

HUMANITARIAN ENERGY CONFERENCE

16 May 2022 Kigali, Rwanda

#HumanitarianEnergy #HEC2022





Session 1 Track A: Clean Cooking

10:30-12:30

Room A



Moderator



Jillene Belopolsky

Clean Cooking Alliance



Part 1: E-cooking







PESITE Cooking with Renewable Energy in Displaced Settings

Pesitho ApS Simon Buss la Cour Cofounder & CEO

The ECOCA from PESITHO - Off grid Solar Electric Cookstove





1 ECOCA for **1 family**



No costs for wood or charcoal

A source of light

USB for charging of phones

Help **enable the livelihood** of families in vulnerable areas

Implementing E-cooking in displaced settings in Uganda



Willingness to Pay for Solar Electric Cooking

Modalities	Up front	1 YEAR	2 YEARS	3 YEARS	5 YEARS
Payment per month	\$0	\$16	\$8,5	\$6	\$4
	Total: \$175	Total: \$192	Total: \$204	Total: \$216	Total: \$240



100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0% Up front 1 YEAR 2 YEARS 3 YEARS 5 YEARS ■ Refugees ■ Host communities ■ Coffee cooperatives

Selection of Payment Modalities



Refugees Host communities Coffee cooperatives

Savings on phone

charging

Total savings on

energy expenditures

Total monthly savings: Refugees: \$23 | Host: \$26 | Coffee Farmers: \$34

Savings on cooking Savings on lighting

fuel

Reference: Forum, Maj; Caritas Denmark; February 2022; ECOCA willingness-to-pay pilot - Willingness-to-Pay among Vulnerability Groups in Uganda - Learning Study

+ Income generating activities.

Time saved on

firewood collection





Employs hosts & refugees



Located at the settlement

750 per month

Ressource

ECOCA

Centre



Independent cooperative



Scalable for demand



Expanding reach with retailers using established VSLA's



2 VSLA's, 15 retailers, 3 groups



Pay-As-You-Go & Carbon Credits, increasing affodability & accessebility



Paid on comission up to 5 years for sales & tracking







Thank You!



Simon Buss la Cour – CEO & Co-Founder PESITHO ApS | <u>www.PESITHO.com</u> | +45 60213436 | <u>snb@pesitho.com</u> May 2022 – Humanitarian Energy Conference

Piloting Electric Pressure Cookers in Kalobeyei (PEPCI-K)

Speaker: Karlijn Groen (SNV)



Piloting Electric Pressure Cookers in Kalobeyei (PEPCI-K)

Pilots the use of Electric Pressure Cookers with 75 households and 25 SMEs connected to the solar mini-grids in Kalobeyei integrated settlement (Kenya) to gain insight in:

- the potential for cooking with EPCs for mini-grid users for household and commercial use in a refugee/very low-income setting;
- the requirements and potential barriers to developing a market for EPCs in a refugee and other very low-income mini-grid settings





Kalobeyei Integrated Settlement, Kenya

- Part of Kakuma refugee camp with 40.000 residents
- A 60 KW (120 kWh storage) solar mini-grid commissioned by Renewvia Energy provides electricity to 506 customers
- Will be expanded to 541 kW PV (1104 kWh) connecting other villages (+2500 customers).

Key pilot activities

		Activities
Nov '21	Partner	onboarding & product identification
March	Product testing	Testing of 20 EPCs with 15 HH and 5 eateries
Арпі	Product	Commercial distribution of 80 EPCs
	distribution	Developing and testing payment product
March-	Data collection & Analysis (pre and post EPC uptake)	Cooking practices
August		EPC uptake and payment products' performance
		Electricity consumption
Throughout		

Learning & knowledge dissemination





Key baseline study findings



- Opportunity to maximize use of the available electricity resource benefiting both end user (in terms of fuel expenditure, cooking time and water savings) and mini-grid operators
- Consistent and sufficient supply of electricity is critical
- There is willingness to cook to with electricity and pay a portion of their (limited) income to purchase and use an EPC
- EPC payment models need to tap in to limited income levels and (informal) community based saving groups (SACCOs, chamas and VSLAs)





