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ABDUL LATIF JAMEEL POVERTY ACTION LAB

Social Norms and Smart Metering for Reducing Electricity Use

Evaluating Energy Evidence in Asia Pacific (EEAP)

28 May 2025

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Agenda

- Context

- J-PAL's Evidence in Energy Demand.
  1. Social Comparisons
  2. Prepaid Electric Meters
  3. Real-time Pricing
  4. Information Campaigns and Subsidies

Our mission is to reduce poverty by ensuring that policy is informed by scientific evidence. We do this through research, policy and scale engagement, and training.

J-PAL North America
Massachusetts Institute of Technology (MIT)
Cambridge, USA

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University of Cape Town
Cape Town, South Africa

J-PAL South Asia
Institute for Financial Management & Research
Chennai & New Delhi, India

J-PAL Southeast Asia
University of Indonesia
Jakarta, Indonesia

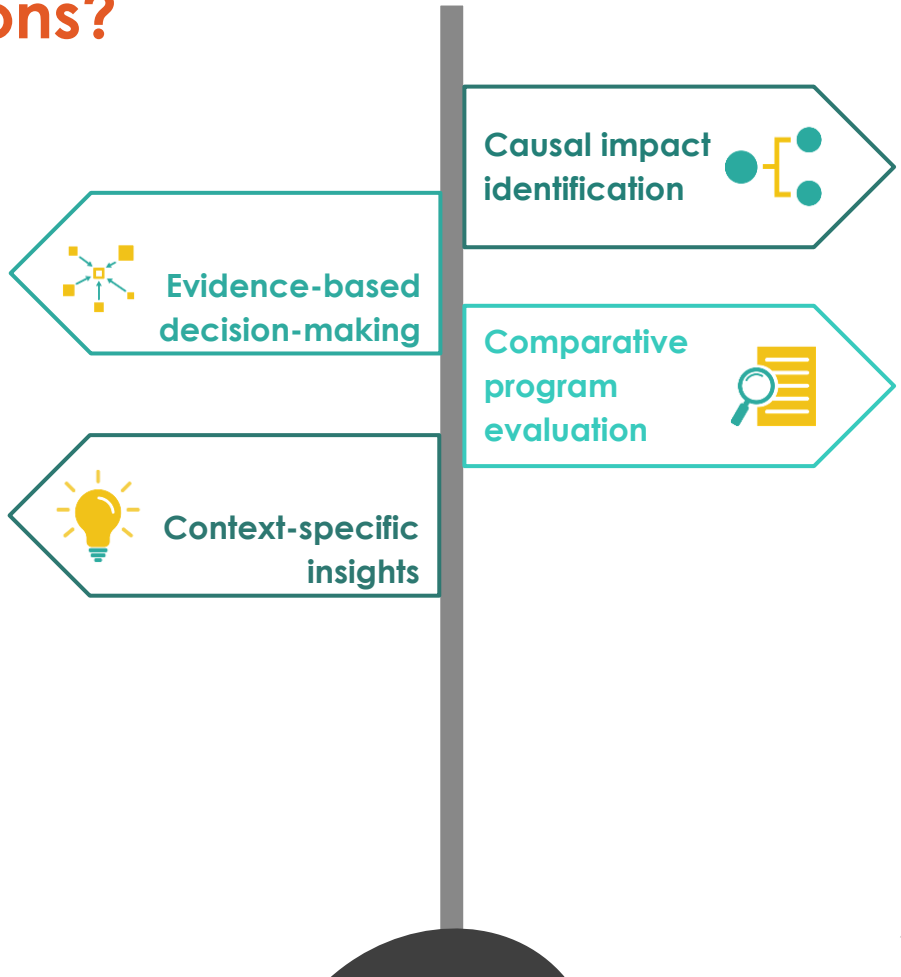
More than 220 completed and ongoing evaluations in South Asia

With **seven regional offices** and hundreds of local partnerships, J-PAL has conducted over **2,200 randomized evaluations** across **11 sectors** in **96 countries**.

Why Randomized Evaluations?

