

CPR within Lagunas de Montebello National Park, Chiapas, Mexico

Last Updated: November 16, 2022

1 Part I: Static Analysis - Collective Action

The ancestors of the community of Tziscaco arrived in this area in the nineteenth century (and perhaps earlier) and a number of families were granted specific land rights by Porfirio Diaz in the late 1800s. Community members individually manage thousands of hectares of agricultural and grazing lands, many inside the national park boundaries, and jointly administer a region of communal forest as well. Community members extract lumber and firewood from the forest, which also attracts tourism. Tourism comprises an important part of the community's revenue.

The community calls itself an ejido: one of the two communal property types recognized by the Mexican Constitution. However, since their title predates the Mexican Revolution and the creation of the ejido system, Tziscaco is not officially an ejido.

1.1 The Commons Dilemma

The National Park of Lagunas de Montebello (PNLM) was created in 1959. The land within PNLM was originally a patchwork of large ranches, rural peasant land holdings and communities. For the creation of this park, the government appropriated and purchased less than half of the land declared part of the protected area. Consequently, the community of Tziscaco continues to live within designated park boundaries and to manage land holdings in the unpurchased area within the national park.

- **Potential Property Rights problem**

Interview results clearly reveal that external authorities do not recognize the communal rights asserted by Tziscaco. Because the communal land is not an official ejido, it is by default federal land. The national park and the community have been in conflict for the past four decades, and the basic disagreement regarding the legitimacy of communal claims makes resolution of this conflict difficult and unlikely. In addition, respondents from the community conveyed a deep and abiding mistrust of governments. Although the community has benefited from several small development projects over the years, many residents nonetheless fear potential forced removal from their homes by federal authorities since they live within a declared federal park.

- **Managing the Appropriation Problem**

Appropriation rules are decided in a periodical community-wide assembly. The community has no policing body and relies on informal mutual monitoring. The forested area is relatively small and easily accessible and violations of the rules that prevent planting and removal of live trees are fairly conspicuous. Interviewees indicated that one such infringement years earlier was quickly noticed by the community and group pressure was applied to force the offender to desist. Self-monitoring works because the community is small and so is the area of the community forest, which is also easily accessible. However, if the population of the community grew, monitoring the appropriate extraction of the resource could become more difficult.

- **Potential Public Under-provisioning**

Currently, Tziscaco only monitors communal forest use unofficially. Interviewees indicate that formal community monitoring is not possible because Tziscaco has insufficient resources and personnel. They state that if the national park authorities want to enforce restricted use of communal forest to improve conservation, they should pay the community to undertake this activity.

1.2 Biophysical Context (IAD)

- **Natural Infrastructure:**

PNLM is a small (6,022 ha) protected area situated in south-central Chiapas, along the border with Guatemala in the ecological transition zone between the central highlands and the lowland tropical rainforests of this state. The park is home to nearly 60 lakes and ponds. PNLM is in a humid region, and receives approximately 2,000 mm of annual rainfall, but has moderate temperatures averaging less than 18°C. The climate, unique geographic location, and varied topography of this park have supported the establishment of forests with a mixture of pine and hardwood species. The area of Tziscaco is located inside of the park, and comprises private farm holdings and a communal forest, called Ocotal. From these forests, residents extract firewood, lumber, and touristic appeal.

- **Hard Human-Made Infrastructure:**

Numerous roads and social trails bisect these lands, allowing the population of Tziscaco access to almost the entirety of the forest.

1.3 Attributes of the Community (IAD)

- **Social Infrastructure:**

Tziscaco is a tight-knit community composed primarily of descendants of the original families that settled this area more than a century ago. The community is ethnically relatively homogenous and there are deep and far-reaching kinship ties among most residents. The long history and close ties of the community are manifest in numerous joint activities and extensive social networks. There are community-run restaurants and communal efforts to prevent forest fires and to organize reforestation efforts. The community organizes politically in a community-wide assembly.

- **Human Infrastructure:** There are 1,200 members in the Tziscaco community. Apart from this, there is no specific information on human infrastructure in the source document.

1.4 Rules in Use (IAD)

1. Position Rules:

- The four community leaders must be elected by direct male vote in the assembly.
- Position rules for park staff are not specified in the source document.

2. Boundary Rules

- Users of the Ocotal or community forest are exclusively the members of the Tziscaco community.

3. Choice Rules

- Lands must only be passed to male descendants.
- Rules established by both PNLN and Tziscaco forbid the clearing and planting of any land within the community not parceled into individual agricultural plots.
- There are community restrictions regarding the use of fire to clean and prepare agricultural plots for planting as well. These are not specified in the source document.

4. Aggregation Rules:

Only male community members have the privilege of voting in the assembly to decide community rules and leadership positions. The proportion of votes that determines the decision outcome is not specified in the source document.

5. Scope Rules:

- Both a community rule and a national park directive prohibit the cutting of live trees in the Ocotal.
- Formal and informal boundaries separate the community forest from individual plots, and community land from the PNLN park. Different rules apply to the appropriation of resources in each of these domains.
- Community leaders have the authority to impose sanctions to non-compliant individuals.
- Municipal police has no authority to sanction individuals poaching timber, encroaching on protected boundaries or breaking other rules, and can only report violations to other authorities such as the park staff itself and the Mexican Army.

