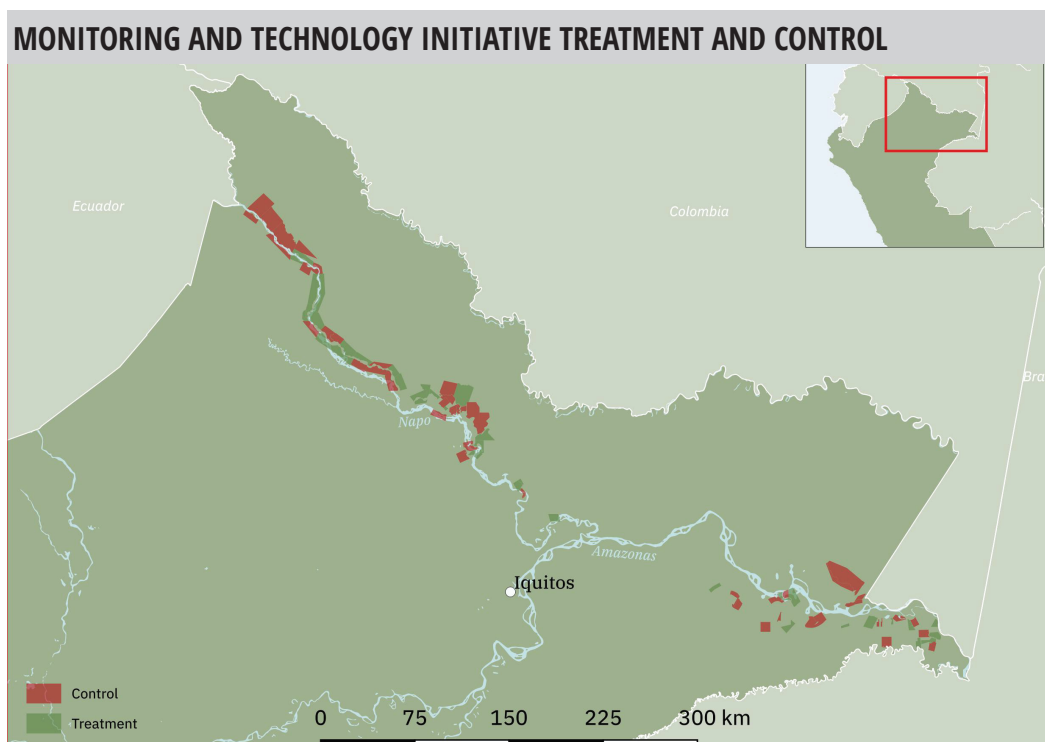# Rainforest Foundation US

Study evaluates the impact of indigenous community tropical forest monitoring with technology and resource governance in the Amazon

This unprecedented study builds on a growing body of research on the relationship between territorial rights of indigenous communities and deforestation prevention. Notably, this is the first randomized controlled trial (RCT) on community forest monitoring and governance in indigenous communities. The monitoring program was assigned to indigenous communities in the Loreto Province of Peru between early 2018 and May 2019. To permit measurement of the impact of the program, researchers collected original survey data, conducted qualitative interviews, and analyzed satellite imagery among 36 treatment and 40 control communities. The researchers measured community participation in forest monitoring, deforestation rates, community governance, and citizen perceptions of resource management. Preliminary results of the impact evaluation associated with this program will be shared on September 24, 2019.

The implementation of the project was led by the Rainforest Foundation US (RFUS), The Indigenous Organization of the Eastern Peruvian Amazon (ORPIO-AIDESEP), and the World Resources Institute (WRI). The technology used by implementing communities, ranging from the border with Ecuador to the border with Colombia used Near Real Time (NRT) satellite deforestation data incorporated into smartphone geotagging applications and drones to collect data over the study period. The data was then collectively analyzed by the community and stored in the first-ever indigenous run data hub, the Center for Information and Territorial Planning (CIPTO-ORPIO). Implementation and measurement will continue for at least one more year.

