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World Development Vol. 32, No. 2, pp. 233–249, 2004

Printed in Great Britain
0305-750X/$ - see front matter

doi:10.1016/j.worlddev.2003.07.007

Who Talks with Whom? The Role of Repeated Interactions in Decentralized Forest Governance

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Summary. — This article suggests that efforts to study decentralization outcomes would benefit from widening the unit of analysis from the local *government* administration to the local *governance* system. Many individual local governments, especially in developing countries, lack the human and physical resources to be effective governors by themselves. It is, thus, useful to recognize the linkages between different governance actors. The empirical analysis, based on observations in Bolivia's forestry sector, finds that the degree of connectivity between the actors in a municipal governance system helps explain why some systems are more effective than others.

Key words — Latin America, Bolivia, decentralization, forestry, municipal government, collective action

1. INTRODUCTION

Policy makers in both industrial and developing countries have adopted decentralization reforms as a strategy to improve public sector performance. The proponents of the reforms argue that decentralization can lead to more efficient delivery of public services (Jimenez & Paqueo, 1996; World Bank, 1988); more accountability (Blair, 2000; Ribot, 2002); more civic engagement in public affairs (Fizbein, 1997; Nickson, 1995; World Bank, 2000), and more equitable policy outcomes (Fauget, forthcoming; Maro, 1990). Because of decentralization reforms, local governments in an increasing number of countries are being asked to take over governance responsibilities related to the management of natural resources. Judging from the observed outcomes, however, it is clear that the acclaimed benefits of decentralization do not materialize automatically. An increasing body of empirical research is pointing out that decentralization is neither a public policy panacea nor an inevitable tragedy (Andersson, 2002; Ostrom, 2000; Smoke, 2003).

Bolivia has perhaps gone further than any other country in Latin America when it comes to decentralizing the governance of several public goods and services, especially in the sectors of education, health, urban services, and natural resource management (FAO, 1999). In the mid-1990s, a series of decentralization reforms transferred substantial financial resources and forest governance responsibilities from the central government to Bolivia's 314 municipal governments (Government of Bolivia, 1994, 1996, 1999). Recent empirical findings suggest that the outcomes of Bolivia's efforts to decentralize its forestry sector governance are quite mixed (Andersson, 2003;

* An earlier version of this paper was presented at a World Bank Brown Bag Lunch Seminar in January of 2002. In addition to the participants at that talk, I wish to thank several others for their helpful comments on earlier drafts of the paper, especially Elinor Ostrom, Emilio Moran, Clark Gibson, Carla Veloz, Ron Smith, Diego Pacheco, Frank van Laerhoven, and two anonymous reviewers. Thanks also to Joanna Broderick and Patty Lezotte for their help with editing. I am most indebted, however, to the 205 men and women in the Bolivian Lowlands who agreed to be interviewed for this study. Financial support from the Helge Axson Johnson Foundation in Sweden, the National Science Foundation (NSF) grant SES0004199, and the Center for the Study of Institutions, Population, and Environmental Change (CIPEC) at Indiana University (NSF grant SBR9521918) is gratefully acknowledged. Final revision accepted: 23 July 2003.

Contreras & Vargas, 2001; Pacheco, 2000). The purpose of this article is to discern what factors might explain the mixed results. Why are some local governments more successful than others in governing their natural resources?

There is growing interest in trying to answer this question empirically. [1] One of the most common empirical findings in the recent decentralization literature is that the effectiveness of local governments in the natural resource sectors depends on the degree to which local governments involve local resource users in political decision making and are downwardly accountable to these users (e.g., Agrawal & Ostrom, 2001; Blair, 2000; Crook & Manor, 1998; de Oliveira, 2002; Larson, 2002; Pacheco, 2000; Ribot, 2002; Singleton, 1998). Another frequent finding in this literature is that many local governments in less developed countries lack the financial and human resources to be successful (e.g., de Mello, 2000; Fizbein, 1997; Larson, 2002; Pacheco & Kaimowitz, 1998; Wyckoff-Baird, Kaus, Christen, & Keck, 2000).

In the search for viable explanations to the variable outcomes of decentralized resource governance, most empirical studies consider the local government administration as the appropriate unit of analysis. This study suggests that future empirical analyses would benefit from widening the unit of analysis from the local *government* administration to the local *governance* system. The logic behind this argument is that the individual characteristics of local governments are often insufficient to explain the variation in governance outcomes in decentralized regimes. Bolivia's forestry sector is a case in point, as the mandate to govern this sector is split up between six different organizations. None of these organizations have either the legal mandate or sufficient human and physical resources to govern the sector unilaterally. To be effective, I argue, the mandated actors at different levels of governance would need to build institutions for communication and cooperation through which they can combine their resources and efforts. Hence, the challenge to organize the decentralized governance of forests in Bolivia is to achieve collective action among a diverse set of actors with varying interests and access to information, power, and resources.

