Deforestation Driver Analysis

to Assist with Project Baselines and Leakage Calculations
What is a system of Deforestation and how does the understanding of the system influence a project baseline?

Es la interacción de factores espacializables y no espacializables de forma directa e indirecta que permiten describir los procesos de deforestación actual y futura en un área específica (FDN, 2010).

An Avoided Deforestation project must incorporate these concepts into its baseline in order to define it.

Mexico’s National Deforestation Risk Model addressed many of these issues and the CAR Workgroup is considering how it can be used to develop a standardized baseline for Avoided Deforestation Projects. This will require additional steps.
Need for Deforestation Driver Analysis

INE’s Deforestation Risk Model designed to produce estimates at a national level

Use of the model at the local (project) level will require a sound analysis of which local spatial variables are needed

Model of Deforestation Risk

Need for Analysis of Deforestation Drivers at Localized Area to calibrate deforestation model and improve leakage estimates

Results of Model at Project Scale
**Step 1- Identify All Possible Drivers of Deforestation in Mexico**

### Examples

<table>
<thead>
<tr>
<th>Sector</th>
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<tbody>
<tr>
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<td>Permanent commercial cultivation (palm, avocado, rubber, ...)</td>
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<td>Permanent cultivation for agricultural rural development projects</td>
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<td><strong>Infrastructure extension</strong></td>
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<td>Expansion of market infrastructure (food markets, storage, etc.)</td>
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**Step 1a: Identify and Describe Relationships and Sequences**

**Step 1b: Develop a survey methodology to identify how these drivers can be identified within defined geographic areas (states/projects for example)**

**Developing an AD Project Baseline and Assigning Leakage Values**
Step 2- Define the Geographic Boundary in Which the Project Operates

✓ The geographic boundary forms the context for defining the project’s baseline and leakage monitoring.

✓ For simplicity, this could be a coincident with state boundaries due to jurisdictional issues. However, may be combined states where ecosystems, economies, forest policies, and high-risk of leakage are shared.
Step 3 - Using the Product of Step 1, Identify the Suite of Deforestation Drivers Within Defined Boundary

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Deforestation Drivers Within Jurisdiction “X”

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Step 4 - Identify/Develop Data to Quantify the Relative Contribution of Each of the Potential Drivers Within the Jurisdiction

✓ If no data exists, a survey must be developed and implemented to quantify the contributions

Example

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<thead>
<tr>
<th>Sector</th>
<th>Name of Driver</th>
<th>Available Data (example)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural expansion</td>
<td>Traditional shifting cultivation</td>
<td>FAO-1989, SEMARNAT -2008</td>
</tr>
<tr>
<td></td>
<td>Permanent cultivation for agricultural rural development projects</td>
<td>FAO-1989, SEMARNAT -2008</td>
</tr>
<tr>
<td></td>
<td>Spontaneous transmigration</td>
<td>CONAFOR-2010, SEMARNAT -2008</td>
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<tr>
<td></td>
<td>Local transmigration (resettlement)</td>
<td>CONAFOR-2010, SEMARNAT -2009</td>
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Step 5 - Quantify the Relative Contribution of Each of the Potential Drivers Within the Jurisdiction

✓ Perform causal analysis of deforestation drivers:
  ✓ To assist in identifying deforestation sequencing

Example

<table>
<thead>
<tr>
<th>Sector</th>
<th>Name of Driver</th>
<th>Relative Contribution of Driver to Area Deforested</th>
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</thead>
<tbody>
<tr>
<td>Agricultural expansion</td>
<td>Traditional shifting cultivation</td>
<td>5%</td>
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<tr>
<td></td>
<td>Permanent cultivation for agricultural rural development projects</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Spontaneous transmigration</td>
<td>15%</td>
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<tr>
<td></td>
<td>Local transmigration (resettlement)</td>
<td>45%</td>
</tr>
<tr>
<td>Wood extraction</td>
<td>Commercial wood extraction (clearcutting, selective harvesting)</td>
<td>20%</td>
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<tr>
<td></td>
<td>Fuelwood extraction for industrial use</td>
<td>3%</td>
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<tr>
<td></td>
<td>Charcoal production for industrial use</td>
<td>2%</td>
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<tr>
<td>Infrastructure extension</td>
<td>Expansion of military defense villages</td>
<td>5%</td>
</tr>
</tbody>
</table>
Step 5 - Quantify the Relative Contribution of Each of the Potential Drivers Within the Jurisdiction

✓ Perform causal analysis of deforestation drivers:
  ✓ To assist in identifying relationships of drivers and sequencing

✓ Describe each driver in terms of:
  ✓ Who is doing the deforestation.
  ✓ Why they are doing the deforestation.
  ✓ Where are they doing the deforestation.
  ✓ For whom are they doing the deforestation.
  ✓ Spatial scale of driver.
  ✓ Direct and indirect impacts of driver.
  ✓ Potential for leakage.
  ✓ Prevention/mitigation opportunities for driver.

✓ Identify the leakage potential of each driver
Step 6 – Analyze the Spatial Restrictions and Mobility of Each of the Drivers

- **Global (Multi-national corporations):**
  1. Large plantations of industrial commodities
- **Regional (Land speculators):**
  2. Forest clearing for land speculation
- **National (Ministries, military, national corporations):**
  3. Large economic land concessions
  4. Illegal logging for commercial on-sale
- **Sub-national (Provincial officials, enterprises):**
  5. Migrant encroachment
  6. Land manipulation by local officials
  7. Individuals inducing forest fires
- **Local (Communities, hunters):**
  8. Conversion to subsistence agriculture
  9. Gathering of fuel wood

**Mitigation potential:**
- Driver cannot be addressed
- Driver can be somewhat reduced
- Driver can be significantly reduced
- Driver can be eliminated
Step 7- Identify How the Project Addresses Deforestation Drivers

✓ Combined with the leakage analysis, a leakage risk for each project can be assigned.
Step 8 – With Spatial Drivers Identified, Local Variables can be Used to Calibrate INE’s Deforestation Risk Within the Geographic Boundary and Extrapolated to the Project Level as a Predictor of Deforestation Rates Into the Future