

Implementing Climate Solutions in India

Through the looking glass (NIE, NPE, NPM, mPE)

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with Sanjana **Kadyan**, Marc **Jeuland**, Faraz **Usmani**
and many others

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IESC (Cargese), Corsica



What do I come to this workshop with ...

almost all my research has been directly about policies, programs and projects or adjacent to them. As in, almost all of my papers are derived from very rich collaborations with multi-lateral agencies, NGOs, governments, and local academics in low and middle income countries around the world (as well as US agencies). ...

- **companies:** [critical mineral mining](#) globally
- **utilities** (private sector): [piped water](#) in Nepal
- **farmers** (and households): PES, REDD+ and [forests](#) in Costa Rica
- **communities:** [water](#) & [sanitation](#) in India
- **politicians:** [devolution & decentralization, protected areas, and forest ecosystems](#) in Indonesia
- **ngos:** [energy access and electric cookstoves](#) in India

Some personal reflections

I have started a new course on Political Economy, with applications to Climate (mostly forest, water, energy) which reflects what I said in class. I am a bit

- tired of trite normative prescriptions blaming everything on lack of political will
- disappointed with practitioners (who are rightfully frustrated with aloof academics), implementing on “guts and anecdotes”, but little science
- puzzled by low average treatment effects of programs, projects and policies, with large ex ante Benefit-Cost ratios
- curious about (having learnt about demand for public services) what underlies the lack of political will - the malleability of incentives, motivations, institutions and governance in the supply of public services

the IOEA part ...

- Institutions, or the “rules of the game” that constrain and enable human behavior, are fundamental determinants of economic development and social well-being (North 1990, Acemoglu, Johnson and Robinson 2005; 2012).
- Pioneering work in new institutional economics (NIE) has provided a macro level framework to analyze why institutions emerge, prevail, and change in societies (North 1990; 1991; 2005).
 - **property rights, transaction costs, and incomplete contracts** - foundational questions about organization of economies, bargaining in politics, and issues surrounding collective action and common-pool resource management (Williamson 1975; 2000, Dixit 1996, Ostrom 1990; 1996; 2005, Ménard and Shirley 2022).
- Recent scholarship in the new political economy (NPE) tradition has utilized agency theory to explain how micro-level details of political institutions - electoral rules, forms of government and democracy, political reservation and term limits - influence policy outcomes (Besley 2007, Besley and Persson 2018, Lloyd and Lee 2018).
- Literature has extended these insights to the environment, documenting how political institutions shape deforestation, pollution, natural resource extraction, and climate change (Burgess et al. 2012, Pailler 2018, Hu 2021, Miteva and Pattanayak 2021, Moore et al. 2023, Gulzar et al. 2024, Jia 2025).

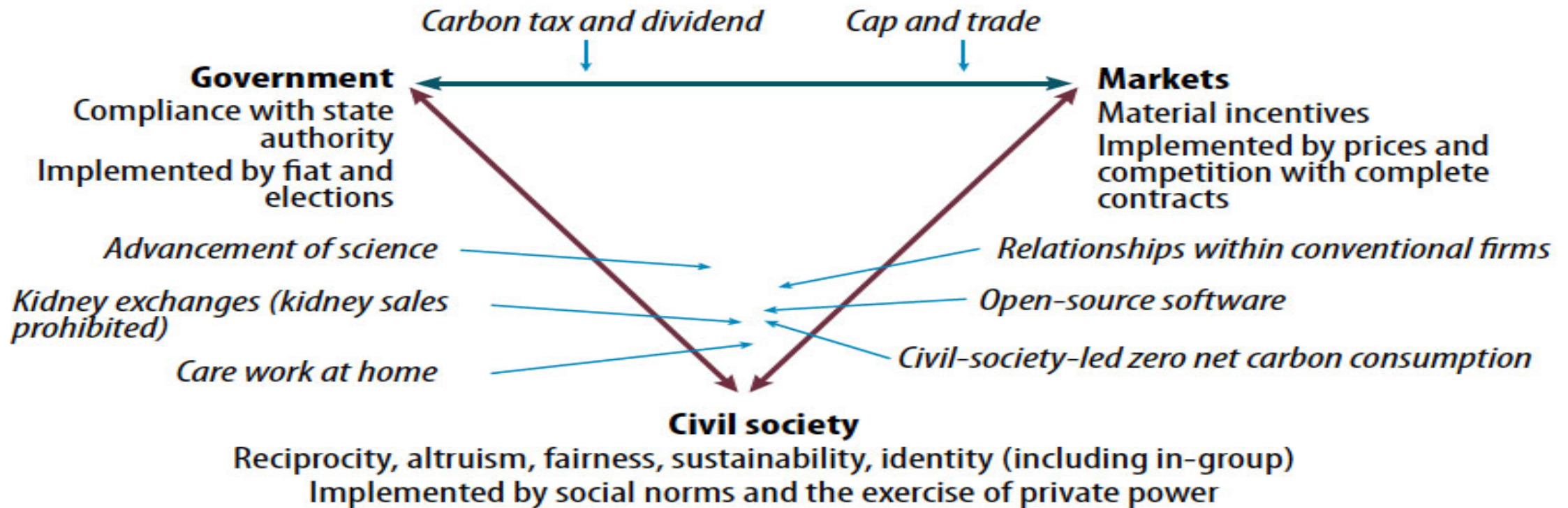
... from NIE, NPE, NPM ...

- Contrasted with literature linking institutions to policymaking (and outcomes), less attention on analyzing institutional arrangements at the policy implementation stage
 - So how do these “meso-organizations” .. **public sector organizations, civil society and bureaucrats** ... interpret, adapt, implement and enforce macro-level rules of the game in specific policy domains remain largely a black box in the economics literature (Andrews, Pritchett and Woolcock 2017, Ménard 2018, Ménard and Shirley 2014).
- Emerging work in new public management (NPM) by Besley and Ghatak (2005, 2018), among others, and a growing empirical literature has begun to open this black box,
 - e.g., how the selection, allocation, and incentives of bureaucrats shape public service delivery (Finan, Olken and Pande 2017).
 - however, we know remarkably little about the role of these non-political actors in delivering environmental outcomes (Besley et al. 2022; Axbard and Deng 2024, Dipoppa and Gulzar 2024), and
 - **even less about how their institutional contexts (e.g., local ties, social proximity, and informational advantages** (Xu et al. 2023, Bhavnani and Lee, 2018, Pepinsky et al. 2017) moderate these roles.

Synergy Simplex: Bowles & Carlin

A new space for policymaking

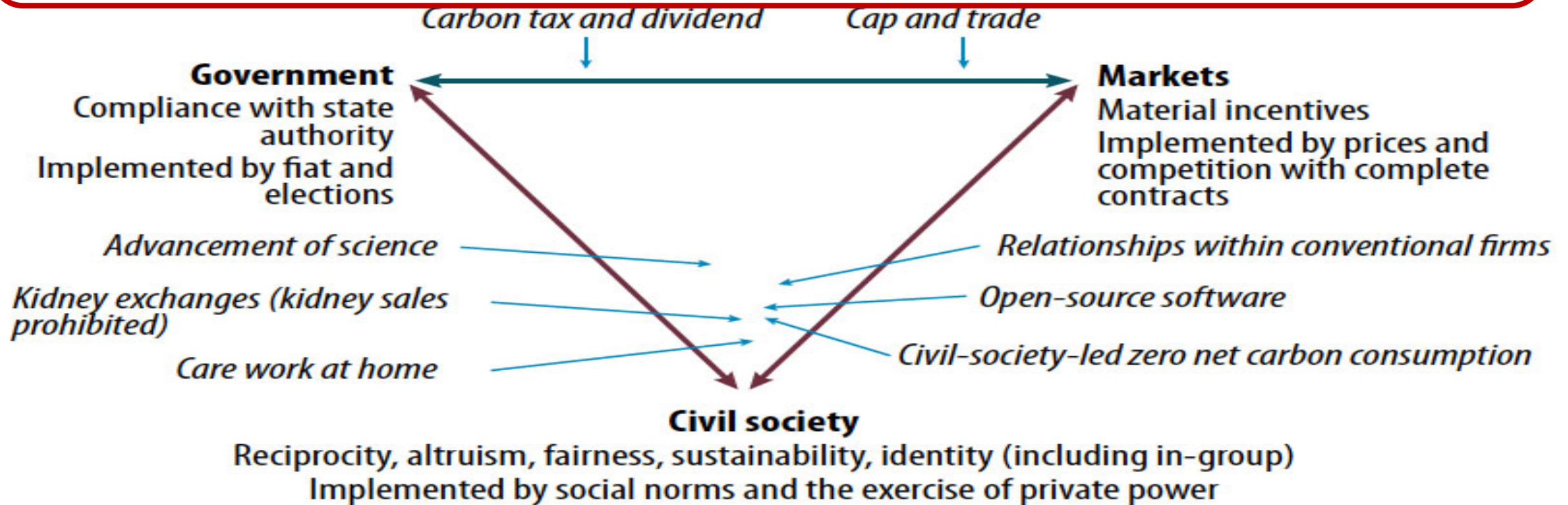
Extending the state power vs. markets debate to recognize the role of social norms creates new opportunities to address problems from pollution to pandemics.



Synergy Simplex: Bowles & Carlin

A new space for policymaking

Extending the state power vs. markets debate to recognize the role of social norms creates new opportunities to address problems from pollution to pandemics.



In today's causal focus, what is the role of Institutions?

CHAPTER 9 Institutions in causal inference

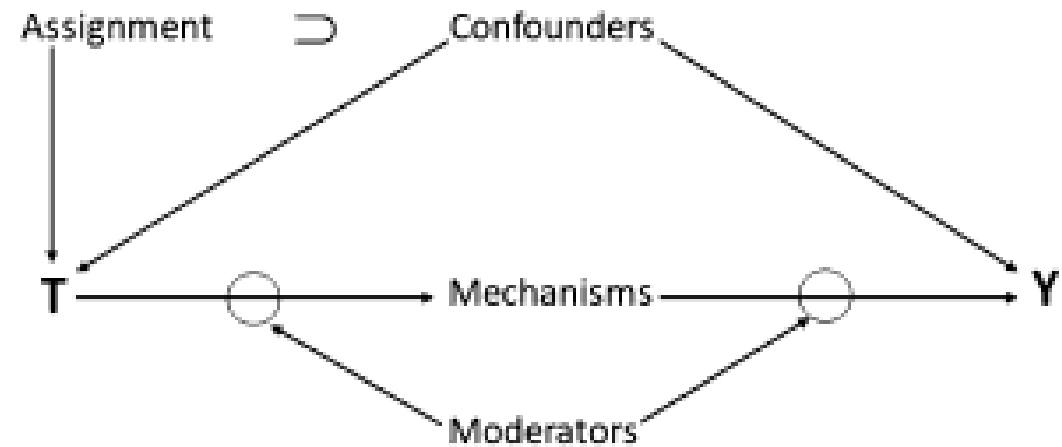


FIGURE 1

Diagram of a generic causal model of the effects of treatments **T** on outcomes **Y**.

Sill & Jones. 2018. *Handbook of Environmental Economics*. Elsevier. Vol 5. Dasgupta et al. (eds).

In today's causal focus, what is the role of Institutions?

CHAPTER

9

CHAPTER 9 Institutions in causal inference

Causal inference in environmental conservation:
The role of institutions*

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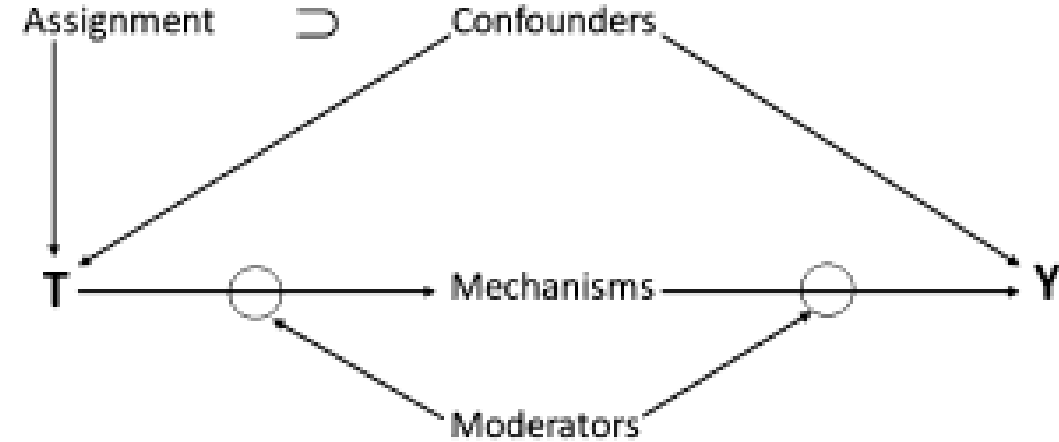


FIGURE 1

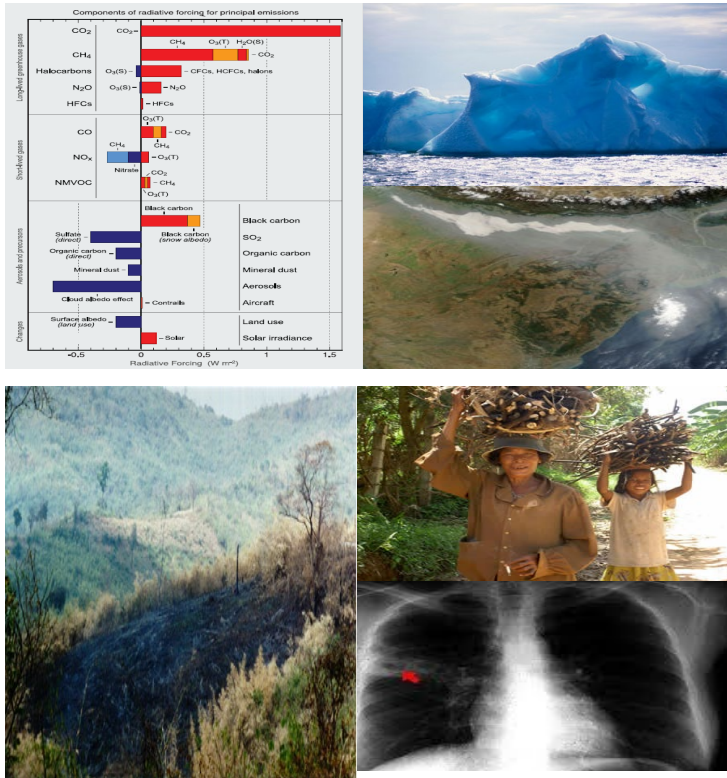
Diagram of a generic causal model of the effects of treatments **T** on outcomes **Y**.