Contrary to much of the current empirical research on *public sector* decentralization reforms, empirical research on decentralized decision making in the *private sector* does recognize linkages for cooperation between actors at different levels of decision making and the role of communication in shaping such linkages (e.g., see Conrad, 2002; Dessler, Frederick, & Cyr, 2001; Forza & Salvador, 2001; Fulk & Boyd, 1991; Miller, 1992; Sproull & Kiessler, 1991; Zack, 1993). Drawing on the contributions from these studies as well as the literature on collective action, I propose an institutional approach to the study of decentralized forest governance. I use this approach to develop and then empirically test the hypothesis that more communication between the core *municipal governance actors*—a concept which in this analysis includes central government representatives, municipal government officials and staff, nongovernmental organizations (NGOs), as well as forest user groups and individuals—is associated with better governance outcomes at the municipal level.

The empirical tests of this hypothesis, using data from 205 interviews with the municipal governance actors in 32 different municipal territories in the Bolivian Lowlands, show that a governance system's degree of connectivity between its core actors helps explain why some local governments are more effective than others, both in terms of forest user satisfaction and measures of forest tenure security. Because few local governments are likely to be effective on their own, one of their key tasks is to facilitate the cooperation between the different local governance actors.

2. BACKGROUND

Previous to the recent decentralization reforms, municipal governments in Bolivia were essentially small, voluntary urban organizations without any significant political power, financial resources, or a clearly defined jurisdiction. Few had any formal obligations to either the central government or citizens. That all changed with the reforms in 1994, when the central government began to transfer political decision-making competence and financial resources to municipal governments.

In 1994, President Sanchez de Lozada's government introduced a series of decentralization reforms that would radically change the country's political structure. The Law of Popular Participation (1994), the Law of Decentralized Administration (1995), and the Law of Municipalities (1999) define the extent and content of the municipal government mandate.

The centrally defined regime created 314 municipal governments that are mutually exclusive and exhaustive local executive bodies with popularly elected municipal council members. Each municipal government is granted formal political competence and financial instruments to carry out a mix of centrally and locally defined priorities and programs.

During 1993–94, as a result of the fiscal transfers from the central to municipal governments that the Law of Popular Participation commanded, many municipal governments' annual operating budgets increased by as much as a thousand percent. Many of the smaller, rural municipalities went from a zero budget to tens of thousands of dollars in available resources, practically overnight. For instance, the 41 rural municipalities in the Department of Cochabamba increased their annual budgets by an average 1.310% over 1993–94, and by 259% over 1994–98 (Government of Bolivia, 2000).

In addition to the intragovernmental financial transfers, each municipality may levy taxes on motor vehicles, urban property, and large rural properties (50 ha and larger). Nevertheless, for most rural administrations, the contribution of these municipality-levied taxes has been minimal compared to fiscal transfers. Municipal governments may not levy their own taxes on operations in the forestry sector, and they are not allowed to charge user fees when providing public services in this sector. [2] The 1996 Forestry Law lays out the broad mandate of the municipal governments in the forestry sector. These are discussed in more detail in the section that follows.

A consensus is emerging among Bolivian forestry sector analysts that one of the main problems in the sector is the widespread forest tenure insecurity (Contreras & Vargas, 2001; Kaimowitz, Thiele, & Pacheco, 1999; Pacheco, 2001). A recent publication from the FAO views insecure forest tenure for smallholders as one of the primary reasons that the role of the forestry sector has been so limited in alleviating poverty in Bolivia (FAO, 2001). This assessment is supported by a recent survey of rural community leaders in the Bolivian Lowlands, which revealed that 82% of the community leaders in the 50 randomly selected municipalities in the Bolivian Lowlands considered the difficulty to gain formal access to forest property rights as the most serious problem in the sector (Andersson, 2002, citing CIPEC, 2001). Is there anything municipal governments can do about the forest tenure problems?

According to Bolivia's decentralized forestry regime, the governance functions are shared by six different organizations, as illustrated in Table 1. The bulk of the funding to carry out these functions comes from private forestry firms. Each year they are charged $US1 per hectare of forest that they hold. Municipal governments that host such concessions on their territory receive 25% of the centrally collected concession fees and, in return, they must establish a municipal forestry program within six months of receiving their first payment (Government of Bolivia, 1996).