Initial end user feedback (20 test participants)

- All participants are satisfied with the EPC and cook with it on average 1-2 times a day (electricity allowing)
- Early findings indicate primary fuel use reduced by 1-2 times
- All participants note a reduction in the amount of water used for cooking ranging 3-40L per day
- Least favourable attribute for the EPC is the small pot size (6-8L) and that it only has 1 pot
- No indication of significant increase in electricity expenditure*

*The analysis for electricity consumption/expenditure is not yet available

Road to success

Determining short-term successes

Knowledge and learning through data and observation

- How are EPCs being used?
- What is needed to drive uptake?
- What is needed to drive usage?
- How do the EPCs impact the grid?

Understanding of market barriers and requirements

- Which products are a good fit?
- What capacity building is needed? For users? For distributors?
- Are further subsidies needed?

Determinants to drive scale Financial:

- Appropriate finance mechanisms
- Capacity and willingness of distributors to implement
- Favourable electricity tariffs

Technical:

 Mini-grid capacity to absorb EPCs and sustain electricity supply

Socio-economic:

- Products match end-user needs
- Distributors are effective in marketing and awareness raising and driving uptake and usage



Thank you!

Karlijn Groen - SNV Energy Advisor karlijngroen@snv.org





Discussion and Audience Q&A *E-Cooking*



Part 2: LPG and Biogas



Cecilia Ragazzi

Mercy Corps



Geophrey Owino Oyugi

International Organisation for Migration (IOM) and NORCAP Energy Expert



Deep Dive on Clean Cooking: Learning from Past and Looking into the Future

ALHERI

Expanding choices for quality, modern, affordable clean cooking technologies in displacement settings

) Location: Maradi, Niger

-) End Users:
 -) **31,400 refugees** in three Villages d'Opportunite
 - > 8,800 members of the surrounding host communities
 - Infrastructure and value chain accessible to the entire refugee and host community population
 - Main fuel: wood and charcoal, current spent of avg 3 USD/week
 - 95% households use three-stone fires, 5% ceramic cookstoves
 -) **5h/week** to collect fuel
 - 100% are interested in more modern forms of cooking (cleaner, more effective, viable in the rainy season, less smoke)





Deep Dive on Clean Cooking: Learning from Past and Looking into the Future

ALHERI

Objective: Uptake of LPG cooking technology, inclusive of depot and 3 refilling stations outside each Village d'Opportunite

) Facilitation

- Mercy Corps conducted market research, segmentation of prospective end-users to identify most vulnerable to be associated with starter kit distribution and 6-month vouchers for refill
- Selected LPG company ready to make direct financial investment, designed market activation campaigns inclusive of demonstrations and safety awareness, implemented vouchers scheme, quality assurance

) Financing mechanism:

- Blended financing: BPRM grant, attracted direct investment from national LPG national provider to build the needed infrastructure and set up the retailing network
- Ongoing 6-month voucher scheme: 1.5 6-liter bottle/month = 6.60 USD vs. current avg 12USD/month
- Foreseen LPG uptake post-project: 70%



Deep Dive on Clean Cooking: Learning from Past and Looking into the Future

ALHERI Expanding choices for

Expanding choices for quality, modern, affordable clean cooking technologies in displacement settings

) Looking forward:

- Expand offer of cooking technologies through strengthening technology value chains in Tillaberi to create healthy competition and increase dignity of choice. Value chains we're looking at:
 - Solar electric cooking
 - Third party Tier 2 stoves (quality certified)
- Supporting sector to replicate process from project learnings - Creation of blueprint for how to partner with cooking suppliers and build value chains, with checklist and training tools to be socialized with humanitarian energy community through the GPA





Thank You!

