

# **Women Empowerment key for smokeless kitchens in rural India<sup>1</sup>**

Sravanthi Choragudi

## **Highlights:**

- 1. More than 50 percent of the rural households use solid fuels- firewood, dung, crop residue, coal- for cooking.**
- 2. Women and children are at high risk of respiratory illnesses caused due to indoor air pollution.**
- 3. Policies focusing only on enabling the ownership of LPG connection has limited success in promoting its universal adoption.**
- 4. High refill costs, urban-centric LPG distribution system, easy availability of solid fuels, cheap labour of women, and lack of awareness of ill effects of burning solid fuels are a few reasons of continued dependence on solid fuels.**
- 5. Households where women are financial independent, employed and participate in household purchasing decisions have higher chances of opting clean cooking fuel.**
- 6. Woman's awareness of ill effects of using solid fuels; right gender relations; and woman's access to market encourages the use of clean cooking fuel.**
- 7. To ensure smokeless kitchens, cooking fuel schemes ought to create a system comprising of necessary demand and supply conditions. Spreading knowledge and awareness, making LPG cylinder delivery system less cumbersome, introducing micro payment of LPG refilling costs to accommodate poor households.**
- 8. Cooking fuel schemes ought to partner with local Women Self-Help groups to both encourage take-up and ensure sustainable use of clean coking fuel.**
- 9. Smokeless kitchens should be a public health agenda and therefore prioritized in State promoted health programmes like TB eradication, woman's health and infant and child care.**

<sup>1</sup> I would like to thank Dr. Shoibal Chakravarty and Dr. H. Paramesh, Divecha Centre for Climate Change, IISc for their comments and suggestions.



## I. Background

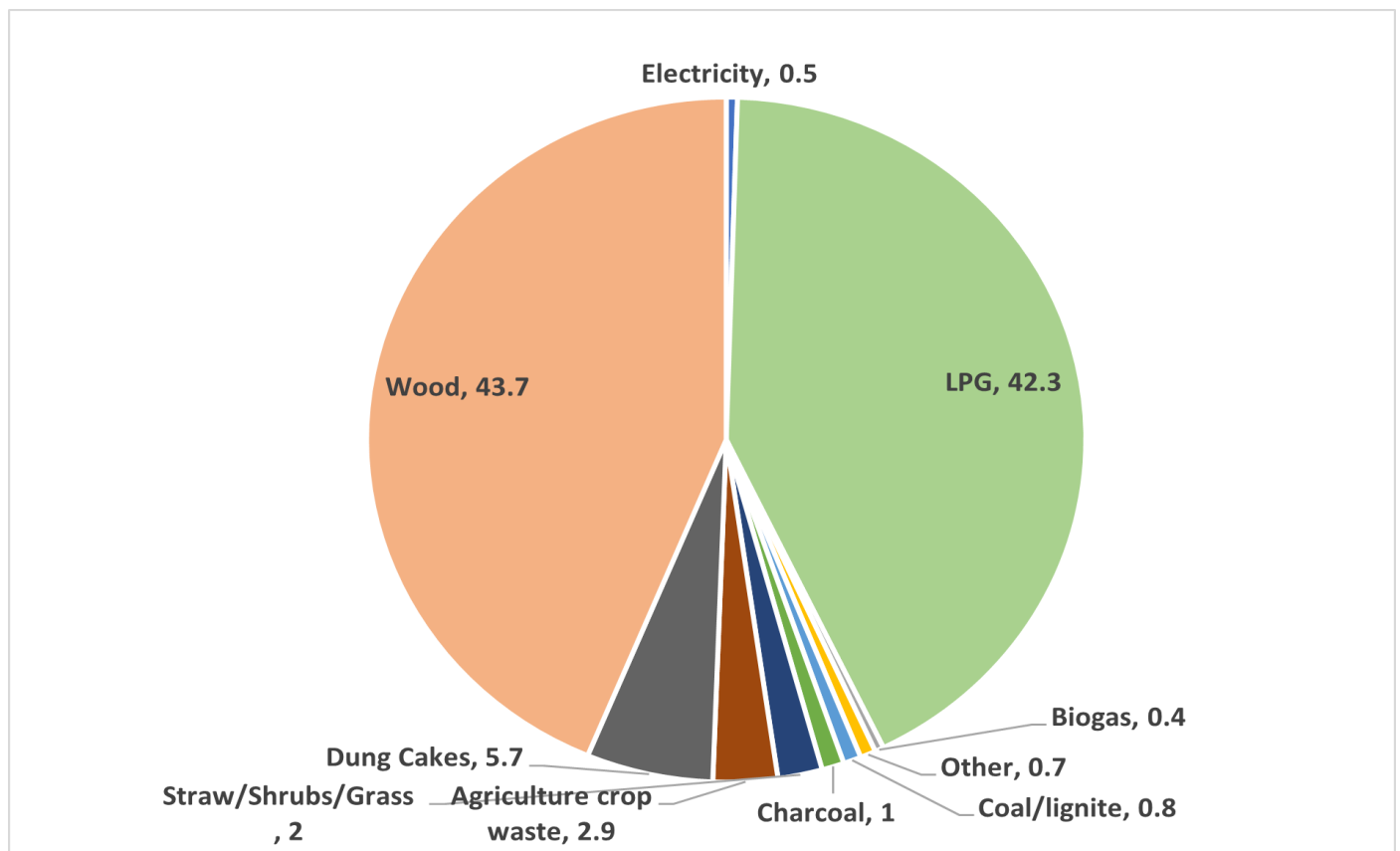
In rural India, more than fifty percent of the households use highly polluting solid fuels for cooking (Figure 1). Significant percentage of the households use solid fuels like firewood, crop residue and dung cakes. Burning of solid fuels, especially in the indoors with poor ventilation is one of the major reasons for chronic respiratory diseases in India. According to a study, prevalence of asthma among children increases multifold when the household uses solid fuels for cooking (Paramesh 2002).