Many of the tasks that the decentralized regime asks of municipal governments relate directly to the improvement of forest tenure security for smallholders. For instance, the municipal government may propose to set aside up to 20% of the public forest land in its territory for the creation of a Municipal Forest Reserve (Government of Bolivia, 1996, art. 25.a). It is also the municipal administration's task to facilitate the organization of previously informal user groups into official forest user groups with formal rights to manage forests. Once groups are formally organized and recognized, the municipal government asks the Ministry of Sustainable Development and Planning to allocate forest user rights in the form of community forest concessions [3] within the Municipal Forest Reserve. If such rights are granted, the local groups must develop a formal forest management plan in order to receive the required permits for commercial extraction. The municipal government is then supposed to provide technical advice to the user groups in developing such a plan, but the final decision regarding the plan's approval rests with the Superintendencia Forestal (SIF), which is the central government's technical forestry agency (see Table 1). Once harvesting is underway by the formally recognized user groups, the municipality is to assist the SIF in monitoring and enforcing the rules associated with the granted property rights (Government of Bolivia, 1996, art. 25 b–h).

Whether municipal governments will actually perform the mandated functions in the best interest of the collectivity of local forest users is a different question. Seven years after the reforms were passed, how have Bolivia's municipal governments responded to their new role in the sector? Figure 1 gives us an idea of the current state of municipal forest governance in Lowland Bolivia.

Table 1. *Bolivia's Forestry Regime Established by the 1996 Forestry Law*

Organization	Competence functions
Ministry of Sustainable Development and Planning (MSDP)	—Formulates forest policies, strategies, and norms —Land classification and evaluation of forest potential —Demarcation of concession areas for timber companies and local groups —Prices for concession fees and volume-based taxes —Promotes research, extension, and education —Looks for technical assistance and funding for plans, programs, and projects
Superintendencia Forestal (SIF)	—Supervises overall technical compliance with the forestry regime —Grants management rights to eligible forest users —Approves management plans and private sector agreements with indigenous territories —Enforcement of forest regulations and sanctioning illegal forest users —Registration of concessions, authorizations, and logging permits —Inspects forest areas and activities, expropriates unauthorized timber and auctions it through public bidding —Requests external forest audits of forest operations —Collects concession fees and volume-based taxes and distributes them
Municipal Governments	—Propose to MSDP the boundaries of Municipal Forest Reserves to be granted as community concessions to local user groups —Offer technical assistance to local user groups —Organize training for local user groups —Facilitate and promote local commercial activities in their sectors —Inspect local forestry activities and request external audits as needed —Set up municipal databases of existing forest plantations in their sectors
FONABOSQUE	—Finances projects related to the sustainable management and protection of forests
Ministry of Economic Development (MED)	—Promotes forest investments, production, and productivity of the forest industry —Promotes forest marketing and the introduction of lesser known species in national and international markets —Promotes value-added production in coordination with prefectures and municipalities
Prefectures	—Design and implement public investment projects at departmental level in the fields of local forestry development, research and extension, afforestation, reforestation, and watershed conservation —Institutional strengthening of municipalities in their forestry activities —Execute functions delegated to them by MSDP, MED, and SIF

Source: Adapted from Andersson (2002); based on Bolivia Forestry Law 1700.

According to Figure 1, over half of all municipalities in the forest-rich Lowlands are providing some forestry-related services to forest users. About half of these municipalities receive positive approval ratings from their municipal oversight committee [4] representatives. It is interesting to note the correlation between the existence of municipal forestry programs and formal forest management rights for smallholders. Out of the 50 municipalities that were randomly selected for this study, 20 were hosts to smallholders who had successfully acquired formal forest management rights under the new regime. Nineteen out of the 20 were also providing municipal forestry activities, suggesting that municipal governments indeed play a role in facilitating smallholders' access to formal forest property rights. The descriptive results summarized in Figure 1 illustrate how widely municipal governance performance in the forestry sector varies from one municipality to another. To search for the factors that can help explain this variation, the next section reviews the current literature on decentralized natural resource governance and collective action.

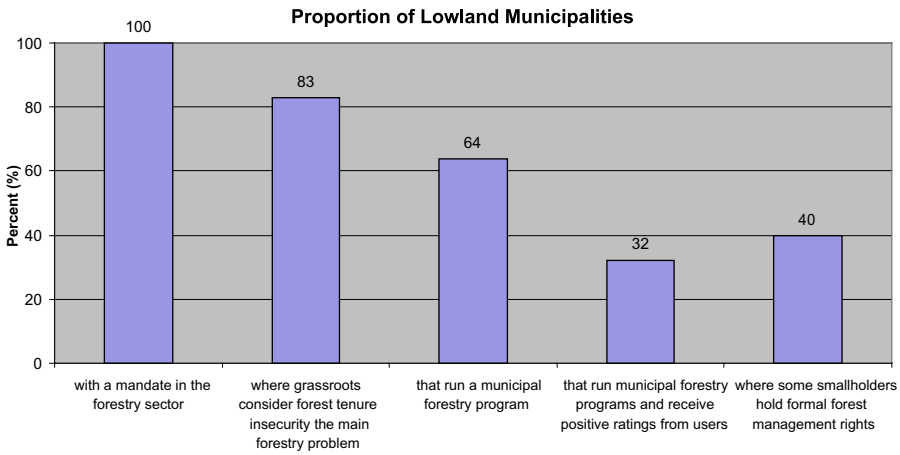

Figure 1. *Characteristics of municipal governance of forests in Bolivia. Source: CIPEC (2001).*