Randomized evaluations (RCTs) are the most rigorous way to assess whether a program caused a specific outcome. By randomly assigning participants to treatment and comparison groups, RCTs eliminate selection bias and isolate the true impact of an intervention.

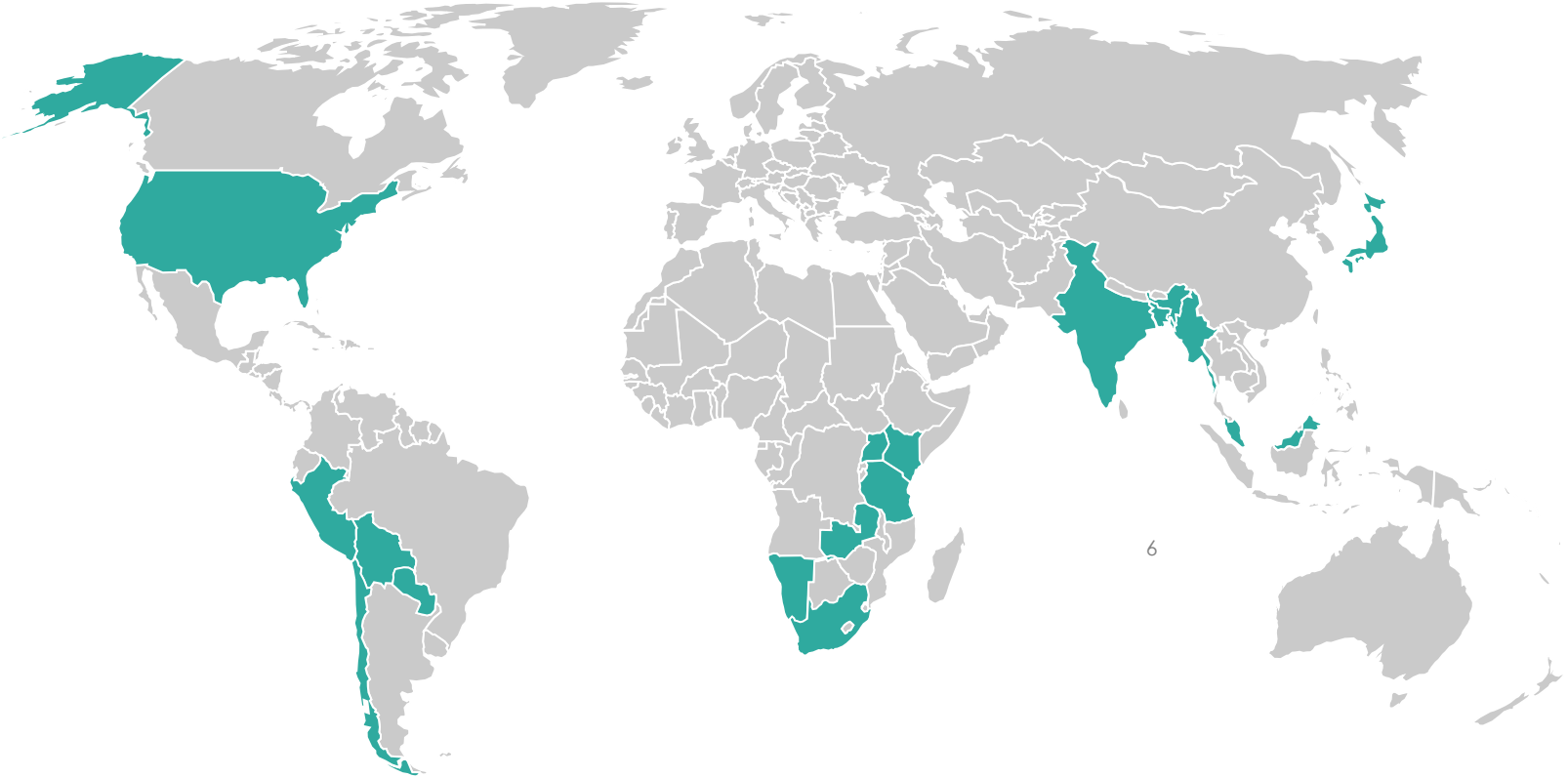
In sectors like energy and environment—where policies often rely on untested projections—RCTs provide clear, actionable evidence. They help policymakers compare alternatives, allocate resources effectively, and scale solutions that work.



