Oregon State University Humanitarian Engineering Program

SENSOR-BASED IMPACT MONITORING

Development of an Integrated Sensor System to Measure Cookstove Impact

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MOTIVATION

- 40% of the world still use inefficient open fires for their energy needs
- Smoke from open fires results in up to 8% man-made climate change and 3.5 million premature deaths annually
- Engineers have designed improved cookstoves that reduce health and environmental impact
- · Millions of dollars a year are now spent on distributing improved cookstoves worldwide, however, their actual impact on households is often unknown
- Researchers at Oregon State University developed the Fuel, Usage and Emissions Logger (FUEL), which is an integrated sensor system that measures cookstove impact

METHODS

- Field testing was conducted in Honduras and Uganda (2017, 2018)
- · Evaluated the technical feasibility and usability of system
- Integrated sensor-based measurement and rapid-assessment ethnographic methods





Collecting survey data, Apac, Uganda



Reviewing sensor data. El Eden, Honduras

CALCULATED METRICS





Daily fuel consumption, stove stacking



El Eden, Honduras is settled an a steep valley, making travel for firewood collection extremely difficult.



Woman from Apac, Uganda cooking over both a traditional open fire and an improved stove



Fuel, Usage and Emissions Logger (FUEL) System









CARBON CREDITS Desired metrics to measure for determining the

> Protect s from rain, kænsdry Stores wood, mor e floor space Proximity t os tove Away fromt er mites Keeps fuel safe Keep track of