3. THE CONDITIONS OF EFFECTIVE MUNICIPAL GOVERNANCE

Whether decentralized or centralized, the goal of most public forestry regimes is to control access to and regulate competition over forest resources (Winter, 1998). Without the proper institutions to provide these plural functions of forest governance, the forest resource takes on characteristics of an open-access common-pool resource (CPR). The perverse incentives associated with an open-access forest CPR, which encourage over-harvesting, are well documented in the literature (e.g., Gibson, McKean, & Ostrom, 2000; Ostrom, 1999). The Bolivian government's response to this potential CPR dilemma has been to allocate and enforce formal usufruct rights to forest user individuals, corporations, and communities who have been granted a concession by the government to manage forest on public lands, or possess formal land titles and manage their private forested land. To be authorized to harvest forest products commercially from these lands, both these categories of users need to manage their forests according to an official forest management plan. Since the central government retains exclusive ownership of all forests in the country, the user rights that are granted are contingent upon compliance with the requirements specified in the Forestry Law.

The logic behind Bolivia's forestry policy is that the government enforcement of the conditional user rights will reduce the likelihood of individuals over-harvesting from the forest CPRs. Several scholars have amply showed, however, that relying on government hierarchies to solve one social dilemma, such as an open-access forest CPR, often introduces several new collective-action problems, which also may be difficult to solve (Miller, 1992; Ostrom, 1999; Singleton, 1998; Gibson *et al.*, 2000). [5]

(a) *Social dilemmas in decentralized forest governance*

In all hierarchical organizations, public or private, there are fundamental internal collective-action problems caused by asymmetries of power and information [6] (e.g., Holmström, 1982; Moe, 1984; Ostrom, Gibson, Shivakumar, & Andersson, 2002; Singleton, 1998). Actors who are advantaged by these asymmetries face strong incentives to maximize their own short-term, self-interests at the expense of the group objectives. Hence, to be effective, organizations must be able to structure the social relationships internally so that participants overcome these temptations and become motivated to cooperate with the collective objectives.

In addition to these *internal* barriers to effective governance outcomes, there are social dilemmas that complicate the cooperation *between* governance organizations. Given the socioeconomic realities for most municipal governments in Bolivia and the particular institutional design of the country's forestry regime, organizing an effective municipal forestry program becomes a challenge of constructing the means for sustained cooperation

between the municipal government and a variety of other essential governance actors, including forest users, national government agencies, NGOs, and private firms. As necessary as cooperation between these actors might be, it is often complicated by differences in the actors' preferences, interests, as well as disparities in their access to power, resources, and information. The complications these factors cause for the cooperation between the governance actors in the decentralized policy arena are well documented in the decentralization literature. Smoke (2003) sees the lack of coordination between governance actors at different levels of authority as "one of the greatest deficiencies in most decentralization efforts" (p. 13). [7] de Mello (2000) notes that coordination of intragovernmental fiscal relations is a prominent hurdle for decentralization policies. Because of the difficulty for many local governments to be effective on their own, Blair (2000) calls for constructing "a new civic culture that will facilitate cooperation across middle and lower groups" in society (p. 34). In a study of Colombian *municipios*, Fizbein (1997) argues that because the local governments are embedded in an ever changing legal and institutional environment, their effectiveness depends in part on how well they can communicate with external actors, and especially to central government organizations (p. 1039).

The realization that cooperative arrangements between complementary governance actors are essential, but are not likely to emerge automatically, raises the question as to what institutional conditions are associated with successful cooperation within and between governance institutions. The literature on collective action addresses this issue explicitly.

(b) *Overcoming collective-action dilemmas in public organizations*

According to Miller (1992), to overcome collective dilemmas in public organizations, managers have a crucial role to play in fostering an environment propitious for cooperation. Several examples given by Miller (1992, p. 233), Tendler (1995), and Fizbein (1997), from both public and private sectors, show that managers can do so by demonstrating their credible commitment to cooperate with the organization's goals. Drawing on evidence from both laboratory experiments and fieldwork, Ostrom, Gardner, and Walker (1994) show that the prospects for overcoming open-access CPR dilemmas increase dramatically when actors (i) engage in recurring interactions, (ii) value the future benefits of cooperation, and (iii) are allowed to communicate face-to-face (p. 327). See also Ostrom and Walker (2003).

