

The human factor in energy efficiency: lessons from developing countries

Behaviour has the potential to be either a formidable barrier or meaningful driver of energy efficiency uptake. While the topic has a longer record of evidence in OECD Member countries, it is under-researched in the emerging and developing economy context. Yet, it presents promising options for no- and low-cost energy efficiency up-scaling in the near term.

Abstract

Climate change mitigation, business competitiveness, household welfare, and energy security are just some of the pursuits which may benefit from energy efficiency. Yet, implementation lags globally. How can behavioural insights inform energy efficiency initiatives to increase uptake? While energy efficiency and behaviour has a longer track record of research in OECD Member countries, evidence is scarce in emerging and developing economies. In cooperation with industry leaders, governmental agencies and recognized research partners, the German Development Institute (GDI) has conducted novel research to identify behavioural drivers of energy efficiency at the firm and household level in Africa and elsewhere. It draws upon case studies conducted with energy intensive industries in South Africa, SMEs in Uganda, and informal settlement householders in Kenya. These reveal the no- or low-cost potential of behaviour change to contribute to energy efficiency uptake in the near term, an especially important input in the context of constrained energy supply, political will, and budgets. At the household level, GDI has conducted research in co-operation with the Busara Center for Behavioral Economics in Nairobi to identify barriers and drivers of compact fluorescent lamp (CFL) uptake among informal settlers. This identifies a novel approach to promoting energy efficient technologies centred upon durability: When power surges occur (average of four monthly) on the electrical grid serving Kibera, an informal settlement in Nairobi, a majority of residents report that incandescent bulbs burn out. Conversely, CFLs are reported by most residents to withstand power surges. The payback of CFLs thus translates to a period averaging one month, even in a context of non- or flat-rate electricity payment. Yet, among electricity connected households, only 20% have CFLs. We conducted a laboratory-in-the-field experiment employing inter alia a randomised control trial testing three potential drivers of CFL uptake: Awareness, liquidity, and commitment. Findings show that while the provision of liquidity for CFL purchase can positively impact uptake, this is more than tripled by the additional provision of information demonstrating the durability of CFLs in comparison to incandescent bulbs. This points to the need of “more than just money” in energy efficiency programme design and attention paid to the broader welfare benefits that energy efficiency entails. In South Africa and in cooperation with UNIDO, the Industrial Energy Efficiency Project, and the National Cleaner Production Centre, energy efficiency driven by behaviour change and process innovation has contributed to business competitiveness. Challenging the status quo, providing clear information to employees about energy efficiency, awarding achievements, and drawing on social norms

have contributed to uptake. As this case demonstrates, behavioural insights can contribute near-term and low-cost opportunities for energy savings, especially important in the South African context. In Uganda in cooperation with the Ministry of Energy and Minerals Development (MEMD) and the GIZ Promotion of Renewable Energy and Energy Efficiency Programme (PREEEP), an assessment of energy efficiency management has revealed behavioural barriers and drivers of energy efficiency. Drivers of behaviour identified are hands-on experiences, communication framing, feedback, social comparisons and peer learning.

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Biography

Aurelia Figueroa has provided energy industry policy and investment analysis in international organisations, think tanks, the public and private sectors. Currently, she is a Researcher / Economist at the German Development Institute, a leading development policy think tank globally. Prior to this, she completed a Bosch Fellowship with appointments at the German Federal Ministry for Economics and Energy and Siemens AG. She is a member of the Emerging Leaders in Environmental and Energy Policy (ELEEP) network and holds a Master of International Affairs degree in international economic development from Texas A&M University.