MONITORING AND TECHNOLOGY INITIATIVE TREATMENT AND CONTROL

Ecuador

Colombia

Brazil

Napo

Amazonas

Iquitos

Control
Treatment

0   75   150   225   300 km

Background:

RFUS has been investing directly in indigenous communities that are deeply motivated to conserve their ancestral lands with the tools, training, and resources necessary to protect their rainforests for 30 years. The RFUS theory of change is based on the fundamental logic—supported by evidence—that the most effective way to conserve the rainforest is to empower the indigenous people who have done so for millennia, which explains how 35 percent of intact forest landscapes are managed by indigenous people. In 2015, RFUS and WRI started deploying new technologies, such as Near Real Time deforestation alerts, smartphone apps, and drones, into the hands of indigenous communities with tropical forest territories. Within two years of implementation, RFUS measured dramatic drops in deforestation rates in several communities. This led RFUS to reach out to Columbia University and ORPIO to carry out this pioneering study.

The Challenge:

Despite widespread recognition of the importance of forest to solve the climate crisis, humid tropical primary forest loss has spiked since the signing of the New York Declaration on Forests in 2014. The world is losing nearly 4.3 million hectares per year, which accounts for 4.7 million gigatons of carbon dioxide emissions--equal to that of the entire European Union. Meanwhile, private and public entities invest billions of dollars annually in tropical forest conservation, yet only one percent of this funding is directed for indigenous causes. Even so, there is often scant evidence that these funds are making an impact on the ground.
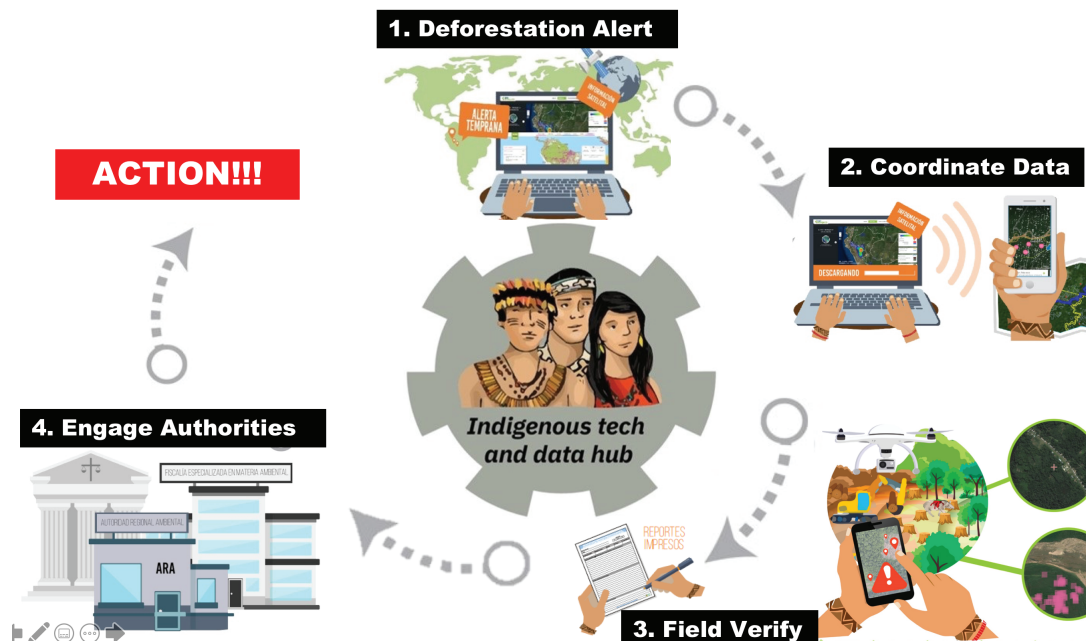

Here is how the system works:

1) Indigenous communities with collective land rights and a desire to protect their forests elect three to five community forest technology monitors
2) Satellite deforestation alerts taken from the University of Maryland Global Land Use and Discovery (GLAD) system are analyzed and shared with indigenous communities every two weeks, incorporated into smart phone applications such as Global Forest Watcher and Locus Pro
3) Community monitors patrol their territory for deforestation and illegality, verifying the alerts with their smartphone applications which geotag photos and reports
4) The information is presented to the assembly, the highest authority in an indigenous community, who judge whether the deforestation is authorized, unauthorized but can be dealt with internally, or carried out by an illegal actor
5) Action is taken. The reports are either delivered to enforcement authorities for follow up or dealt with through internal governance mechanisms.

Potential Policy and Climate Change Implications:

In Peru and elsewhere, very few resources are dedicated to front-line, on-the ground actions such as community forest monitoring and local law enforcement, even though these actors are the principal agents in mitigating deforestation and addressing increasing illegality. Indigenous communities with titles face mounting threats and need long-term support to defend their forests. Just as analysis linking territorial rights to forest protection has driven investment in land titling, the results of this research could have the following policy and investment implications.

1) Drive investment in community-based forest management in indigenous communities by proving that it is one of the most efficient and cost-effective ways of mitigating deforestation, given that at least 480 million hectares of rainforest are managed by government-recognized indigenous territories in low/middle income countries

2) Leverage more support for local law enforcement officials, who are the key long term local actors in implementing forest policy in collaboration with communities, by providing data on the impacts of local law enforcement on territorial rights and deforestation

3) Build the capacity of local indigenous organizations to manage data, link with local and national authorities, and be recognized as key active partners in confronting deforestation on a local and regional level, and incorporated into decision-making and implementation of NDC-related activities

4) As regional indigenous organizations and communities master data collection for GLAD alerts, adapt the knowledge and data infrastructure to measure carbon capture and be incorporated programs that require precise data collection