The Global Energy and Environment Challenge

How can we ensure that people around the world have access to the reliable, affordable, energy needed for economic growth and human development without putting the environment and climate at risk?

J-PAL's **Environment, Energy, & Climate Change sector**: Over **150** ongoing and completed randomized evaluations in **19 countries**

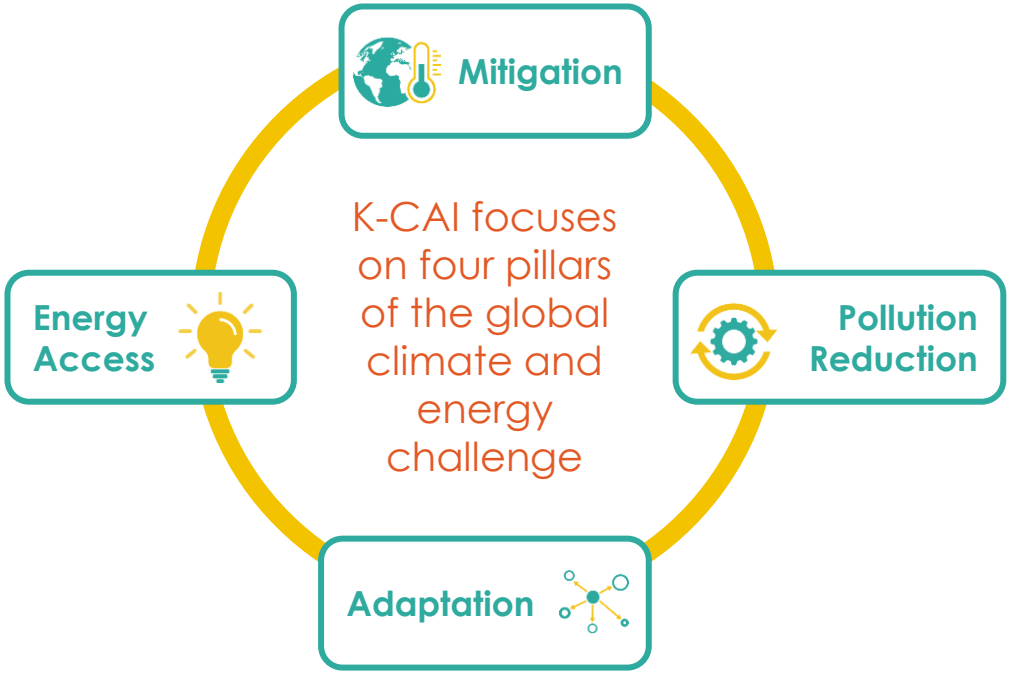


Evaluations | The Abdul Latif Jameel Poverty Action Lab

The King Climate Action Initiative: combating climate change and poverty with evidence

Mission: to **innovate, test, and scale evidence-informed climate solutions** in partnership with policymakers around the world.

Launched in 2020: The initiative aims to **raise the standard for evidence in climate policy, reach at least 25 million people in poverty** with effective mitigation and adaptation solutions by 2030, and **cut emissions equivalent to $125 million.**



KING PHILANTHROPIES

King Climate Action Initiative (K-CAI) | The Abdul Latif Jameel Poverty Action Lab