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Supplying clean energy in developing countries:
Role of NGOs in the Himalayas

with M Jeuland, F Usmani

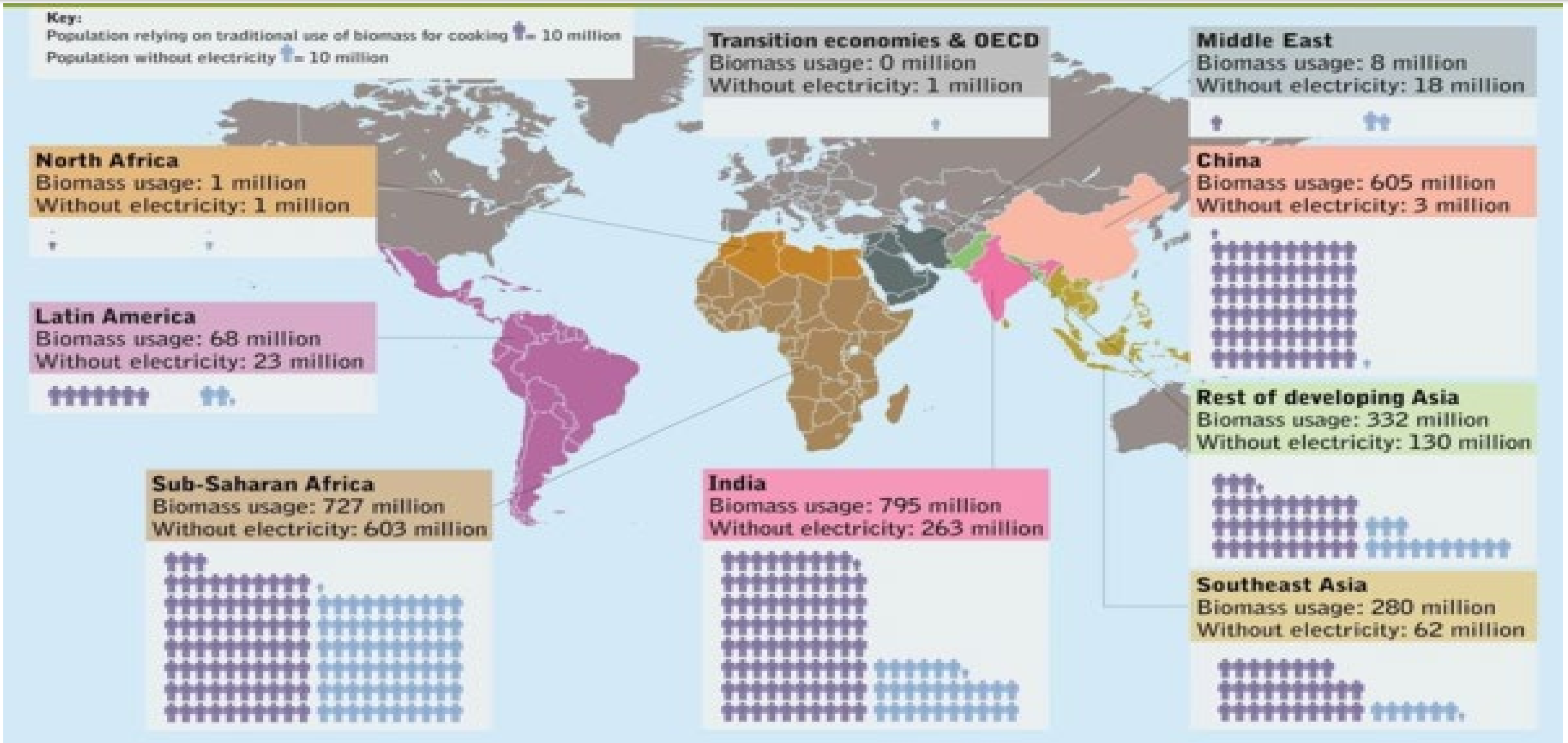
Energy poverty causes (triple) externalities



- Short lived, local climate forcer
- Impacts on glaciers
- Regional air quality (ABC)
- Unsustainable harvesting
- Forest ecosystem damage
- Drudgery of fuel wood collection
- Health of women & children

- Many unknowns regarding **impacts** – uncertain costs & benefits
- **Many more unknowns** regarding **implementation** – incentives & institutions re behaviors of **households**, communities, **NGOs**, retailers, governments

Energy poverty is a equality & justice issue



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PLoS MEDICINE

Essay

Implementation Research Is Needed to Achieve International Health Goals

David Sanders*, Andy Haines

Health research needs to focus not just on the growing divide in health status between the world's rich and poor but also on the unacceptable gap between our unprecedented knowledge of diseases (including their control) and the implementation of that knowledge, especially in poor countries. Directed and innovative research is needed to analyse the causes of this situation

most concerned with implementation (Box 1). We identify some of the key obstacles to correcting this gap, and conclude with some suggestions for actions that can be taken to increase the quantity and quality of HSR.

Weak Health Systems in Poor Countries

The gap in infant mortality and life expectancy between rich and poor

as Kenya, South Africa, Zambia, and Zimbabwe losing more than ten years in life expectancy in a short period of time [2]. In many of these countries, this situation is exacerbated by public health services that have been seriously weakened by chronic underfunding and loss of personnel, with an accelerating "brain drain" that is reaching crisis proportions and raising ethical questions regarding recruitment

Researchers and funders need to use systems approaches that are beginning to translate research not only to the bedside but also to global health programs.

Implementation Science

Temina Madon, Karen J. Hofman,* Linda Kupfer, Roger I. Glass

We face a formidable gap between innovations in health (including vaccines, drugs, and strategies for care) and their delivery to communities in the developing world. As a result, nearly 14,000 people in sub-Saharan Africa and South Asia die daily from HIV, malaria, and diarrheal disease (1), even though scientific advances have enabled prevention, treatment, and, in some cases, elimination of these diseases in developed countries.

Many evidence-based innovations fail to produce results when transferred to communities in the global south, largely because their implementation is untested, unsuitable, or incomplete. For example, rigorous studies have shown that appropriate use of insecti-



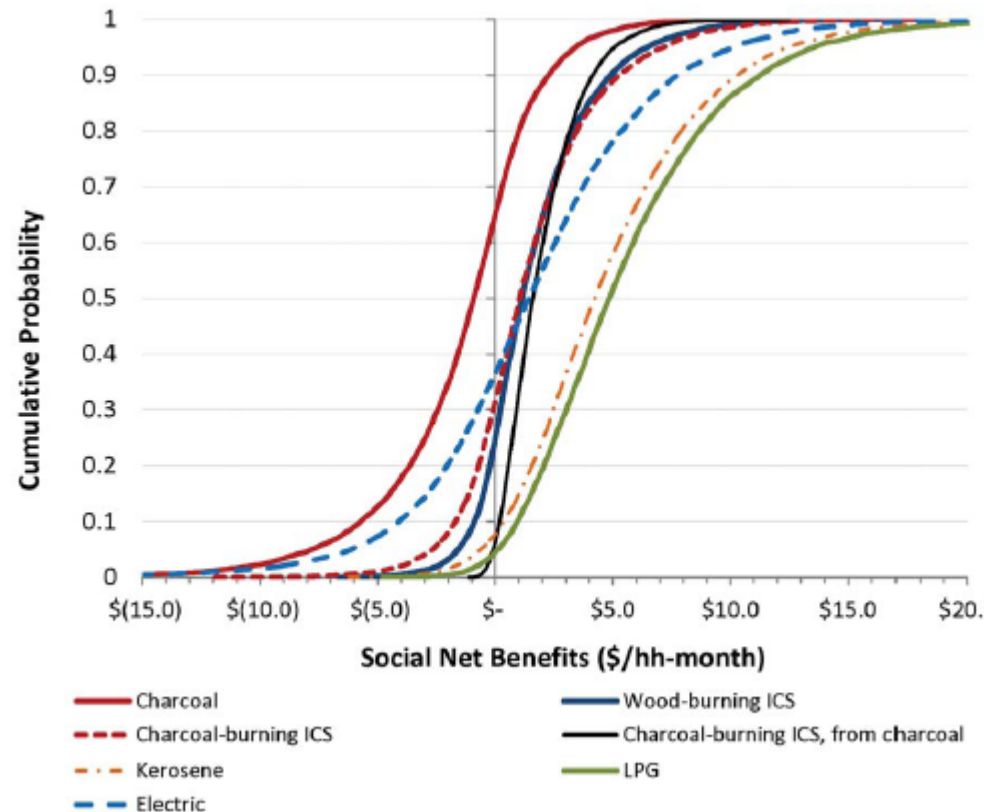
A Framework for Research Translation

- Huge gap between innovation & delivery – because implementation is untested, unsuitable or incomplete:
 - Poor people face a bewildering array of constraints – knowledge, access, inadequate infrastructure & health system, environmental exposure
 - Scientists have been slow to view implementation as a dynamic, adaptive, multi-scale phenomenon that can be addressed through research
- Need for
 - theory & methods adapted to poor countries
 - inter-disciplinary problem focused training
 - “North-South” collaborations – gov, NGOs,

Phase I: Diagnose

desk reviews, simulations, focus groups

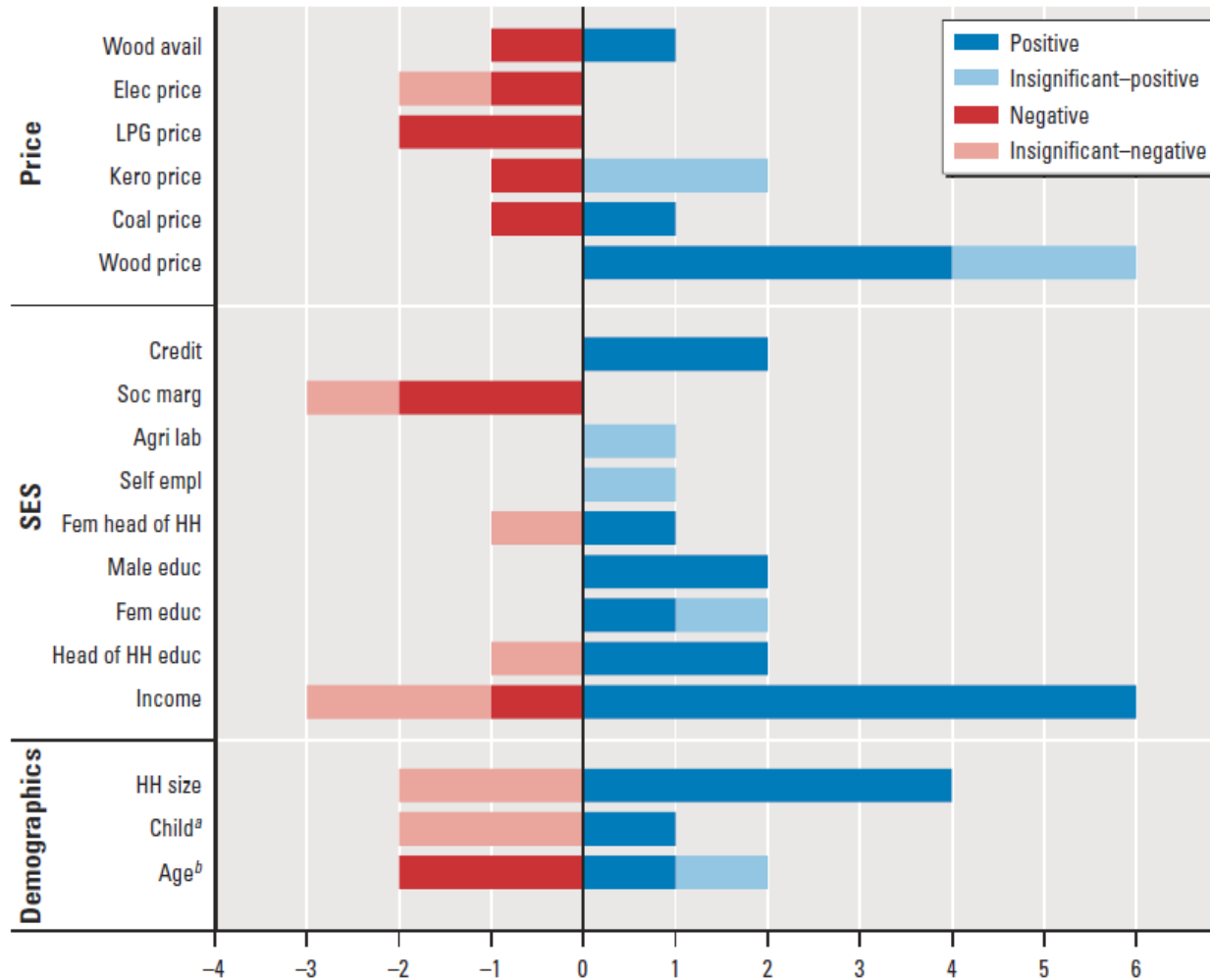
Do cooking interventions pass the cost benefit test?



- Advocates tend to produce a clear and compelling case for ICS, but such results are too optimistic
- Generally impossible to predict *ex ante* where interventions will work
- **Costs and benefits strongly depend on efficiencies, adoption & use**
- Heterogeneity is a fact of life (e.g., micro-institutions); ultimately development stage (***education, urbanization, electrification***) matters

Jeuland & Pattanayak 2012. *PLOS One*

What drives adoption of clean energy?



(Lewis, JJ and SK Pattanayak. 2012 *Environmental Health Perspectives*)

- Literature dominated by anecdotes, case studies, and correlations
- SES, HH education, fuel prices, credit – matter
- Information campaigns, social marketing – not studied
- Rigorous (experimental or QE) evaluations missing

Through the looking glass: Environmental health economics in low and middle income countries*

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Behavior, Environment, and Health in Developing Countries: Evaluation and Valuation

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Key Words

policy interventions, water quality, arsenic, indoor air pollution, diarrhea, malaria, acute respiratory infections, stove, toilets, bed nets, fuel

Abstract

We consider health and environmental quality in developing countries, where limited resources constrain behaviors that combat enormously burdensome health challenges. We focus on four huge challenges that are preventable (i.e., are resolved in rich countries). We distinguish them as special cases in a general model of household behavior, which is critical and depends on risk information. Simply informing households may achieve a lot in the simplest challenge (groundwater arsenic); yet, for the three infectious situations discussed (respiratory, diarrhea, and malaria), community coordination and public provision may also be necessary. More generally, social interactions may justify additional policies. For each situation, we discuss the valuation of private spillovers (i.e., externalities) and evaluation of public policies to reduce environmental risks and spillovers. Finally, we reflect on open questions in our model and knowledge gaps in the empirical literature including the challenges of scaling up and climate change.

Why do so few adopt & use clean stoves/fuels?

can't pay

don't know

don't care



selfish

myopic

risk averse

conformists

constrained

Article

How do People in Rural India Perceive Improved Stoves and Clean Fuel? Evidence from Uttar Pradesh and Uttarakhand

Vasundhara Bhojvaid ¹, Marc Jeuland ^{2,3,*}, Abhishek Kar ⁴, Jessica J. Lewis ⁵,
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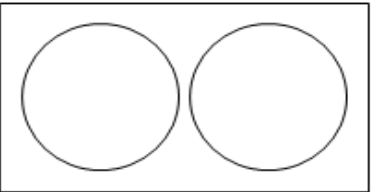
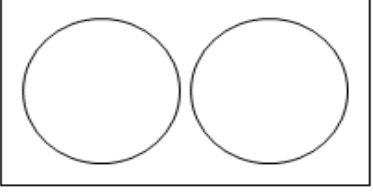
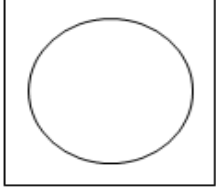
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Diagnosing through choice experiments

| | चूल्हे | उन्नत चूल्हा 1 | उन्नत चूल्हा 2 | मिट्टी का चूल्हा |
|-----------------|-------------------------|---|--|---|
| Price | दाम | 500 रुपए  | 2500 रुपए  | 0 रुपए |
| Smoke | धुआं |  |  |  |
| Fuel Req. | ईंधन की जरूरत |  |  |  |
| # Cook surfaces | चूल्हे के मुंह की गिनती |  |  |  |

Jueland, MA et al. 2015 *Energy Economics*

Phase II: Design

simulate mature market, pilots

Intervention: Pilots & Implementation

Baseline work: Perceptions and Preferences

How do People in Rural India Perceive Improved Stoves and Clean Fuel? Evidence from Uttar Pradesh and Uttarakhand

Vasanthakumari Bhargava¹, Manu Arora^{2,3}, Abhishek Kaur⁴, Jovita J. Lewis⁵, Sakshirani K. Ponnampal^{6,7}, Nitika Kumar⁸, Virendra Kumar⁹ and Divyanshu B. Sharma¹⁰

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⁷ Scripps Institution of Oceanography, University of California—San Diego, San Diego, CA 92162, USA

■ cautious interest, ...
 ■ care about health benefits and time savings
 ■ supply chain, social marketing, and price incentives

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Piloting Stove Intervention



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Context: 3 different pilot contexts in India

