Comments for researcher panel

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Focus of comments:
(1)Findings to highlight from recent research: firms
(2)Going forward: research on the energy-productive use nexus

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(1) Findings to highlight from recent research

- In a talk calling for more applied economics research on firms in developing countries, Penny Goldberg noted the field's traditional people-focus (2018)
  - Research on energy and development is not an exception

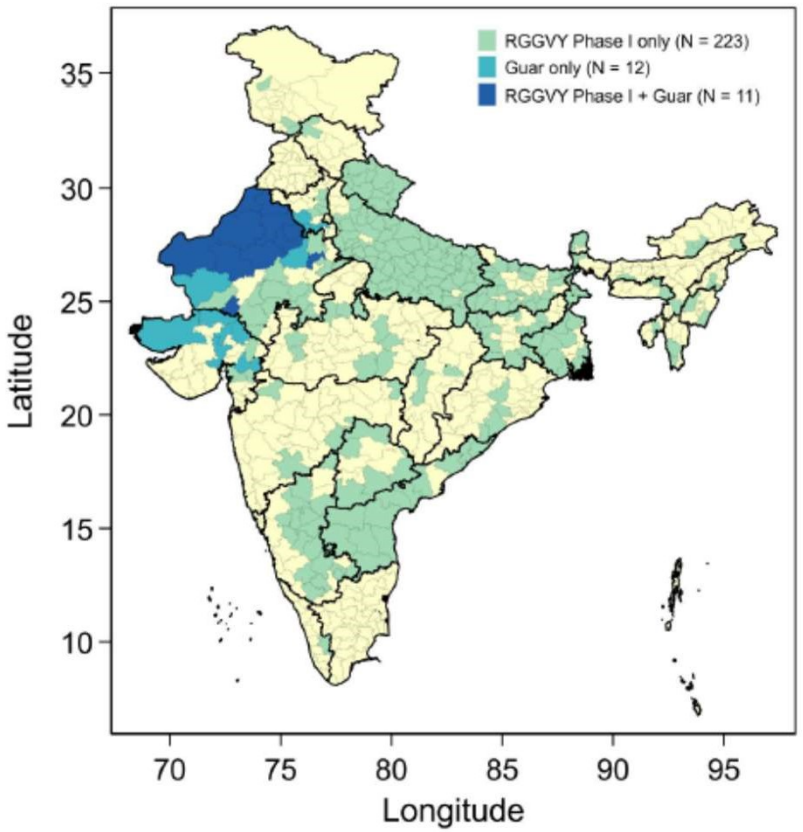
- World Bank Enterprise Surveys indicate firms view energy as constraint
  - 20.3% of South Asian firms identify electricity as biggest obstacle
  - In Nepal, this number jumps to 25.6%

- If firms play a role in development and economic growth, then we should be paying attention to the extent to which energy constrains firms, constrains growth
  - As we've heard, evidence on impacts on is limited

Fracking, farmers, and rural electrification in India

Fetter and Usmani (2018)

Figure 1: Districts of India, by guar-production and electrification status



How does the causal effect of electrification on labor-market outcomes vary with changes in economic contexts?

Research employs two natural experiments:

1. Shale revolution in the United States→ agricultural boom in demand for guar crop → shock to economic activity in part of northwestern India
2. Contemporaneous nationwide roll-out of rural electrification

Fracking, farmers, and rural electrification in India

Fetter and Usmani (2018)

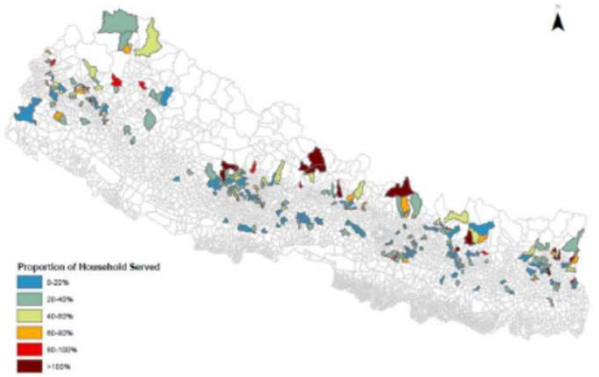
- The role of complementary conditions:
- When combined with economic opportunity, evidence access to electricity drives a shift away from ag employment to non-ag employment
- The guar processing industry grows and expands (more workers), but only in districts that were electrified
- When these complementary conditions are lacking (i.e., villages unaffected by the boom, firms in non-guar or non-electrified districts, or firms in other industries), electrification appears to have no/little discernible impact

