

# Show me the money (and the information)!

Durability driven CFL uptake in a context  
of informality

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# Agenda



- Context
- Methods
- Findings
- Discussion

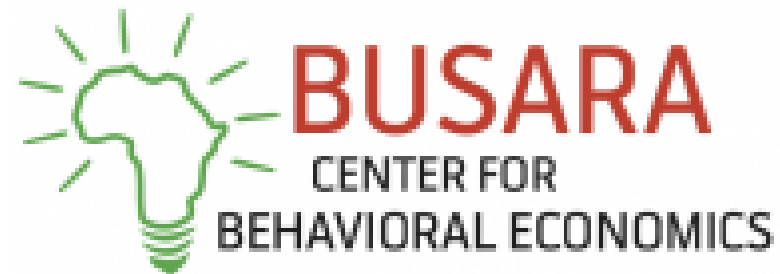


# Context

# Setting: Kenya / Kibera



- Kenya
  - PC annual energy consumption of 155 kWh (modern energy supply should provide 2000 kWh, UN)
  - Varying electricity access figures – 19-40% nationally
- Kibera
  - Often cited as the largest informal settlement on the African continent
  - Estimated 250 000 – 1 million residents
  - Home to multiple ethnicities, languages, religions
  - High entrance barriers
  - Local partner necessity



