

**WOMEN'S BARGAINING POWER AND HOUSEHOLD  
ENERGY CHOICES:  
INSIGHTS FROM A PANEL SURVEY IN  
KYRGYZSTAN**

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## Motivational Background

- Women's roles and responsibilities within households often include energy management, including cooking, heating and other household energy needs (Choumert-Nkolo et al., 2019). Understanding the impact of women on household energy dynamics is essential to designing effective policies to promote gender equality and energy transition (Malakar, 2018; Musango, et al., 2020; Nwaka, et al., 2020).
- Empirical research highlights the importance of women's influence on household energy choices, and that women often play a central role in managing household energy use, making decisions about cooking technologies, and ensuring access to energy for their families (Atagher et al., 2017; Nwaka et al., 2020; Alda-Vidal et al., 2023; Choumert-Nkolo et al., 2019).
- However, in low income and developing countries, women's intra-household bargaining power may vary based on diverse regional and country-specific cultural contexts (Choumert-Nkolo et al., 2019; Alda-Vidal et al., 2023). Bargaining power refers to individuals' ability to influence decision-making processes and allocate resources within the household (Paschal & Kauangal, 2023).
- Kyrgyzstan provides an interesting and under-researched case study to explore the intersection of gender and household energy choices for sustainable development. Kyrgyzstan, a landlocked country in Central Asia, is among the most energy intensive countries in the world with energy consumption in the residential sector quadrupled between 2010-2019 (IRENA, 2022).

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## Research Objective

- By examining the role of women's bargaining power in the household, this research aims to provide a more thorough understanding of gendered household energy dynamics in developing countries and makes several contributions to the empirical literature.
  - Firstly, it advances knowledge on gender and energy transition in a developing country context.
  - Secondly, the study employs longitudinal household survey data covering the period from 2011 to 2019, enabling an exploration of household energy dynamics and women's influence over time.
  - Thirdly, a multi-dimensional approach is used to assess the bargaining power of women, including a thorough assessment of their participation in household decision-making processes.
- This study aims to investigate women's bargaining power influence on the selection of cleaner cooking technologies, focusing on women's intra-household power relations.

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## Methodology

- This study utilizes data from the "Life in Kyrgyzstan" (LiK) household panel survey conducted in 2011, 2013, 2016, and 2019.
- The analysis focuses on households in Kyrgyzstan that participated in all waves of the LiK survey between 2011 and 2019.
- The sample is limited to households that provided information on the types of cooking choice used in their households and had women present
- The final sample comprises 6,920 households observed across the four survey waves, with 1,730 households surveyed in each wave, yielding a comprehensive view of household dynamics over the entire survey period.

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## Empirical strategy

- To examine the impact of women's bargaining power on household energy choices, we employ a panel multinomial logit selection model

$$\Pr(y_{it} = m \mid X_{it}, \beta, u_{ij}) = F(y_{it} = m, X_{it}\beta_j + u_{ij})$$

- $X_{it}$  is a vector of explanatory variables,  $\beta_j$  is a column vector of coefficients for the  $j$ th outcome,  $u_{ij}$  is a household-level unobserved heterogeneity term, and  $\varepsilon_{ijt}$  is the independently and identically distributed error term.
- The outcome variable  $y_{it}$  represents the energy choices in households and reflects the type of energy technologies adopted by households and identified in the LIK household questionnaires.
- We categorize the cooking choices into three distinct options:
  - (i) tandyr-oven (fire oven),
  - (ii) gas stove, and
  - (iii) electric stove.

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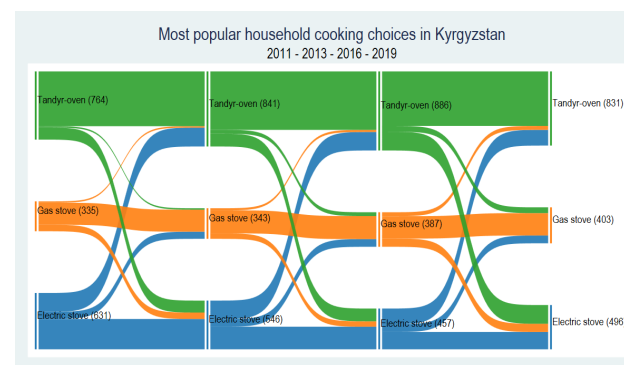


Figure 1. Sankey diagram of household cooking choices over the survey period  
Source: Authors' calculations, LIK data

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## Women's bargaining power index