The cooking fuel scenario in rural India changed significantly since the late 90's when only 6 percent of the households were using LPG. However, the shift towards clean cooking fuel, especially LPG cylinders, was predominantly concentrated among the high-income, and mostly urban, households. In order, to make clean cooking affordable to all, the Central government launched a universal clean cooking program-Pradhan Mantry Ujwala Yojna (PMUY)- in 2017. This programme eased the poor households of the burden of upfront cost of gas

stove and LPG connection (Figure 2). However, universal ownership of LPG connection did not ensure its consistent usage among a significant share of rural households. Recurring and high cost of refilling the cylinders, readily available crop residue and firewood are a few major reasons for the households to revert back to solid fuels for cooking.

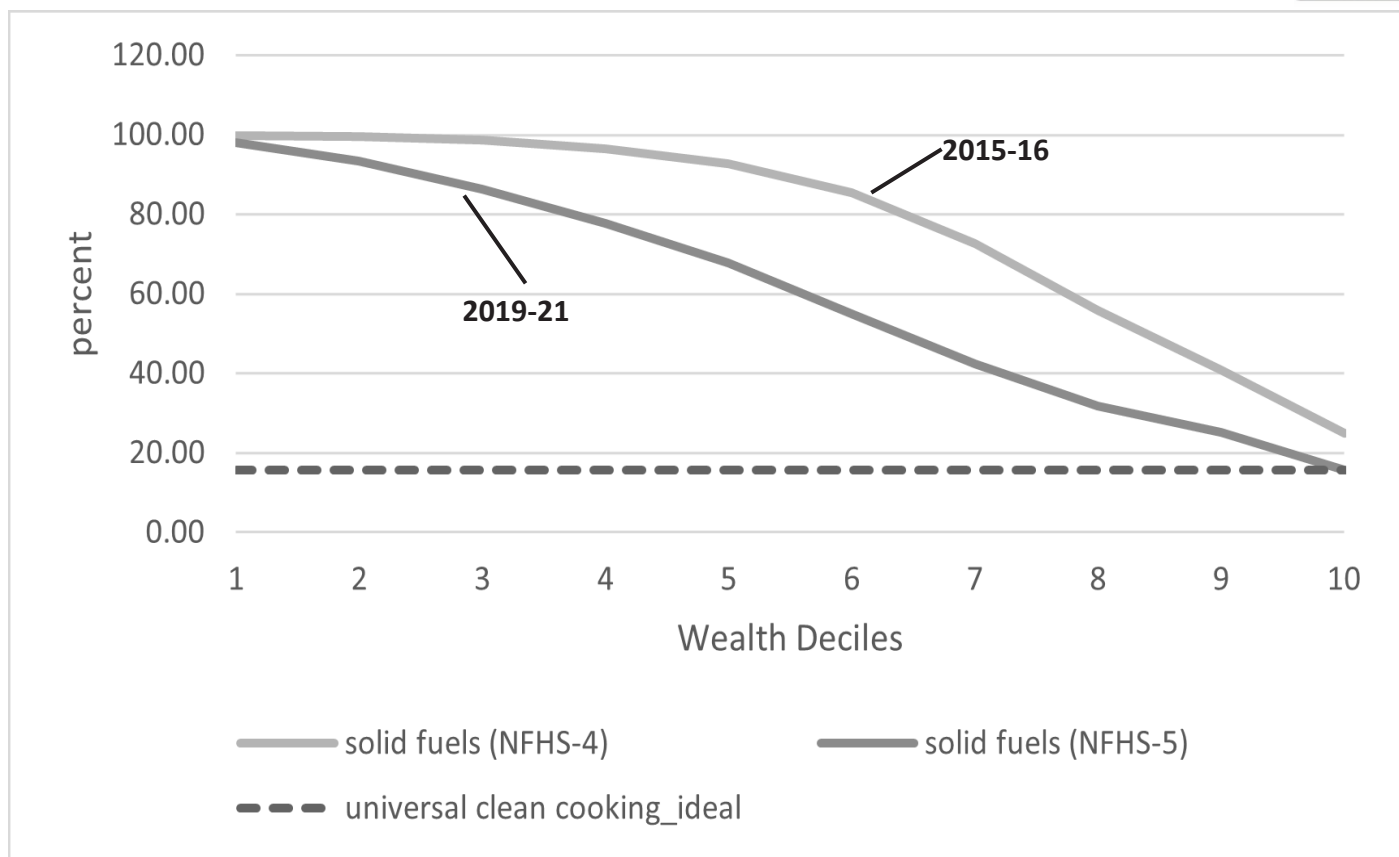
The limited success of clean fuel policies that focused on ownership of the physical infrastructure requires us to look past the economic factors. Clean cooking processes has a direct bearing on the time, health, and labor borne by the woman and it effects the rest of the household by extension. Adoption and consistent usage of clean cooking technologies, therefore, rest on the women and is driven by them. Therefore, polices intended to promote smokeless kitchens ought to put the primary users- women- at the center.

In this policy brief we argue that smokeless kitchens are made possible by empowered women, thereby India's clean cooking policies are incomplete without placing women at the forefront.



Source: National Family Health Survey 2019-21

Figure 1: Cooking Fuel Usage among India's Rural households (percentage).



Source: Calculated using NFHS-4 (2015-16) and NFHS-5 (2019-21)

