

GOAL PROGRAMME INNOVATION FUND

Innovating for a World Beyond Humanitarian Crisis

HomeBiogas - Sierra Leone

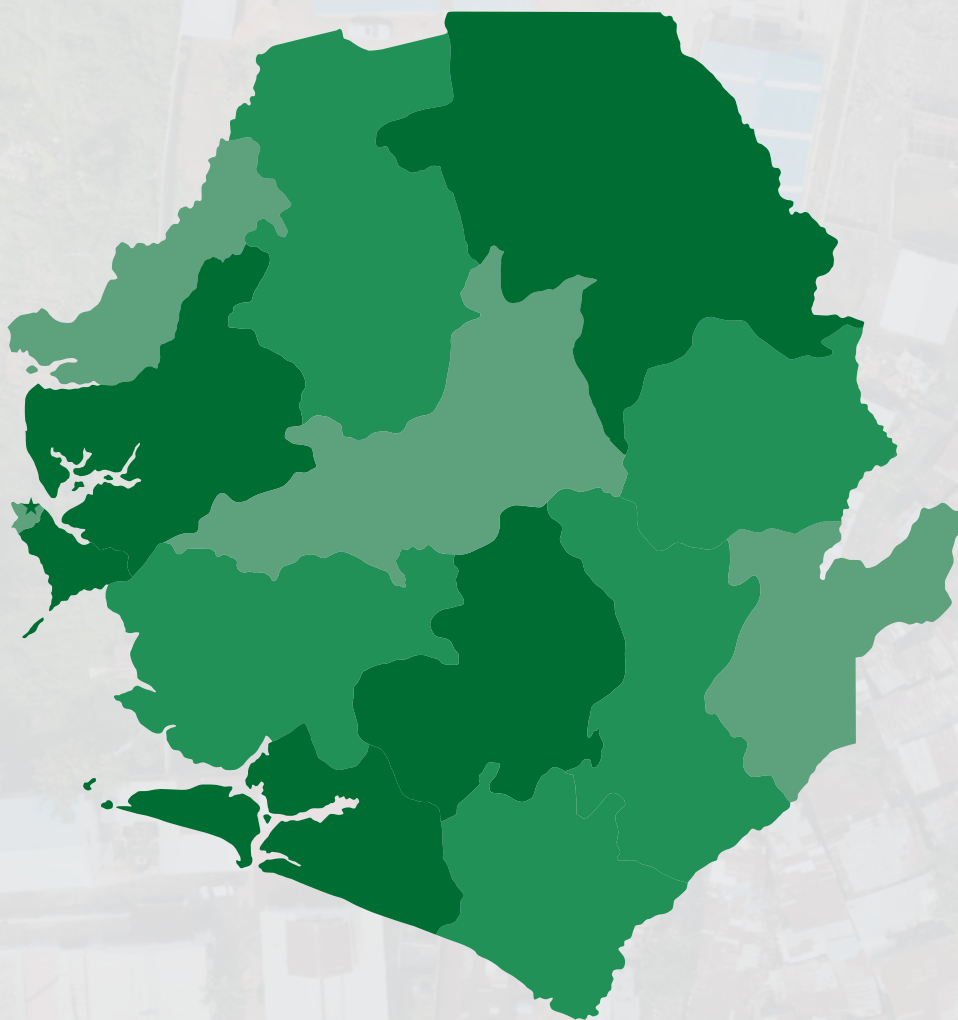


State of innovation

-  Ideation and piloting ✓
-  Validation
-  Scaling

The consumption of firewood and charcoal for cooking in Sierra Leone is unsustainable. The demand for biomass energy for cooking already exceeds the regrowth rate of the forest cover and will be aggravated by projected population growth to an approx. population of over 10 million by 2030. This will accelerate deforestation and deplete the nation's 2.726 million hectares of forest and woodland reserves in the coming decades.