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CECILIA RAGAZZI

Director, Energy Access cragazzi@mercycorps.org



CLEAN COOKING INITIATIVE IN IOM WASH, SOUTH SUDAN

BIOGAS PILOT PROJECT IN MALAKAL SOUTH SUDAN

OVERVIEW OF ENERGY SITUATION IN S.SUDAN



- South Sudan ranks lowest in Africa in terms of electrification rates. Only 6.7% of South Sudan population had electricity access in 2019. (World Bank, 2019).
- Traditional biomass is largely used for cooking in South Sudan with only 2% of the population using non-solid fuels for cooking. Charcoal used in South Sudan amounted to 8 kilo tons equivalent of oil in 2015(UNEP, 2015).
- Population displacement in South Sudan compounds energy access challenges mentioned above, given the complex operational dynamics in displacement contexts.



Female IDP cooking with biogas produced from anaerobic digestion of faecal sludge in Malakal PoC © Geophrey OYUGI/ IOM 2022





LOCATION	 Malakal PoC is in the upper Nile state of South Sudan and has a population of 31,178 IDPs. (DTM-IOM, 2022) It has 0% access to electricity while traditional biomass (charcoal/firewood) and paraffin is used to provide cooking and lighting energy respectively. 	
	ignung energy, respectively.	

END USERS	 Each household has an average family size of 5 individuals. Livestock rearing, particularly breeding of cows is common due to their value as bride price during marriage ceremonies. Most of the population is unskilled and largely rely on trading of goods for sustenance. 	

AREA OF ENERGY INTERVENTION	IOM commissioned a pilot biogas project in Malakal PoC by installing two anerobic bio-digesters to evaluate feasibility of technology to provide on site sanitation of faecal sludge and cooking and lighting energy to beneficiaries.
	• A single digester treats approximately 214I of faecal sludge per day, producing 3-4 m^3 of biogas per day.
	Produced biogas met the cooking energy demand of 8HH per day which translates to around 40 people per day.
	 In addition, produced biogas powers a biogas lamp which provides illumination for 2 hours in the shared biogas kitchen in the evening.
	 Cooking using biogas saved about 7.9 tonnes of firewood p.a and abated GHG emissions by about 12.7teCO2e in the recording year (May 2021-May 2022).
	 Use of biogas saved each HH approximately 345 SSPs per day in purchase of firewood, which translates to 125, 925 SSPs p.a. This is equivalent to 280 USD saved per HH p.a.



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FINANCING MECHANISM	 The project was financed through grants from the following donors: FCDO, USAID's Bureau of humanitarian assistance and DG ECHO.
KEY CHALLENGES & LESSONS LEARNED	 Lack of technical capacity in anaerobic digester design, operation and maintenance amongst beneficiaries. To solve this challenge IOM trained two male beneficiaries in O&M of installed biogas digesters. IOM also built practical capacity of 12 WASH staff by conducting a 4-day technical workshop on anaerobic digester design, operation and maintenance. Improper use of toilets by beneficiaries. Safety risks on components of biogas unit. Poor road infrastructure and insecurity lead to overreliance of expensive air transport. Monitoring of anaerobic fermentation process was key to the success of the biogas pilot project
LOOKING FORWARD	 Borrowing on the success of the pilot project and proof of concept, IOM South Sudan is now seeking opportunities to sustainably scale up this technology. Only 214 litres of faecal sludge is treated per day against produced 38, 061 litres of faecal sludge, presenting a huge potential for expansion of technology within Malakal PoC. Widespread breeding of cows, present a huge potential for expansion of technology to individual homes outside Malakal PoC.