**Figure 2:** Solid Fuel Users Across Economic Group.

## II. Women Empowerment and Choice of Cooking Fuel: Evidence from Rural India

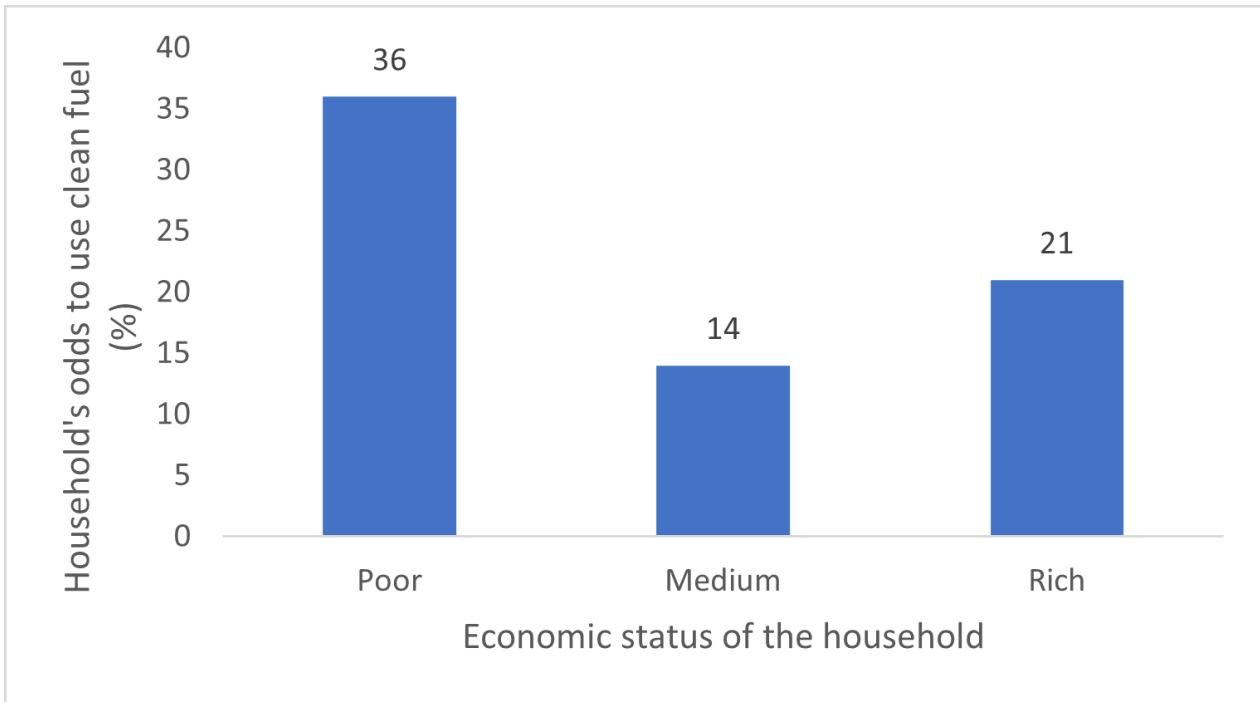
Women empowerment is critical for achieving developmental goals (UNDP 2024) including education, health and nutrition and eradication of poverty. Similarly, the choice of clean cooking fuel centrally lies on the autonomy of the women. Specifically, studies identified the following women empowerment indicators to significantly influence the fuel choices households make.

- **Decision making power:** Women with decision making authority on household spending, are likely to bargain for cooking fuel that involves less drudgery as well as health risks (Kabeer 1999; Mohapatra and Simon 2017; Zhang et al. 2022).
- **Financial Independence:** Financially independent woman would invest on goods and services that accrue welfare to the household in general (Parikh 2011). Therefore, they would opt for clean cooking fuel. Since, consistent use of LPG involves recurring cost, women with access to ready cash are more likely to bargain for it.