# Informality

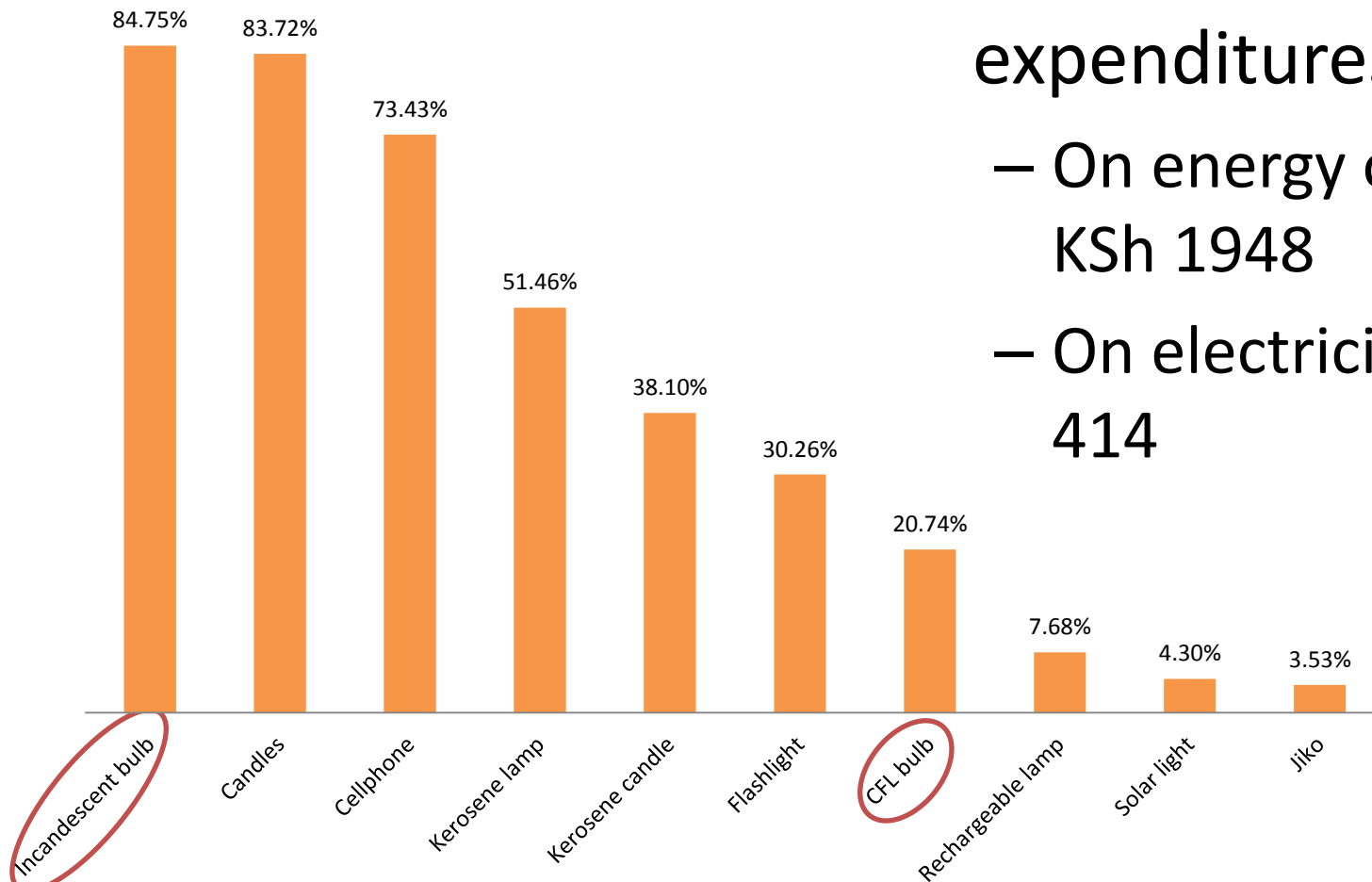


- „Borrowed“ electricity: 35%
- Flat rate payment: 88%
- Tricky, taboo subject
- Complex network of informal providers

# Energy landscape



## Main lighting sources



- Average monthly household expenditures
  - On energy overall: KSh 1948
  - On electricity: KSh 414



# Durability (and efficiency)



- Monthly average of appx. five power surges
- Vast majority report incandescent bulb burn out after power surges
- Bulbs can play a role in grid stability improvement
- Some electricity providers offer discounts for CFL uptake



# Durability driven



*This is not an energy efficient bulb*



# Durability driven

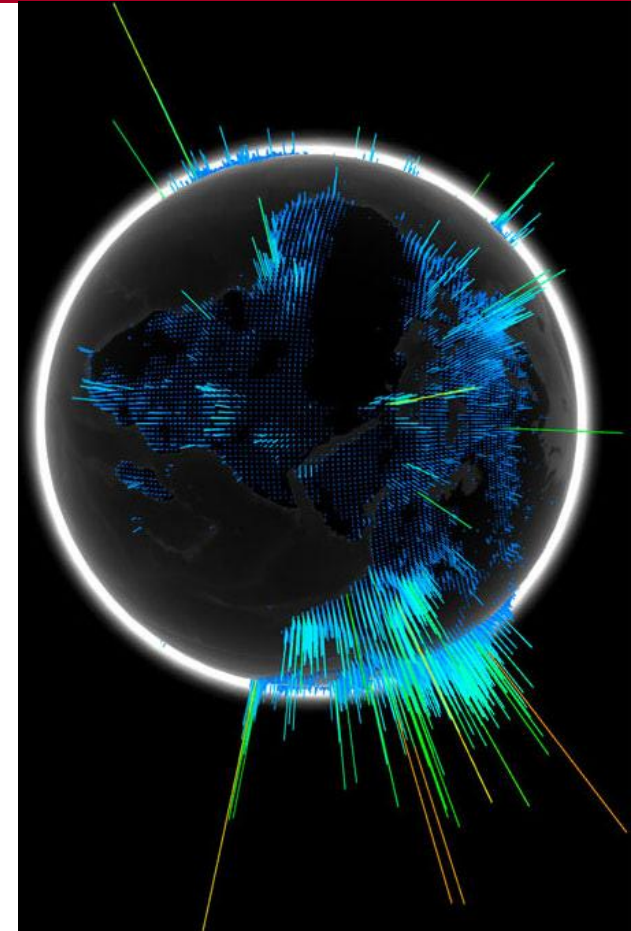


# This is a durable bulb

# Global scale



- Informality: Estimated one billion people live in informal settlements globally
- Durability: Similar context of bulb burn out post power surge?
- Efficiency: Lighting accounts for 19% of annual global electricity demand
  - Equal to the power generated by all gas-fired power plants worldwide
  - And, emissions equal to 70% of world passenger vehicle emissions





80% of grid connected Kiberans use incandescent bulbs despite extremely low product lifetime and higher power consumption compared to CFLs.

- **Research question**

Why do they act against the economically rational solution and how can this be changed?