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Biogas unit in Malakal PoC © Geophrey OYUGI/IOM 2021

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Biogas lamp illuminating the shared biogas kitchen © Geophrey OYUGI/IOM 2021





Discussion and Audience Q&A LPG and Biogas



Part 3: Biomass



Judith Joan Walker

African Clean Energy



Brian Onyango

Usafi Green Energy







Market Based Approach to Cooking Solutions in Uganda

Monday, 16 May 2022

Sienso

ENERGY



Market Based Approach

PROSPERS

Promoting Solar Powered Energy Efficient Stoves in Kyangwali Refugee Settlement

In collaboration with:





Funded by:







User Referral Bonus (URB) Model

1 Referral

= 1 Month's repayment discount



Reduction of up to 9 payments

(half the total cost)

Monitoring and Evaluation



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Key Results

- 700 Households
 511 Referrals
 70% Refugee Households
- 1.7 Hours average daily cooking2.7 Hours average electricity usage

Thank you

Judith Joan Walker - COO African Clean Energy

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PROBLEM AND SOLUTION



Invasive prosopis juliflora (18,000 hector)



unclean cooking model



Dry firewood as main fuel



Alternative clean cooking solutions



Briquettes as clean fuel



Modern Social Cookstoves



DEMOGRAPHIC COOKSTOVES/FUEL IN PER CAMP IN KAKUMA







KEY HIGHLIGHTS

- Sold over 10,000+ silver bora cookstoves since 2022-
- Kakuma camp have different nationalities that as well defines cooking nature at the camp
- Partner with NGOs/Private partners on clean cooking

Monday, 30 May 2022

TRENDS IN KAKUMA COOKSTOVE SALES DISTRIBUTIONS



KEY HIGHLIGHTS

- Average sales per week 500 (currently)
- Payments methods : PAYGO and Bi-Weekly credit to our authorized vendors
- Online digital platform on tracking cookstoves and briquettes consumptions

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CBI ATM (Cash base interventions unhcr cards)





Kakuma camp 211,000+ Refugees



Usafi energy vendors



UNCHR Refugees Cards



Retails supermarkets/Store



Shopping cards



Targeting groups and organizations

DATA STORAGE AND TRACKING



Trained over 150 business vendors



IMPACT ON OUR DISTRIBUTORS

- Train over 100 vendors in our system to place orders via the digital online platform
- Monitor the behavior change and use of our products (SNV)
- We have so far produced and sold over 10,000 silver bora stoves the households since 2020

CHALLENGES FACED AT THE CAMP

- Logistic challenges
- Modern equipment's for operations
- Water storage capacity.
- Less Cash flow (Economic imbalance)



Registered over 100+ vendors













LET US RECIPROCATE THE BEST PRACTICES AND MOST CONSISTENCE MODEL OF ENERGY ACCESS SYSTEMS IN THE HUMANITARIAN SETTLEMENTS

PARTNERS



Humanitarian Energy Conference (HEC) 2022



IMPROVED INSTITUTIONAL COOKSTOVES

Rebecca Apicha Senior Program Officer – Environment May 16, 2022 Humanitarian Energy Conference

OVERVIEW

- International Lifeline Fund
- Improved institutional cookstoves
- Challenges Is there a kitchen?
- Opportunities





INTERNATIONAL LIFELINE FUND



- Founded in 2003
- Experience in Uganda, Haiti, Burundi, Kenya, Sudan, South Sudan, Ethiopia, and Tanzania
- Programs in Water and Environment
- Environment programs include:
 - Household cookstoves
 - Institutional cookstoves
 - Solar nano-grids



IMPROVED INSTITUTIONAL COOKSTOVES



- Biomass with 50% fuel savings, 10-year lifespan
- Purchased by institutions or through partnerships
- Constructing in Uganda and Haiti since 2008
- Providing technical support to WFP in Burundi since 2014 led to 678 stoves being constructed in 193 schools
- Partnered with Babington Technology to pilot innovative multi-fuel burner



CHALLENGES – IS THERE A KITCHEN?

- High cost barrier
- Lack of awareness
- Poor program design
- Mismatched technology
- Lack of ownership
- No training or follow-up
- Not a focus of the sector





OPPORTUNITIES





Rebecca Apicha Senior Program Officer – Environment rebecca.apicha@lifelinefund.org





Discussion and Audience Q&A *Biomass*



Thank you for attending the Clean Cooking Deep Dive session at #HEC2022!