Barriers to Electrification for "Under Grid" Households in Rural Kenya

Kenneth Lee[a], Carson Christiano[b], Eric Brewer[c], Francis Meyo[d],
Matthew Podolsky[e], Javier Rosa[f], Catherine Wolfram[g,i], and Edward Miguel[h,i]

Abstract

An estimated 600 million people live without electricity in Sub-Saharan Africa. Despite ambitions of governments, NGOs, and donors to invest in rural electrification, decisions about how best to extend electricity access are being made in the absence of rigorous evidence. We use a novel dataset of over 20,000 geo-tagged structures to test the hypothesis that building infrastructure alone is sufficient for increasing connectivity. Our dataset covers 150 communities in Western Kenya, a region with large potential for rapid rural electrification given the high population density and significant investments in grid infrastructure. Yet even in this ideal setting, rural electrification rates remain extremely low, averaging 5% for households and 22% for businesses. This pattern holds across time and is observed for both poor and relatively well off households and businesses. We distinguish between households that are "off grid," meaning that they are too far away to cost-effectively connect to the national electrical grid, and households that are "under grid," those close enough to connect to a low-voltage line at a reasonable cost. We find that half of the unconnected households in our sample are "under grid,"or clustered within 200 meters of a low-voltage power line. We argue that if governments wish to leverage existing grid infrastructure, subsidies and new approaches to financing are necessary. In regions that have yet to build out grid or off-grid infrastructure, we highlight the need for forward-looking policies that consider household and business demand for connections, as well as potential economies of scale in costs.

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[a] Department of Agricultural and Resource Economics, University of California Berkeley, Berkeley CA 94720
[b] Center for Effective Global Action, University of California Berkeley, Berkeley CA 94720
[c] Department of Computer Science, University of California Berkeley, Berkeley CA 94720
[d] Innovations for Poverty Action, Busia, Kenya 50400
[e] Technology and Infrastructure for Emerging Regions, University of California Berkeley, Berkeley CA 94720
[f] Department of Computer Science, University of California Berkeley, Berkeley CA 94720
[g] Haas School of Business, University of California Berkeley, Berkeley CA 94720
[h] Department of Economics, University of California Berkeley, Berkeley CA 94720
[i] National Bureau of Economic Research, Cambridge, MA 02138