citizens, means of generating a carbon-market, creation of jobs or local business opportunities

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