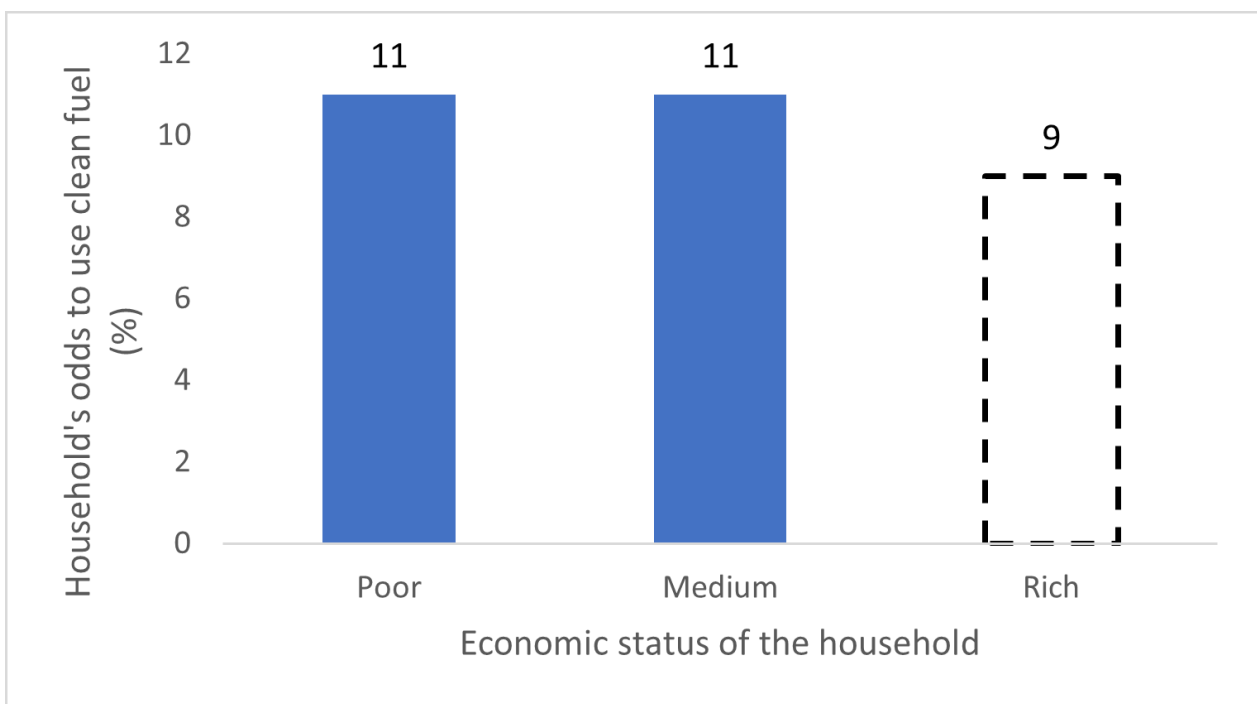
Figure 3 and 4 represent the odds (in percentage) that the household opts for clean cooking fuel and empowerment status of the women of that household - financial independence and bargaining power- in that household. A household where a woman of that household has access to cash which she can spend at her will, vis-à-vis a household where woman has no financial independence, has better chances to use clean cooking fuel. Especially among the poor households the chances for smokeless kitchen improves by 36% if the woman of the household is financially independent. Similarly, households where women have a say on the household purchases, as opposed to the households where women don't, have better chances to opt clean cooking fuel.

Men and women have unequal capacity to exercise their agency (World Bank 2012). Therefore, the nature of goods and or services a woman negotiates for or spends on is highly contextual. More specifically, it hinges on social norms, gender relations and general awareness of the woman of the household.

a. *Gender relations:* Gender relations in a household affects a woman's autonomy in



**Figure 3:** Woman's Financial Independence and Household's odds to use clean cooking fuel (2019-21).



**Figure 4:** Woman's freedom to decision making and Household's odds to use clean cooking fuel (2019-21).

**Note:** Dotted line indicates the results are not statistically significant.

the economic sphere, especially on decisions regarding spending. For example, in case of domestic violence and or husband's distrust of the woman, bargaining for a (seemingly) self-serving goods/services like LPG involves a high risk of backlash.

*b. Social norms:* Restrictive social norms like limits on woman's travel, impact the fuel choice adversely. This is particularly deterring when traveling to nearby towns and cities is the only

way to get an LPG refill.

*c. Awareness:* Finally, well-informed decision making is important for the choice of fuel. Therefore, a woman's knowledge of the ill effects of burning solid fuels is key for exercising her agency to spend on/bargain for LPG.