Deforestation is directly contributing to water shortage, loss of soil fertility, soil erosion and landslides as seen by the August 2017 mudslide in Freetown. Loss of the remaining wildlife and the general biodiversity, dried-up rivers affecting hydropower supply, and river level rise resulting to periodic flooding during the raining season. Most of these impacts are already evident in different ecological zones in the country, amounting to huge economic losses of the national capital assets, including loss of the productive potential of the country. With a low electrification rate, no oil production and a poor economy, Sierra Leonean households will continue to use wood fuel as their primary cooking fuel for the foreseeable future. The pressure on wood resources can be decreased using alternative biofuels such as HomeBiogas.



The intervention is set to be implemented in different cities of **Sierra Leone**



What is the innovation about?



Kingtom, Sierra Leone

HomeBiogas is an established waste-to-energy method that has already had a significant impact globally in various contexts, including hard-to-reach areas proposed to be piloted in this innovation project in Sierra Leone. This complements GOAL's current urban WASH strategy.

The main objective of this project is to introduce and pilot homebiogas technology to produce cooking gas. HomeBiogas is an innovative waste-to-energy method, tested in different contexts. This will be piloted in hard-to-reach areas of Freetown for the first time. Biogas is an innovation that provides a cost saving and comprehensive solution for waste management.

Specific objectives include:

- Importing samples of Homebiogas to Sierra Leone.
- Supporting the operationalisation of Homebiogas in selected communities/households of Freetown including the quantification and characterisation of biogas produced from different waste streams/materials and their mixtures, under field conditions.
- Generating data tables of gas yield vs feedstock used for the convenience of the users.
- Identification and profiling of potential private sector investors to take the product to market scale.
- Proposed business model based on the findings of the pilot with detailed production price and market development parameters.



Why is it an innovation?

Many options have been tried to increase access to safely managed sanitation services in hard-to-reach areas. Most of them were centered on improving manual pit emptying practice. The challenge of limited road access coupled with the limited technical and financial fragility of manual pit emptiers have always been the major barriers to taking those trials to the scale.

Additionally, these options have not considered the limited access to improved sanitation facilities where the majority in hard-to-reach areas do not have containments discharging raw sewage into the public drainages ending in the sea. HomeBiogas is an innovative option which will address the issue of access to improved sanitation facilities in those challenged areas at the same time responding to the pressing need of alternative cooking energy. This technology is also innovation in the context of Sierra Leone as the reuse of liquid and solid waste is at the infant level.

Freetown population is now estimated at more than 1.2 million. The technology will target 40% of this population living in hard-to-reach areas. At the market scale, the project will be targeting the entire city of Freetown and beyond!



What is expected benefit of this innovation?

GOAL Sierra Leone will explore the potential of introducing community-based waste management systems such as Homebiogas technology with focus on waste to energy.

This is in line with Renewable Energy Policy 2016 directions of:

- Making better use of indigenous energy resources.
- Cutting reliance on imported fossil fuels coupled with market incentives to promote renewable energy technologies.
- Integration of renewable energies into the mainstream energy economy.

Not only community-based waste management technologies allow hard to reach area communities to have access to improved waste management services, but also, they will provide opportunities to reduce the use of firewood and charcoal as the main source of cooking energy and opening the room to the promotion of green cooking energy sources. This will reduce the deforestation and GHG emissions from uncontrolled decomposition of waste and hence contributing to climate resilient urban communities.



Innovating to Overcome Humanitarian Crisis

The GOAL Programme Innovation Lab is a dynamic and collaborative unit established by GOAL to foster innovation within GOAL's programmes and to promote this work both internally and externally with the wider development and humanitarian community.

To get involved or find ways to support our innovations, visit our website at goalglobal.org/innovation or contact us at: resilience@goal.ie



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our website

The GOAL Humanitarian Innovation Fund is designed as dynamic collaborative process through which strategic partners can engage and provide support to foster innovations which have the potential to enable marginalised populations overcome humanitarian crisis.

The Innovation Fund is a vehicle for strategic partners who are passionate about innovation and how innovation can be applied to overcome humanitarian crisis to support efforts to maximise the potential of innovation to transform Crisis to Resilience. Partners from across the full spectrum of society are invited to engage including from the private sector business, philanthropists, trusts and foundations, civil society organisations academic institutions and government organisations.

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