Impact of Hydroelectric Dams on Indigenous Language Retention: A Case Study at Chixoy Dam, Guatemala

Summary

In 1982, construction of the Chixoy hydroelectric dam displaced 3,500 Mayans living in remote communities in Guatemala’s central highlands. These communities were moved to army-built settlements on the outskirts of small towns, where they continue to live today. Socioeconomic conditions in these settlements are poor, and many of the impacts of displacement on nutrition, education and livelihoods are documented. Yet impacts on the cultural continuity of these indigenous communities—effects that may be more durable—are minimally noted. Loss of access to their river and other natural resources that provided a foundation for their way of life undermines their use of traditional foods, medicines, clothes, spiritual practice, and forms of community organization and governance that have sustained them for generations.

This study quantifies a cultural impact of displacement: retention of the indigenous language, Maya Achi. It uses multi-variate regression analysis to measure the loss of Achi usage that can be attributed to displacement.

Goals

- Generate study results that inform the Chixoy case, which is being litigated in national and international courts.
- Establish a precedent for rigorous measurement of the cultural impacts of development projects, to better inform policy decisions more broadly.

Motivation

- Despite contention surrounding their social and environmental costs, we continue to build large dams at a rapid pace.
- Institutions that finance and regulate dams endeavor to minimize social and environmental harm.
- These institutions need better information about how dams disrupt the cultural fabric and continuity of communities they displace.

Infrastructure policy decisions are informed by cost-benefit frameworks that inadequately accommodate qualitative data and anecdotal evidence. This project endeavors to quantify one of the cultural impacts of dams. Conveying cultural impacts within this framework will strengthen decision-making processes pertaining to equitable distribution of the costs and benefits of development.

Context

Communities in the shaded areas above were displaced to army-built settlements, marked by the plus signs (+) on this map. These settlements sit at the edges of larger towns and are close to roads. Several non-displaced Achi-speaking communities also exist in this area, and have since before Chixoy’s construction. Comparing outcomes in displaced and non-displaced communities with similar characteristics will help generate meaningful and unbiased results.

Methods

Over the summer of 2012, surveys with over 100 data points were conducted with one to five individuals in each of 280 households in displaced and non-displaced villages near Chixoy dam. Impact on language will be estimated using a difference-in-differences strategy:

\[ Y_{it} = \beta_0 + \beta_1 \text{Displaced}_i + \beta_2 \text{Time}_t + \beta_3 \text{Displaced}_i \times \text{Time}_t + \theta_0 + \theta_1 X_{it} \]

- \( Y \) is a measure of language use, for individual i at time t. Some measures of Y include: Achi fluency; adult preference for Achi vs. Spanish when speaking with children; child preference for Achi vs. Spanish when playing soccer with friends.
- Displaced and After are dichotomous variables.
- \( \beta_3 \) is the difference-in-differences estimator, or the coefficient of interest.

In other words, this compares the difference in language use before and after displacement among the displaced group with the difference in language use among the non-displaced group while controlling for other relevant variables. It will answer the question: “To what extent has use of Achi changed in the displaced communities as compared with similar communities that were not displaced?”

Results

A very preliminary look at the data suggests that the youngest generation in displaced communities has not lost Achi fluency at a greater rate than in other communities, but does express a preference for Spanish over Achi in social situations and other contexts outside of the home. Further analysis is needed before these results can be quantified.

Background facts

**Indigenous people**

There are about 370 million indigenous people in the world. They comprise about 5% of the global population, but account for nearly one third of the world’s poorest. (UNPO)

Indigenous and tribal peoples “have suffered disproportionately from the negative impacts of large dams.” (WCD)

**Dams**

Large dam reservoirs have displaced 40-80 million people globally since 1950, and have affected many millions more. (WCD)

**Guatemala**

Indigenous people comprise over half of Guatemala’s population. (UNDP)

In Guatemala, 86.6% of indigenous people are poor. (World Bank)

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