



# DATA FOR DEVELOPMENT

## India Human Development Survey Forum | December 2024

A monthly update of socio-economic developments in India by the IHDS research community.

### The Determinants of Household Cooking Fuel Transition: Evidence from Rural India

-Namrata Barik and Puja Padhi



This paper investigates factors influencing rural households in India to transition from dirty to mixed fuels rather than adopting clean fuels, using a balanced panel from the India Human Development Survey (2004-05 and 2011-12). Transitioning to cleaner energy is crucial for sustainable economic growth, health improvements, and environmental benefits. A fuel choice transition matrix is constructed, and a multinomial logit model is used to analyse household energy shifts, classifying outcomes as persistent dirty fuel use, mixed fuel adoption, or clean

fuel adoption. Results reveal that beyond income, the household head's education and gender significantly impact energy choices. The study emphasizes the need for policies targeting socio-economic and educational barriers to cleaner fuel adoption in rural areas, enhancing health and supporting sustainable development.

Table 1: Fuel choice transition matrix for rural and urban households

Transition Matrix	Aggregate (%) 2012			Rural (%) 2012			Urban (%) 2012		
	Clean	Mixed	Dirty	Clean	Mixed	Dirty	Clean	Mixed	Dirty
2005 Clean Fuel	69.68	25.48	4.84	43.55	43.99	12.46	74.29	22.22	3.5
2005 Mixed Fuel	24.3	61.28	14.41	13.88	68.17	17.95	39.64	51.15	9.21
2005 Dirty Fuel	4.48	17.05	78.46	2.46	14.6	82.49	14.34	28.96	56.7

Source: India Human Development Survey IHDS 1 (2004-05) and IHDS 2 (2011-12)

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## About the Authors



### Namrata Barik

Namrata Barik is a PhD candidate in the Department of Economics, IIT Bombay. She is currently working on cooking fuel transitions in rural households, particularly examining the adoption of clean cooking fuel and the dynamics of fuel stacking. Her research interest includes energy economics, environmental economics and energy transition with a special emphasis on household decision-making and policy impacts on clean energy adoption.



### Puja Padhi

Puja Padhi is a Professor in the Department of Economics, IIT Bombay, since 2008. She specializes in financial economics and applied econometrics, with extensive expertise in financing economic development, macroeconomics, money, and banking. Her research focuses on understanding the financial mechanisms that drive economic growth and stability. She has contributed significantly to the field through numerous publications in leading national and international journals. She earned her Ph.D. from the Central University of Hyderabad, India.

## Determinants of Migration from Poor Households in India: An Empirical Investigation

-Shreya Nupur and Meghna Dutta

The paper explores the factors driving migration from poor households in developing countries focusing on India. Using nationally representative data from the India Human Development Survey (Round II, 2011-12), authors differentiate between long-term and short-term migration drivers. The findings reveal that long-term migration is driven by factors such as household debt, access to resources, upper-caste affiliation, and major family events or shocks. In contrast, short-term migration is more prevalent among



marginalized groups like Scheduled Castes and Scheduled Tribes. Key triggers for short-term migration include household debt, major shocks, and the presence of dependents. However, an increase in rural male wages reduces the likelihood of short-term migration, underscoring the importance of creating local employment opportunities. These results highlight the pressing challenges faced by poor households in making migration decisions, particularly for short-term moves. It is crucial to incorporate migration into poverty alleviation policy frameworks for achieving poverty reduction and inclusive development goals.

Table 2: Marginal effects of the determinants of long term and short term migration

Variables	Rural Households (dy/dx)	Rural Poor Households (dy/dx)	
		Long Term Migration	Short Term Migration
Wage prevailing in village (ln)	-0.035 (0.007)	-0.093*** (0.014)	-0.068*** (0.005)
Debt (log)	0.004*** (0.002)	0.005*** (0.001)	0.003*** (0.0003)
<b>Household level Shocks</b>			
Major illness (No =Ref.)			
Yes	0.020*** (0.006)	0.044*** (0.013)	0.009** (0.004)
Marriage (No =Ref.)			
Yes	0.054*** (0.005)	0.066*** (0.011)	0.014*** (0.004)
Observations	25,827	5162	5,070

Note: \*p < .10; \*\*p < .05; and \*\*\*p < .01

Source: Authors calculations based on IHDS-II, 2011 data set

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### Shreya Nupur

Shreya Nupur is an Assistant Professor at the University of Petroleum and Energy Studies (UPES), Dehradun. Her research interests lie in the areas of labour migration, employment, household well-being, resilience, ICT, gender and health. Before joining UPES, she assisted research in the Institute of Economic Growth (IEG), New Delhi and also served as visiting faculty at Delhi Technological University (DTU), New Delhi. She holds PhD degree in Economics from Indian Institute of Technology Patna and has published in several prestigious journals.



## Meghna Dutta

Meghna Dutta is an Assistant Professor at the Indian Institute of Technology Patna. Her research interests include informal employment, firm behavior, gender and health. Prior to joining IITP, she has held professorships at Goa Institute of Management (GIM) and Tata Institute of Social Sciences (TISS). She has completed her PhD at Centre for Studies in Social Sciences (CSSS), Jadavpur University, Kolkata, and has authored numerous high-impact publications on micro economic modelling, firm behaviour, informal sector, household well-being and credit access.



## Publications List

### Recent Publications using IHDS Data

Madhavan, M. (2024). Household energy choices under fuel stacking scenarios: evidence for bundling welfare schemes for facilitating clean fuel use. *Environmental Research: Energy*. [Link](#)

### IHDS in the News

Bhukta, R. (2024). Bridging the caste divide: How financial inclusion drives social inclusion. *Development Impact, World Bank Blogs*. [Link](#)

Nandwani, B., & Roychowdhury, P. (2024). Road to empowerment: Rural roads programme and women's outcomes. *Ideas for India*. [Link](#)

## About IHDS

The India Human Development Survey (IHDS) began as a nationally representative, multi topic survey of 41,554 households in 1,503 villages and 971 urban neighborhoods across India. The first round of interviews were completed in 2004-05; Data is publicly available via ICPSR. The second round re-interviewed most of these households in 2011-12 (N=42,152) and data for the same is available via ICPSR. Fieldwork for IHDS 3 was undertaken in 2022-24 and data is currently being cleaned and processed.

IHDS 3 has been jointly conducted by researchers from the University of Maryland, the National Council of Applied Economic Research, Indiana University and University of Michigan.

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