Source: Sanjit Das/Bloomberg via Getty Images

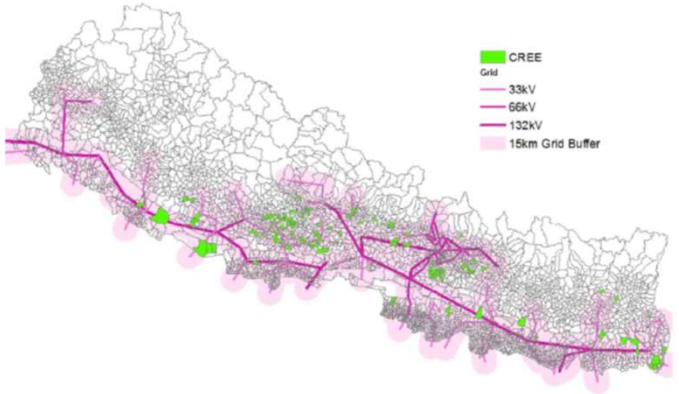
Grid and Off-grid in Nepal:
Electricity services and enterprise development

Meeks and Thompson (2018)

Microhydro plants



Community Rural Electricity Entities



Can constraints be alleviated to help enterprises grow?

- Does this vary by electrification source?
- Heterogeneity in electricity services?

Grid and Off-grid in Nepal: Electricity services and enterprise development

Meeks and Thompson (2018)

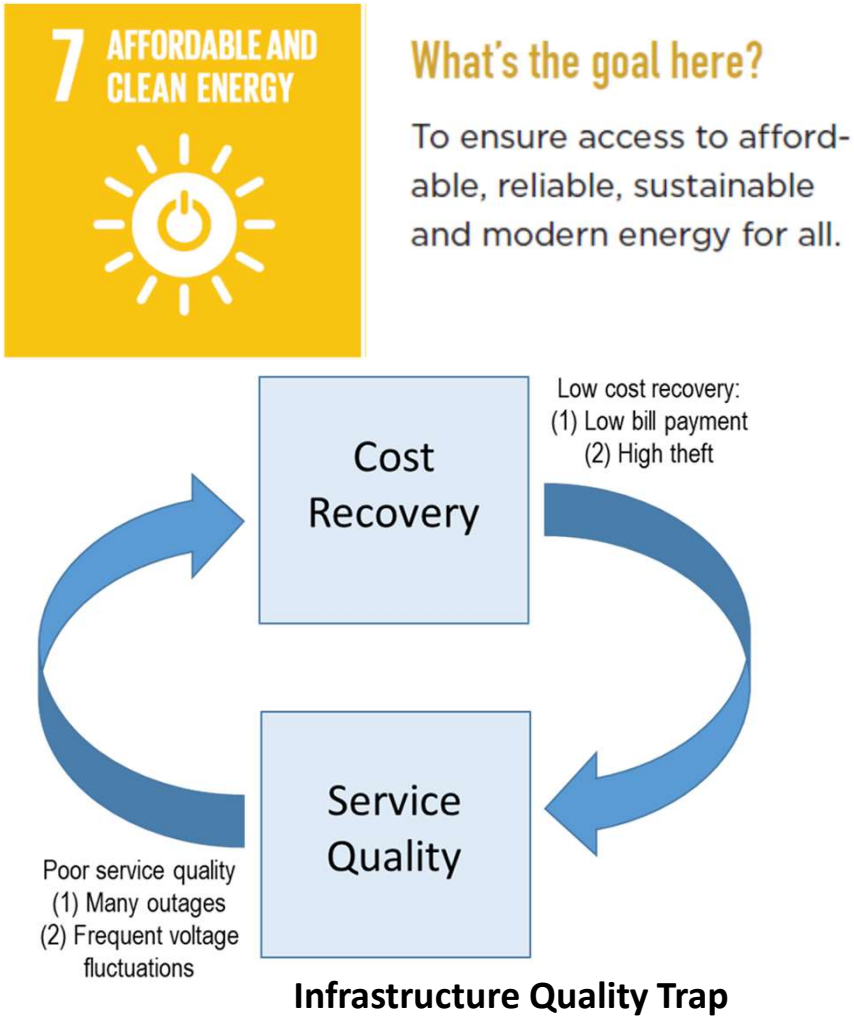
- With both sources of electrification, we find significant increases of comparable magnitude in:
  - Number of non-farm small enterprises (manufacturing)
  - Total employment in these enterprises, and
  - Their net revenues
- It does not appear as though these small enterprises are legally registering
  - Does this help or hinder growth?
  - Role of informal firms topic of debate in devpt economics

Complementary research by Hassen, Pattanayak and Fentie (2019) indicates that measuring the impacts of grid electrification on enterprise creation in Ethiopia requires longer-run follow-up period

(2) Going forward: research on the energy-productive use nexus

- We have a core of foundational research papers upon which we can and should build
- An important direction is thinking beyond construction / installation
  - Maintenance
  - Management
  - Reliability and service quality
  - Non-technical losses

- Thinking about these in a general equilibrium fashion to avoid infrastructure quality trap (McRae, 2015)



Infrastructure Quality Trap

Smart Meters, Electricity Utility Cost Recovery, and Service Quality

Meeks, Isaev, and Omuraliev (ongoing)

Can smart meters disrupt the infrastructure quality trap?

- Smart meters installed at households and transformers through randomized design