

INCENTIVIZING VILLAGES TO REDUCE FIRE

LESSONS FROM AN RCT EXPERIMENT IN WEST KALIMANTAN

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FOREST FIRES IN INDONESIA

- Forest fires are a major cause of greenhouse gas emissions, deforestation, habitat destruction, worsened human health, and strained international relations in Indonesia.
- Most fires are deliberately set, often (but not always) by smallholders as they seek to expand farm size.
- The Government of Indonesia has enforced laws to stop fires **by imposing bans and making them illegal**, with little success.

➤ **What about financial incentives?**

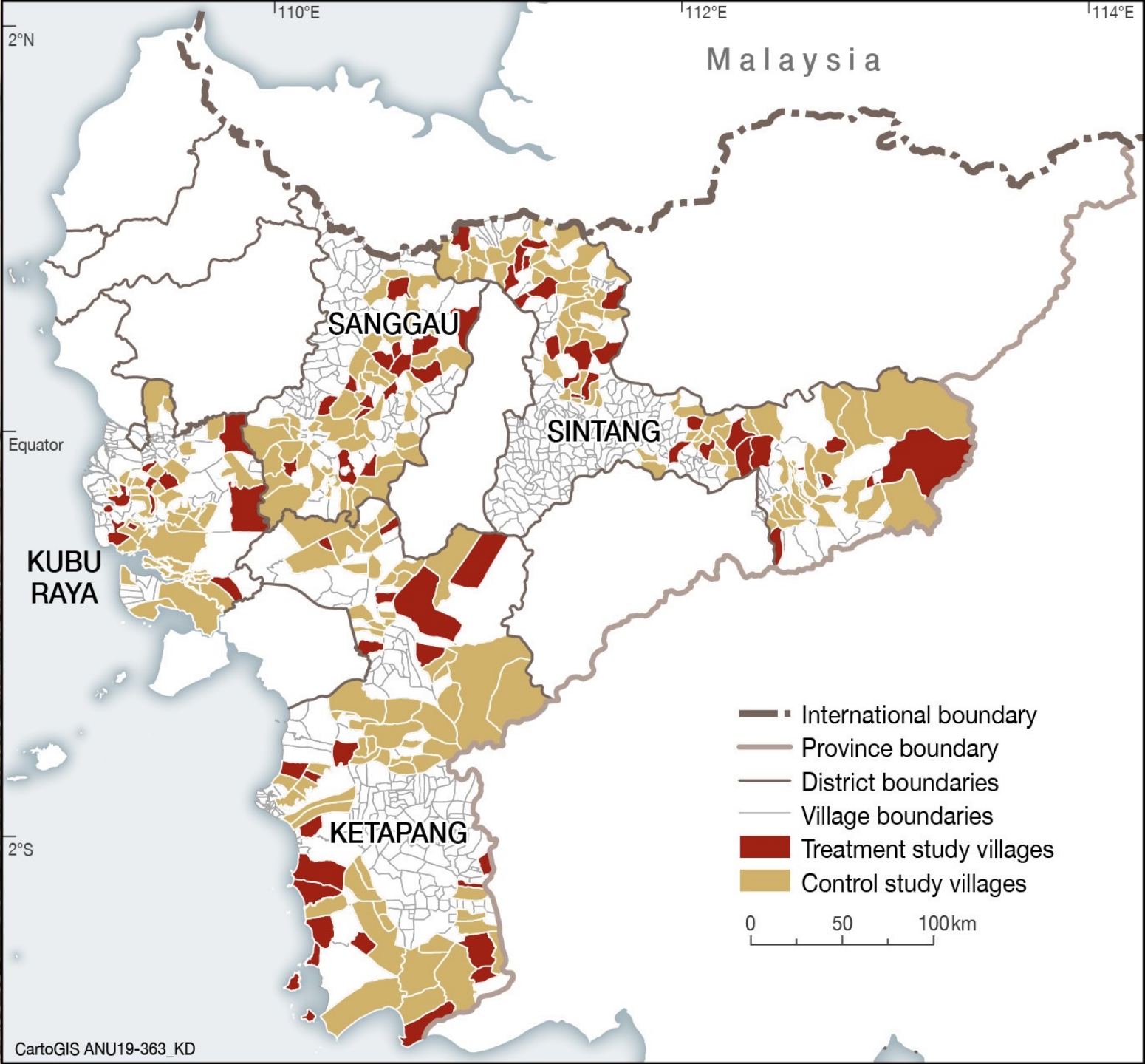


EVALUATING THE EFFECTIVENESS OF PES IN REDUCING FIRE

- Between Jan-Dec 2018, we did a vast policy experiment using an RCT to look at the impacts of financial incentives in reducing fires.
- This study involves 275-villages from 4 fire-prone districts in West Kalimantan. Districts were purposively selected based on their history of fire, forest margins and peat land, and recent growth in oil palm smallholders.