Tropical Orissa
 Uttarakhand mountains (UK)
 Uttar Pradesh plains



18

Sample characteristics (~3.5 hrs/pilot)

| Household characteristics | Uttar Pradesh | Orissa | Uttarakhand | Total |
|--------------------------------------|---------------|--------|-------------|-------|
| Total # of | 72 | 40 | 45 | 157 |
| SPC membership | 42% | 43% | 71% | 52% |
| % female headed household | 12% | 10% | 10% | 10% |
| Head of household education (yrs) | 5.2 | 5.4 | 6.7 | 5.7 |
| Head cook education (yrs) | 3.4 | 3.4 | 3.4 | 3.4 |
| SPC membership | 0% | 21% | 0% | 20% |
| % no electricity | 5.5 | 13.0 | 20.0 | 16.5 |
| % latrine access | 0% | 21% | 20% | 17% |
| % fuelwood used for heat | 100% | 70% | 0% | 50% |
| % kerosene used for heat | 0% | 28% | 0% | 24% |
| % kerosene used for cooking | 100% | 0% | 0% | 100% |
| % LPG stove ownership | 0% | 41% | 0% | 24% |
| Time spent gathering fuel (hrs/week) | 14.5 | 4.0 | 18.0 | 10.5 |

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Summary from these pilots

| State | Intervention | Local marketing | Stove choice | Stove |
|---------------|--|-------------------------------|-----------------|----------|
| Uttar Pradesh | Interventions: Basic, Promotions, Incentives | Basic, Promotions, Incentives | Choice = Forced | Electric |
| Orissa | Interventions: Basic, Promotions, Incentives | Basic, Promotions, Incentives | Choice = Forced | Electric |
| Uttarakhand | Interventions: Basic, Promotions, Incentives | Basic, Promotions, Incentives | Choice = Free | Electric |
| Uttarakhand | Interventions: Basic, Promotions, Incentives | Basic, Promotions, Incentives | Choice = Free | Electric |
| Uttarakhand | Interventions: Basic, Promotions, Incentives | Basic, Promotions, Incentives | Choice = Free | Electric |
| Uttarakhand | Interventions: Basic, Promotions, Incentives | Basic, Promotions, Incentives | Choice = Free | Electric |
| Uttarakhand | Interventions: Basic, Promotions, Incentives | Basic, Promotions, Incentives | Choice = Free | Electric |
| Uttarakhand | Interventions: Basic, Promotions, Incentives | Basic, Promotions, Incentives | Choice = Free | Electric |
| Uttarakhand | Interventions: Basic, Promotions, Incentives | Basic, Promotions, Incentives | Choice = Free | Electric |
| Uttarakhand | Interventions: Basic, Promotions, Incentives | Basic, Promotions, Incentives | Choice = Free | Electric |

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III. So what did we try?



21


Study site

Himalayan foothills, Uttarakhand, India



22

Study site: Nainital, Bageshwar



23

Pilot: Key Lessons

- Limited success in UP, better success with NGOs in Orissa and UK
- Installments seemed critical (few households willing to pay upfront)
- Effect of rebates and stove return option unclear
- Intensive promotion by NGO (demos and info sheets) necessary but not sufficient
- Stove choice really helped in UK (attractiveness of electric stove)


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Intervention 1: Lots of information (IEC)

Training, messaging, & sales plan

Promotional material

House-to-house demonstrations




25

Intervention 2: Choice

Electric stoves

Natural draft stoves



26

Intervention 3: Monetary incentives

Finance plan including random rebates conditional on use



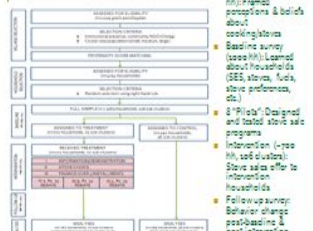
27

Intervention Sample Selection

| Variable | Mean treatment | Mean control | Difference | Normalized |
|----------------------------|----------------|--------------|------------|------------|
| Presence of paved roads | 0.10 | 0.11 | -0.01 | 0.01 |
| Distance to doctor | 0.10 | 0.11 | -0.01 | 0.01 |
| Basic health coverage | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of drinking water | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of electricity | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of latrine | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of LPG | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of kerosene | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of wood | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of coal | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of gas | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of solar | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of wind | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of biomass | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of geothermal | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of hydro | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of nuclear | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of other | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of any | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of none | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of all | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of some | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of many | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of most | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of almost | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of nearly | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of very | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of extremely | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of super | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of ultra | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of mega | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of giga | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of tera | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of peta | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of exa | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of zetta | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of yotta | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of ronna | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of septa | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of octa | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of nona | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of deca | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of undeca | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of duodeca | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of tredecim | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of quattuordecim | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of quindecim | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of sexdecim | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of septendecim | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of octodecim | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of novemdecim | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of viginti | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of unguis | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of viginti | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of unguis | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of viginti | 0.10 | 0.11 | -0.01 | 0.01 |
| Presence of unguis | 0.10 | 0.11 | -0.01 | 0.01 |


28

Intervention: final design



29

IV. Did our intervention work?



30

Bhojvaid, Jeuland, Lewis, Pattanayak, 2014. *Int J of Env Res & Pub Health*

Lots of piloting (Lewis et al., 2015)

Lewis, JJ et al. 2015. *Journal of Health Communication*

Table 1. Summary of pilot intervention features

| Pilot | Product | | | Pricing plan | | | Place | | | Promotion: Social marketing/ behavior change communication ^a | Total sales (sales in random sample) | % HH purchase (% purchase in random sample) |
|-------|-----------------|------------------|----------|----------------------------|----------------------------------|-----------------------------|---------------|-----|------------------|--|---|---|
| | Forced draft | Natural draft | Electric | Full upfront payment | Rebates conditional on use | Optional stove return | State | NGO | Near highway? | | | |
| A | ✓ | ✓ | | ✓ | | | Uttar Pradesh | | | Basic | 0 (0) | 0 (0) |
| B | ✓ | ✓ | | | | | | ✓ | | Basic | 2 (2) | 8 (8) |
| C | | ✓ | | | | | | ✓ | | Basic Plus | 3 (0) | 1 (0) |
| D | | ✓ | | | | | Odisha | ✓ | | Basic Plus | 14 (6) | 23 (46) |
| E | | ✓ | | | | | | | ✓ | Basic Plus | 4 (1) | 4 (8) |
| F | | ✓ | ✓ | | | | Uttarakhand | ✓ | | Intensive | 19 (6) | 40 (38) |
| G | | ✓ | ✓ | | | | | ✓ | | Intensive | 17 (9) | 31 (60) |
| H | | ✓ | | | | | | ✓ | | Intensive | 2 (2) | 7 (14) |

Note. NGO=nongovernmental organization.

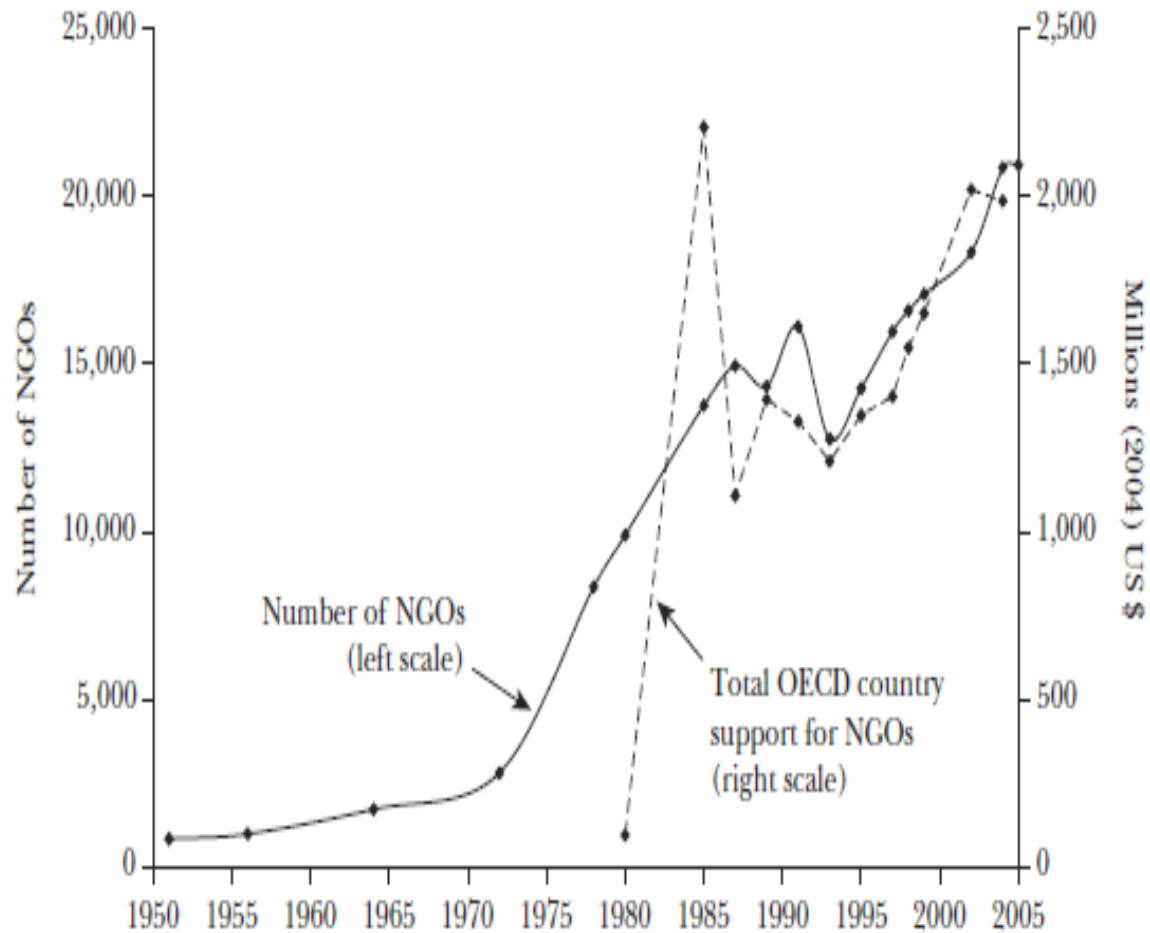
^aBasic: pamphlets and household demonstration; Basic Plus: pamphlets (in advance), village posters, community and household demonstration; Intensive: new pamphlets and extended household visit (in advance), community and household demonstration.

Piloting Improved Cookstoves in India



The rise and rise of NGOs

Growth of Nongovernmental Organizations, 1950–2005



- Reflect general trends
 - government contracting
 - entrepreneurial spirit
 - professionalization
- Ideological roots
 - Economics: third way is more efficient for growth, production, & delivery
 - Politics: counterweight to state, channels of dialogue & participation, training for activism
- Several challenges

NGOs background (1): challenges

- Government not always ideal supplier
 - Market fails, govt. steps in ...
 - but corrupt, uninformed, and or incompetent
- Typically, civil society (nimble NGOs)
 - operate in the gap between market & state
 - provides information and gives voice to the voiceless
 - attempts to provide directly
- But when they go to scale, they can become or be made
 - **corrupt** (rent-seeking mechanism at the expense of donor)
 - **uninformed**, especially if (a) weak accountability structures: beneficiaries can be trapped & NGOs do not face elections, (b) have strong ideology that is not locally beneficial
 - **Incompetent**
 - not being residual claimant means they don't have to watch costs (but that might mean quality is maintained)
 - face the full force of market volatility and competition
 - strangled by regulations or compete with state

NGOs background (2)

- Efficiency?
 - not really cost-effective!? Not really
 - heavily subsidized now; without subsidies?
- Democratic?
 - Outside the political process
 - Internally not participatory or debate based ...
- Legitimacy?
 - external reliance (on official funding); from *partner to contractor* – and from ‘beneficiary to consumer’ is no longer based on values & voluntarism
- Accountability?
 - everybody resists effective accountability; (1) clear statement of goals, (2) transparency of decision making & relationships, (3) honest reporting of inputs & outputs, (4) appraisal by overseeing authority, (5) mechanism for holding to account responsible agents ...
 - numerous challenges: nature of work is qualitative, contingent, not controllable
- Reform
 - **Popular support – deep roots**
 - **Self-financing – not externally dependent**
 - **Transparent, accountable, and partner-based**



Stylized model of household decision-making

Utility

Income constraint

$$\max_{a,c,l,m,k,t} L = u[c, l, a, s(e), e(a)] + \lambda [y - c - p(\xi) \cdot m - r(\xi) \cdot k + w(T - s(e) - l - t(\xi))] + \mu [T - l - s(e) - t(\xi)]$$

Time constraint

NGOs enter through ξ and alter **transaction costs**:

- 1 Price of materials (e.g., subsidies): $p^1(\xi) < 0, p^{11}(\xi) < 0$
- 2 Cost of knowledge (e.g., information on health benefits): $r^1(\xi) < 0, r^{11}(\xi) < 0$
- 3 Time commitment (e.g., acquisition, installation): $t^1(\xi) < 0, t^{11}(\xi) < 0$

The household's optimal choice

$$\frac{u_a + u_s \cdot s_e \cdot e_a + u_e \cdot e_a}{\lambda} - w \cdot \xi \cdot e_a = p(\xi) \cdot a_m + r(\xi) \cdot a_k + w \cdot a_t(\xi) \quad (1)$$

Marginal benefit, $MB(a)$ Marginal cost, $MC(a, \xi)$

Rewriting (1) in terms of household net benefit $\pi(a, \xi)$:

$$\left. \frac{\partial \pi(a, \xi)}{\partial a} \right|_{a=a^*} = MB(a) - MC(a, \xi) = 0 \quad (2)$$

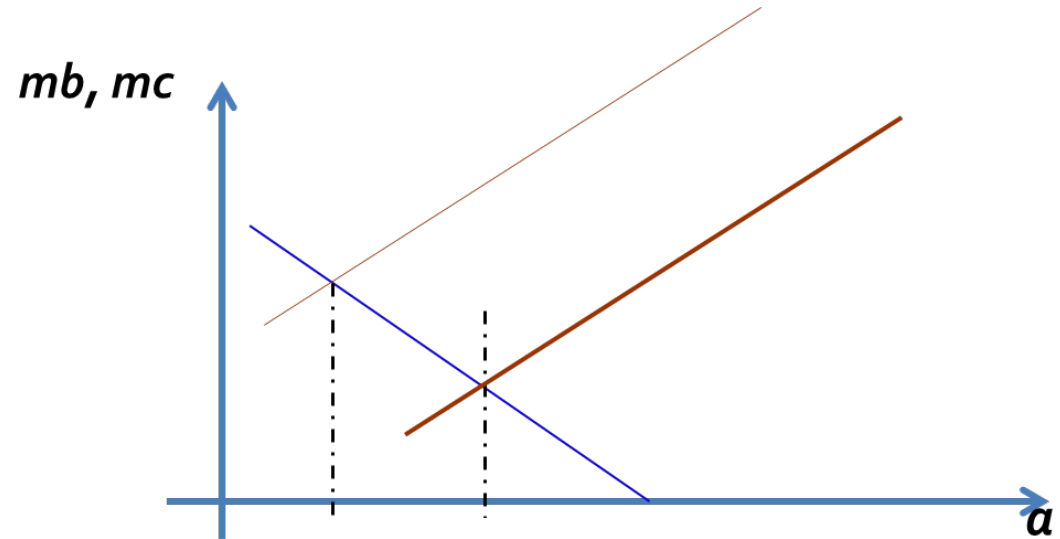
$$\frac{\partial^2 \pi(a, \xi)}{\partial a^2} = \frac{\partial MB(a)}{\partial a} - \frac{\partial MC(a, \xi)}{\partial a} < 0, \quad (3)$$

The “NGO effect”: more averting behavior

Then we can invoke the implicit-function theorem to write:

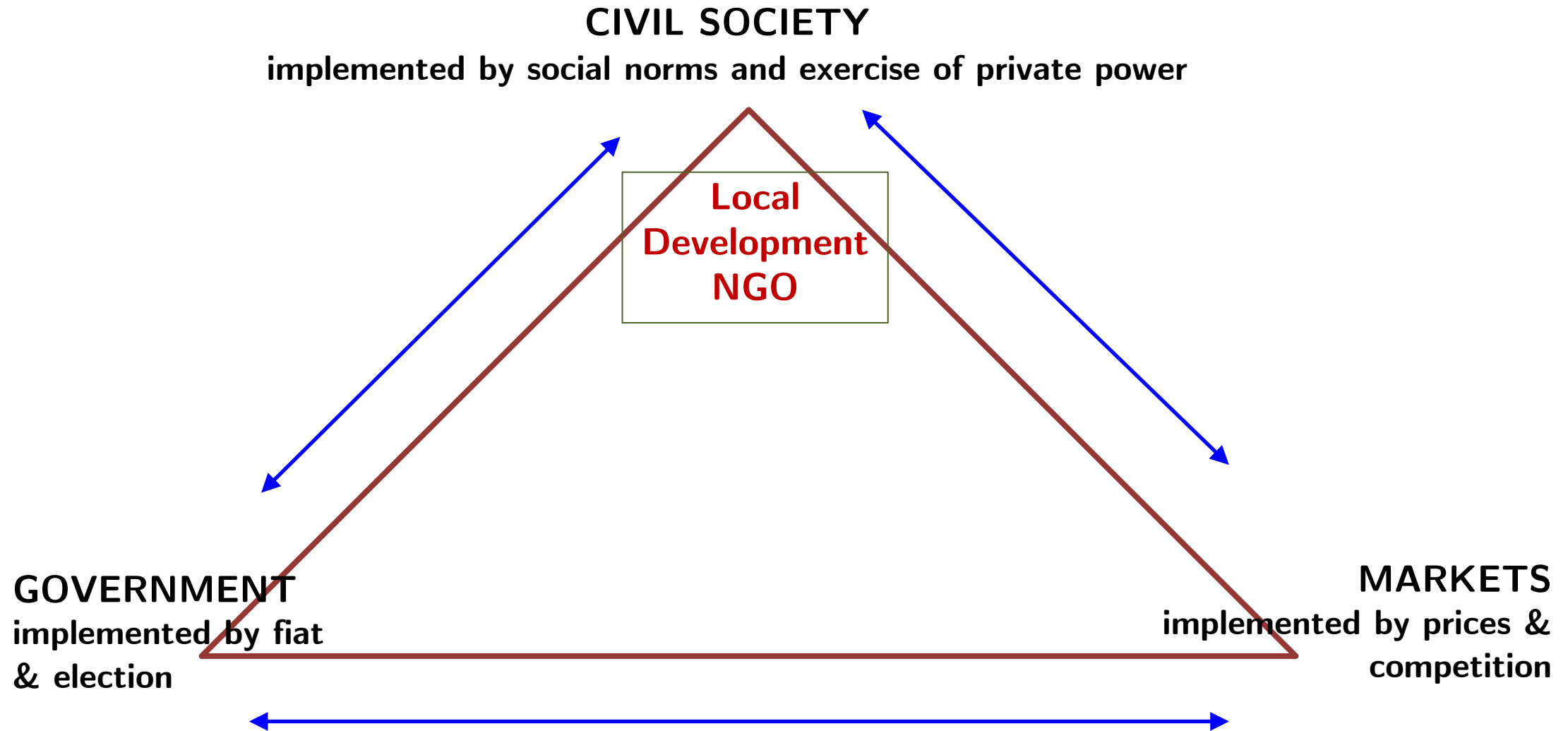
$$\begin{aligned}\frac{da}{d\xi} &= -\frac{\partial^2 \pi / \partial a \partial \xi}{\partial^2 \pi / \partial a^2} \\ &= -\frac{-\partial MC(a, \xi) / \partial \xi}{\partial^2 \pi / \partial a^2} \\ &> 0.\end{aligned}$$

Numerator > 0 ; follows from our assumptions that the marginal cost of adoption is decreasing in ξ .



“NGO effect”: Welfare-maximizing level of averting is increasing in the presence of this “NGO”
→ **Motivation for our main empirical hypothesis**, i.e., NGOs reduce transaction costs (North 1992), leading to greater environmental or health risk-averting behavior

Synergy Simplex: Applied to local development NGO



role of institutions (e.g., NGOs)

Causal inference in environmental conservation:
The role of institutions*

9

CHAPTER 9 Institutions in causal inference

Cookstove Promotion

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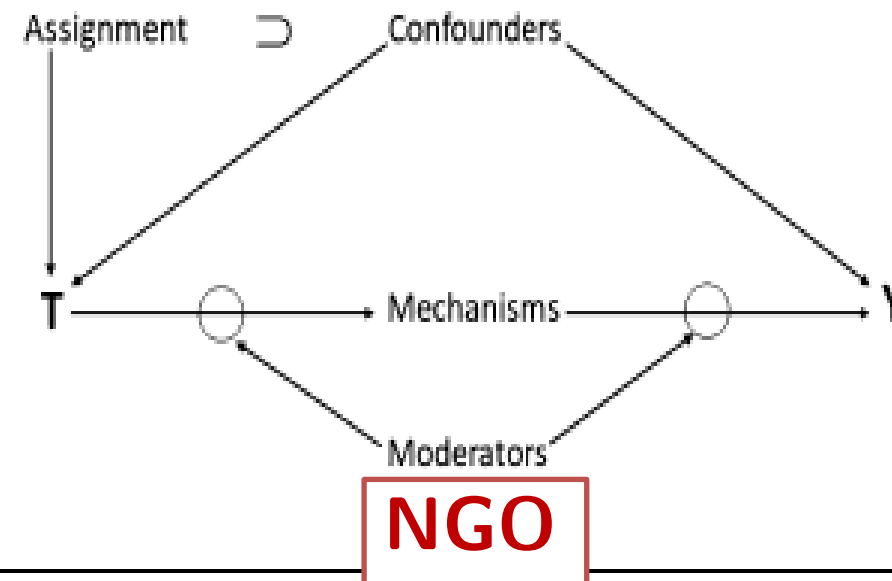


FIGURE 1

Diagram of a generic causal model of the effects of treatments T on outcomes Y .

Sill & Jones. 2018. *Handbook of Environmental Economics*. Elsevier. Vol 5. Dasgupta, Pattanayak & Smith (eds).

Key lessons: diagnose, design

- Multiple discussions with key stakeholders
- Several **focus groups**, expert consultations
- 2000 **household surveys** in two states
- 8 **pilot interventions**
- establish a functional ICS supply chain
- ease income, liquidity, & info constraints, and
- account for heterogeneous tastes (e.g., biomass vs. electric ICS) & **context** (e.g., **NGO vs. not**).
- Therefore, we designed an experimental supply-and-promotion intervention that combined
 - *in-house delivery of suitable ICS;*
 - *demonstration, financing, and rebates; and*
 - *choice among an electric and/or biomass ICS*
- RCT implemented by hired trained sales team, not NGO

Key lessons: diagnose, design

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 - *in-house delivery of suitable ICS;*
 - *demonstration, financing, and rebates; and*
 - *choice among an electric and/or biomass ICS*
 - **stratify by institutional (NGO) group**
 - RCT implemented by hired trained sales team, not NGO

A person wearing a hat and a light-colored shirt is sitting on a grassy hill, looking out over a valley. The valley features terraced fields and is surrounded by mountains. The scene is hazy, suggesting a misty or overcast day.

Phase III. Test

Experiment (RCT), 1000 hh, 100 hamlets, 3 rounds

The intervention

Designed to stimulate demand for improved cookstoves

Randomized at the sub-village (*tok*) level and consisting of:

- **Information:** Fact sheet comparing benefits of two improved cookstoves
- **Demonstration:** Personalized household-level demonstrations
- **Lower liquidity constraints:** Option to pay in up to three installments
- **Lower income constraints:** Randomized household-level rebate



NGO effect: Constructing the counterfactual

1. List all communities in two districts of Uttarakhand, India (using Census)
2. Identify those where NGO had worked for decades

In general, NGO communities ...

- ✓ Have fewer households
- ✓ Have more Scheduled Caste households
- ✓ Are somewhat more remote

Consistent with findings from the NGO location literature

4. Match using Census data (PSM) to construct observationally equivalent non-NGO groups, then “trimming” to remove lower quality matches

Pre-processing to have pre-matched strata (Crump et al. 2009; Ho et al., 2007, Pattanayak et al., 2009; Arnold et al., 2010)

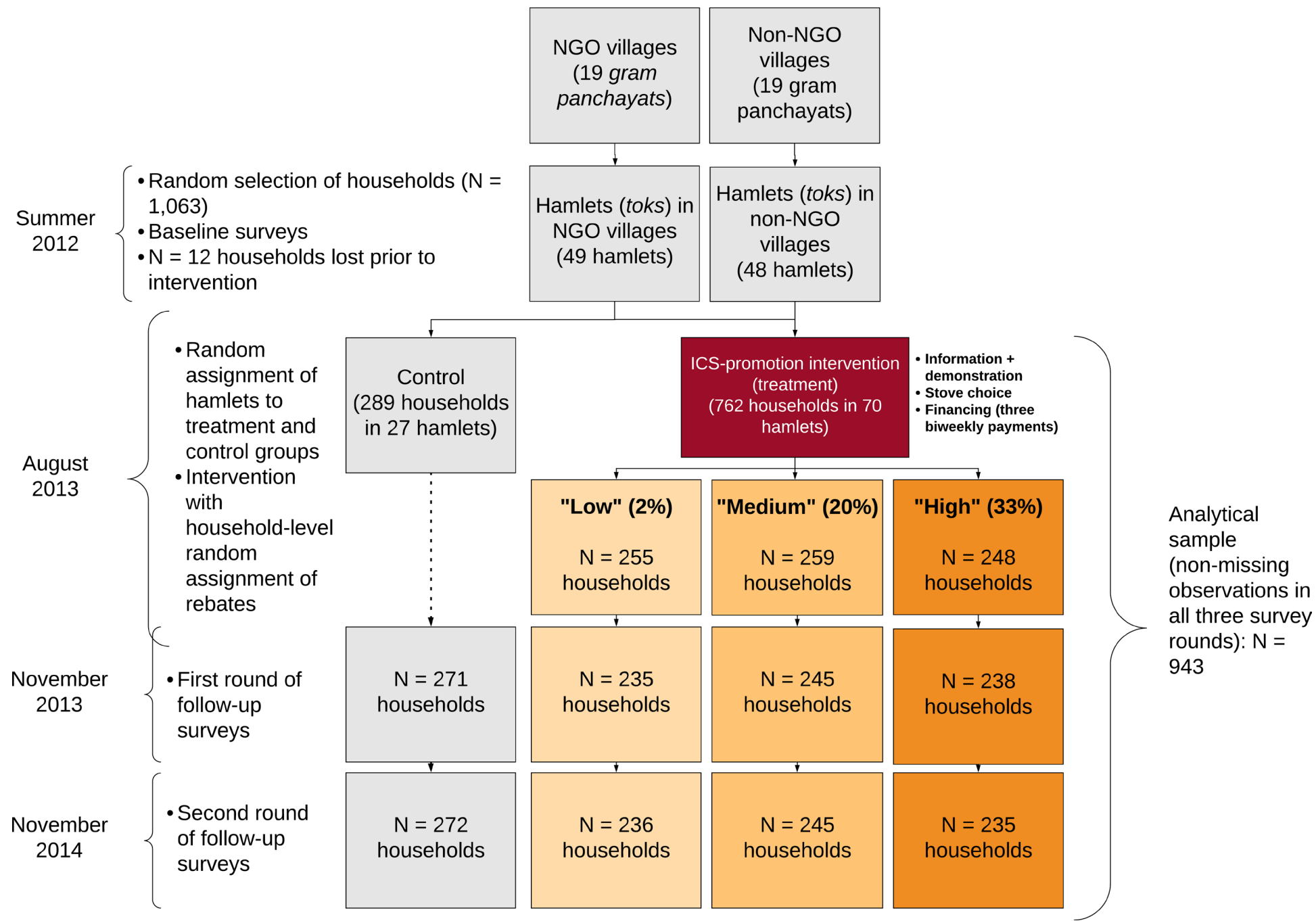
Overview of sample households

| Household-level characteristic | (1) | (2) | (3) | (4) | (5) |
|---|--------------|---------|------------------|---------|-----------------------|
| | NGO villages | | Non-NGO villages | | Normalized difference |
| | Mean | Std Dev | Mean | Std Dev | |
| Household size | 5.23 | 2.12 | 4.52 | 1.89 | 0.35* |
| Mean number of children aged five and under | 0.55 | 0.86 | 0.38 | 0.72 | 0.22 [□] |
| Age of household head (years) | 53.8 | 13.7 | 54.2 | 14.0 | -0.03 |
| 1_ (Female-headed household) | 0.25 | 0.44 | 0.27 | 0.44 | -0.04 |
| Education level of household head (years) | 6.23 | 4.51 | 6.14 | 4.62 | 0.02 |
| Education level of primary cook (years) | 4.66 | 4.32 | 4.55 | 4.62 | 0.02 |
| 1_ (Below poverty line) | 0.58 | 0.49 | 0.58 | 0.49 | -0.01 |
| 1_ (Owns traditional stove) | 0.99 | 0.12 | 0.97 | 0.16 | 0.09 |
| 1_ (Uses traditional fuels) | 0.99 | 0.11 | 0.97 | 0.16 | 0.05 |
| Traditional-stove use (minutes per day) | 300.3 | 142.3 | 284.5 | 137.6 | 0.11 |
| 1_ (Owns improved stove) | 0.31 | 0.46 | 0.28 | 0.45 | 0.04 |
| 1_ (Used an improved stove in past week) | 0.29 | 0.46 | 0.28 | 0.45 | 0.10 |
| 1_ (Uses a clean fuel daily) | 0.28 | 0.45 | 0.26 | 0.44 | 0.05 |
| 1_ (Heard of stoves that produce less smoke) | 0.30 | 0.46 | 0.22 | 0.41 | 0.29 |
| 1_ (Heard of fuels that produce less smoke) | 0.37 | 0.48 | 0.26 | 0.44 | 0.19 |
| Traditional-fuel collection (minutes per day) | 129.6 | 101.5 | 101.8 | 87.5 | 0.23 |
| 1_ (Thinks cookstove emissions are unsafe) | 0.50 | 0.50 | 0.50 | 0.50 | -0.01 |
| 1_ (At least one case of cough/cold in past week) | 0.25 | 0.43 | 0.20 | 0.40 | 0.12 |
| Observations | 469 | | 474 | | 943 |

□ $p < 0.10$ □ $p < 0.05$ □ $p < 0.01$

Post-match balance: characteristics across NGO & non-NGO villages

| Village-level characteristic | (1) | (2) | (3) | (4) | (5) |
|---|--------------|---------|------------------|---------|-----------------------|
| | NGO villages | | Non-NGO villages | | Normalized difference |
| | Mean | Std Dev | Mean | Std Dev | |
| Area (km ²) | 146.7 | 94.5 | 175.0 | 268.6 | -0.14 |
| Total population | 386.8 | 136.6 | 376.7 | 130.0 | 0.08 |
| Scheduled Caste population (proportion) | 0.26 | 0.29 | 0.28 | 0.30 | -0.04 |
| Scheduled Tribe population (proportion) | 0.0065 | 0.028 | 0.00036 | 0.0016 | 0.31 |
| Number of primary schools | 1.11 | 0.46 | 1.05 | 0.23 | 0.15 |
| Number of middle schools | 0.37 | 0.50 | 0.32 | 0.48 | 0.11 |
| Number of health centers | 0 | 0 | 0 | 0 | - |
| Number of primary health centers | 0 | 0 | 0 | 0 | - |
| Number of telephone connections | 0.26 | 0.56 | 0.42 | 0.51 | -0.30 |
| _ (Bus services) | 0.11 | 0.32 | 0.053 | 0.23 | 0.19 |
| _ (Credit societies) | 0 | 0 | 0 | 0 | - |
| _ (Approach to village: paved road) | 0.21 | 0.42 | 0.16 | 0.37 | 0.13 |
| Distance from nearest town (km) | 25.1 | 16.1 | 19.9 | 11.9 | 0.36 |
| Forest area (hectares) | 34.1 | 63.9 | 26.0 | 51.8 | 0.14 |
| _ (Tap water) | 0.89 | 0.32 | 1 | 0 | -0.47 |
| _ (Electricity for all purposes) | 0.053 | 0.23 | 0 | 0 | 0.32 |
| Observations | 19 | | 19 | | 38 |



