Land governance and LCLUC in Central America

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Main study region: Trifinio

Guatemala

Honduras

El Salvador

Montecristo Trifinio Trinational Park
Mapping LCLUC in Trifinio 1986-2010

Percentage change for major land uses in Trifinio

Landsat classification of following years:
Drivers of LCLUC in Trifinio 1986-2010

Dependent variable: Average annualized forest loss (km$^2$)

Covariate Coefficient

- Forest area 0.31***
- Distance to national capital 0.84***
- Road density -1.03***
- Population density 0.14***
- Elevation -0.48***
- Slope -0.37***
- Area protected 0.01
- Guatemala dummy
- Honduras dummy -0.56**
- 2001-2010 dummy 0.32***

R$^2$ overall 0.80

N 90

Source: CATHALAC, 2011; WDPA, 2012; Trifinio Commission; and Bosques y Agua Project.

Map by Carlos L. Muñoz Brenes

Munoz, C., Schlesinger, P, Jones, K., Vierling, L. In preparation.
Next steps: Drivers of LCLUC in Trifinio

• Update with remote sensing product with 5-year periods of change
• Key informant interviews to develop quantitative indices (summer 2015)
  – Governance indicators
    • Rules, Practices, “Good” governance
  – Agricultural/coffee prices and markets
  – Migration and demographics
• Test effect of covariates inside & outside Trifinio boundary
Next steps: Drivers of LCLUC in Trifinio

• Analyzing high resolution imagery using ENVI
  – Advance mapping of agroforestry systems
    (Schlesinger, P. et al, in prep.)
• Correlations with 65 household surveys on perceived forest changes (Summer 2014):
  – 55% report forest loss on private forest
  – 88% report forest loss on communal forest
  – Causes:
    • Conversion to agriculture
    • Population growth
    (Jennewein, J. et al, in prep.)
Protected Areas and LCLUC

- **Core zone**: 67% less deforestation than areas outside zone
- **Buffer zone**: 27% less deforestation than areas outside zone

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### Percent change in buffer zone

<table>
<thead>
<tr>
<th>Country</th>
<th>1986-2001 (%)</th>
<th>2001-2010 (%)</th>
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<tbody>
<tr>
<td>El Salvador</td>
<td></td>
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<tr>
<td>Guatemala</td>
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<tr>
<td>Honduras</td>
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</tbody>
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### Treatment effect

<table>
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<tr>
<th>Zone</th>
<th>Effect Description</th>
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</table>
Next steps: Protected Areas and LCLUC

- Estimating impact of all 23 Trifinio protected areas on forest cover
  - Quasi-experimental methods
  - Combining this with key informant interviews with park managers on governance

- Systematic review of impact of Central America’s transboundary areas & protected areas on LCLUC
  - Peer reviewed & grey literature
  - Spanish & English language

Thank you