

Energy Poverty, Consequences, and Possible Solutions

David Kimemia
SAMRC VIPRU-UNISA ISHS
Energetic Colloquium, Goethe I, 5 April 2019

Define tomorrow.



UNISA



Persisting Energy Poverty in SA

- Energy poverty besets poor households
 - Various definitions: expenditure, quality, quantity
- Reliance on combustion fuels, risky stoves
- Exerts health, safety and economic penalties
- Form of structural violence, social injustice
- Governmental response – muted/reactive

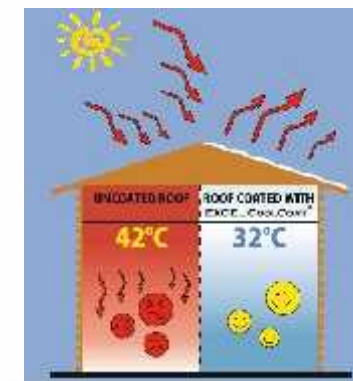
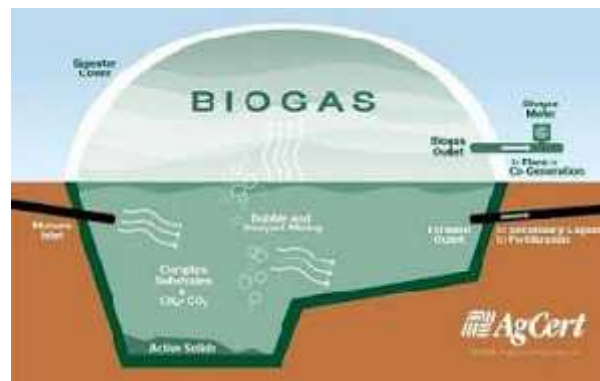
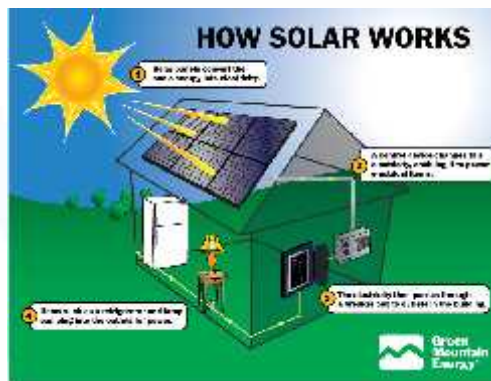
Consequences of Energy Poverty

- Burns, fires, poisonings, violence:
 - Morbidity and mortality,
 - Property losses, deepens impoverishment
- Household air pollution:
 - From smoky fuels
 - Major cause of health losses
- Exposure to elevated heat levels
 - Adverse health effects



What are the Solutions?

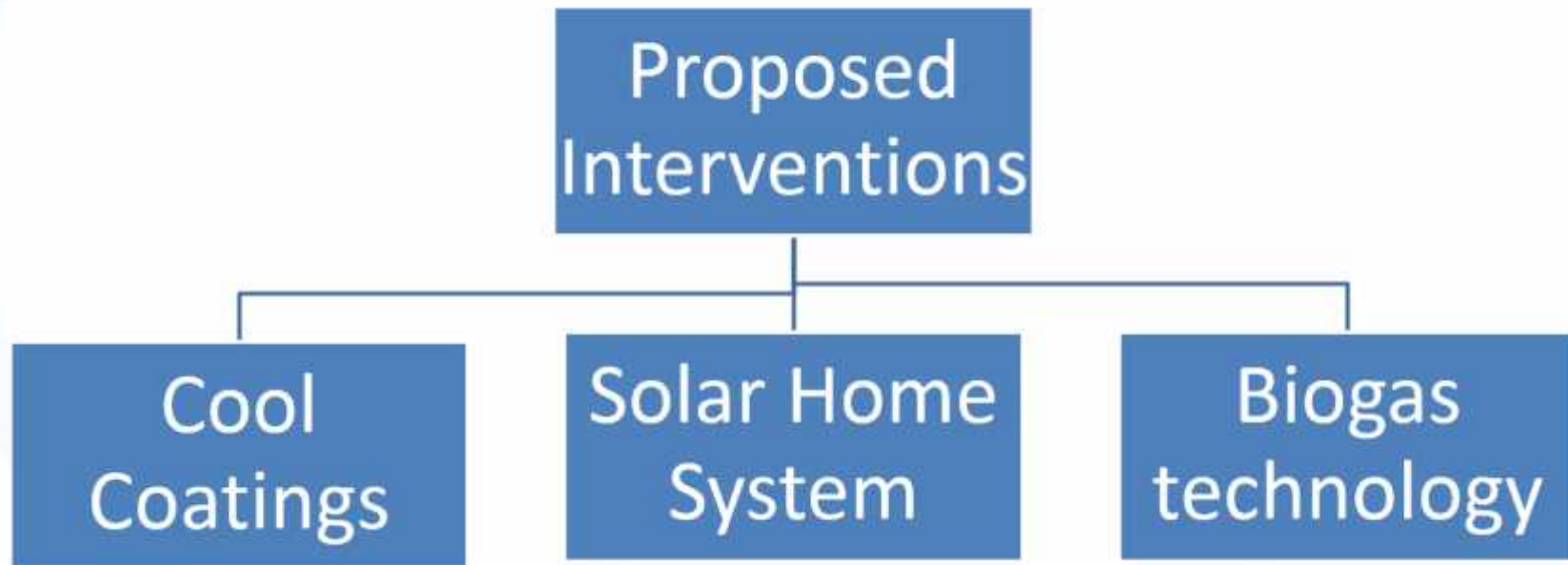
- Technology for safe and clean energy exists
- Options: solar, biogas, LPG, liquid biofuels...
- Needed: practical energization model (demonstrate, test, implement, evaluate)
 - Place clean energy technology in the hands of poor communities and sustain adoption
- Microgrid approach; scalable solutions