6. Information Rules

The source document does not specify any information rules.

7. Payoff Rules

Monitoring is mostly carried on mutually by the members of the community, but also sometimes by external authorities. Community leaders are in charge of arbitrating disputes over land and domestic issues. The Consejo de Vigilancia (Vigilance Council) is in charge of land disputes. Two of the leadership positions within Tziscaco deal with infractions of internal rules and arbitrating issues such as domestic disputes, disorderly conduct, and damage of crops or property. If the decision of the Vigilance Council is not respected, the non-compliant individual can be thrown in the community jail. Other types of sanctioning include fines, compulsory work, confinement to the community jail, or the withholding of an offender's share of communal revenue.

1.5 Summary

The action situation is the Tziscaco community's appropriation of firewood and lumber from the community forest in PNLM. Elected local policy-makers and their electorate are the male members of the community. Internally and externally imposed rules condition the interaction of users with the resource system. The tasks of monitoring and sanctioning are carried out by the community itself and its elected leaders. Due to the characteristics of the biophysical context and the attributes of the community, monitoring resource users' activities is fairly easy. The importance of the forest resources and the fact that a sufficient part of it remained intact after the devastating fires of 1998 provide incentives for the community to manage the forest effectively.

2 Part II. Dynamic Analysis - Robustness

These forests experienced extensive and severe fires in 1998, due to drought conditions following the El Nino event of 1997. PNLM also suffered extensive damage when the typically small and manageable fires started by farmers preparing their fields grew large and uncontrollable. The fires alarmed national park authorities as well as local residents, and prompted the increase of efforts to prevent further degradation of forest resources. Park staff and researchers presumed forests within PNLM claimed and used by Tziscaco would be highly degraded. It was stated that the 1998 fires, added to existing land use pressure and tension between local communities and the national park, exacerbated land scarcity and facilitated forest access. They expected any forest assessment to find significant planting and minimal conservation within the communal forest, and to encounter evidence of encroachment into federal land. Essentially, local professionals predicted the forest would be subject to unrestrained, open-access use. However, the source document investigated this issue and found out that there were no significant differences in the level of degradation of federal managed forests between the PNLM and community forests, and found no signs of overexploitation. This is probably due to communal efforts in reforestation and fire suppression.

2.1 Shocks, Capacities, Vulnerabilities

In this section, most of the shocks, capacities, and vulnerabilities in the system are extracted from the case study source document. In addition, we infer potential vulnerabilities drawing hypothesis from the case study information.

...to and of the Resource (link 7 to R):

The forest suffered extensive damage during the 1998 fires caused by the drought that followed the El Niño event in 1997. However, the forest showed vigorous regeneration after the shock.

...to and of the Public Infrastructure (Link 7 to PI):

Governmental underprovision of resources for the local the community prevents the formalization of their monitoring systems. Until the moment when this study was conducted, informal self-monitoring was sufficient for the community. However, we hypothesize that informal monitoring systems are deemed unreliable by external authorities, reinforcing their mistrust of local resource users and exacerbating the divide between Tziscaco members and the park staff.

...to and of the Resource Users (link 8 to RU):

Tziscaco community members show a deep and abiding mistrust of governments, and fear potential eviction from their homes since they live in a declared federal park. the relationship with external authorities creates a climate of insecurity for the community, reduces communal motivation to manage for future benefits, and under mines the functionality of Tziscaco's common property institutions. In addition, we infer that in a scenario where the population of Tziscaco grew, self-monitoring could become more difficult.

...to and of the Public Infrastructure Providers (link 8 to RU):

Tziscaco has been in conflict with external authorities -namely, park officials- since the establishment of the protected area, the PNLM, more than four decades ago, due to conflicting claims on property rights. Common property institutions must be recognized (or at the very least ignored and unchallenged) in order to remain robust. Without external consent, the common property system will be challenged and undermined by outside forces as soon as the common pool resources appeal to outside interests.

...Between Resource Users and Public Infrastructure Providers (Link 2 between RU and PIP):

Elected community leaders and the electorate of Tziscaco are male members of the community. Thus, political power is concentrated in male resource users. We hypothesize that changes in sex-based power inequalities might result in conflicts between the female resource users and the male PIPs.

2.2 Robustness Summary

The main fragilities of the system consist of lack of external property rights recognition; and the climate of insecurity produced by the long-standing conflict with external authorities and the perception of resource users. Lack of recognition might endanger the system if

the common pool resources appeal to outside interests, while distrust of external authorities might undermine the community's institutions and motivation to manage future benefits. In addition, we hypothesize that changes in sex-based power dynamics could create conflicts between female RUs and PIPs. Also, we infer that the park staff's distrust of the community's informal monitoring system can exacerbate the issue of common property rights recognition, and that a growth in population could make self-monitoring more difficult.

3 Part III. Case Contributors

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