J-PAL Air and Water Labs

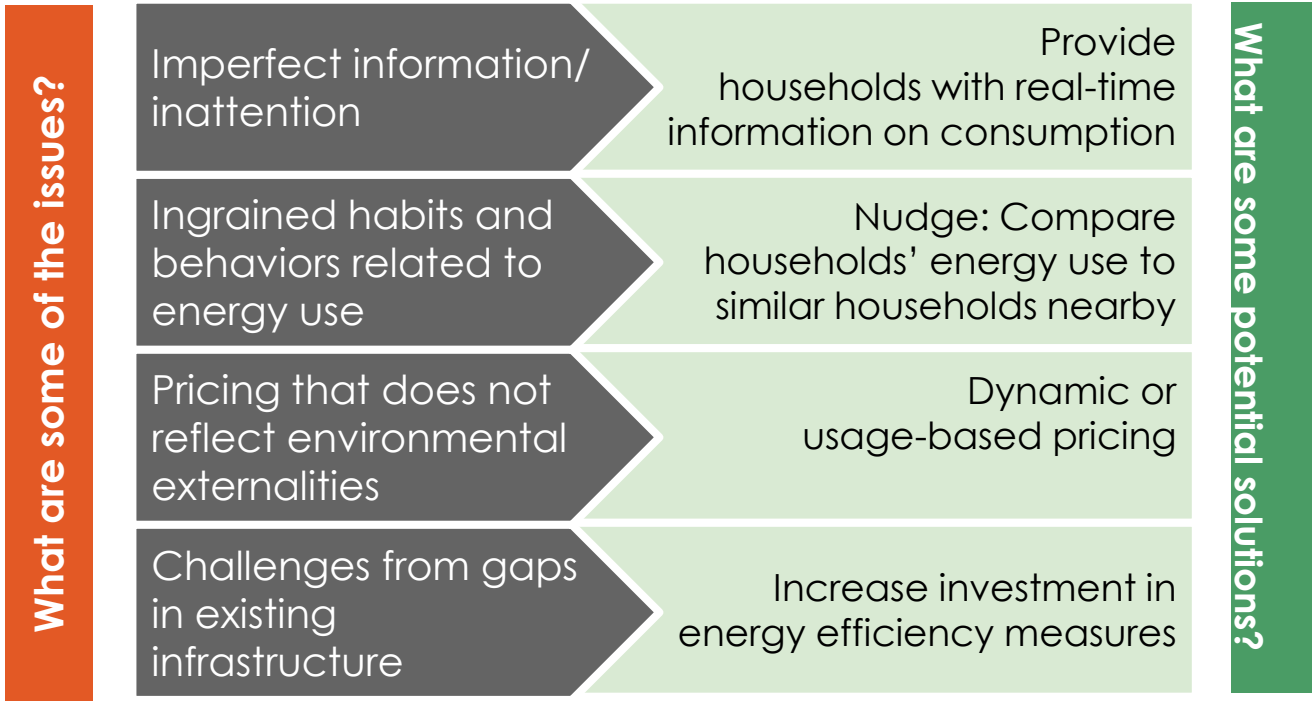
The AWL's to establish embedded impact labs across three regions, co-generating evidence with governments to improve air and water quality through policy.

	Sectoral Focus	Ongoing Projects	Government Partners
HAPIE Hub of Advanced Policy Innovation for the Environment **Middle East and North Africa**	Air Quality, Emissions & Pollution Control Water Quality, Access & Sanitation, Climate Adaptation & Resilience in Agriculture	**5** 2 Full RCT 2 Pilots 1 Exploratory Grant	المعهد القومي للحوكمة و التنمية المستدامة National Institute for Governance & Sustainable Development وزارة التخطيط والتنمية الاقتصادية والتعاون الدولي Ministry of Planning, Economic Development & International Cooperation
SARWA Solutions and Advancements through Research for Water and Air **South Asia**	Pollution Prevention and Control, Water Management and Conservation	**4** 1 Scale-Up 2 Pilots 1 Exploratory Grants	Gujarat Pollution Control Board Har Ghar Jal Jal Jeevan Mission
WAE Lab Water, Air, and Energy Lab **South Africa**	Water Management, Energy Optimization	**5** 1 Pilot 4 Projects	CITY OF CAPE TOWN ISIXEKO SASEKAPA STAD KAAPSTAD

J-PAL Evidence in Energy Demand Management

Improving energy efficiency

How can we improve household energy efficiency in developed countries?



1. Can social comparisons reduce overconsumption of electricity?

Peer Comparisons and Incentives to Influence Electricity Use

Policy Challenge: Utilities in India are under pressure to reduce household electricity consumption, but pricing reforms can be politically difficult and trust in utilities is often low. Policymakers are increasingly exploring behavioral tools like social comparisons as alternatives.