	2011	2013	2016	2016
	<i>Reference Index</i>			
<b>Women's Bargaining Power Index 1</b>	<b>0.1502</b>	<b>0.0177</b>	<b>-0.0420</b>	<b>-0.1259</b>
— Age (years)	46.8751	48.8751	51.8751	54.8751
— Education level (1=tertiary)	0.1561	0.1486	0.1491	0.1468
— Education level (1=secondary technical)	0.1393	0.1133	0.1139	0.1121
— Labor (1=has a job)	0.2532	0.2075	0.2191	0.2185
	<i>Intra-Household Bargaining Variables</i>			
<b>Women's Bargaining Power Index 2</b>	<b>-0.0706</b>	<b>-0.0632</b>	<b>0.0350</b>	<b>0.0988</b>
— Buy major items	0.2780	0.2827	0.2514	0.3289
— Lend money to others	0.2156	0.2312	0.2225	0.2087
— Borrow money from others	0.2179	0.2272	0.2329	0.2133
— How much to save of household income	0.2468	0.2277	0.2561	0.2312
— Children's well-being and health	0.2699	0.2572	0.2127	0.1879
— Marriage of male household member	0.0971	0.0965	0.1110	0.1399
— Marriage of female household member	0.1532	0.1468	0.1405	0.1613
— Kaly (marriage customs)	0.0884	0.0908	0.1133	0.1382
— Where male household member should work	0.0948	0.0971	0.1439	0.1543
— Where female household member should work	0.2676	0.2879	0.3832	0.2671
— Negotiating with neighbors	0.3023	0.2671	0.2873	0.2509
— Participation to discuss community issues	0.2243	0.2162	0.1867	0.2069
— Migration of household member	0.0913	0.1104	0.1012	0.1439
— How to use remittances	0.1029	0.1116	0.1376	0.1803

Table 1. Women's Bargaining Power Indexes  
Source: Authors' calculations, LIK data

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## Estimation results

	RANDOM EFFECTS		FIXED EFFECTS	
	Reference Index	Intra-Household Bargaining Indexes	Reference Index	Intra-Household Bargaining Indexes
	<b>Gas cooking stove</b>		<b>Gas cooking stove</b>	
Total sample	0.435*** (0.073)	-0.019 (0.026)	0.204* (0.113)	0.045 (0.030)
Urban sample	0.548*** (0.117)	0.063 (0.040)	0.109 (0.197)	0.140*** (0.047)
Rural sample	0.286*** (0.104)	-0.041 (0.038)	0.153 (0.167)	0.009 (0.045)
	<b>Electric cooking stove</b>		<b>Electric cooking stove</b>	
Total sample	0.275*** (0.048)	-0.006 (0.015)	0.235*** (0.070)	0.007 (0.018)
Urban sample	0.225** (0.101)	0.101*** (0.033)	-0.026 (0.161)	0.121*** (0.046)
Rural sample	0.303*** (0.056)	-0.031* (0.018)	0.310*** (0.082)	-0.012 (0.021)

Table 2. Cooking choice coefficient estimate for the women's bargaining power indexes.  
Source: Authors' calculations, LIK data

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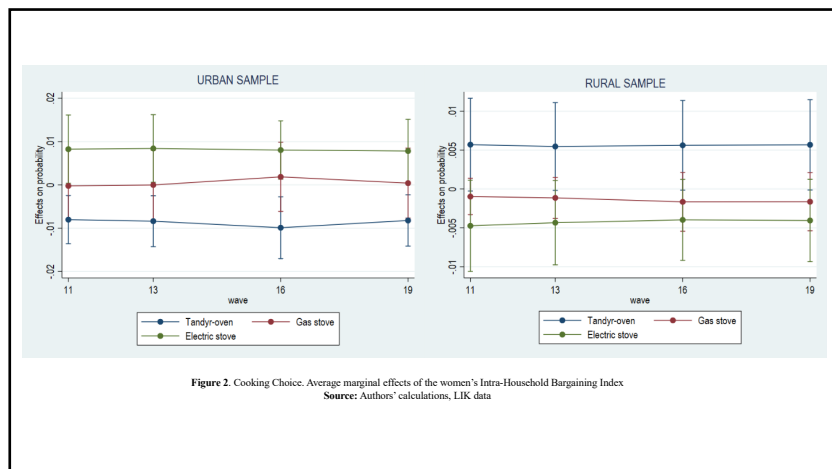
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## Conclusion and policy implications

- The empirical findings indicate a statistically significant relationship between women's increased bargaining power and the adoption of electric or gas stoves in urban areas. However, in rural areas, this association is more inclined towards the use of conventional fire ovens. These findings highlight the importance of tailored policies across rural and urban regions, by ensuring equal access to clean energy technology.
- These findings have important policy implications for Kyrgyzstan and other developing countries where households are heavily dependent on solid fuels. Climate change mitigation and decarbonization policies should prioritize the promotion of clean energy technologies by raising women's awareness of the associated benefits.
- Finally, women's empowerment for climate change mitigation needs to be carefully considered, given that women's bargaining power may differ in rural and urban settings and may be more dependent on intra-household dynamics rather than on their socio-demographic characteristics.

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- Thank you very much for your attention!
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