Sustainable Intensification of Groundwater Irrigation in the Eastern Indo-Gangetic Plains

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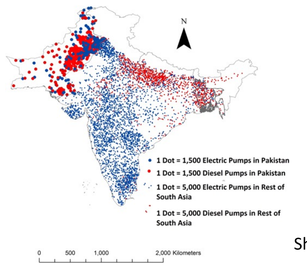
Background

- 20 million + diesel irrigation pumps in EIGP of South Asia
- High diesel costs limit intensive groundwater use



Shah et al. (2018)

Research Questions

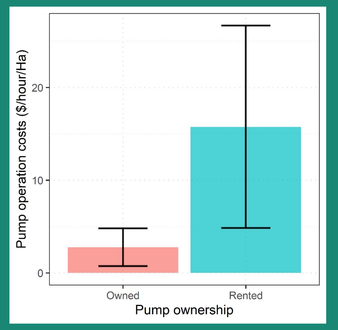
1. What opportunities exist to reduce costs of groundwater irrigation in diesel pump systems within the EIGP?
2. Will improvements in diesel pump cost-effectiveness lead to irrigation intensification and livelihood improvements?

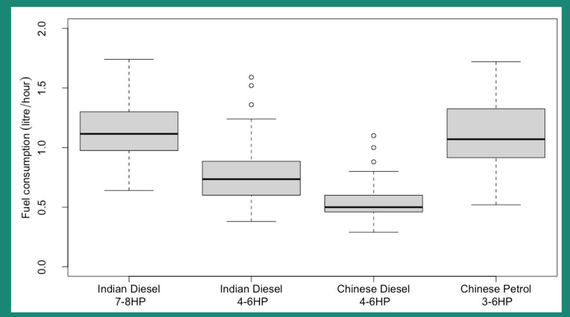
Methods

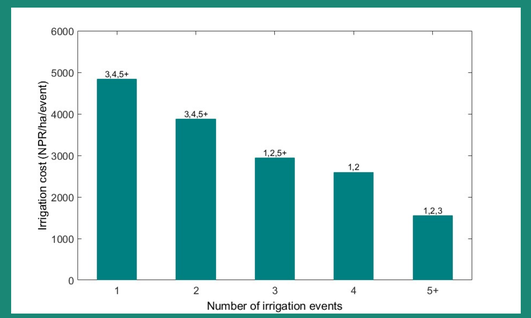
- Survey of 432 farmers households across two districts in the Terai region of Nepal
- In-situ testing of fuel efficiency and hydraulic performance of 110 irrigation pumpsets

Key Findings

- Irrigation costs vary significantly between individual farmers
- High rental rates and inefficient pumpset designs are key drivers of higher access costs
- Farmers with higher access costs use less water, leading to lower yields and elevated poverty
- Limited awareness of opportunities to improve pumpset efficiency and cost-effectiveness







Policy Recommendations

1. Reductions in irrigation costs can be achieved through reforms to subsidies + advice to farmers about pumpset selection and efficient irrigation management
2. Improved quality control on imports and support for local maintenance services needed to support scaling of low-cost fuel-efficient pumpsets
3. Greater access to fuel efficient pumpsets can deliver poverty reduction and support transition to low carbon technologies, but risks of lower costs to aquifer sustainability must be considered in planning