Solution: In a randomized evaluation in Delhi NCR, households received weekly reports comparing their electricity use to that of similar neighbors, along with conservation tips. A second group received the same reports coupled with monetary incentives offered by the billing agency.

Impact: Households that received only peer comparison reports reduced electricity use by 7% over four months and became more responsive to price changes. When financial incentives were added, the impact disappeared entirely. Offering incentives may undermine trust or crowd out intrinsic motivation, limiting the effectiveness of behavioral nudges.

Photo: J-PAL South Asia

Adding money to a trusted nudge removed all impact Framing matters !

Anant Sudarshan (2017)

Insights

1. Energy reports can influence people's habits (short-run) and investments in energy efficiency (long-run).
2. Targeting the right consumers is critical.
3. Monetary incentives may crowd out households.*
4. Utilities can save costs and increase customer satisfaction.

* Sudharsan (2017); Allcott et al (2010)(2014)

2. Do prepaid electricity meters decrease electricity use and recover utility revenue?

Prepaid electric meters to decrease electricity use

Policy Challenge: Utilities serving low-income households often struggle with poor cost recovery, delayed payments, and the high costs of meter reading, billing, and disconnection enforcement. These challenges can threaten the financial viability of expanding electricity access.

Solution: Researchers evaluated the impact of replacing post-paid meters with prepaid ones, which require customers to pay in advance. The study tested whether this shift could reduce consumption, improve payment behavior, and lower operational costs, while examining how outcomes varied by customer payment history.

Impact: Prepaid meters led to reduced electricity usage improved payment timelines and revenue collection costs to utilities. The benefits were pronounced among poorer consumers with delinquent payments. Interestingly, negative returns were observed among previously compliant users.

Photo: Shutterstock.com

Prepaid meters can expand access for the poor and improve financial viability for utilities.

B. Kelsey Jack Grant Smith (2016)

Ongoing evaluations: Smart Metering in Jammu & Kashmir and Senegal

	Jammu and Kashmir	Senegal
	High losses from electricity theft and non payment	Poor revenue recovery from SMEs, unreliable service
	Smart meters for over 50,000 urban consumers improves billing and supply	Prepaid smart meters for 1,000+ SMEs to reduce theft and improve reliability
	Improved revenue recovery, reduced outages, and potential for time-of-day pricing	Increased collections and more reliable service to underserved areas

3. Does real-time pricing reduce electricity use during peak times?

Can social messaging or pricing reduce electricity use during peak hours?

Policy Challenge: Demand for electricity peaks during summer, putting strain on the grid. Policymakers seek low-cost ways to shift household behavior to reduce electricity use during these peak hours. Households may be willing to conserve but lack clear incentives or timely information.

Solution: Researchers partnered with an electricity retailer in Japan to test behavioral nudges and price incentives on households to understand how they influence household energy use during peak demand hours. Two demand side conservation strategies using social messaging and dynamic pricing were tested through an RCT

Impact: Both strategies led to short-term reductions in electricity use but price-based notifications led to larger and more sustained reductions. Households that faced dynamic pricing continued to conserve after the messaging stopped and pricing changes ended, while the social motivation group returned to their typical energy use after the short-term effects faded.

Photo: Example of electricity usage information provided by an in-home display.

Messages promoting social good can prompt energy conservation, but pricing sends a stronger, longer-lasting signal.

Takanori Ida, Koichiro Ito, Makoto Tanaka (2014)

Insights

1. Real-time pricing information can encourage consumers to manage energy use better.

2. Encouraging energy-efficient habits can lead to continued impacts over investments in new energy efficient appliances.

3. Making price signals more visible can improve energy conservation Hunt, (2011)

4. Enrolling households by default (opt-out) rather than relying on voluntary participation can influence consumption behavior Fowlie et al (2020)

4. Do information campaigns and subsidies improve energy efficiency?

Experimental Evidence from Indian Manufacturing Firms

Policy Challenge: Policymakers often promote energy efficiency through audits, subsidies and standards assuming that it could reduce energy us and emissions. Can energy efficiency improvements reduce overall energy consumption in industrial sectors?

