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Stop the killer in the kitchen: does women's intrahousehold bargaining power trigger clean fuel adoption in Senegal?

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--03 Billion of people

-- (75% of these people are in SSA)

---730 millions tons of TBiomass

--1 billion tons of CO2

--Black carbon (most potent warming agent after CO2)

--Loss of biodiversity



- Indoor Air pollution , 04th important risk factor for disease (Lung cancer, ALRI, Pulmonary disease)
- 4.3 Millions Deaths per year, primarily children and women



WHY ARE HOUSEHOLDS IN SUB SAHARAN AFRICA SO DEPENDENT ON SOLID FUELS?



THE ENERGY LADDER THEORY

Income, Cost, Prices

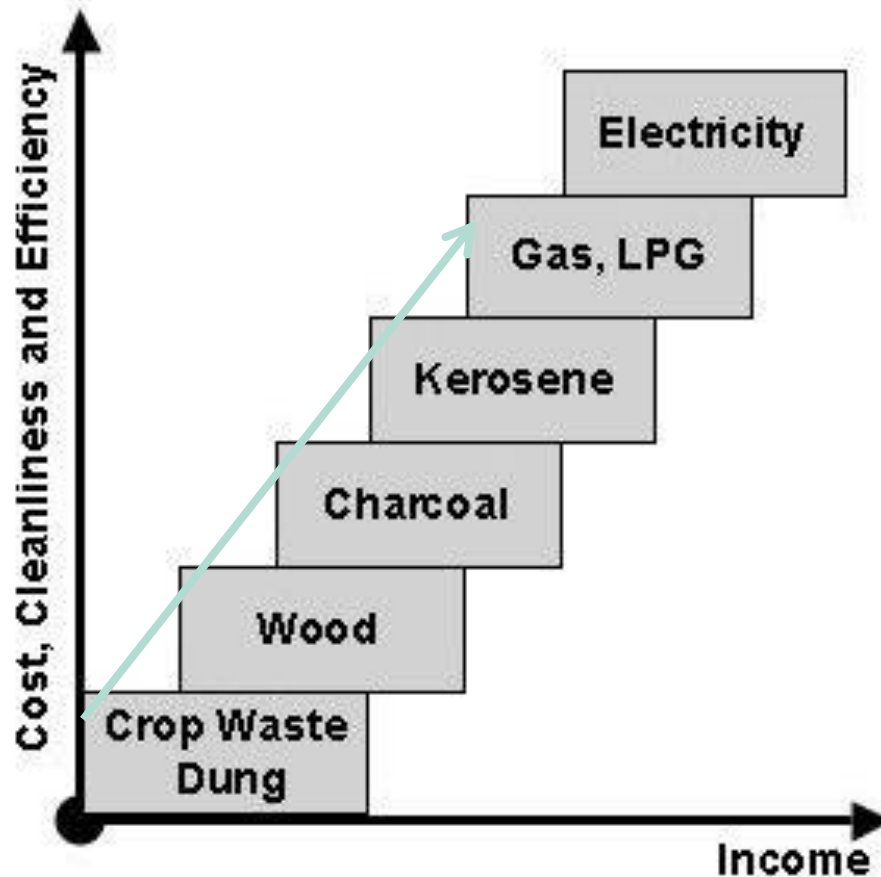
(Akabiah 1990,

Dovie et al., 2004)

Aikens et al.(1975)

Liquidity constraints,

Risk




E

IS

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,

Non economic factors at the household level

Level of education, (*Learning ability*)  **GREEN GROWTH**
Foster and
Rosenweig(2010), Kremer and Miguel (2007),
Rosenweig and Schultz (1989)

Household Life cycle Variables (MATH) Brown and
Verkantesh (2006)/Demographic variables:
Age of the Head of the household, The household size
(Shimoda(2007), Sardianou(2008))

Institutions and technology adoption at the macro (Fabio Manca, 2009) and micro level :

Formal institutions: Property rights, rule of law matter for technology adoption : Jeannin(2012), Goldstein and Udry (2002,2008), Feder et al. (1985), Infante D., Smirnova J. (2009)

Informal institutions matter for technology adoption Jeannin(2012), Munshi and Myaux (2006), Duesenberry and Stemble, 1949



Heltberg (2005) ; Rao and Reddy, (2007)

Verkantesh and Morris(2000)

Miller and Mobarak (2013)

Beltramo T. et al. (2014); Mohapatra et al.(2014);

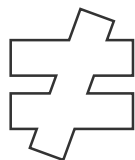
Sied (2015)

INFORMAL INSTITUTIONS
(social norms, religion, ethnicity, social capital)

Household-entity-
conflict of interest



-Economic
resources
-Human
resources



-Economic
resources
-Human
resources

**INTRA-
HOUSEHOLD
BARGAINING
OUTCOME**

DECISION MAKING

Traditional fuel



Cleaner fuel



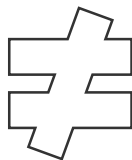


INFORMAL INSTITUTIONS
(social norms, religion, ethnicity, social capital,...)