5) Provide media results from on-the-ground actions in the Amazon that heighten the visibility and profile of indigenous leaders confronting threats to their forests and proactively addressing them.
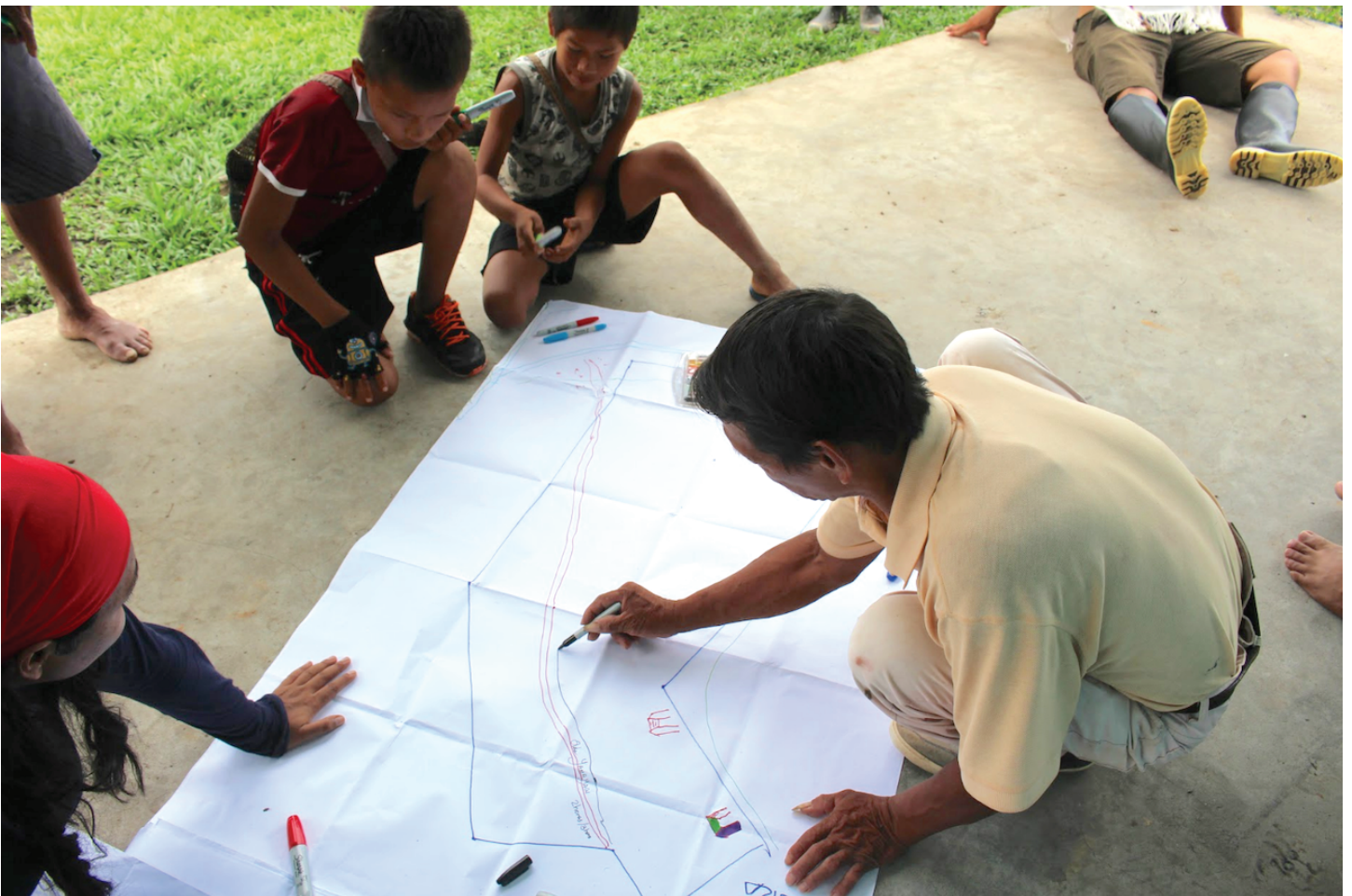
Preliminary Results:

The data collected yield three preliminary findings. First, treatment communities participated in monitoring at high rates. In these communities, monitors submitted 8006 reports between the initiation of the program in early 2018 and May 2019, averaging 222 reports of monitoring activities per community. Monitors in 83% (30/36) treatment communities submitted at least one report per monitor per month -- most communities far exceeded this threshold. Further, if anything, monitoring activities intensified over the course of the intervention. These observations are graphed in Figure 1. In a citizen survey fielded in April-May 2019, within treatment communities, 90% of citizens could identify at least one community monitor. Finally, anecdotally, there exists substantial demand for this monitoring program among untreated (control or non-experimental) communities in the Napo and Amazon river basins.