Johnson and Minis (1996) argue that because "information flow is the currency of all linkages between civil society and government," efforts to strengthen the performance of local governments need to consider the importance of communication between local government and civil society (p. 2). The analysis of rural development efforts in developing countries often stresses the vertical linkages between local organizations and agencies higher up in the governmental hierarchy (Cohen & Peterson, 1999; Parry, 1997; Tendler, 1995; Uphoff, 1986). Contributors to the literature on adaptive management tend to emphasize the need for both horizontal and vertical linkages to enable stakeholders to learn about the effects of their interactions with the ecosystem (Holling, 1978; Walters, 1986).

The lessons from these different branches of the literature are unambiguous: for governance actors to be able to cooperate effectively they need to communicate effectively with one another. Without such continuous communication, the governance actors will fail to learn about local conditions, needs, and preferences, the efforts of collective problem solving undertaken by other actors, as well as opportunities to combine resources with other actors. More important, when actors with low discount rates *do* interact repeatedly over time, trusting relationships can develop between them. As the literature on social capital has shown, trust between actors often lowers the transaction costs involved in working together effectively (Ostrom & Ahn, 2003; Putnam, 1993; Woolcock, 1998). The purpose of the empirical analysis that follows is to discern whether the patterns of repeated interactions between municipal governance actors help explain why some municipalities are more effective in the forestry sector than others.

(c) *Hypothesis*

The hypothesis of this study is that municipalities that have developed institutions for repeated face-to-face communication between actors at different levels of governance enjoy better conditions for learning and cooperating in public service provision than those municipalities where such institutions are not as well

developed. I propose that there are two types of communication linkages that are crucial for promoting sustained cooperation within the municipal governance system: *vertical* and *horizontal* communication.

Vertical communication refers to the interactions between actors at different levels of governance. For instance, forest users engage in vertical communication when they talk to municipal government staff or with central government officials. Vertical communication is important for both accountability and for devising differential policy responses. It is through vertical communication that principals find out what their agents have, or have not, done. The proper functioning of both upward accountability from municipal officials to central government and downward accountability from municipal government to citizens rely on the frequent use of these vertical channels of communication (Cohen & Peterson, 1999; Ribot, 2002). Vertical communication is also necessary for policy makers to acquire local information about time and place, which is one of the prime justifications for decentralization (Hayek, 1948; Ostrom, Schroeder, & Wynne, 1993).

Municipal government representatives also can communicate *horizontally*, with NGOs, other municipal governments, or other forestry actors operating in the municipal territory. These meetings are important for learning about opportunities to combine resources, experiences of other actors in solving common problems, training opportunities for staff, and to plan potential joint activities. The horizontal information exchange is linked to governance performance in two ways. First, the ease with which information passes between the various actors involved in both provision and production of services helps determine the eventual effectiveness of services produced (Forza & Salvador, 2001; Truman, 1971). Second, both vertical and horizontal communication can—if repeated over time, and if the group members value the potential future benefits from cooperation—lead to greater trust between participating actors (Lyon, 2000; Ostrom & Ahn, 2003; Petro, 2001; Putnam, 1993).

Since increased trust between actors would facilitate their cooperation, and such cooperation is deemed necessary for effective outcomes, a plausible link exists between local communication patterns and the effectiveness of municipal forest governance. By studying who talks with whom in the municipal governance system, I will assess empirically the existence and strength of this possible link. In the next section, the results of 205 interviews with municipal governance actors in Bolivia are used to test if horizontal and vertical communications influence the effectiveness of the municipal governance system in Bolivia.

4. THE APPROACH OF THE EMPIRICAL INQUIRY

The hypothesized effect of local communication patterns will be tested using the municipal governance actors' perceptions about their relationships with each other and with other organizations, such as NGOs and central government representatives. To capture these perceptions, I carried out in-depth, personal interviews with three different forestry sector actors in each of 50 randomly selected municipalities in the Bolivian Lowlands. The three actors, interviewed between November of 2000 and March of 2001, were the mayor who held office during 1996–99, [8] the municipal forestry officer, and the president of the Municipal Oversight Committee.

In addition to the municipal-level surveys, six municipalities were selected for in-depth, qualitative case studies. The six cases were selected on the basis of the municipal governments' degree of connectivity between the main actors in the municipalities' forestry sector. [9] The cases selected for the qualitative case studies are highlighted in Table 2.