UNISA Community Energization Approach

- **Goal:** contribute to the promotion of the health, safety and peace of energy-poor households and communities
- **Aims:**
 - Determine the performance, efficiency and **technical effectiveness**
 - Conduct **formative evaluations** with the participating communities
 - Determine key human, environmental and institutional **enablers and barriers**
 - Evaluate the immediate and medium-term **safety and health outcomes**

Intervention Basket



Phased Project

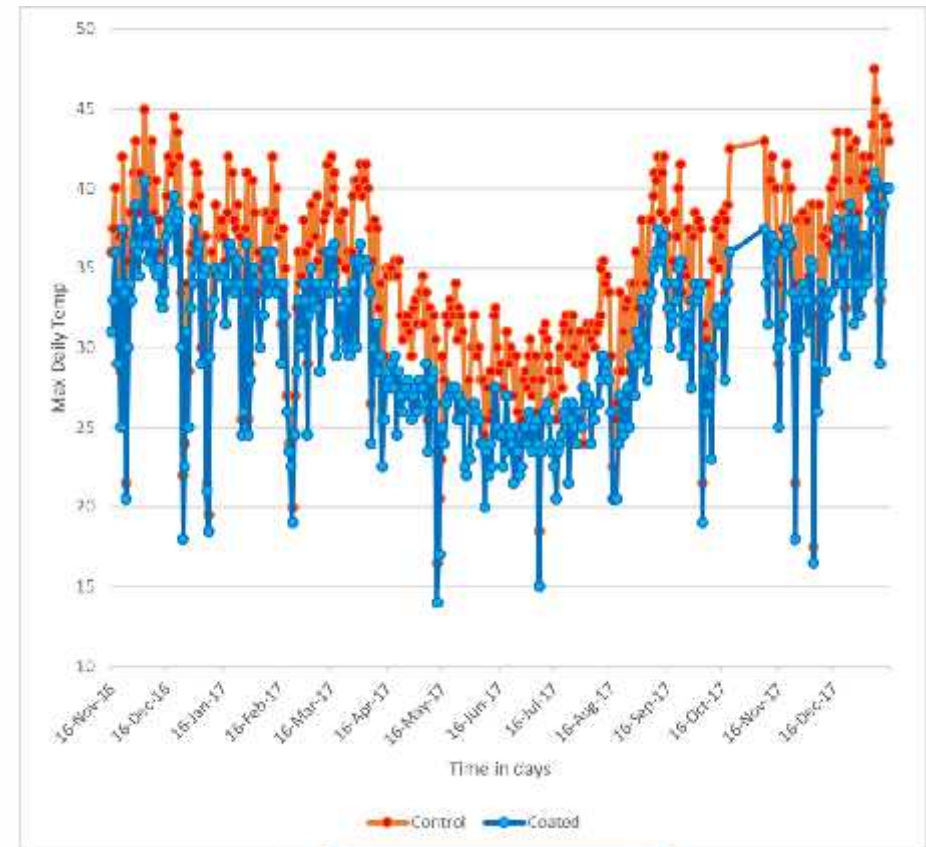
- Phase I: Demonstration of solar, biogas, cool coatings
 - Set up demo site; test the technology;
 - Conduct live demonstrations
- Phase II: Pilot in ECDs and households
 - Monitor and evaluate in 6 months
- Phase III: Implement CRT intervention (N=400 households)
 - Follow for 24 months; Evaluate health, safety, socioeconomic outcomes etc.
 - Monitor long-term uptake