Figure 1.
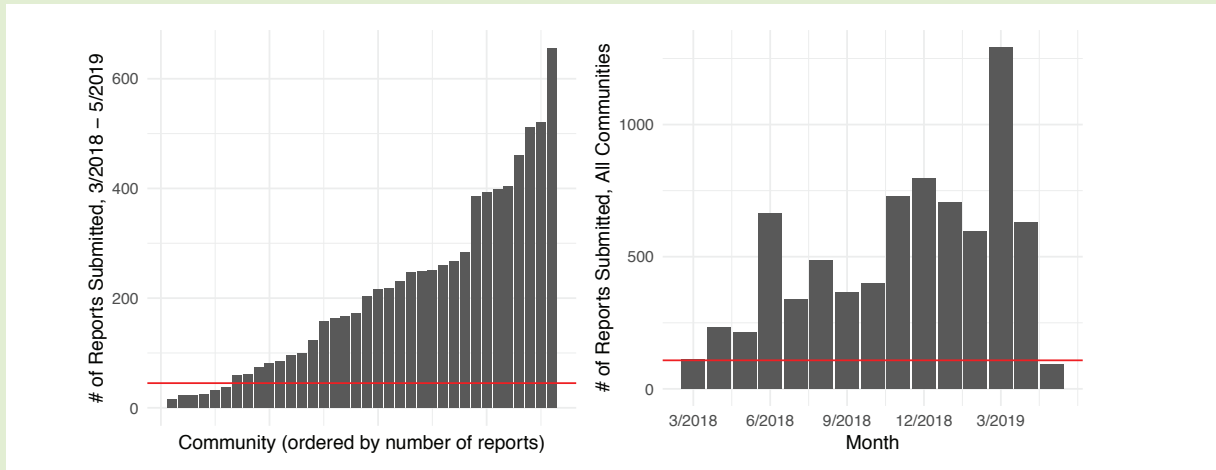
Second, survey evidence indicates that relative to control communities, the imposition of monitoring in treatment communities shifts citizens' views of resource governance. Monitors appear to be viewed as an institution tasked with resource governance. Figure 2 shows that assignment of the monitoring intervention (i) significantly reduces the proportion of citizens that report that they do not know who manages forest resources (p < 0.02) and (ii) creates a new community-sanctioned authority ("monitor") to whom citizens attribute responsibility for forest management (p < 0.001). In turn, citizens report significantly higher levels of satisfaction with the status of forests (p < 0.09) and forest governance (p < 0.07). We observe few changes in citizens' assessments of the salience or causes of deforestation. However, this may occur because of high baseline levels of deforestation salience in control communities.

Figure 2.
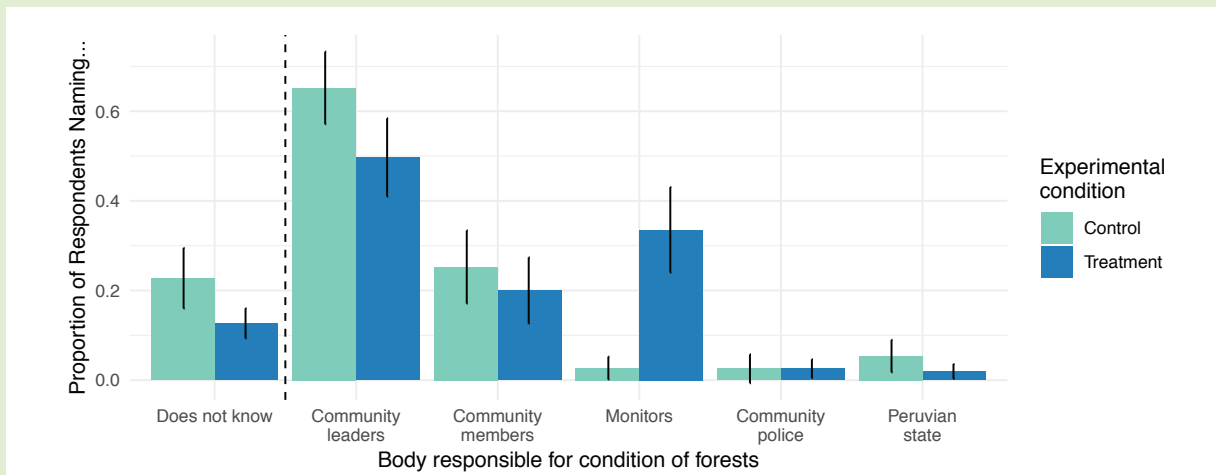
Finally, we examine patterns of deforestation between March 2018 and May 2019 as a function of randomized assignment to monitoring. Using remote-sensed deforestation data from the Peruvian Ministry of the Environment's GEOBOSQUES deforestation alerts, we find slight reductions in the percent of territory deforested along the deforestation frontier (p < .1 in a pre-specified one-tailed test). Given that monitoring is responsive to deforestation events as opposed to preventative at least in the first instance, we will continue to monitor satellite data going forward.

Principal Investigator: Tara Slough