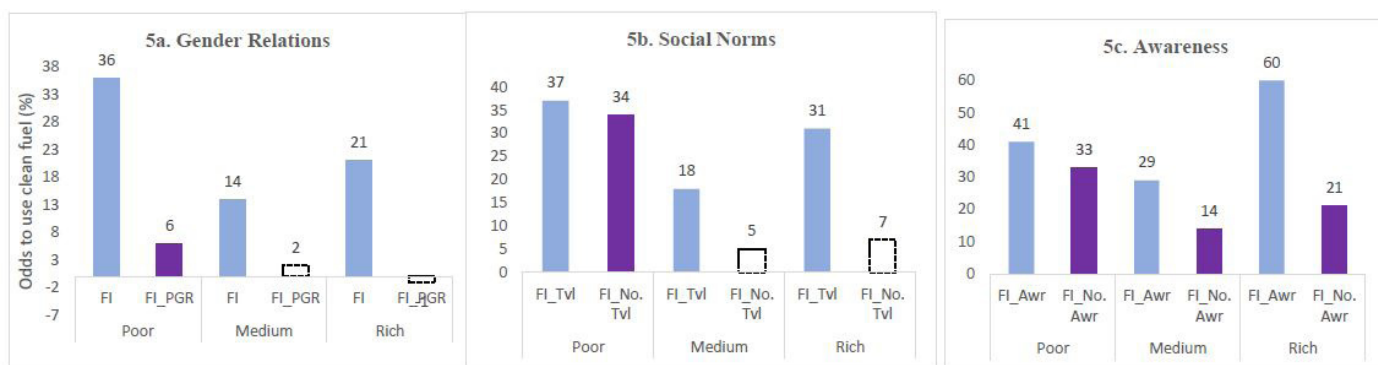
**Figure 5 and 6** presents the household's odds of using clean fuel where empowered women operate in opposing social circumstances. Financially



independent women who experience poor gender relations at the household have a lower chance to promote clean cooking fuel: 36% vs 6% among the poor households (**Figure 5a**). If woman faces restrictions in travelling and accessing market places, the chances of the household to opt clean fuel diminishes even if that woman is financially independent (**Figure 5b**). If a financially independent woman is unaware of the ill effects of using solid fuels for cooking, the chance of the household

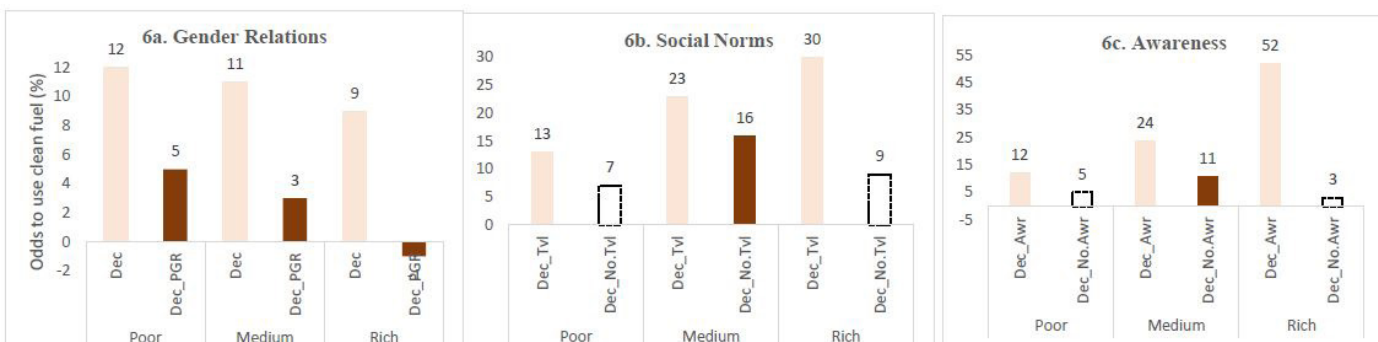
opting for a cleaner alternative fall significantly (**Figure 5c**).

