



Our World, Our Responsibility

Project Concept

**IMPROVED COOKING
SYSTEMS (ICS)**

**Kowai Town,
Kpaai District,
Bong County – Liberia**

Abbreviation



Abbreviation	Definition
\$	United States Dollar
CMC	Community Monitoring Committee
CO ₂	Carbon Dioxide
FTE	Full-Time Equivalent (Jobs)
GDfH	Global Development for Humanity
HH(s)	Household(s)
ICS	Improved Cooking Systems
SDGs	Sustainable Development Goals

Agenda



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Project Background and Timeline

Project Background

Key Challenges in Kowai Town, Kpaai District, Bong County, Liberia



Heavy Firewood Dependence: Households rely primarily on traditional firewood for cooking. Across 100 households, the annual consumption of firewood is approximately 4.9 tons per household per year*, which puts increasing pressure on the surrounding forests.



High Time & Labor Burden: As nearby wood sources become depleted, households, particularly women and children, travel an average of 2.5 km and spend ~2 hours per day collecting firewood, reducing time for farming, education, and income activities.



Indoor Air Pollution & Health Risks: Traditional open-fire cooking exposes households to heavy smoke, contributing to respiratory illnesses and other health risks, especially affecting women and young children, who spend more time near cooking areas.



Seasonal Fuel Cost Pressure: While some firewood is collected freely, households increasingly purchase firewood during the wet season, leading to higher cash expenditures and vulnerability to price fluctuations.



Limited Access to Clean Cooking Solutions: High upfront costs, lack of flexible payment mechanisms, and weak local maintenance capacity limit access to improved or clean cooking technologies, despite clear potential for over \$50 annual savings per household.

SOLUTION



IMPROVED COOKING SYSTEMS (ICS)



* The annual wood consumption of approximately 4.92 tons per household includes cooking (4.32 tons) and rice processing (0.6 tons). Other agro-processing activities, such as palm oil processing, are conducted outside the household and are therefore not directly affected by the ICS intervention.

Project Background

Strategic Solution – ICS Overview



System Package (Capacity/Size): One improved cooking package per HH, consisting of one Improved Cookstove + one Biochar Stove, designed for full HH cooking coverage. The system is highly adaptable to local cooking practices (≈90% similarity), enabling rapid adoption without major behavior change.

Fuel Source & Efficiency: ICS is designed for cleaner and more efficient combustion, which reduces smoke and fuel consumption. Supports both firewood and charcoal, reducing smoke and overall fuel consumption. Usable in all seasons and weather conditions.

Beneficiaries: The project targets 100 households (approx. 600–700 people) in Kowai community, Kpaai District. Primary beneficiaries are women and children, who face the highest exposure to indoor smoke and the largest firewood collection burden.

Implementation Model (Community-Based): Distribution and monitoring will be managed by GDFH with a Community Monitoring Committee (CMC). Households receive the ICS package at a subsidized price of \$80 (with ≈27% subsidy), with flexible repayment: \$16 upfront plus 4 instalments of \$16.



Project Timeline



#	Project Timeline - Improved Cooking Systems_Liberia	Month 1				Month 2			
		1	2	3	4	1	2	3	4
Key Implementation Milestones									
1	Conduct project introductory meetings with District authorities, community leaders, women and youth groups, and key stakeholders								
2	Conduct community sensitization, household mobilization, beneficiary registration, and baseline assessments								
3	Conduct procurement planning, supplier selection, verification, and finalize supply agreements for ICS packages (Improved Cookstove + Biochar Stove)								
4	Deliver Improved Cookstoves (ICS) and related materials to the project location and registered households								
5	Distribute ICS to households and conduct on-site setup and demonstration sessions at community level								
6	Provide household-level training on safe use, maintenance, efficient cooking, and contribution/repayment model								
7	Establish Community Monitoring Committee (CMC) and link households to suppliers and technicians								
8	Conduct final operation readiness checks, complete test cooking sessions, and prepare households for full operation with basic training sessions								

Project Objectives and Impact

Key Project Objectives



1

Reduce Firewood Dependence & Forest Pressure

Reduce HH firewood consumption by 50% within the first year through adoption of Improved Cooking Systems (ICS package), easing pressure on surrounding forest resources.