Villages in the **treatment group (75)** were eligible to receive IDR 150 million (~USD 10,800) upon the success of preventing fires for a year:

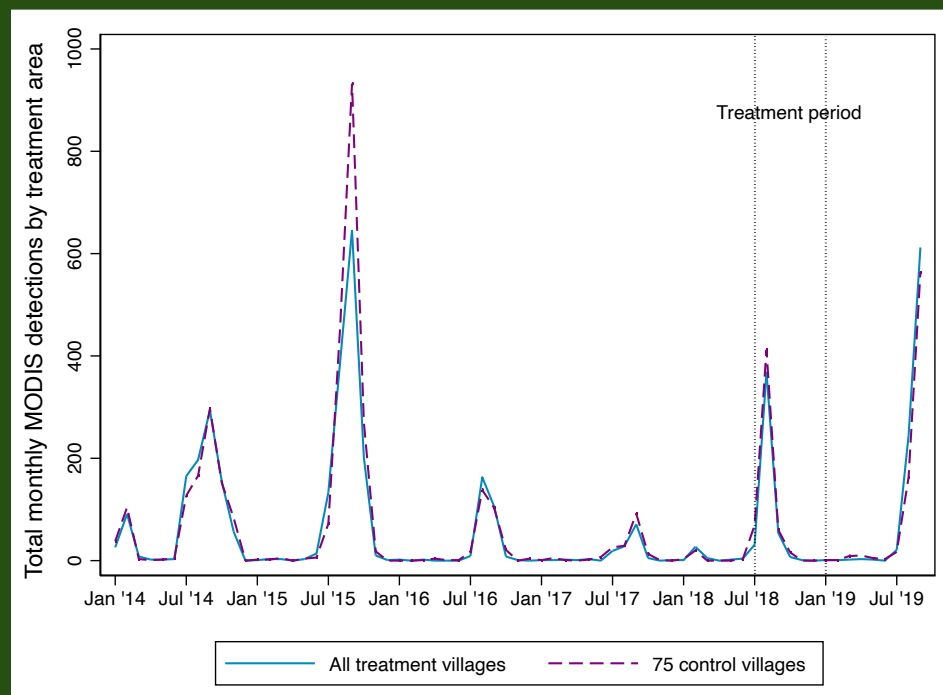
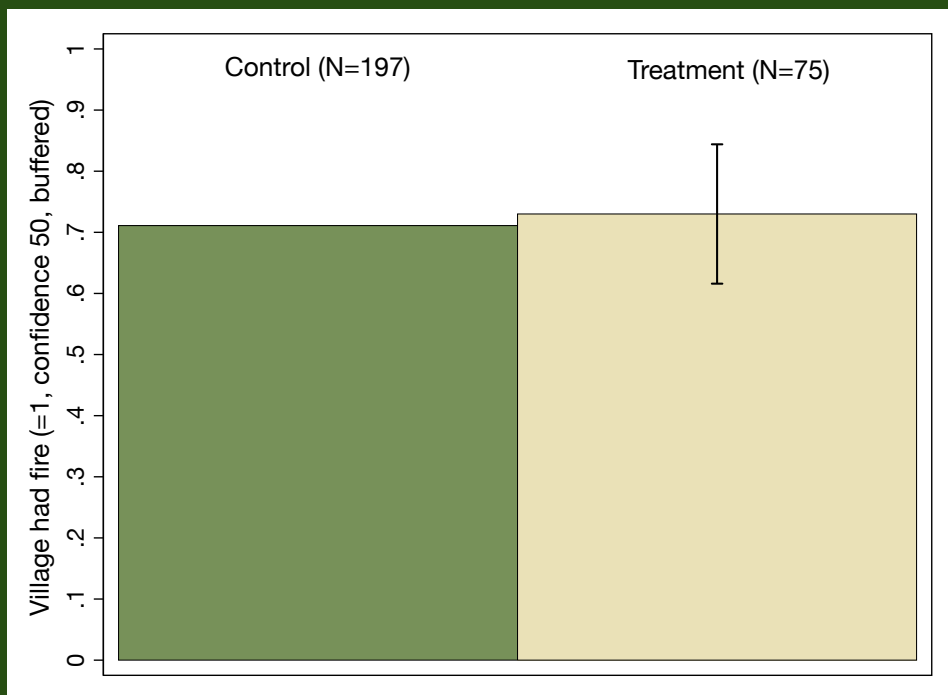
1. Depending on village size, we aim to at least match 10–20% of the village's annual budget. All eligible villages enrolled, covering around 30,000 households.
2. MoUs were signed with districts, with multiple socialization to sub-district and village officials as well as individual villagers.
3. Training, up-front money, and WhatsApp lines were provided to equip villages with knowledge on fire prevention and necessary supports (i.e., a bundled program).
4. Villages were given the freedom to decide collectively within their community on how to spend the cash prize.
5. Villages were not penalized for traditional fire for subsistence farming.