# Methods

# Research Methods & Hypotheses

- Four elements: Laboratory experiment (N=651), Household baseline survey (N=651), randomised control trial (N=540), endline uptake observation survey (N=451)
- Hypotheses on CFL barriers
  - 1) Dwellers do not know CFL benefits.
  - 2) Dwellers lack liquidity at the moment of purchase.
  - 3) Dwellers lack self-control to invest in CFL.
- Hypotheses on drivers of change
  - 1) Providing information on CFL benefits will enhance uptake.
  - 2) Providing liquidity will enhance uptake.
  - 3) Nudging dwellers to commit to CFL purchase will enhance uptake.



# Treatments



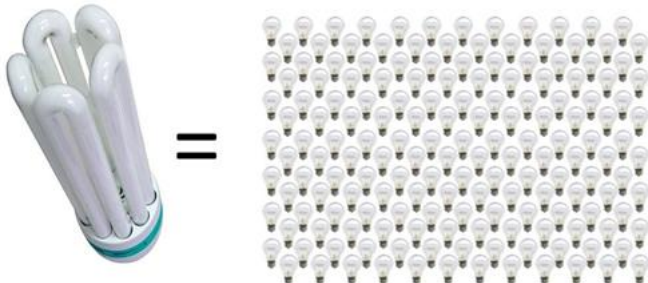
Information			Control		
Liquidity	Commitment	Control	Liquidity	Commitment	Control

## CFL (Energy Saver) Light Bulbs

- Used by Kibera residents, these are reported to withstand power surges.
- One bulb lasts for six to eight years.
- They save you a lot of money:

**KSh 270**

**KSh 10.000???**



- Philips warm white CFL light bulbs cost 270 KSh at ASAS.
- They use less electricity.



*Planning to buy a CFL? Respond by tomorrow with Yes or No. Yes responses receive a 20KSh and No responses a 5KSh airtime reward.*

- Yes response: "Thank you for agreeing to buy a CFL. You may do so at ASAS for KSh 270."
- No responses receive "Sorry to hear that. If you change your mind, you may buy CFLs at ASAS for KSh 270."
- After a 48 hour waiting period, non-responders receive the text "If you decide to buy a CFL, you may do so at ASAS for KSh 270."





# Findings

# RCT outcome: Endline CFL uptake

Treatment	Awareness + liquidity	Awareness + commitment	Awareness	Liquidity	Commitment	Control
Bought CFL (%)	65 ( <b>84%</b> )	4 (6%)	7 (8%)	19 ( <b>23%</b> )	4 (6%)	6 (8%)

- **Liquidity helps, but when combined with information it is especially successful**
- **Information alone is a relatively insufficient input**
- **Commitment not a strong driver, possibly because of administration challenges?**

# RCT outcome: Endline CFL uptake

Treatment	Avg. Marginal Effects	Std. Error
Awareness + liquidity	2.387***	.274
Liquidity	.624**	.262
Awareness	-.014	.290
Awareness + commitment	-.197	.323
Commitment	-.167	.325

Number of observations: 451, Pseudo R<sup>2</sup>: 0.3737

\* P < 0.10, \*\*P < 0.05 \*\*\*P < 0.01



# Discussion

# Policy measures



- Identify salient entry points
- Work with trusted partners
- Inform, empower the consumer
  - Awareness raising
  - Policy measures: standardisation, IPR regimes
- Acknowledge the role of the middleman & informal sector
- Engage with CFL producers in combating counterfeits
- Identify CFL lifespan
- Effectively design subsidies

# Outlook for future research



- Replicability potential?
- Contextual CFL lifespan
- Effective message framing
- Subsidy design
- Quality assurance measures
- Cost signaling methods
- Effective disposal design