THE HOUSEHOLD



-Economic resources
-human resources



-Economic resources
-human resources



Intrahousehold bargaining outcome

Traditional fuel



Cleaner fuel



1. WHAT IS THE EFFECT OF AN INCREASE OF WOMAN'S INTRAHOUSEHOLD BARGAINING POWER ON CLEAN FUEL UPTAKE?

2. WHAT IS THE REVERSE EFFECT OF MODERN FUEL ADOPTION ON WOMAN'S INTRAHOUSEHOLD BARGAINING POWER?

3. WHICH TYPE OF INFORMAL INSTITUTIONS AFFECT CLEAN FUEL UPTAKE AND WOMAN'S INTRAHOUSEHOLD BARGAINING POWER ?

**WOMAN SAY IN EXPENDITURE
ON HER OWN HEALTH**

**WOMAN SAY IN LARGE
HOUSEHOLD PURCHASES**

**WOMAN SAY IN FAMILY /
RELATIVE VISIT**

**WOMAN SAY ON
HOW THE MONEY
EARNED BY
THE HUSBAND
SHOULD BE SPENT**

**LATENT TRAIT
MODEL**

**WOMEN'S
INTRAHOUSEHOLD
BARGAINING
POWER INDEX**

Detailed information on women's empowerment and main source of cooking fuel

14602 Women
3 761 Men

2005

15 689 Women
4931 Men

2010

8 488 Women
3 371 Men
5548
Married Women
Living together

2014

Descriptive statistics



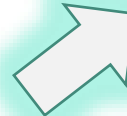
WHO MAKES DECISION ON	Wife Does Not	Wife Does	Number of Observations
The woman's own earnings	7.9%	92.10 %	2569
Large Household purchases	81.54%	18.46%	5558
Visit to Family and friends	79.44%	20.56%	5558
What to do with money husband earns	85.72%	14.28%	5455
The woman's health care expenditure	80.95 %	19.05 %	5558
Type of fuel used	Traditional fuel	Clean fuel	Number of Observations
Clean Fuel Adoption (Electricity, Natural Gas, Biogas, Kerosene, LPG)	90.43%	9.57 %	5558



DEPENDENT VARIABLE 2 (Clean fuel Uptake)	Variable i-WOMEN'S SAY IN EXPENDITURE ON HER OWN HEALTHCARE)	Variable i- WOMEN'S SAY IN LARGE HOUSEHOLD PURCHASE	Variable i- WOMEN SAY IN FAMILY RELATIVES. VISIT	Variable i-WOMEN SAY ON HOW THE MONEY EARNED BY THE HUSBAND SHOULD BE SPENT
<i>Women's say in Variable i (cf column)</i>	1.51*** [0.068]	1.47*** [0.084]	1.63*** [0.081]	1.67*** [0.097]
<i>Household wealth index</i>	0.754*** [0.056]	0.76*** [0.055]	0.63*** [0.047]	0.85*** [0.055]
<i>Household size</i>	-0.035*** [0.017]	-0.032* [0.017]	-0.023 [0.018]	-0.011 [0.018]
<i>Household lives in rural area</i>	-0.23*** [0.08]	-0.21*** [0.09]	-0.27** [0.08]	-0.19** [0.096]
<i>Religion_animism</i>		-7.25*** [0.20]	-8.74*** [0.00]	-6.7*** [0.19]

Main results

AN INCREASE OF WOMEN'S
DECISION MAKING AND
HOUSEHOLD WEALTH INDEX



CLEAN FUEL UPTAKE

AN INCREASE OF HOUSEHOLD SIZE
AND RESIDENCE IN A RURAL AREA



CLEAN FUEL UPTAKE

RELIGION MATTER
(PRACTICING ANIMISM)



CLEAN FUEL UPTAKE

Conclusion



- Households with women more empowered would therefore be more likely to uptake clean fuel, curbing the harmful health and environmental effects of traditional ones
- Suitable Policies to enhance women's economic empowerment (CCT and UCT Programs directed to women; e.g. keeping pregnant girls at school) focused on rural areas would help stopping the «*Killer in the kitchen*»
- Empowering women is an effective response to climate change, as that would foster the adoption of clean technologies as modern fuel

Thank You for you
kind attention

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