Impact of Intervention: large purchase response

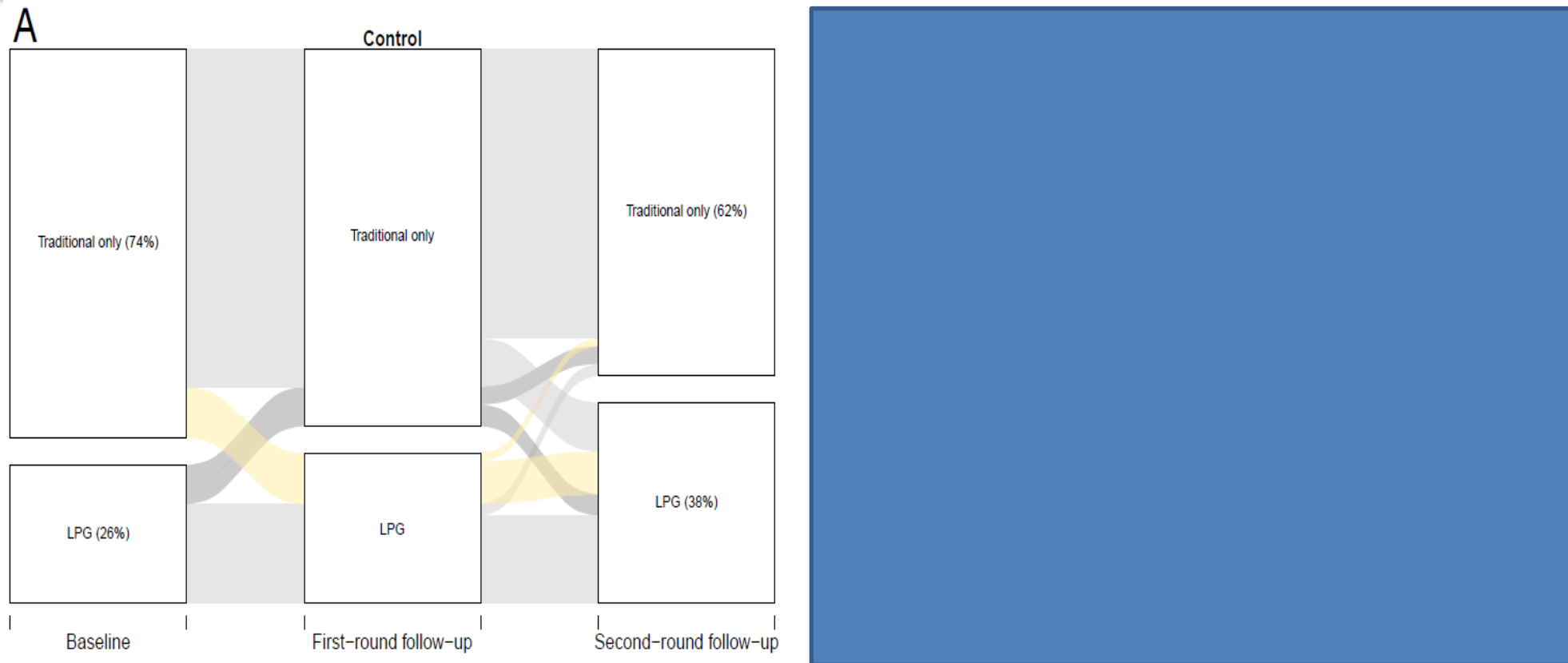


Fig. 3. Stove ownership over time by treatment group: control (A) and treatment (B). Baseline surveys occurred in summer 2012. Intervention occurred in summer 2013. First-round follow-up surveys occurred 3 mo after the intervention. Second-round follow-up occurred ~15 mo after the intervention.

Possible to achieve high ownership and use in low income settings!

Impact of Intervention: large purchase response

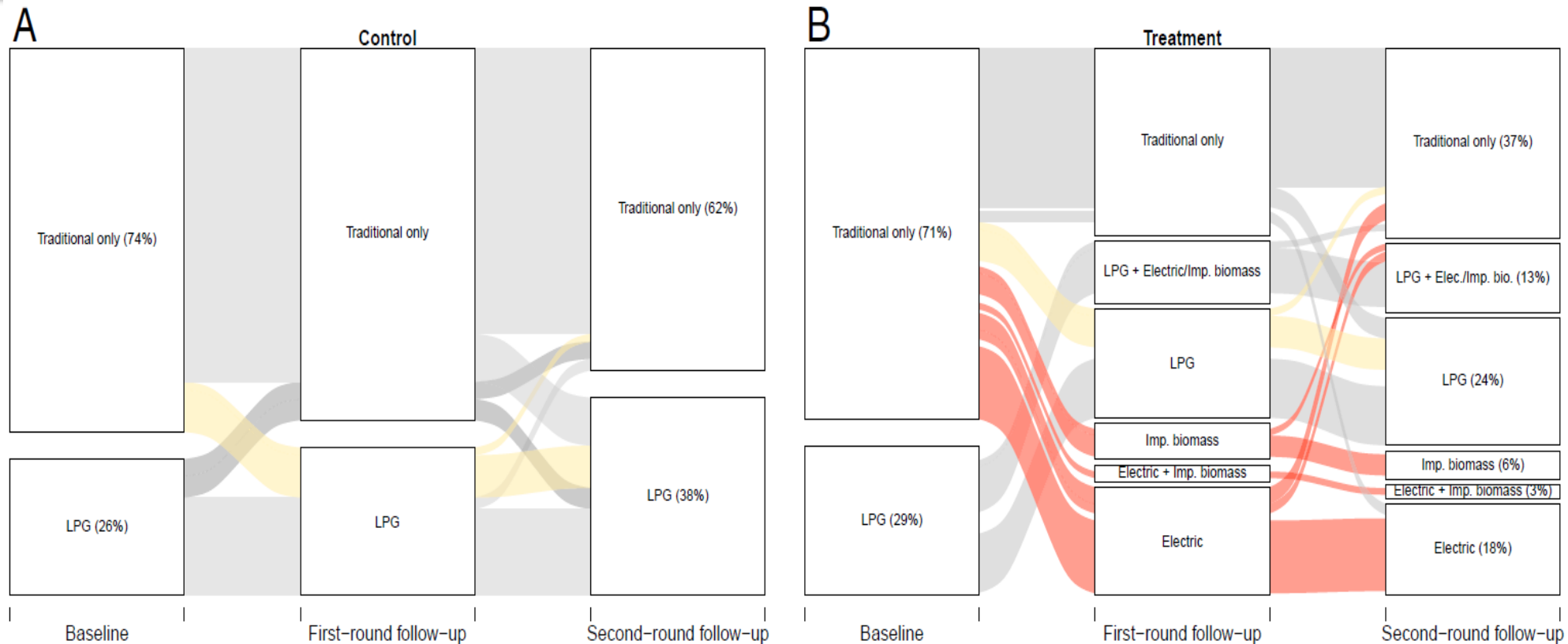


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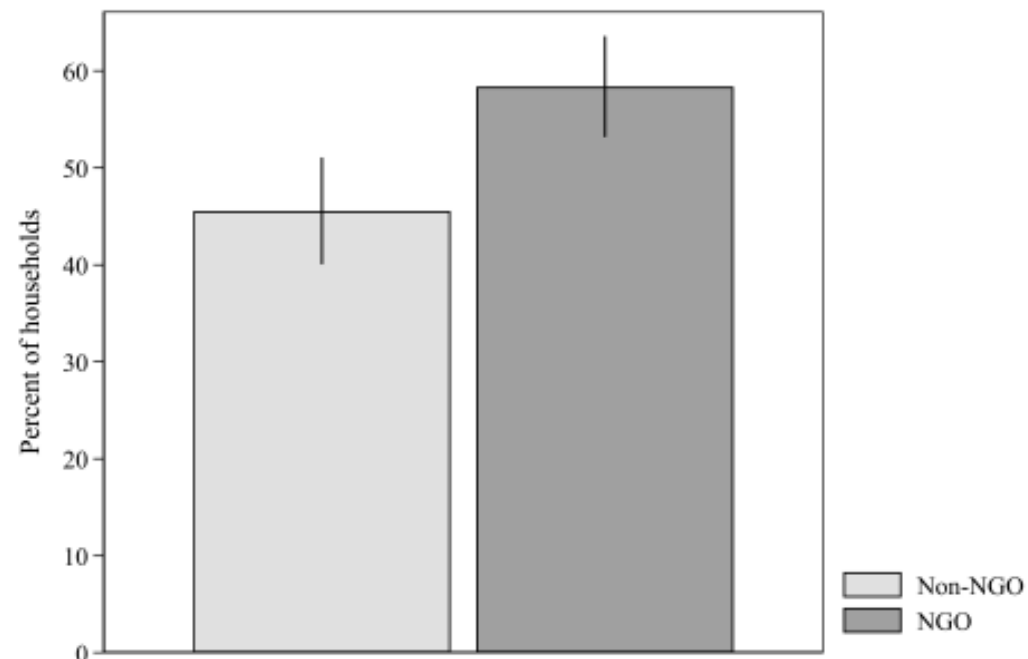
Heterogeneous impact on purchase across NGO/non-NGO villages

$$Y_{ijd} = \beta_1 (TREATMENT_j) + \beta_2 (NGO_j) + \beta_3 (TREATMENT_j \times NGO_j) + \mathbf{X}_i \delta + \gamma_d + \epsilon_{ijd} \quad (7)$$

Basic result

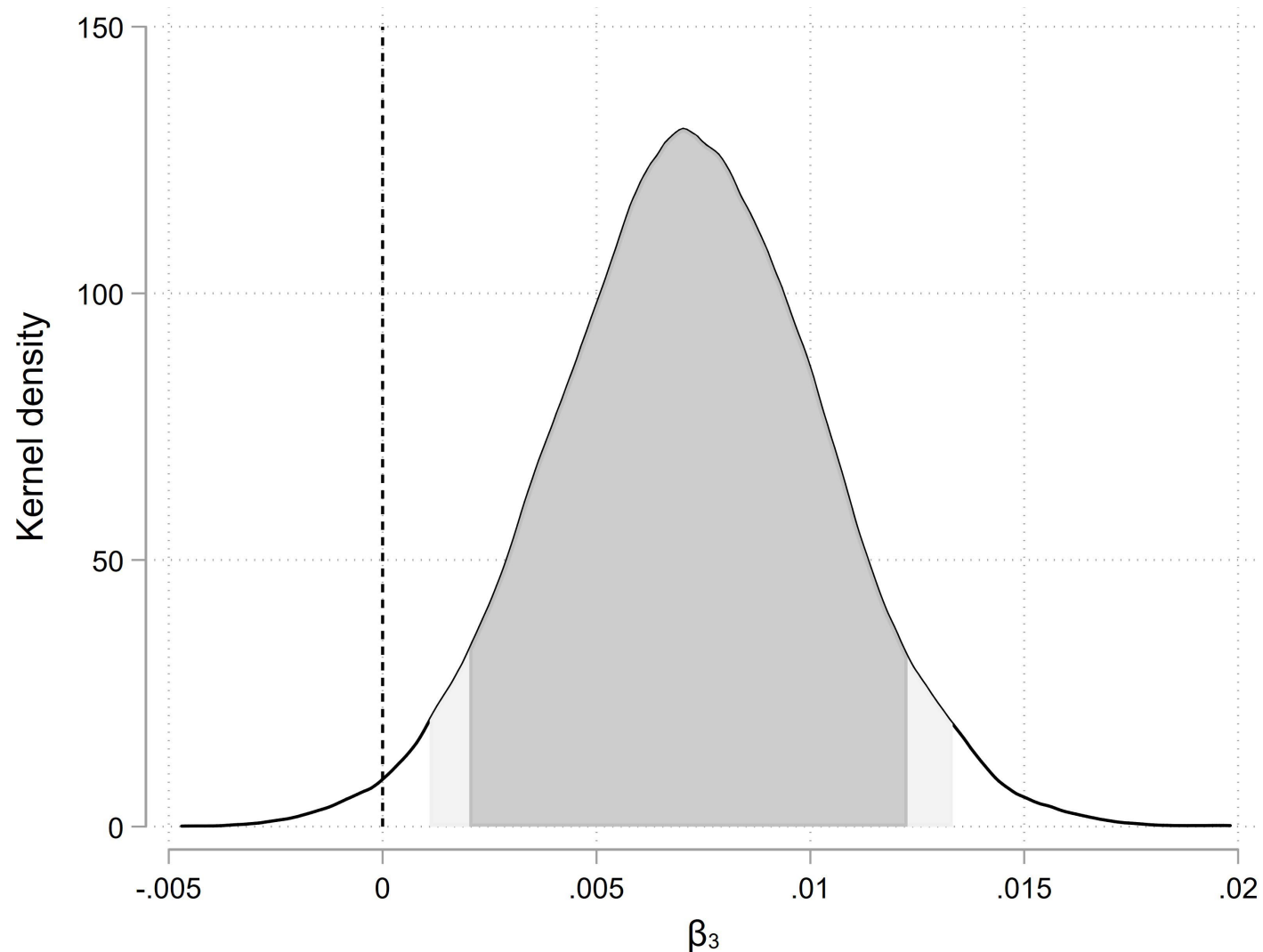
| | (1) | (2) | (3) |
|--|--------------------------------|-------------------|-------------------|
| | 1 (Purchased intervention ICS) | | |
| <i>TREATMENT_j</i> | 0.52*** (0.03) | 0.45*** (0.05) | 0.45*** (0.05) |
| <i>NGO_j</i> | | -0.03 (0.03) | -0.04 (0.03) |
| <i>TREATMENT_j × NGO_j</i> | | 0.14** (0.06) | 0.14** (0.06) |
| Control mean | 0 | 0 | 0 |
| District fixed-effects | Yes | Yes | Yes |
| Household-level controls | No | No | Yes |
| <i>N</i> | 943 | 943 | 943 |
| Adjusted <i>R</i> ² | 0.24 | 0.24 | 0.24 |

Standard errors clustered at hamlet level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.



Notes. This figure plots the share of households in NGO and non-NGO villages that purchased at least one intervention ICS in response to the ICS-promotion intervention as a percentage of all treated households in the respective stratum. Error bars represent 95 percent confidence intervals for the means.