# Asante Sana!

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# Laboratory Protocol



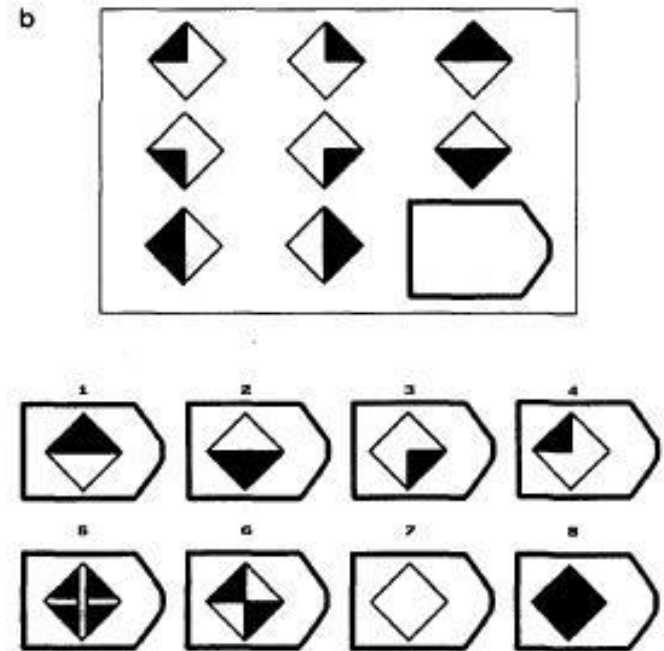
RED GREEN

For each question below, please choose either Option A OR Option B

OPTION A

OPTION B

	pays in 1 day	pays in 15 days
Question 1	225 KSh	200 KSh
Question 2	200 KSh	200 KSh
Question 3	175 KSh	200 KSh
Question 4	150 KSh	200 KSh
Question 5	125 KSh	200 KSh
Question 6	100 KSh	200 KSh
Question 7	75 KSh	200 KSh
Question 8	50 KSh	200 KSh
Question 9	25 KSh	200 KSh
Question 10	0 KSh	200 KSh



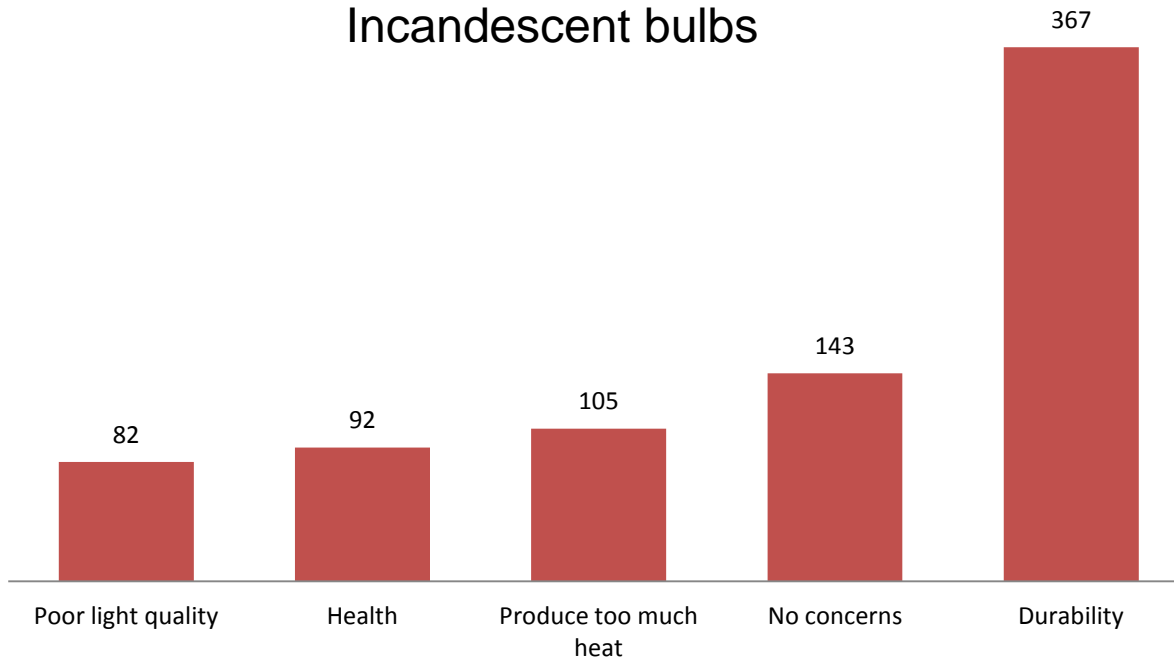


- Seven modules
  - Demographics
  - Time preferences
  - Electricity and lighting provision
  - Energy efficiency knowledge
  - Light bulb experiences
  - Electricity payment
  - Purchase preference

# Leading concerns



Incandescent bulbs



CFL bulbs