2

Improve Indoor Air Quality & Household Health

Reduce exposure to indoor air pollution by at least 60%, lowering smoke-related respiratory and health risks, particularly for women and children.

3

Reduce Time and Labor Burden

Reduce the daily work of fuel collection which is currently about 2 hours per day and 2.5 km travel distance and, thereby freeing time for farming, education, and income-generating activities

4

Improve Household Energy Affordability

Enable 100 households to adopt the ICS package through subsidies and flexible repayment, supporting ~\$ 50 in annual household fuel cost savings.

5

Strengthen Local Capacity & Maintenance

Build local capacity through user training, linkage to local suppliers and technicians, and access to spare parts to ensure correct use and long-term functionality of ICS.

6

Enhance Climate Resilience & Sustainability

Reduce greenhouse gas emissions by ~450 tons of CO₂ per year while establishing community monitoring and cost-recovery mechanisms for sustained operation and future scale-up.

Key Impacts



Fuel & CO₂ Savings (tons)

ICS adoption reduces firewood consumption by approximately **2.5 tons per HH per year*** and avoids **~450 tons of CO₂ emissions** annually at community level.



Saving Impact (\$)

Households save on average **~\$50 per year** by reducing purchased firewood and using fuel more efficiently with ICS.**



Employment Impact (FTE***)

The ICS generates **1.3 FTE temporary jobs** in implementation time and **2 permanent local jobs** in supply and maintenance services.



Labor Time Savings

Wood collection time (~2 hours per day and ~2.5 km travel) is significantly reduced through ICS adoption, lowering labor burdens on women and children.



Health & Productivity

ICS reduces indoor air pollution exposure by **≥60%**, lowering smoke-related health risks and improving household productivity.



Forest Protection & Sustainability

Reducing firewood demand decreases pressure on forests and supports community resilience, cost-sharing and local services.

The project contributes directly to the key Sustainable Development Goals (SDGs)

1 NO POVERTY



3 GOOD HEALTH AND WELL-BEING



5 GENDER EQUALITY



15 LIFE ON LAND



7 AFFORDABLE AND CLEAN ENERGY



13 CLIMATE ACTION



* The biochar stoves are more efficient in fuel reduction (50–60%) than improved cookstoves (40–50%); therefore, an overall fuel reduction effect of ~50% is used for impact analysis.

** Income estimates are based on field data indicating that approximately 20% of total household firewood is purchased, while the remainder is collected free.

*** FTE stands for Full-Time Equivalent, meaning a standard full-time job with 172 working hours per month, or full 12 months work in rural and agricultural context.

Impact on Fuel & CO₂, Saving, and Employment



Fuel & CO₂ Savings (tons)

ICS reduces firewood use by **~2.5 tons/year per HH** and avoids a total of **~450 tons of CO₂ annually**

Households in Kowai community rely almost entirely on traditional firewood and three stone method for cooking, consuming approximately 4.9 tons per year per HH across 100 households.

The introduction of Improved Cookstoves (ICS) reduces firewood use by approximately 50%, (~2.5 tons annually) and an estimated ~450 tons of CO₂ emissions avoided per year. This eases pressure on local forest resources while delivering measurable climate benefits.



Saving Impact (\$)

Average saving are **~ \$50** per year by reducing purchased firewood and using fuel more efficiently.

Although a large share of firewood is collected freely, approximately 20% is purchased, particularly during the wet season when collection is more difficult.

By reducing purchased firewood and improving fuel efficiency, ICS adoption generates on average \$50 in annual household savings. At community level, this translates into \$5,000 in annual savings, strengthening household resilience and freeing resources for food, education, and productive activities.



Employment Impact (FTE)

Creating **1.3 FTE temporary jobs** and **2 permanent local jobs**.

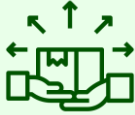
The ICS generates both temporary jobs and permanent local jobs.

Job Category	Job Type	FTEs
Admin & coordination	Temporary	0.5
Transport & logistics	Temporary	0.33
Training, repair & maintenance	Temporary	0.5
Total Temporary FTEs		1.3
Local ICS supply enterprise	Permanent	1
Local Repair service	Permanent	1
Total Permanent FTEs		2

Temporary jobs are for at least one year during the implementation phase, while permanent jobs reflect long-term livelihood and sustained adoption of ICS.