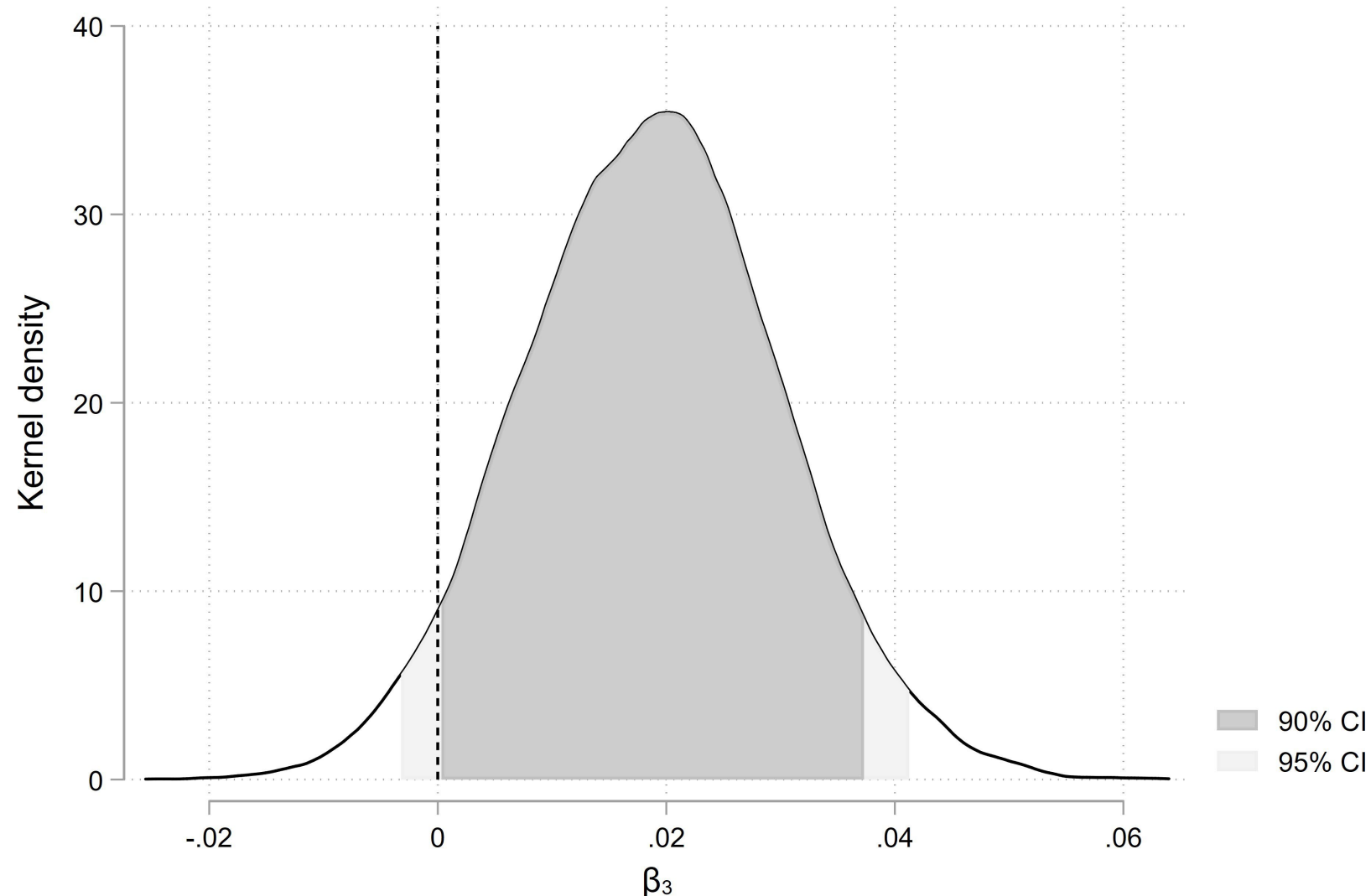
Robustness 1: Years of NGO activity



Every additional year of the NGO's presence in a village resulted in an increase in rates of ICS purchase by households by just under 1 percentage point.

Distribution of β_3 coefficient on the treatment-NGO interaction term from 10,000 bootstrap simulations

Robustness 2: number of NGO projects



Distribution of β_3 coefficient on the treatment-NGO interaction term from 10,000 bootstrap

Every additional project that the NGO leads presence in a village resulted in an increase in rates of ICS purchase by households by about 2 percentage points.

Difference-in-difference-in-differences specification

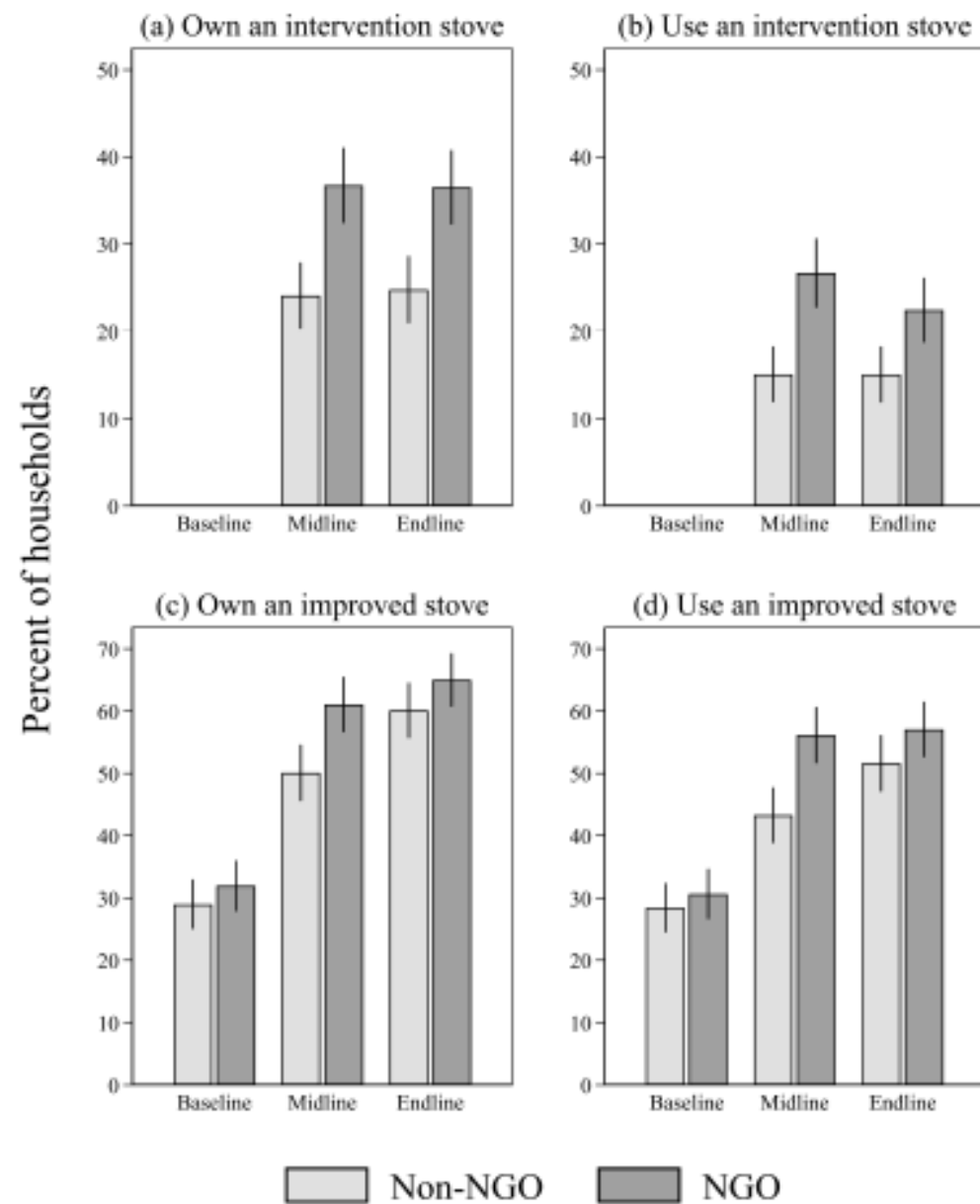
$$\begin{aligned} Y_{ijt} = & \beta_4 (POST_1) + \beta_5 (POST_2) \\ & + \beta_6 (TREATMENT_j \times POST_1) + \beta_7 (TREATMENT_j \times POST_2) \\ & + \beta_8 (NGO_j \times POST_1) + \beta_9 (NGO_j \times POST_2) \\ & + \beta_{10} (TREATMENT_j \times NGO_j \times POST_1) + \beta_{11} (TREATMENT_j \times NGO_j \times POST_2) \\ & + \gamma_i + \epsilon_{ijt} \end{aligned}$$

Identification would be threatened by NGO-stratum-specific shock that alters treated households' responsiveness to the intervention over time

- For example, **if** . . .
 - 1 Treated hamlets located closer to urban areas; **AND**
 - 2 NGO villages exhibit greater rural-to-urban migration; **AND**
 - 3 Intervention period spanned return of (cash-rich) urban migrants

| | (1) | (2) | (3) | (4) |
|--|---------------------------|--------------------|---------------------------|---------------------|
| | I (Owns intervention ICS) | | I (Uses intervention ICS) | |
| $POST_1$ | 0.012* (0.0064) | 0.014 (0.0091) | 0.0039 (0.0038) | 0.0068 (0.0066) |
| $POST_2$ | 0.039** (0.016) | 0.027* (0.016) | 0.027** (0.011) | 0.020* (0.011) |
| $TREATMENT_j \times POST_1$ | 0.41*** (0.030) | 0.33*** (0.047) | 0.29*** (0.026) | 0.21*** (0.034) |
| $TREATMENT_j \times POST_2$ | 0.39*** (0.034) | 0.34*** (0.053) | 0.23*** (0.027) | 0.20*** (0.042) |
| $NGO_j \times POST_1$ | | -0.0046 (0.013) | | -0.0068 (0.0066) |
| $NGO_j \times POST_2$ | | 0.027 (0.034) | | 0.016 (0.025) |
| $TREATMENT_j \times NGO_j \times POST_1$ | | 0.16*** (0.058) | | 0.16*** (0.048) |
| $TREATMENT_j \times NGO_j \times POST_2$ | | 0.098 (0.070) | | 0.061 (0.056) |
| Baseline non-NGO control mean | 0 | 0 | 0 | 0 |
| Household fixed-effects | Yes | Yes | Yes | Yes |
| N | 2,829 | 2,829 | 2,829 | 2,829 |
| Adjusted R^2 | 0.56 | 0.56 | 0.34 | 0.35 |

Standard errors clustered at hamlet level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.



Forest Bureaucrats:
Evidence from the Indian Forest Service

With Sanjana Kadyan

Motivation

Bureaucrats are central to state capacity and policy implementation in developing economies - yet have remained historically understudied.

- Growing literature on bureaucrat selection and incentives; much less on bureaucrat **assignment** (Finan, Olken and Pande 2017).
- Majority literature in public service delivery space, very little known about role of bureaucrats in managing and protecting the environment (Besley et al. 2022).

Forest Bureaucrats: Main Takeaways

- Does assigning a bureaucrat to work in their **home region** affect their **performance**?
- India's **Indian Forest Service (IFS)** — elite cadre of 2,000+ bureaucrats managing 70 mn hectares of forests (21% of national land).
- Novel dataset on IFS officer characteristics and career history linked to forest outcomes of administered districts, 2008–2020.
- Panel fixed effects; quasi-random variation in home state assignment generated by state allocation rule.
- Home bureaucrats associated with **lower forest cover**, concentrated in **below-median forest districts**; Scheduled Tribe home officers **show additional positive effects**.

Underlying ... Home Allocation and Bureaucrat Performance

Theoretical tension between delegation and control that public sector organizations try to balance.

Principal (**ministry**) delegates policy enforcement to an agent (**home bureaucrat**) with local private information and local social ties.

- + **Local information**: agent ^{65/18} uses local knowledge, social proximity of shared identity, culture, norms to produce better outcomes, intrinsically more motivated to serve communities.
- **Elite capture**: local ties make agent susceptible to capture by local elites, more opportunities for corruption, clientelism.

Net effect: **empirically open**

The Indian Forest Service

- Elite civil service of Government of India - cadre of 2000+ officers in 2025.
- Responsible for the management and protection of India's forests, wildlife and natural resources.
- Shares classic features of modern bureaucracies:
 - Meritocratic exam based selection, **rule-based allocation to states for lifetime**, seniority-based wages and promotion, limited exit and fixed retirement age.
- **Divisional Forest Officer/Deputy Conservator of Forests**: heads the forest division/district); key field officer for forest management, forest-law enforcement, and prevention and detection of forest and wildlife crime.
- Career: **ACF** of forest range (1–3 yrs) → **DFO** of forest division/district (4–13 yrs) → **CF** of forest circle (14–18 yrs) → senior positions at state/central/HQ positions.

Home State Allocation Mechanism

Within each **bracket (intake year \sum home state \sum caste)** (e.g. 2014 – Madhya Pradesh – SC):

1. Go through candidates in **exam rank order**
2. Match to insider (home state) vacancy in their caste category: **home = 1**
3. If no vacancy: attempt swap; if still none, convert to outsider vacancy: **home = 0**
4. Remaining outsider slots filled in rank order by officer's state preferences

Identification Implication

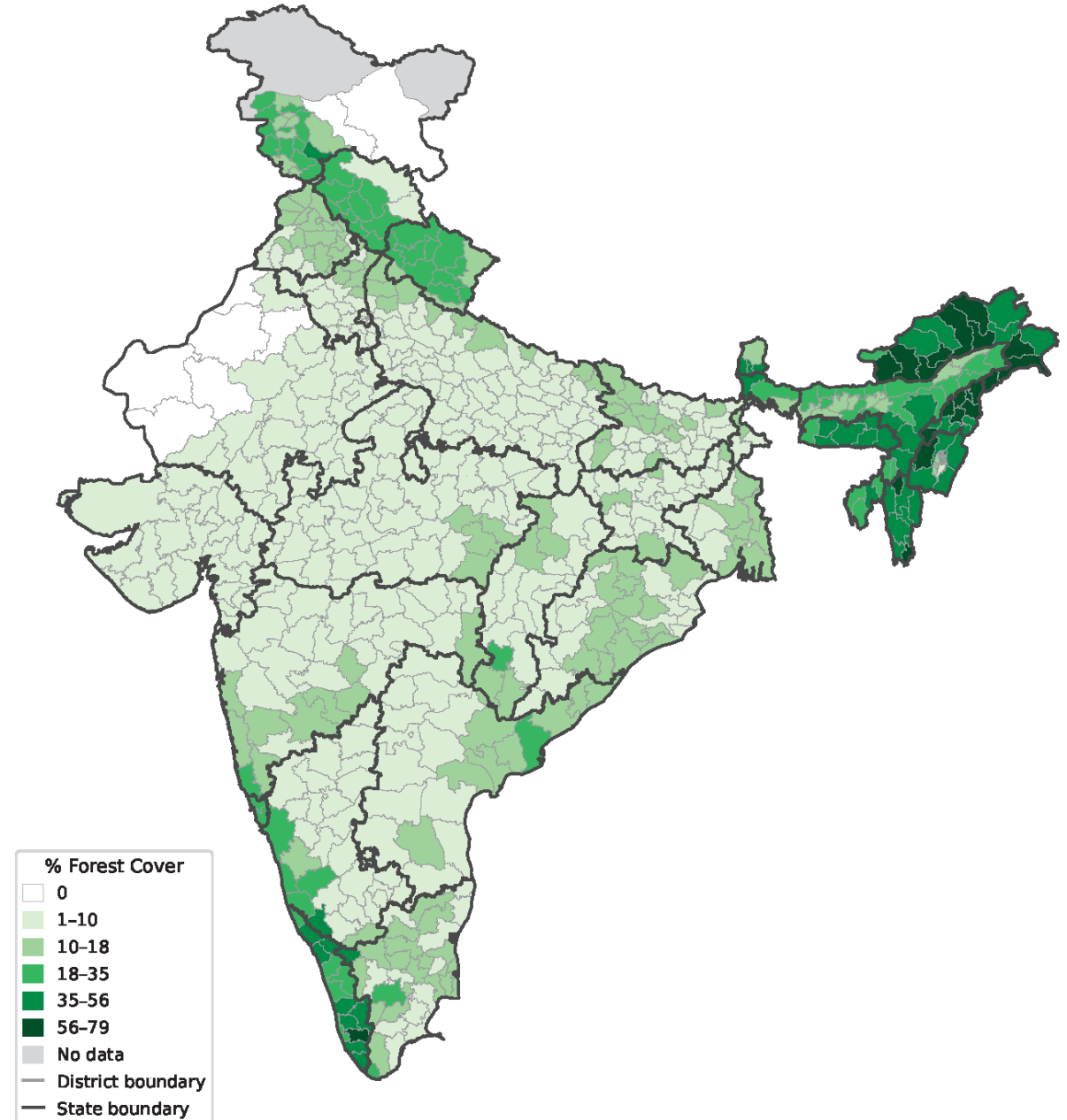
Home state allocation depends on (1) availability of vacancies in the bracket and (2) number of officers in the bracket — both orthogonal to officer characteristics.

