

SUSANNA B. BERKOUWER

Contact Information	247-A University Hall, UC Berkeley berkouwer@berkeley.edu www.susannaberkouwer.com +1 (646) 371-6426		
Doctoral Studies	University of California, Berkeley PhD, Agricultural and Resource Economics, expected completion May 2020 PRIMARY FIELDS: Environmental and Energy Economics, Development Economics SECONDARY FIELDS: Psychology and Economics, Political Economy		
Advisors	<u>Professor Meredith Fowlie</u> fowlie@berkeley.edu +1 (510) 285-7722 Department of Agricultural & Resource Economics	<u>Professor Catherine Wolfram</u> cwolfram@berkeley.edu +1 (510) 761-5943 Haas School of Business	
	<u>Professor Edward Miguel</u> emiguel@berkeley.edu +1 (510) 393-7677 Department of Economics	<u>Professor Dmitry Taubinsky</u> dmitry.taubinsky@berkeley.edu +1 (707) 480-8125 Department of Economics	
Placement Officers	<u>Professor Sofia Villas-Boas</u> sberto@berkeley.edu +1 (510) 409-4341	<u>Professor Max Auffhammer</u> auffhammer@berkeley.edu +1 (510) 643-5472	<u>Diana Lazo</u> lazo@berkeley.edu +1 (510) 643-5133
Prior Education	Yale University University College London	M.A. International and Development Economics B.Sc. Statistics with Economics	2013 2010
Teaching	UC Berkeley UC Berkeley Yale University Yale University	Beahrs Environmental Leadership Program (mid-career), <i>Impact Evaluation</i> Haas School of Business, <i>Data and Decisions</i> , Lucas Davis Department of Economics, <i>Economics of Poverty Alleviation</i> , Dean Karlan Department of Economics, <i>Economics of Natural Resources</i> , Robert Mendelsohn	2019 2017 2013 2012
Awards	2019 2018	US/International Association for Energy Economics (USAEE/IAEE), <i>Best Student Paper Award</i> Art Rosenfeld Award for Energy Efficiency	
Grants and Fellowships	2019 2018 2017 2016 Earlier	Rocca Dissertation Research Fellowship (\$6,000) International Growth Center (\$24,300), Weiss Family Program Fund for Research in Development Economics (\$31,544), Economic Development and Institutions Grant (\$360,954), Rocca Dissertation Research Fellowship (\$6,000), Xlab Behavioral Research Grant (\$3,000), ARE Graduate Student Travel Grant (\$1,500) Rocca Pre-dissertation Research Fellowship (\$4,000), Xlab Behavioral Research Grant (\$3,000), Levin Family Seed Grant (\$2,000), ARE Graduate Student Travel Grant (\$1,500), Graduate Assembly Travel Award (\$300) Development Impact Lab Top-up Translation Grant (\$173,000), ARE Graduate Student Travel Grant (\$1,500) Prins Bernhard Cultuurfonds Scholarship (\$13,000), Dr Hendrik Muller's Vaderlandsch Fonds Grant (\$4,000), Ernest Hecht Faculty Undergraduate Scholarship (\$3,000)	
Refereeing	American Economic Journal: Applied Economics, Journal of Development Economics		
Affiliations	Fellow, Energy for Growth Hub Graduate Student Researcher, Energy Institute at Haas		

**Research
Papers**

“Credit and attention in the adoption of profitable energy efficient technologies in Kenya”

(JOB MARKET PAPER) with J.T. Dean. [Available here](#). *This study was pre-registered with the AEA RCT Registry (ID: 2484) and has IRB approval in Kenya (KEMRI/RES/7/3/1) and the U.S. (Berkeley CPHS 2017-11-10534).*