Operational and Implementation Framework

Major Operational Aspects



System Distribution

ICS packages are distributed to registered households through a community-managed process, ensuring correct allocation and tracking.



Fuel Use & Efficiency

ICS systems using firewood and charcoal improve combustion efficiency, reduce smoke, and lower fuel consumption year-round.



Planning and Control

GDfH and the Community Monitoring Committee (CMC) coordinate distribution, training, and repayment schedules.



System Monitoring

The CMC monitors usage, functionality, and repayment compliance at household level, and future upgrading to more efficient systems, based on lessons learned.



Capacity Building

Households receive practical training on safe use, efficient cooking, and basic maintenance. Selected community members will be trained for local repair businesses.



Maintenance

GDfH-supported local technicians provide repairs and spare parts through independent maintenance businesses, ensuring long-term service delivery.

Project Implementation Framework



Community Engagement



Formation and orientation of a Community Monitoring Committee (CMC), involving community leaders and GDfH, to ensure ownership, transparency, and accountability.

Operations & Service Model



Households receive an ICS package consisting of two units at a subsidized price and use it in accordance with agreed guidelines, while retaining responsibility for daily cooking practices and fuel choices.

Capacity Building



Households receive practical training on safe use, efficient cooking, basic maintenance, and proper charcoal handling to ensure sustained adoption.

Maintenance & Technical Oversight



Local technicians, supported by GDfH, provide repairs, spare parts, and technical support, with periodic follow-up to ensure sustained functionality during and beyond the project implementation period.

HHs Contribution



Beneficiary households contribute through an upfront payment (\$16) followed by agreed instalments in two years, providing affordability and supporting cost recovery and commitment.

Financial Sustainability



The recovered funds and savings support implementation, strengthen local services, and enable investment in more efficient systems while laying the groundwork for future scaling

Project Financials

Overview of Project Financials



 INITIAL INVESTMENT COST	ICS packages 100 packages / 200 units \$11,000	+	Awareness & Training \$1,000	+	Logistics & Contingency \$1,125	=	Total Investment \$13,125
 ANNUAL OPERATIONAL COST	No centralized operating costs at project level. Routine maintenance and fuel costs are covered by households.					=	Total Operating Costs (Project Level) \$0
 ONE TIME RECOVERY & SAVINGS	ICS Cost Recovery (Year 1, one-time) <i>Households repay the subsidized cost of one ICS package per household (two units) (20% upfront + 4 instalments).</i> \$8,000						Fuel Cost Savings (Annual for 100 HHs)* \$5,000
SUSTAINABILITY	The project is financially sustainable with long-term expansion potential.						

*: Average household fuel savings are ~ \$ 50 per year due to reduced firewood and charcoal use.