Outcome: Forest Cover

District-Level Forest Cover, 2008
(MODIS VCF, 250 m pixels)

MODIS Vegetation Continuous Fields (VCF) (2001-2020):

- **District-level** annual tree cover in the form of percentage of each pixel under forest cover (250 m resolution).
- Sourced from SHRUG v2.1 database.
- VCF strength: able to measure both increases and decreases in forest cover, considered more useful in Indian context relative to Global Forest Change data.
- Baseline forest cover in 2008: contiguous areas of very dense forest are geographically concentrated, districts with 20–40% of their land covered by



Treatment: Novel IFoS officer-year panel dataset constructed

Administrative datasets:

- Annual MoEFCC Civil Lists (2008-2025)
 - Text-parsing techniques on semi-structured PDFs with inconsistent formats across years.
 - Construct **officer-year panel (2008-2025) of 3145 officers**: individual background, **home state**, exam rank, education, career history (payscale, designations (ACF, **DFO**, CF, CCF etc) and **postings**)
- Inter-se-seniority lists, State Forest Department records, and Executive Record Sheets to plug in missing officer values.

Socio-Economic Caste Census (SECC), 2011

- Estimate officer caste based on caste proportions for a given last name, home state, and year of birth in the caste census. Validate with official officer caste data available for some states.

Construct **final district-officer-year panel for 2008-2020** linking DFOs to forest cover of the districts that they administer. **Single DFO per district-year.**

Treatment (contd): Home “DFO”

$\text{home}_{dst} = 1$ if the Divisional Forest Officer (DFO) of district d in state s in year t is an **insider officer** - i.e., their **allocated IFoS state cadre $s = \text{state of domicile}$** .

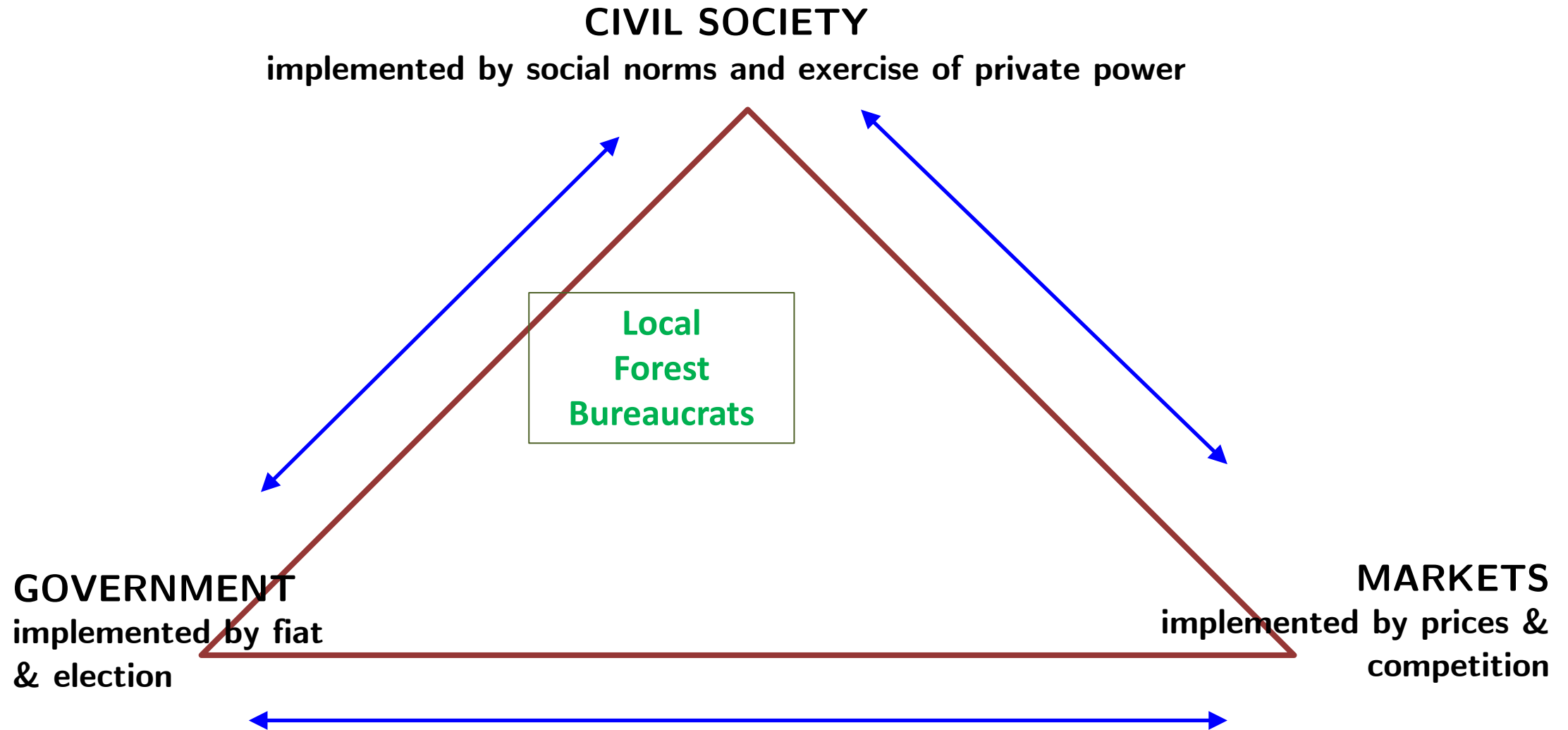
- Officers declare their home state at the time of applying for the UPSC exam- based on parental permanent address, as well as the state of birth and education.
- Strategic misreporting of home state unlikely (Xu et al. 2023)
- As per allocation rule, for every officer who is allocated to his/her home state cadre (“insider”), UPSC tries to allocate two officers whose home state cadre is different from the allocated state cadre (“outsider”) i.e., maintain a one-third share of home officers in any cohort.

Summary Statistics: District-Officer-Year Panel (2008-2020)

| | N | Mean | SD |
|----------------------------|------|--------|-------|
| <hr/> | | | |
| <i>Outcome</i> | | | |
| Average Forest Cover (%) | 1599 | 14.43 | 14.11 |
| <hr/> | | | |
| <i>DFO characteristics</i> | | | |
| Home | 1599 | 0.243 | 0.429 |
| Tenure | 1599 | 9.486 | 4.650 |
| Female | 1599 | 0.042 | 0.200 |
| Age at Entry | 1591 | 28.21 | 2.565 |
| Education | 1575 | 0.748 | 0.618 |
| SC | 1012 | 0.024 | 0.152 |
| ST | 1012 | 0.054 | 0.227 |
| Intake Year | 1599 | 2005.1 | 6.929 |
| Exam Rank | 921 | 20.66 | 18.63 |

Notes: Unit of observation is a district-year. **Home:** dummy equal to 1 if DFO allocated to home state cadre, 0 if allocated to non-home state cadre. **Tenure:** years of service completed at time of DFO posting. **Education:** Education level coded 0 = Bachelor's, 1 = Master's, 2 = PhD. **SC/ST:** scheduled caste/tribe dummy **Intake Year:** year of IFoS recruitment **Exam Rank:** all-India rank in UPSC IFoS examination.

Synergy Simplex: Applied to Forest Bureaucrats



Bureaucrat as the Treatment, (Caste as Moderator)

CHAPTER

9

Causal inference in environmental conservation:
The role of institutions*

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CHAPTER 9 Institutions in causal inference

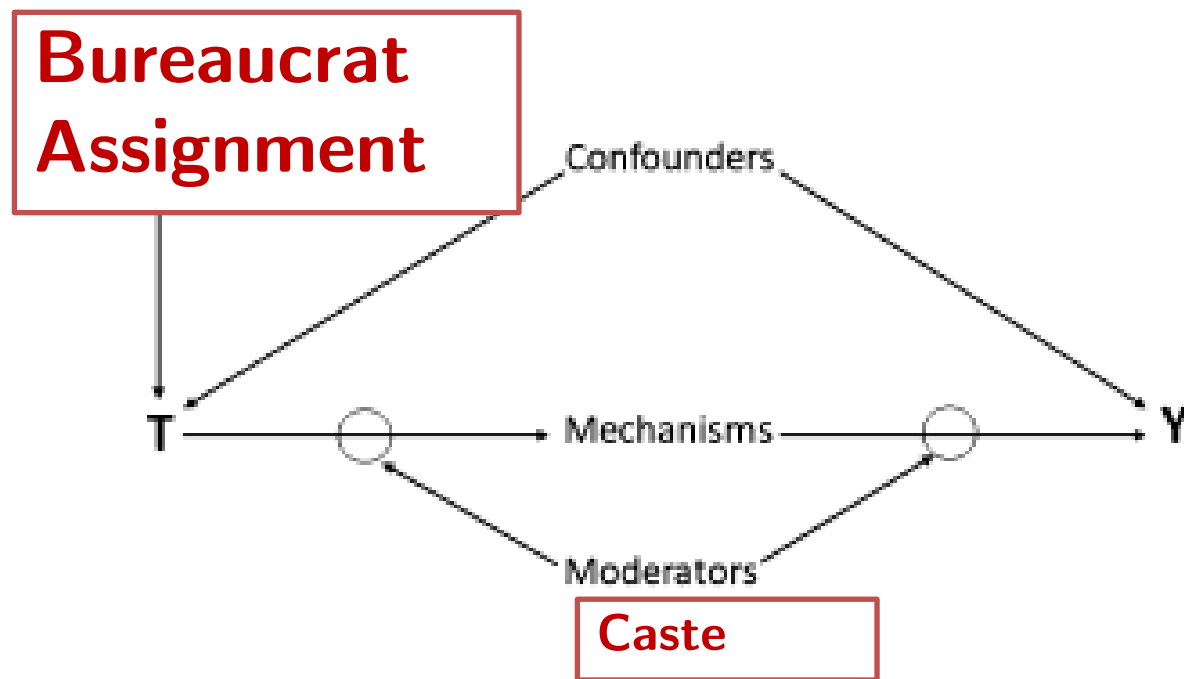


FIGURE 1

Diagram of a generic causal model of the effects of treatments **T** on outcomes **Y**.

Empirics: panel fixed effects

$$Y_{dst} = \beta \mathbf{Home}_{dst} + \delta' W_{dst} + \alpha_d + \theta_t + \varepsilon_{dst}$$

- Y_{dst} : $\ln(\text{Forest Cover Pixels} + 1)$ in district d , state s , year t
- $Home_{dst}$: dummy equal to 1 if DFO allocated to home state cadre, 0 if allocated to non-home state cadre. $\ln(\text{Forest Cover Pixels} + 1)$ in district d , state s , year t
- α_d : district FE, θ_t : year FE
- W_{dst} : gender, age at entry, education, caste (SC/ST), exam rank
- SEs clustered at district level

Preliminary results: Log forest cover (outcome)

| | (1) | (2) | (3) | (4) | (5) |
|----------------|-------------------|----------------------|---------------------|-------------------|-------------------|
| Home DFO | -0.022 (0.025) | -0.127*** (0.048) | -0.039** (0.018) | -0.054 (0.045) | -0.035 (0.076) |
| District FE | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | No | No | Yes |
| State×Year FE | No | No | Yes | Yes | No |
| Controls | No | Yes | No | Yes | Yes |
| Intake Year FE | No | No | No | No | Yes |
| Bracket FE | No | No | No | No | Yes |
| <i>N</i> | 1,519 | 530 | 1,454 | 430 | 523 |

- Across all fixed effects specifications, home DFO is associated with **lower** forest cover.
- $\beta = -0.127^{***}$: home-allocated DFOs associated with **12.7 p.p lower** forest cover than non-home DFOs within district, conditional on officer characteristics.

Preliminary results II: outcome heterogeneity

| | (1) Base | (2) Caste | (3) \leq Med. Forest | (4) $>$ Med. Forest |
|------------------|----------------------|----------------------|---------------------------|------------------------|
| Home DFO | -0.127*** (0.048) | -0.142*** (0.050) | -0.250*** (0.077) | -0.110 (0.112) |
| Home \times SC | | +0.109 (0.105) | | |
| Home \times ST | | +0.400*** (0.093) | | |
| District FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes | Yes |
| <i>N</i> | 530 | 530 | 112 | 127 |

76/
18

- Net home effect for officers belonging to Scheduled Tribes positive (+0.258) — local knowledge effect dominates.
- Negative home effect concentrated in below median forest cover districts.

Through the looking glass:
Muddling through NIE, NPE, NPM, mPE

With Sanjana Kadyan

Classics: Institutions (North)

- Institutions are “rules of the game”: create order, reduce uncertainty in exchange, determine production and transaction costs
- Institutions define an economy’s incentive structure at a point in time, and their evolution shapes the economy’s long-run path of economic/political change.
- Institutions evolve incrementally, as by-products of goals, beliefs and choices of individuals, subject to resistance by organized interests favoring status quo.
- Path dependence: initial set up costs, learning effects, and adaptive expectations.

Classics: Economic Governance (Dixit)

- Processes that support economic transactions by enforcing contracts, protecting property rights, and organizing of collective action for provision of physical (hard) and organizational (soft) infrastructure.
- Can be both *rule-based* (formal state institutions, law) and *relation-based* (informal social networks, norms), both forms co-exist.
- Relation-based institutions better for smaller groups, problems in transition to rule-based institutions as economies grow beyond size limit of social networks.