What roles do credit constraints and inattention play in the under-adoption of high-return technologies? We study this question in the case of energy efficient cookstoves in Nairobi. Using a randomized field experiment with 1,000 households, we estimate a 300% average annual rate of return to investing in this technology, or \$120 per year in fuel savings—around one month of income. Despite this, adoption rates are low: eliciting preferences using an incentive-compatible Becker-DeGroot-Marschak mechanism, we find that average willingness-to-pay (WTP) is only \$12. To investigate what drives this puzzling pattern, we cross-randomize access to credit with two interventions designed to increase attention to the costs and benefits of adoption. Our first main finding is that credit doubles WTP and closes the energy efficiency gap over the period of the loan. Second, credit works in part through psychological mechanisms: around one-third of the total impact of credit is caused by inattention to loan payments. We find no evidence of inattention to energy savings. These findings have implications for second-best regulation of pollution externalities using subsidies versus taxes. In low-income contexts, where credit constraints are common, Pigovian taxation alone may not be the optimal policy. Private benefits and avoided environmental damages generate average welfare gains of \$600 for each stove adopted and used for two years. A subsidy would have a marginal value of public funds of \$19 per \$1 spent.

“Electric heating and the effects of temperature on household electricity consumption in South Africa”

Accepted for publication by The Energy Journal. August 2019. [Available here](#).

How does temperature affect household energy demand in low-income countries? I use 132,375,282 hourly electricity consumption observations from 5,975 households in South Africa to estimate the causal effects of short-term temperature changes on household electricity consumption. The estimates flexibly identify a constant log-linear temperature response—for every 1°C increase in temperature, electricity consumption decreases by 4.1% among temperatures below the heating threshold but increases by 8.1% among temperatures above the cooling threshold. This relationship is driven more strongly by seasonal than hourly temperature changes. Holding all else constant, a 3.25°C increase in temperatures would reduce electricity consumption by 1,093 kWh (6.2%) per year per household. Widespread use of electric heating due to limited residential gas heating infrastructure likely drives this. These results point to important regional heterogeneity in how temperature increases may affect household energy demand in the coming decades.

**Research in
Progress**

“The political economy and governance of rural electrification” with E. Hsu, E. Miguel, and C. Wolfram

This study is pre-registered with the AEA RCT Registry (ID: 2389) and has IRB approval in Kenya (MUERC/27/13) and the U.S. (Berkeley CPHS 2016-11-9365).

Governments in low-income countries frequently outsource public good provision to the private sector, but the political economy and governance issues in this sphere remain poorly understood. We study outsourced public good provision by a low-capacity state in the context of Kenya’s national Last Mile Connectivity Project, which aims to provide universal household electricity access by 2020 using World Bank and African Development Bank funding. We focus on three factors in particular as potential drivers of construction quality: donor conditionality, political incentives, and independent monitoring in a repeated-game setting. We collect temporally and spatially rich administrative planning data on the construction process across thousands of projects, and complement this with novel field engineering assessments and household surveys in 380 sites to study the channels affecting leakage and technical construction. Collection of administrative data is complete and analysis is ongoing. Collection of electricity infrastructure construction quality measurements and household survey data is ongoing and has been completed across more than 100 sites.

“The economics of long-term grid reliability” with S. Puller and C. Wolfram. [Energy Institute at Haas Blog](#).

This study is pre-registered with the AEA RCT Registry (ID: 4886) and has IRB approval in Ghana (ECH 153/18-19) and the U.S. (Berkeley CPHS 2017-11-2534).

In urban areas of Ghana, a primary barrier to economic growth is the reliability of the grid. Since 2012, persistent power failures have given rise to the term “Dumsor,” meaning “lights off-on” in the Akan language. According to a 2013 World Bank report, 61% of firms see electricity reliability as a major constraint, with firms reporting an average of over 700 hours of outages annually, compared to 1.5 hours for firms in the U.S. We first study quasi-randomly assigned infrastructure upgrades to estimate the cost of marginal improvements in reliability. We then exploit spatial network discontinuities in power quality across Accra to understand the socio-economic impacts of long-term reliability improvements. We collect temporally and spatially high-resolution reliability data using the GridWatch technology, and combine these with administrative infrastructure network data and 5,000 on-the-ground firm and household surveys to accurately estimate these outcomes.

“Political incentives and public goods provision in Kenya: Evidence from the electrification of rural community facilities” with K. Lee and M. Walker.