Similarly, a woman’s freedom to make spending decisions has a positive effect on the fuel choice only if she operates in favorable social circumstances. Poor gender relations (**Figure 6a**) social norms restricting women traveling (**Figure 6b**) and woman’s unawareness of importance of clean cooking fuel (**Figure 6c**) reduces the household’s chances of



**Figure 5:** Woman’s Financial Independence and Household’s Fuel Choice: Gender Relations, Social Norms and Awareness.

**Note:** FI: Financial Independent, FI\_PGR: Financial Independence but with Poor Gender Relations, FI\_Tvl: Financial Independence with freedom to Travel, FI\_No\_Tvl: Financial Independence with no freedom to Travel, FI\_Awr: Financial Independence with Awareness, FI\_No\_Awr: Financial Independence but No Awareness. Dotted line indicates the results are not statistically significant.



**Figure 6:** Woman’s Decision to Spend and Household’s Fuel Choice: Gender Relations, Social Norms and Awareness.

**Note:** Dec: Decision to spend, Dec\_PGR: Freedom to decide but with Poor Gender Relations, Dec\_Tvl: Freedom to decide and ability to travel, Dec\_No\_Tvl: Freedom to decide and ability to travel, Dec\_Awr: Freedom to decide with Awareness, Dec\_No\_Awr: Freedom to decide with No Awareness. Dotted line indicates the results are not statistically significant.

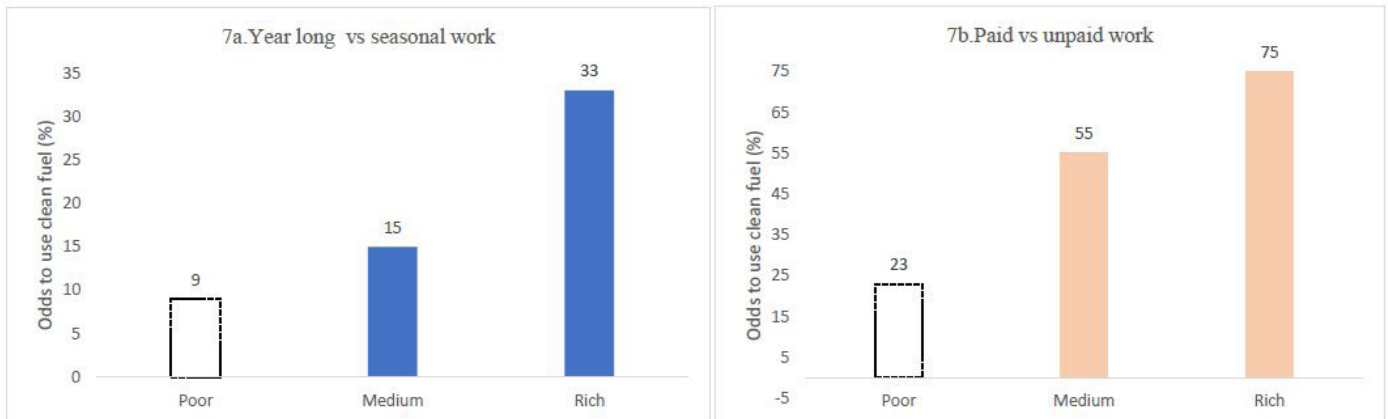


opting for clean cooking fuel, even if the woman of the household has the freedom to partake spending decisions.

- **Employment:** A household where the woman is engaged in year-long paid work tend to opt for less cumbersome cooking options. This manifest through two channels. First, as employed women spend more time away from home they could spare less time to collect firewood/crop residue. Second, as the woman's earnings

adds to the household income, it improves her bargaining power to negotiate for clean cooking fuel.