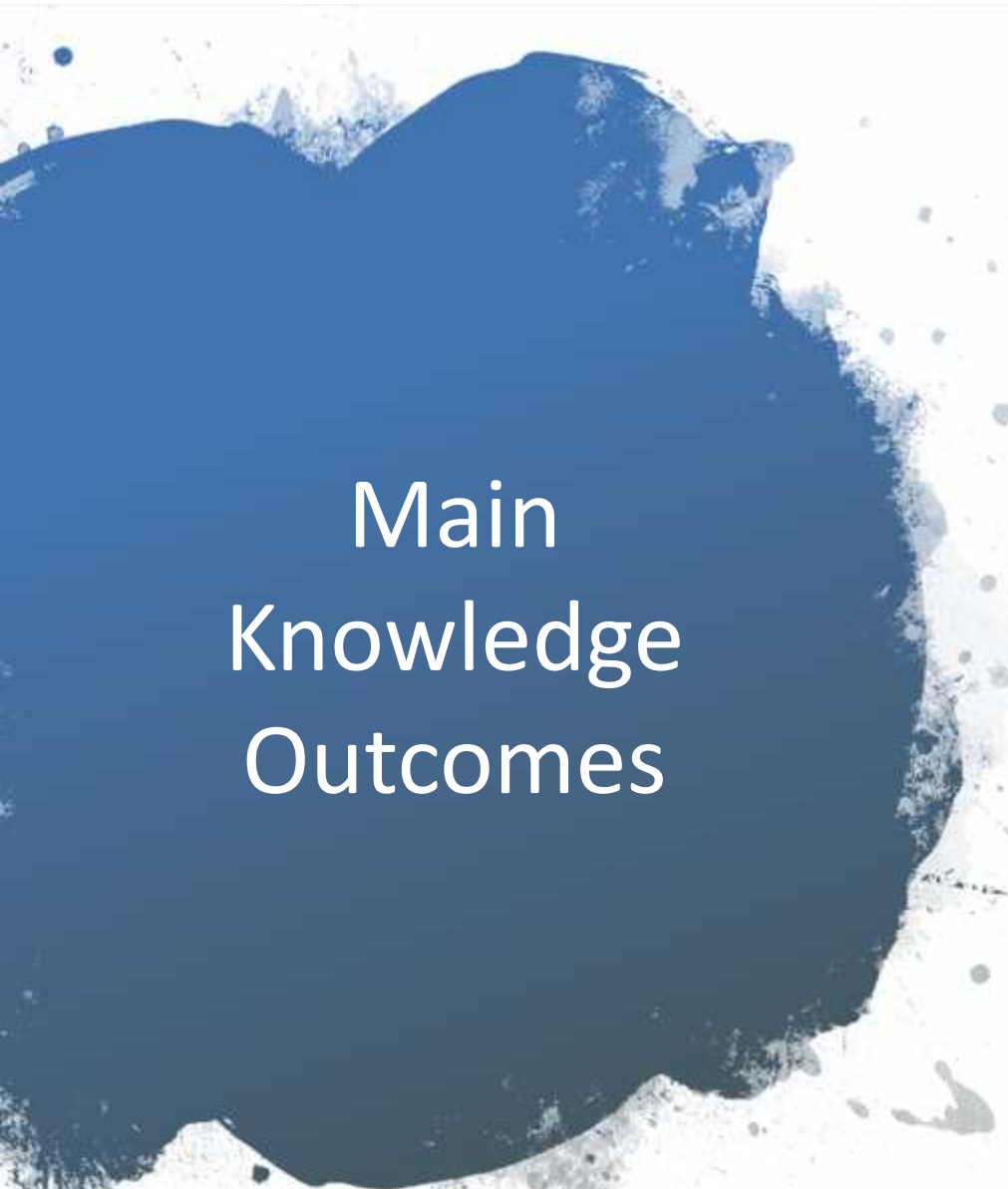
Demonstration Site



Technology Performance Assessments

- Biogas:
 - Meets expected baseline performance
 - Efficient cooking and heating
- Cool coatings:
 - Coated shack cooler relative to control
- Positive formative evaluations
 - Communities satisfied with performance
 - Concerns on safety, security, costs





Main Knowledge Outcomes

- Independent validation of clean energy tech performance – lab & field
- Understandings on social acceptance, utility, benefits
- Refined delivery and sustainability model
- Related health and safety outcomes:
 - Reduction of fires and burn injuries,
 - Cleaner indoor air, thermal comfort
 - Peace promotion