(a) *Is the sample representative?*

The empirical analysis considers 32 out of the 112 municipalities that are located in the Bolivian Lowlands (29%). These 32 municipalities were selected from my original random sample of 50 Lowland municipalities, where the fieldwork for my dissertation research project was conducted. Because this particular article concerns the factors that influence the effectiveness of municipal *forestry* programs, I eliminated the 18 municipalities that did not organize any forestry-related activities during 1999–2000. A "difference-of-means" test was carried out to assess whether the sample of 32 municipalities is representative of all 112 municipal governments located in the Bolivian Lowlands. The results, presented in Table 3, show that, for the non-forestry variables tested, there are no statistically significant differences

Table 2. *Untransformed survey variables*

Municipality	Department	Approval ratings[a]	Forest Mgt rights[b]	Horizontal meetings[c]	Vertical meetings[d]
Ascensión de Guarayos	Santa Cruz	1	1	3	14
Bella Flor	Pando	1	1	2	6
Buena Vista	**Santa Cruz**	**0**	**0**	**1**	**5**
Cabezas	Santa Cruz	0	1	2	13
Charagua	Santa Cruz	1	1	2	14
Chimoré	Cochabamba	1	1	1	12
El Puente	Santa Cruz	0	1	3	11
El Sena	Pando	1	0	2	4
El Torno	**Santa Cruz**	**1**	**1**	**2**	**15**
Filadelfia	Pando	0	1	2	7
Guayaramerin	Beni	0	1	2	12
Gutierrez	Santa Cruz	0	0	2	4
Huacaraje	Beni	0	0	1	7
La Guardia	Santa Cruz	1	1	5	14
Loreto	Beni	0	0	0	3
Magdalena	Beni	0	0	1	2
Nueva Esperanza	Pando	0	0	1	2
Pelechuco	La Paz	0	0	1	2
Porvenir	Pando	1	1	3	14
Puerto Rico	Pando	0	1	2	2
Puerto Suarez	Santa Cruz	1	1	1	20
San Borja	**Beni**	**1**	**1**	**3**	**4**
San Buenaventura	**La Paz**	**0**	**0**	**1**	**7**
San Carlos	Santa Cruz	0	1	3	8
San Ignacio	**Santa Cruz**	**1**	**1**	**4**	**9**
San Javier	Santa Cruz	1	0	3	7
San Jos	Santa Cruz	1	1	3	6
San Julin	Santa Cruz	0	1	1	5
San Rafael	**Santa Cruz**	**1**	**1**	**2**	**11**
Santa Rosa	Pando	1	0	2	8
Santa Rosa	Beni	0	0	1	1
Urubich	Santa Cruz	0	0	1	9

Source: CIPEC (2001).

[a] 0 = Negative rating of municipal services in the forestry sector; 1 = positive rating of municipal services in the forestry sector.

[b] 0 = No formal property rights to smallholders; 1 = some formal management rights to smallholders.

[c] The number of monthly face-to-face meetings between the municipality staff and (i) municipal council members, (ii) other municipalities' staff, (iii) NGOs, and (iv) externally funded projects.

[d] The number of monthly face-to-face meetings between the municipality staff and (i) rural community representatives, (ii) SIF, and (iii) the central government land reform agency (INRA).

between the sample and the overall population of Lowland municipalities.

(b) *Dependent variables*

Two different measures of successful municipal governance were employed as dependent variables in this study. The first variable is estimated using variable scores of user satisfaction with the municipal provision of forestry services. The user ratings have been converted into a dichotomous variable, indicating whether the quality of forestry services provided by the municipal government in 1999–2000 were regarded as either "responding well to the rural population's needs in the forestry sector" or "responding poorly to the rural population's needs in the forestry sector." The variable was measured in interviews with the presidents of the Municipal Oversight Committees in the 32 municipal governments providing forestry services in 1999–2000.

Table 3. *Difference-of-means test for lowland municipalities in Bolivia*

	Population density (Ind/km^2)	Annual transfers (Bs. 100,000)	Human development index[a]
Population (N = 112)			
Mean	10.13	2.59	0.48
Std. dev.	28.03	2.66	0.07
Sample (n = 32)			
Mean	9.93	2.79	0.45
Std. dev.	14.11	2.95	0.05
95% Confidence interval	No difference	No difference	No difference

[a] The Human Development Index, developed by United Nations' Development Program (UNDP), is constructed by aggregating a series of indicators concerning citizens' life expectancy rates, literacy rates, access to education and health services, annual income, housing conditions, and other proxy measures for quality of life.

The second proxy measure of governance performance is the extent to which smallholders within the municipal territory have gained access to formal rights to manage forests after the creation of the municipal forestry program. [10] If such rights were issued to smallholders during 1997–2000, the variable takes on a value of 1, and if no rights were issued, the value is 0. The information needed to construct the variable was obtained from the Superintendencia Forestal (2001). Table 2 displays the distribution of both these dependent variables for all 32 municipal governments that provided some services in the forestry sector in 1999–2000.