Solution: The researcher evaluated the impact of energy efficiency on energy consumption in manufacturing firms in India. Treatment firms received energy audits aimed at improving energy efficiency. A second group received government sponsored part-time engineer to implement audit recommendations

Impact: The treatment firms increased electricity consumption by 9.5% compared to the control. The study found that energy productivity improvements complement inputs like skilled labour and capital leading to an overall increase in energy demand.

Photo: Shutterstock.com

"Rebound effect" when energy gains leads to increase in energy demand

Nicholas Ryan (2018)

Insights

1. Energy savings have been low for residential efficiency programs. Fowlie et al(2015); Hunt et al (2017)

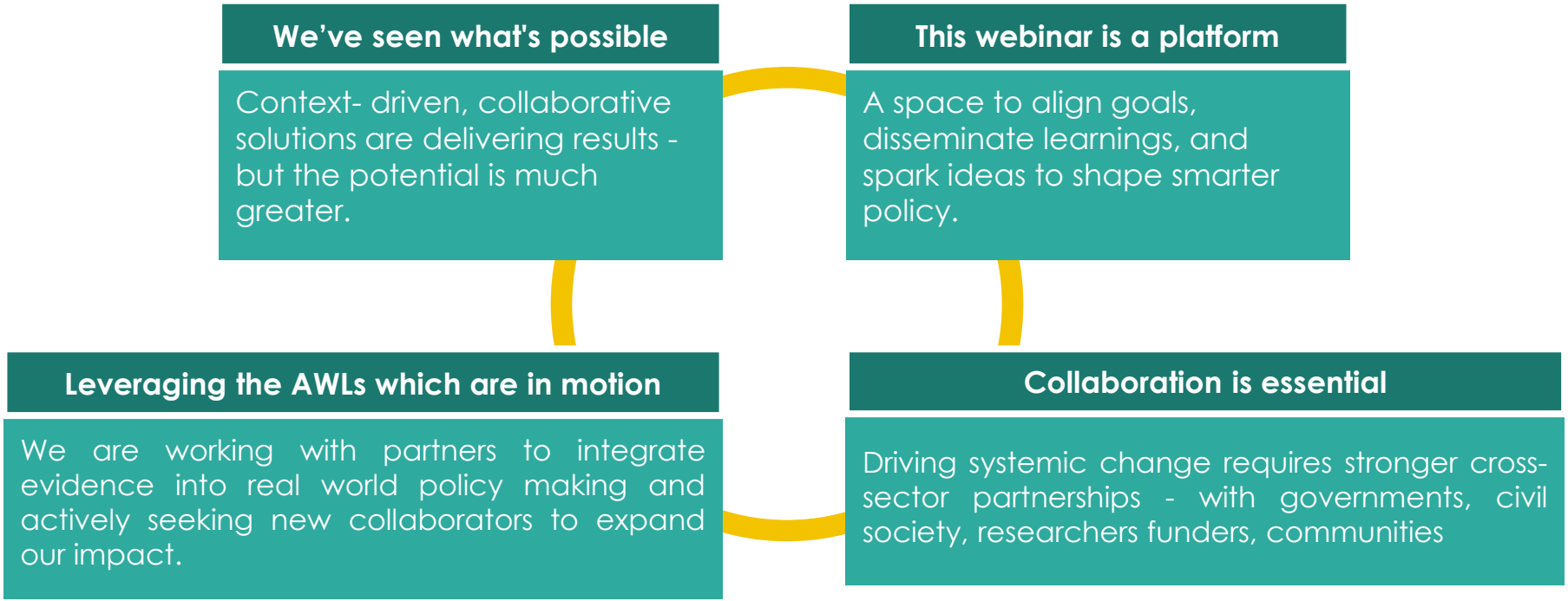
2. Many residential efficiency programs are voluntary, which limit take-up.

3. Discounts/ rebates may increase take-up of energy efficient technologies, but may not be a cost-effective approach to reduce greenhouse gas emissions. Hunt et al (2015, 2017)

Encouraging residential energy efficiency | The Abdul Latif Jameel Poverty Action Lab

There is more work to do.

There is more work to do…



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SOUTH ASIA AT IFMR

Thank you

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