Classics: New Institutional Economy (Williamson, Menard)

- Focus on contracts (not choice) and the resulting transaction costs ...
- Salient contracts are necessarily complex and unavoidably incomplete (bounded rationality) and fraught with hazard (opportunism).
Governance is the means to craft order.
- Economic organization must focus on efficient adaptation (to changes in circumstances of time and place). **Emphasis on ex post contract adjustment relative to ex ante incentive alignment.**
- Align transactions which differ in their attributes with governance structures (markets, hierarchies, hybrids, public bureaus), which differ in their strengths and weakness to economize on transaction costs.
- **Explanations in the social sciences should be organized around (partial) mechanisms rather than (general) theories (Elster, 1994)**

Classics X: Social Dilemmas (Ostrom)

- 'Tragedy' of commons (social dilemma) is not inevitable; instead, humans are capable of profound complex cooperation
- By relying on reciprocity, reputation, trust – none of which is given but engineered - (a) clear communication, (b) repeated interaction allowing evolution of monitoring and sanctioning
- Complexity does not mean chaos. **Polycentric nested systems can outperform centralized monoliths by adapting faster, reducing costs of monitoring, and leveraging deep local knowledge**

Classics: New Political Economy (Besley & Ghatak)

- **Formal contracts are quite limited in public service delivery**
- Representation (conflict of interest between different groups of citizens), Accountability (conflict of interest between the citizens and the government i.e., the principal-agent problem)
- Problems of political accountability rest on incentives (unobserved action) and selection (unobserved type), critical role of information.
- Designing public service delivery: organizations driven by “mission” (bureaucracies and NGOs), mission motivates agents, competition enables matching of organizations to agents and economizing on financial incentives.
- **Decentralized delivery most relevant when heterogeneity in legitimate missions, unmonitored effort key to production, and consumers are well informed.**

'Classic' (Pritchett-Woolcock)



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Solutions When *the* Solution is the Problem: Arraying the Disarray in Development

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Summary. — An analytic framework for tracing three waves of efforts to provide key public services in developing countries is provided. Persistent (though not universal) failure has been the product of (a) the imperatives of large bureaucracies to discount decisions that are *inherently* both discretionary and transaction-intensive (and thus less able to be codified and controlled), and (b) good and bad reasons for believing that, because modern bureaucracies underpin rich country prosperity *now*, simply adopting their institutional form elsewhere is the surest way of facilitating development. Contemporary debates regarding the merits of incorporating more “participatory” approaches into public service delivery are best understood in this context.
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Key words — service delivery, public sector reform, participation

| | | |
|---------------------------|------------------|-------------------|
| | Discretionary | Non-Discretionary |
| Transaction intensive | PRACTICES | PROGRAMS |
| Non-transaction intensive | POLICIES | PROCEDURES |

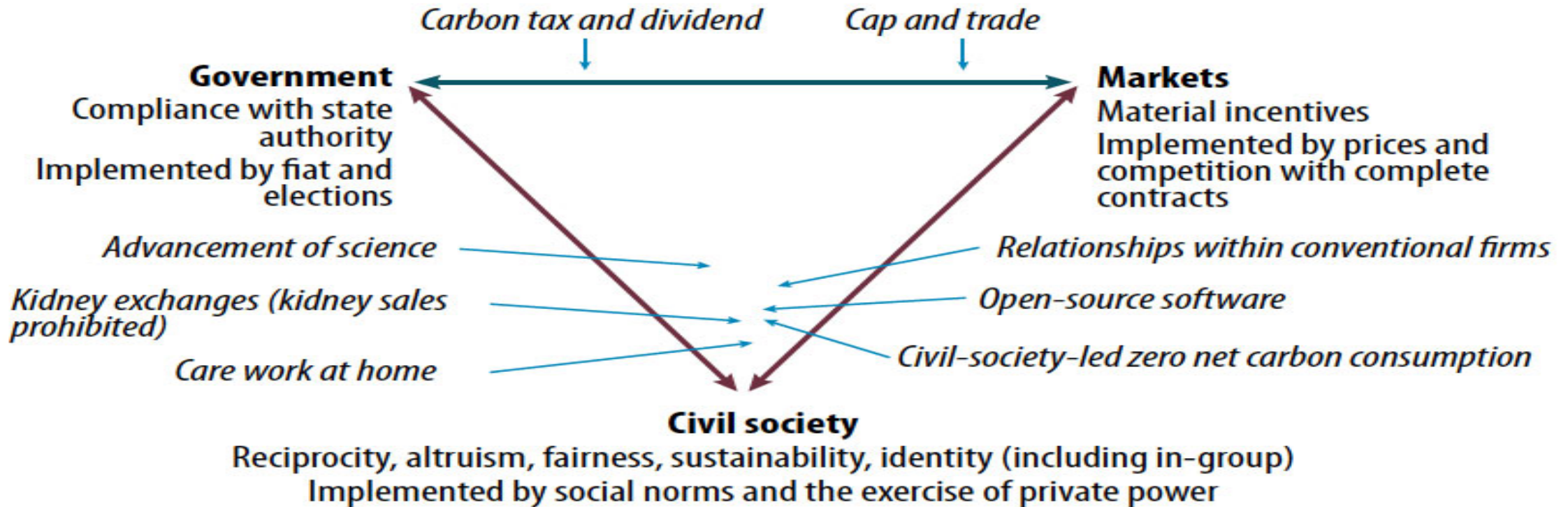
Classics redux, under-emphasized (or missed) in discussions

- Dixit – Economic Governance
 - scale vs. set up costs of relationship-based vs. rules-based
- North - Institutions
 - path dependency and the institutional matrix
- Ostrom – Collective Action
 - virtuous cycle of reciprocity-reputation-trust
- Williamson – Transaction Costs (MicroAnalytics)
 - (Elster) partial mechanisms rather than grand theories, especially because of ex-post adaptation to contract implementation
- Besley & Ghatak (& Persson) – Public Management
 - social accountability: competition harnessed to match “motivated” agents with principals with “mission”
 - decentralized delivery most relevant when heterogeneity in legitimate missions

Synergy Simplex: Bowles & Carlin

A new space for policymaking

Extending the state power vs. markets debate to recognize the role of social norms creates new opportunities to address problems from pollution to pandemics.



Bowles-Carlin redux (heavy debt to Levi & Ugolnik)

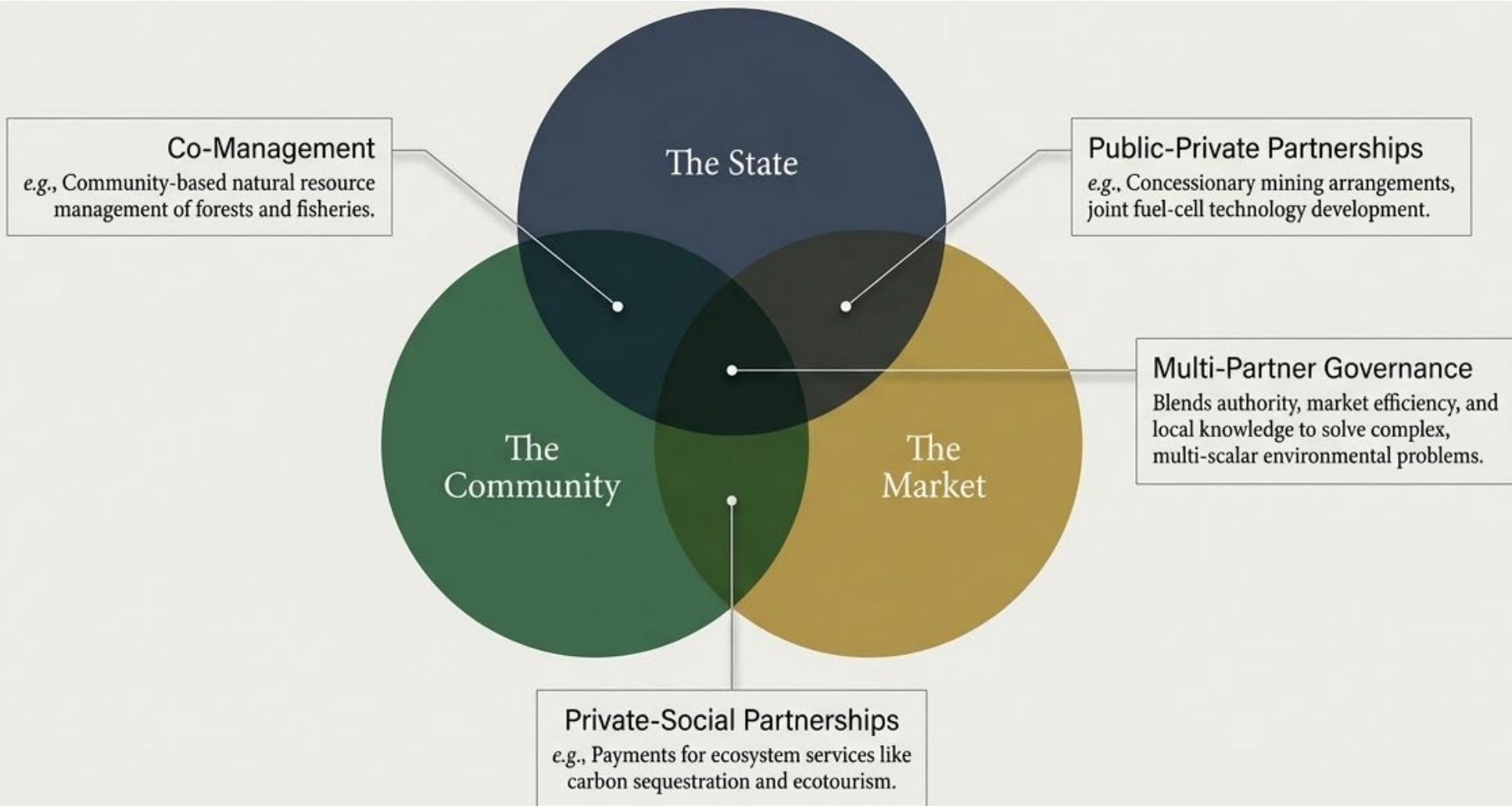
- Good governance needs social interactions that rests on a culture of democracy, egalitarianism, solidarity
- Rejection of (a) fixed & exogenous preferences and (b) the sufficiency of mechanism design
- Centrality of social character and intrinsic motivations
- Government Vs. Market mindset ignores insights and advances in information revolution and social psychology
- the SYNERGY SIMPLEX ...
 - Civil Society: social norms, intrinsic motivations, civic virtue
 - Language & Roadmap: complementarity of state, markets, & civil society ...

Final Words

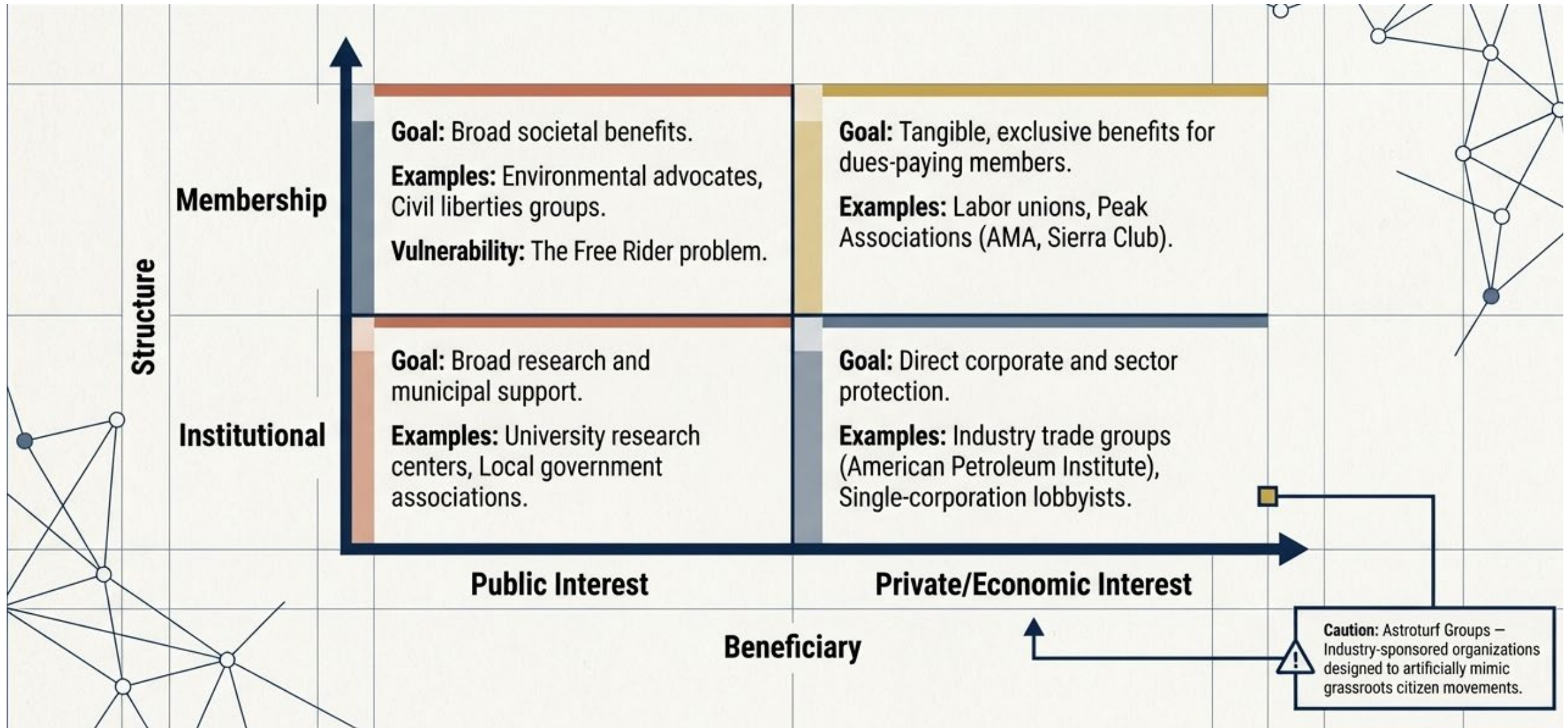
- Institutions (governance, rules of the game, transaction) are vital ... formal contracts quite limited
- Perhaps more true for implementation ('post-contract' adjustments) of climate, environmental, energy policies, programs, projects
- Two case studies show not just the quantity, but the micro-institutional type and nature matter
- Greater attention to civil society (social norms, intrinsic motivations, civic virtue) as a complement to state & markets

Examples of Synergies ...

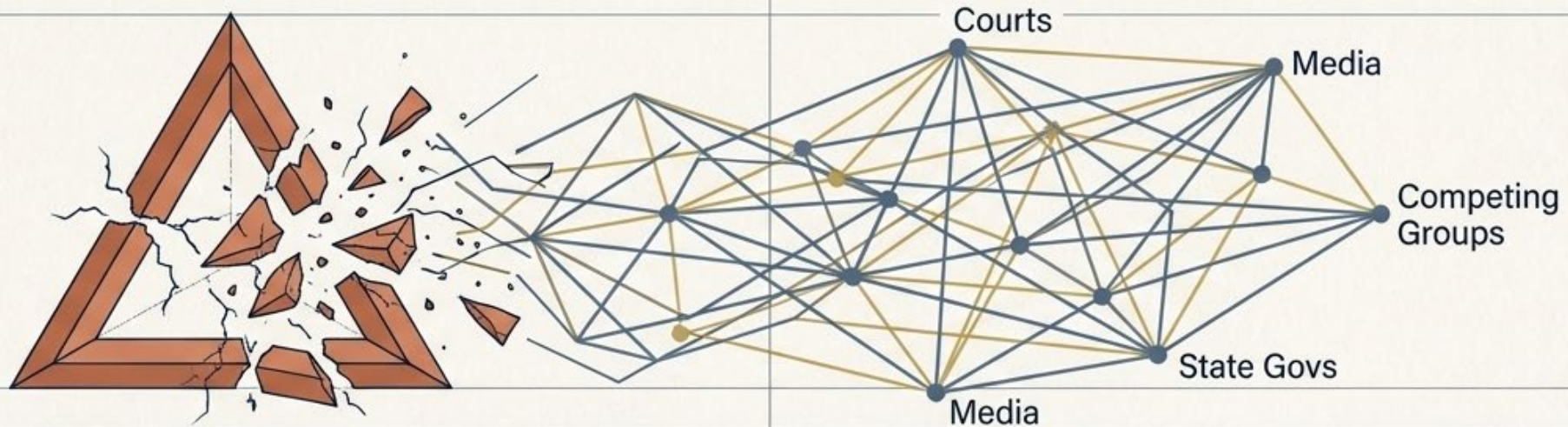
| Synergy Type | Actors Involved | Examples |
|------------------------------------|----------------------------|--|
| Co-management | State & Community | Community-based natural resource management (CBNRM) in forests, fisheries, and water. |
| Public-Private Partnerships | State & Market | Concessionary arrangements for mining; joint development of fuel-efficient technology. |
| Private-Social Partnerships | Market & Community | Payments for ecosystem services (e.g., carbon sequestration, ecotourism). |
| Multi-partner Governance | State, Market, & Community | Complex governance networks involving all three types of actors. |



Policy Network Blueprint: Interest Group Landscape



Policy Network Landscape: the Issue Network



Why it broke: Decentralization, sunshine laws, and highly complex, overlapping issues.

The Sub-Government Shift

| Dimension | Iron Triangle | Direction | Issue Network |
|--------------|-----------------------|-----------|------------------------------|
| Structure | Closed & Rigid | ➔ | Open & Dynamic |
| Participants | Few (Insiders only) | ➔ | Many (Groups, Media, Courts) |
| Environment | Stable & Cooperative | ➔ | Contentious & Overlapping |
| Policy Focus | Distributive Benefits | ➔ | Broad Regulatory/Social |

Synergy Simplex: Bowles & Carlin