RESULTS

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There was, however, some evidence of behavioural shifts

Self-reported creation of village fire brigades, more people involved, and more patrols, in program villages,

Adoption of practices was insufficient to deliver fire free outcomes

So was explicitly paying for them

Ex-post disbursement saved 8,100m IDR and there is no evidence the 3,150m paid reduced fire more than if we made no payments at all



RESULTS

REAL-WORLD CHALLENGES, OR “CONFOUNDERS”

- 1. 2018 was an exceptionally dry year.** Had our experiment taken place instead in 2016 for example, half as many hot spots would have likely occurred. This may have made both natural and man-made fires more difficult to manage.
- 2. Ambiguities on the ground about authorities to issue forest concessions and enforce fire related laws.** Villages are less willing to take matters to their own hands and consider preventing and extinguishing fires as “someone else’s” task.
- 3. Village size impacts cohesiveness and flow of information about the incentives.** Non-fire villages are on average only 1/3 as large, in terms of population, as villages with fires.



WHY A COLLECTIVE INCENTIVE?

First RCT evaluation of a **collective or community-level incentive** for PES payment-by-results because:

- **Smallholder level intervention not feasible:** plot level monitoring incredibly data-demanding, and too costly (30,000 households in treatment villages, more untreated)
- **Land use flux:** active conversion and land use change mean these areas are not static. Villages are.
- **Low regulation setting:** limited property rights, and weak enforcement make a bottom-up collective action approach attractive. Village decentralization setting established.
- **Some earlier village-led programs were promising:** community driven development (PNPM), Village Law 2014
- Opportunity to **operational external climate finance** through existing fiscal architecture (i.e., science of scaling)



WHY DID INCENTIVIZING VILLAGES **NOT HELP?**

A similar scheme worked in Uganda, why not in Indonesia? What can be learned?

The study in Uganda offered incentives for privately owned land, with clear property rights, instead of village land and a **different institutional setting**

People had **little control of the fires** once it happened, fires **started for different reasons**, and **zero fire is hard** (contract too aggressive). Need for a different incentive structure?

The benefit stream from land conversion **may not align well** with a one-season payment, a collective payment, or (few) individuals' incentive (NPV higher)

Collective action is difficult.
Break into smaller problems.

Fires are part natural and wild.
Tiered rewards, and use reductions instead of going fire-free.

Social learning takes time.
Consider targeting or top-down.

TWO OTHER GENERAL LESSONS

1. The value of satellite (i.e., remote-sensing) data for environmental and climate policy evaluation

- **Low cost:** allowed us to mobilize fast, cover more area, and even know where to target through historical patterns
- **High quality:** focus on real outcomes, e.g., no social desirability bias prevalent in survey and other measures

2. The value of evaluating big ideas, early, as pilots, to highlight any issues, and find better options:

- Basic **cost effectiveness** (additionality here) may rule out certain interventions or suggest others (e.g., top-down, address drivers)
- Collective action is incredibly hard, so may be better to instead **focus on identifying and working with key individuals** (e.g., fire-setters, enforcers, local leaders responding to existing rules)
- **Locus of control is key** in environmental policy (see, e.g., Australia and California) focus on what can be controlled by policy here



CONCLUSIONS

- Community-level fiscal incentives do not appear to be a promising way to combat forest fires.
- Context is important in designing any interventions. Here, variation in challenges (access to machinery, landscape), village characteristics (size), and actual sources of fire (accidents, external fires) complicate fire prevention efforts.
- Incentivizing communities, while costs and responsibilities to prevent fires and benefits from using fall into individuals, can be a mismatch (e.g., we estimate that less than 1 percent of households set fire—a minority we don't actually observe).



THANK YOU