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Electrification and Welfare for the Marginalized: Evidence from India

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Socioeconomic disparities between dominant and marginalized groups has been widely documented in India. However, less is understood about the effects of public policies on these disparities. Social discrimination can have negative welfare impacts, but can public policies counter these effects? This study addresses the above question and looks at the likelihood of electrification and its effect on welfare outcomes for various social groups by caste and religion in India. In recent years, public policies in India have set targets to improve employment opportunities and infrastructure for the 'poor' and the disadvantaged. One such public policy has been the 'electrification drive' that started with the 2005 Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) with the goal of increasing electricity access. The electrification push since 2005, especially in rural areas, presents an opportunity to examine changes in the access and quality of electrification, and the effects on welfare outcomes for dominant and marginalized groups.

Available studies on caste and electrification have focused only on the extensive margin— i.e., the likelihood of electricity access for marginalized caste groups. Empirical studies have used either cross-sectional estimations at the national level or village and household fixed effects analysis at the regional level to quantify the likelihood of electricity access for the marginalized groups. Given the mixed results and the disproportionate likelihood of electrification for the disadvantaged groups in rural areas it is crucial to examine how the marginalized groups performed in comparison to the dominant groups in terms of the likelihood of electrification, and in utilizing household electrification for welfare gains—increases in household consumption, wealth, and transitioning out of poverty.

Our study addresses the gaps in the literature by examining differences in electricity access and reliability followed by the post electrification outcomes at the national level between 2005-2012. We do this by categorizing individuals into three groups—(i) Hindus of forward or other backward caste (OBC), (ii) Hindus of scheduled caste (SC) or scheduled tribe (ST), and (iii) Muslims. Unlike previous studies which have only focused on the likelihood of electrification and have remained agnostic about the reliability, we focus on both the intensive and extensive margins of electrification. We also analyze the likelihood and reliability of electrification by sub-grouping the national effect into seven regions which allows us to infer the regional variations in electrification outcomes for the marginalized groups. For the analysis of electrification as a means, we use panel fixed effect regressions to analyze the welfare outcomes for the marginalized groups and compare it to dominant groups.

Our analysis shows that the marginalized communities (SC/ST/Muslims) gained more access to electricity between 2005 and 2012 compared to the dominant groups. However, Muslims gained less access than marginalized Hindus (SC/ST). In terms of reliability, between 2005-2012, average household electricity hours fell (conditional on access) at the national level. Hindu SC/ST had a smaller decline in electricity hours compared to the forward caste Hindus. Muslims had a higher but insignificant decline compared to all Hindus, they also had a higher and significant decline as compared to marginalized Hindus. The differences in electricity reliability between Muslims and all Hindus, and Muslims and SC/ST groups were stronger and significant in rural areas, but weaker and insignificant in urban areas. At the regional level, there were marked differences—eastern, western and southern regions saw a higher increase in electricity access for the marginalized groups, with the SC/ST/Muslims gaining more access than the dominant groups in these regions.

The analysis of electrification and household welfare shows that electricity access significantly increased household assets, annual consumption and reduced poverty for both dominant and marginalized groups. However, in comparison, the effects were mixed across the dominant and marginalized groups. For example, with electricity access, Hindu forward caste had the highest increase in assets in urban areas followed by Muslims and then marginalized Hindus, while in rural areas Muslims had the highest increase. Electricity reliability had significant positive effects on household consumption and assets for the Hindu SC/ST and forward castes. In terms of transitioning out of poverty with electricity access, Muslim households had the highest reduction in poverty, and there was no discernible difference between the dominant and marginalized Hindus. Overall, results suggest that electrification enabled marginalized households to increase their consumption, assets and move out of poverty, but the effects were marginally smaller or at best equivalent to dominant groups. We posit that electrification increased household welfare of marginalized groups, but did not reduce absolute disparities among social groups.

The findings of this study are significant in designing effective intensive margin based electrification policies as our findings focuses on the winners and looser of electrification across different societal segments in India.

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