We study how political incentives affect the allocation of government funds to community facilities in rural Kenya. The government officials that are responsible for allocating resources across public facilities often face personal political incentives such as election pressures, causing realized allocations to differ from what would have been optimal to achieve poverty reduction. The optimal funding and functioning of public facilities such as schools, health centers, and central markets are crucial for achieving poverty alleviation. We study this issue in the case of the electrification of 3,202 public facilities, including markets, schools, health centers, and water points, by the Rural Electrification Authority in 162 nationally representative constituencies in Kenya, between 2008-2013. We encode and analyze 511 confidential letters of official correspondence between members of parliament and REA detailing the process of prioritization and funding allocation decisions to answer this question.

Non-economics Publications

“Hardware, apps, and surveys at scale: Measuring low-voltage grid reliability in Accra, Ghana” N. Klugman, J. Adkins, [S. Berkouwer](#), K. Abrokwah, I. Bobashev, M. Podolsky, A. Suseno, R. Thatte, C. Wolfram, J. Taneja, and P. Dutta. *Proceedings of the 2nd ACM Conference on Computing & Sustainable Societies. COM-PASS’19. Accra, Ghana, July 2019.* [Available here.](#)

The vision of sensor systems that collect critical and previously ungathered information about the world is often only realized when sensors, students, and subjects move outside the academic laboratory. However, deployments at even the smallest scales introduce complexities and risks that can be difficult for a research team to anticipate. Over the past year, our interdisciplinary team of engineers and economists has been designing, deploying, and operating a large sensor network in Accra, Ghana that measures power out-ages and quality at households and firms. This network consists of 457 custom sensors, over 3,000 mobile app instances, thousands of participant surveys, and custom user incentive and deployment management systems. In part, this deployment supports an evaluation of the impacts of investments in the grid on reliability and the subsequent effects of improvements in reliability on socioeconomic well-being. Our insights will be critical as we look toward scaling our deployment to the entire city of Accra and beyond, and we hope that they will encourage and support other researchers looking to measure highly granular information about our world’s critical systems.

Prior Employment

Harvard University , Kennedy School of Government, EPoD Research Fellow (Rema Hanna)	2013–2014
NBER , Research Assistant (Rohini Pande, Michael Greenstone, Esther Duflo, Nicholas Ryan)	2013–2014
Citibank , Analyst	2010–2012

Talks (*Scheduled)

2019	*University of Nevada, Reno (<i>Department of Economics</i>) Northwestern University (<i>North East Universities Development Consortium</i>) University of British Columbia (<i>Environmental Economics Seminar</i>) UC Santa Barbara (<i>Occasional Workshop in Environmental and Resource Economics</i>) University of Illinois Urbana-Champaign (<i>Heartland Environmental and Resource Economics</i>) Association for Energy Economics (<i>USAEE/IAEE Annual Conference</i>) Paris School of Economics (<i>Economic Development and Institutions General Conference</i>) UC Berkeley (<i>Development Economics Seminar, Psychology and Economics Seminar, ARE Department Seminar, SEEDEC, Experimental Social Science Laboratory</i>)
2018	University of British Columbia (<i>Working Group in African Political Economy</i>) UC Berkeley (<i>Energy Camp</i>) Busara Center for Behavioral Economics
Earlier	Columbia University (<i>Interdisciplinary PhD Workshop in Sustainable Development</i>) Makerere University (<i>Center for Research in Energy and Energy Conservation</i>) Busara Center for Behavioral Economics

Activities

2018–2019	Co-founder, UC Berkeley Development & Environmental Economics Working Group
2017–2019	Leadership Board, Women in Economics at Berkeley
2017–2018	PhD Admissions committee member, UC Berkeley Agricultural and Resource Economics
2017	Guest contributor, “Kenya races toward goal of electrifying every household” . <i>NewsHour Weekend</i> , May 20, 2017. PBS.
2013–2014	Member of the Editorial Board, <i>Harvard LGBTQ Policy Journal</i>

Languages

English (native), Dutch (native), French (advanced), Spanish (advanced), Swahili (intermediate)