(c) *Independent variables*

The discussion of the literature on social dilemmas in natural resource management pointed to the importance of face-to-face communication as a social foundation for sustained cooperation. Effective municipal governance, then, is not likely to develop in the absence of institutions that encourage the variety of local governance actors to engage in repeated interactions with each other. Two broad types of interactions are considered here: vertical and horizontal. The composition and measurement of each of these variables are discussed below.

(i) *Institutions for vertical interactions*

The vertical interaction variable measures the frequency of regular face-to-face meetings between municipal actors from different governance levels. The variable was constructed by adding the number of monthly meetings between (1) municipal government representatives [11] and rural community representatives, both in the field and in the administrative centers; (2) representatives of the SIF and the municipal government; and (3) representatives from the central government land reform agency, INRA, and the municipal government. [12]

(ii) *Institutions for horizontal interactions*

This variable indicates the number of monthly face-to-face encounters between the municipal government technical staff responsible for forestry issues and other actors, at the same level of governance, who are somehow involved in local forestry-related activities. The actors considered are: representatives of NGOs; representatives of externally funded projects; members of the municipal council; and technical staff of other municipal governments.

Table 2 shows the distribution of these variables for the 32 municipalities. Both independent variables reflect the conditions for achieving cooperation between the crucial actors of municipal forest governance. The theoretical prediction of the influence of these variables is that for any given municipality, the more vertical and horizontal interactions that take place, the more successful the cooperative outcomes of municipal forest governance. The effect of these variables will be analyzed using two different logit regression models. To control for other variables that may also influence the variance in the dependent variable, the analysis incorporates the following municipal-level control variables:

—*The ratio of municipal government budget per capita*: A municipal government with

more resources per capita could provide effective services more easily than a poorer municipality. [13]

—*The average literacy rate in the municipality*: Municipalities that have a higher proportion of literate people are likely to achieve better results, because cooperation between a government authority and literate forest users is likely to be easier. [14]

—*The amount of available forest resources per capita*: It is easier for the governance actors to be effective in allocating and enforcing formal property rights in municipalities where forest resources are more abundant and there is less rivalry between users. [15]

5. EMPIRICAL FINDINGS

The argument that the institutions for vertical and horizontal interactions are important for effective municipal forest governance receives strong empirical support from the statistical analysis. The results, presented in Tables 4 and 5, show that the more connected the municipal governance actors are vertically and horizontally, the better the governance outcomes in terms of both user approval ratings and smallholders' access to formal forest management rights.

(a) *The effect of vertical interactions*

The institutions for vertical interactions are positively associated with both measures of municipal service quality in the forestry sector. Controlling for the influence of exogenous variables such as literacy rates, municipal budget per capita, resource availability, the results in Table 5 indicate that the better the conditions are for vertical communication and accountability, the higher the probability is for positive approval ratings. According to Table 5, the effect of vertical communication on the probability that the municipality's smallholders have access to de jure forest management rights is even stronger. The R^2 scores suggest that the independent variables explain 55% of the variation in the property rights variable, which is almost twice the explanatory power of the model that uses the level of user satisfaction as its dependent variable. Moreover, the results in Table 5 reveal that in municipalities where the institutions for vertical interactions are either missing or very weak, there is only a 10% probability of being rated as a successful municipal governance system in the forestry sector. On the other hand, in municipalities where these institutions are the strongest, the same probability increases to over 90%. The marginal effect of one more monthly face-to-face meeting across governance levels, holding all other variables at their mean, corresponds to a 5.5% increase in the likelihood of receiving a positive user rating, and an 8.8% increase in the probability of facilitating smallholders' access to formal forest management rights.

A closer look at the data reveals that it is the number of monthly meetings with the central government's SIF that has the biggest influence on both measures of success. [16] Other factors remaining constant, a municipality can increase its probabilities for achieving success by meeting with SIF more frequently. Why might this be so? A plausible qualitative explanation is that SIF is quite proactive in specific forest-rich

Table 4. *Logistic regression estimates for predictors of municipal governance effectiveness*[a]

	User approval ratings (1)	Forest management rights (2)
Constant	−0.524 (3.410)	−0.050 (5.460)
Vertical linkages	0.220** (0.112)	0.361* (0.189)
Horizontal linkages	1.031* (0.553)	1.697** (0.859)
Per capita forest resources	−0.052 (0.078)	−0.368 (0.204)
Per capita municipal resources	−0.000 (0.000)	−0.001 (0.001)
Literacy rates	−0.039 (0.046)	−0.048 (0.073)
n	32	32
Prob. > chi^2:	0.029	0.0002
Pseudo R^2:	0.2809	0.5542

[a] Both models use logit estimators. Standard errors are in parentheses.