Empirical evidence shows that woman's employment proved to have varying influence on the fuel choice across the wealth groups. Spending time away from the house employed consistently throughout the year (**Figure 7a**) and working for a pay (**Figure 7b**) significantly improves the chances of a medium-income and rich households to opt clean



**Figure 7:** Woman's Employment and Household's Fuel Choice: Opportunity Cost of Time and Pay.

**Note:** Yearlong engagement in employment activities sends strong signals about woman's time use away from home. However, if the woman is engaged in employment activities occasionally or seasonally, households are unlikely to make a permanent shift towards time-saving cooking technologies.

cooking fuel. However, among the poor households woman's employment has no impact on the fuel choice. In other words, the cost of refilling of LPG is much higher than the opportunity cost of woman's time and her contribution to the household income.

### Implications for Policy

Rural households in India continue to rely heavily on solid fuels for cooking. Consistent usage of clean cooking fuel not only reduces the indoor air pollution, thereby reduces the risk of respiratory illness, but also minimizes the labour and time women spend on collecting and managing solid fuels and cooking with it. India's decades long policy efforts to promote clean cooking fuel primarily focused on making the fuel and associated infrastructure affordable. While easing the cost of clean fuel reduced the reliance on solid fuels, cooking fuel policies that do not focus on the primary users- women- have proved to have limited success.

Our analysis shows that women empowerment is one of the effective enablers of smokeless

kitchens. Women who are financially independent, earn regular income, and have a say in household spending decisions have a better chance to promote clean cooking fuel in the household. One of the significant insights from our analysis is that socio-cultural setting in which women make decisions or bargain for smokeless kitchens has a telling impact on the outcome. Women are less inclined to exercise their agency for a seemingly self-serving goods/services i.e., cooking fuel when faced with hostile gender relations and unfavorable societal norms. Further, little knowledge of ill effects of burning solid fuels adversely impacts the chances of using clean cooking fuels. Equally important is to note that linkages between women empowerment and usage of clean cooking fuel varies across wealth groups.

In the light of above insights, we argue for the policies to add a gender component that would both improve woman's agency as well as iron out hindrances created by the unfavorable socio-cultural settings. Following are a few pointers.



- Spreading knowledge and awareness of health risks caused due to indoor pollution and benefits of smokeless kitchens
- Easing of the financial burden of a new cylinder as well as reducing the drudgery of travelling long distances to get LPG refill will increase its usage. Women groups (akin to self-help groups) at village/panchayat level could be a necessary support system to aid each other in traveling distances and putting away micro sums to spend on refilling LPG cylinder.
- Clean cooking fuel needs to be considered as a component of public health system. It should be promoted and funded as a part of State promoted health programmes like TB eradication, pre and post-natal health care, infant and child health and nutrition.

### References

- Kabeer, Naila. 1999. "Resources, Agency, Achievements: Reflections on the Measurement of Women's Empowerment." *Development and Change* 30(3): 435–64. doi:10.1111/1467-7660.00125.
- Mohapatra, Sandeep, and Leo Simon. 2017. "Intra-Household Bargaining over Household Technology Adoption." *Review of Economics of the Household* 15(4): 1263–90. doi:10.1007/s11150-015-9318-5.
- Paramesh, H. 2002. "Epidemiology of Asthma in India." *The Indian Journal of Paediatrics* 69(4): 309–12. doi:10.1007/BF02723216.
- Parikh, Jyoti. 2011. "Hardships and Health Impacts on Women Due to Traditional Cooking Fuels A Case Study of Himachal Pradesh, India." *Energy Policy* 39: 7587–94. doi:10.1016/j.enpol.2011.05.055.
- UNDP. 2024. "Women's Economic Empowerment: A Critical Catalyst for SDG Achievement." UNDP. <https://www.undp.org/africa/blog/womens-economic-empowerment-critical-catalyst-sdg-achievement> (November 7, 2024).
- World Bank. 2012. *World Development Report: Gender Equality and Development*. World Bank.
- Zhang, Alice Tianbo, Sasmita Patnaik, Shaily Jha, Shalu Agrawal, Carlos F. Gould, and Johannes Urpelainen. 2022. "Evidence of Multidimensional Gender Inequality in Energy Services from a Large-Scale Household Survey in India." *Nature Energy*. doi:10.1038/s41560-022-01044-3.