Project Financials

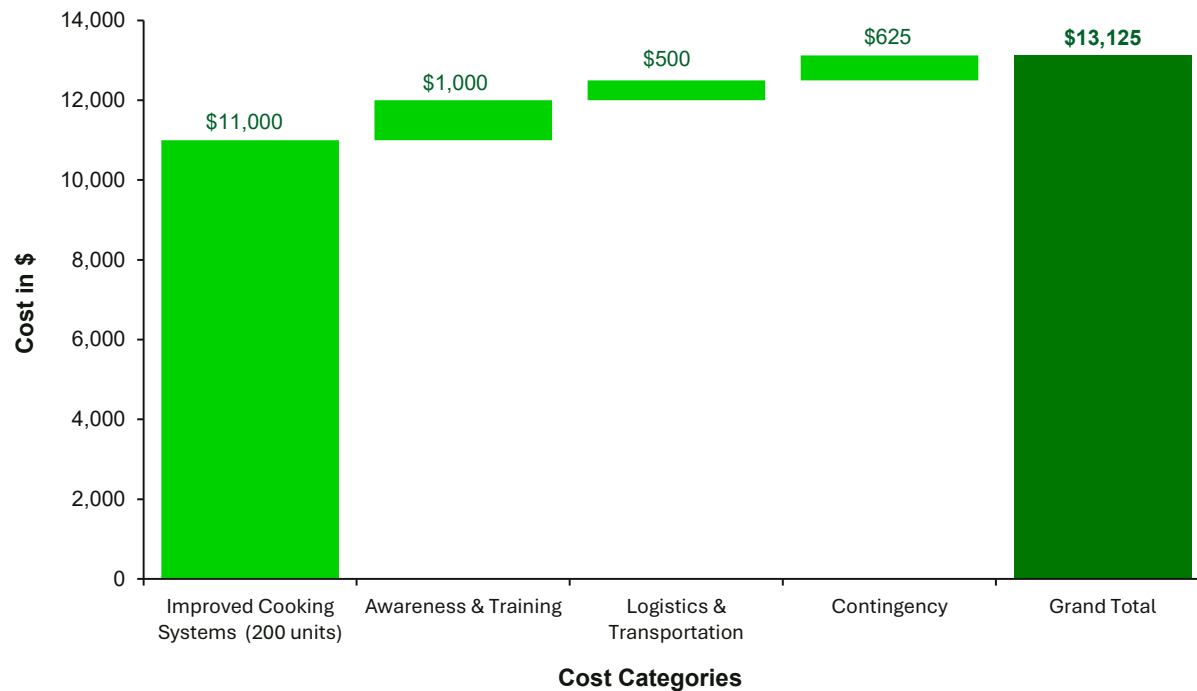
Total Initial Investment Costs



The chart presents the initial capital investment required to implement the Improved Cooking Systems (ICS) project for 100 households in Kowai Town, Kpaai District, Bong County, Liberia.

The **total** initial investment amounts to **\$13,125**, covering the procurement of 200 improved cooking systems, community awareness, sensitization, capacity building, logistics, and contingency costs. The largest cost component is the supply of **improved cooking systems (\$11,000)**, followed by **awareness and training activities (\$1,000)**, **logistics and transportation (\$500)**, and **contingency provisions (\$625)**.

All cost estimates are based on verified supplier quotations and local market rates. The project design emphasizes cost efficiency, household co-financing, and long-term sustainability through cost recovery rather than recurrent operational expenditures.



Project Financials

Operating Costs and Saving Structure



Operating Cost Structure (ICS)

Unlike production-based projects, the Improved Cooking Systems (ICS) project has no centralized annual operating costs at project level (\$0).

Routine fuel purchase, daily use, and minor maintenance are borne directly by households, while technical support and monitoring are embedded in the community-based implementation model.



Household Savings & Cost Recovery (ICS)

The ICS project does not generate sales revenue.

Financial value is created through household fuel cost savings (~ \$ 50/HH/year) and one-time recovery of subsidized stove costs, ensuring affordability and long-term sustainability.

Key Impact

Overview Project Impact



Local Energy & Household System

The ICS project improves household cooking efficiency for 100 households (200 units deployed) in Kowai, reducing reliance on traditional firewood and supporting a cleaner, more reliable household energy system year-round.



Household Income & Cost Savings

Through reduced firewood and charcoal consumption, households save on average **~\$50 per year** and **~\$5,000 annual savings across 100 households**, easing energy expenditure and freeing resources for food, education, and income-generating activities.



Job Creation and Local Services

The project generates **2 permanent (FTE) jobs** and **1.3 temporary (FTE) jobs**, including temporary roles during implementation and permanent local jobs in stove supply, repair, and maintenance, strengthening local service ecosystems.



Health, Time Savings & Environmental Benefits

ICS adoption **reduces indoor air pollution exposure by ≥60%**, cuts fuel collection time by ~2 hours per day, and lowers firewood demand by ~50%, **avoiding approximately 450 tons of CO₂ annually** while improving household health, safety, and environmental sustainability.



Financially Sustainable and Scalable Model

The ICS model has no centralized operating costs; it ensures household cost recovery, enabling scale-up, upgrading of cooking practices, or financing similar development initiatives.

Thank You!



**We Sincerely Appreciate Your Attention and
Interest in Our Operations**



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Together, we can create a progressive world we can be proud of



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Spread the message to
increase awareness

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