* Significant at the 90% confidence level.

** Significant at the 95% confidence level.

Table 5. *Changes in predicted probabilities for effective municipal governance*

	Probability of receiving positive user ratings (1)	Probability of smallholders having formal forest rights (2)
Vertical linkages		
—Min (1)	0.181	0.096
—Max (20)	0.936	0.990
Difference	0.755	0.894
Marginal effect[a]	0.055	0.088
Horizontal linkages		
—Min (0)	0.121	0.046
—Max (6)	0.960	0.996
Difference	0.839	0.950
Marginal effect[a]	0.252	0.393

[a] The effect on the dependent variable when increasing the specified independent variable by one unit while holding all other variables constant at their means.

areas of the Lowlands. According to the SIF staff, they always try to coordinate activities with the municipal technical staff when they carry out activities directly with communities. As a result, the municipal governments are likely to get some of the credit, even if the initiative was not theirs in the first place. This explanation is consistent with case study observations presented below.

(b) *The effect of horizontal interactions*

Between the two explicatory variables, the institutions for horizontal interaction seem to have the strongest influence on successful municipal governance. Controlling for other possible influences, the horizontal interaction variable is statistically significant at the 0.05 level, and the coefficient is quite strong. To get the same marginal effect of one additional horizontal meeting on the probability of successful outcomes, [17] the municipal actors would have to add more than four vertical meetings per month. This result would suggest that an average performing municipality would be able to increase its effectiveness most dramatically by trying to attract NGOs, external projects, private firms, and other municipalities to collaborate around forestry sector activities.

The probability of receiving positive ratings from users goes from about 12% for a municipality where there are few or no meetings between actors at the same governance level, to more than 95% for a municipality with the most frequent horizontal interactions. When replacing user ratings of performance with the more objective variable of the existence of smallholders with formal forest management rights, the relationship becomes even stronger. For a municipality that is average on all other characteristics, an additional monthly horizontal meeting increases the probability of being effective in facilitating improved forest tenure security for smallholders by 39%. Whereas the SIF seems to be the actor that most influences the likelihood for success through the vertical interactions, the interactions with NGOs seem to drive the results of horizontal interaction. In fact, when the meetings with NGOs are dropped from the horizontal interaction index, the horizontal interaction's coefficient loses its statistical significance.

Contrary to theoretical expectations, financial resources do not seem to have a direct and systematic influence on the effectiveness of municipal services. One should be wary, however, to suggest that financial resources are not important. Even to construct the institutions for communication, learning, and cooperation that are studied here would require a fair amount of financial resources. For instance, acquiring motor vehicles for municipal staff so they can spend more time in the field to work directly with forest users requires a financial commitment that many poorer municipal administrations are not willing or able to make.

Judging from the results of the quantitative analysis alone, it would be premature to suggest that repeated interactions *cause* more effective municipal governance. It is entirely possible that the causal arrows point in both directions. For example, it is quite conceivable that there would be more communication between actors

in municipalities where the users have a favorable attitude toward the municipal government's performance. The same goes for formal property rights, as it is quite plausible that if some smallholders have been helped by the municipal government to get formal management rights, it may very well spur other users to try to do the same, thus provoking more communication between actors. From a theoretical perspective, considering the lessons from the literature on social capital and collective action, one would expect past successes in municipal governance to produce strengthened relationships and more trust between actors, which in turn would lead to more interactions (Putnam, 1993; Woolcock, 1998). One would have to conclude that the causality is likely to flow in both directions in the two models. The findings from the qualitative case studies, which are discussed below, will shed some light on which direction of causality dominates in the Bolivian Lowlands. Another important objective of these case studies is to describe the specific characteristics of the causal mechanisms that would make well-connected municipal actors more effective.

(c) *Case study results*

The case studies carried out in the six selected municipalities illustrated that municipal governments can play a pivotal role in facilitating formal property rights. In each case study, in-depth interviews with local user groups, municipal government officials, and other essential governance actors were carried out to assess to what extent the municipal governance actors' activities influence smallholders' decisions in the forestry sector. The lessons from the case studies are organized in terms of the role of municipal forestry programs, repeated interactions and performance, and obstacles to good municipal governance.

(i) *The role of municipal forestry programs*

In the six municipalities, 109 smallholder farmers were interviewed with regard to their interest in forest management and their relationships with their municipal governments and other governance actors. All of the interviewed smallholders who had received formal forest management rights had, without exception, been assisted by their respective municipal governments.

The type of assistance varied substantially from one case to another. The municipal officers in San Borja, San Buenaventura, and Buena Vista, for example, act mostly as administrative advisors to forest users in their territories, reviewing their official paperwork to make sure that everything is in order before it is sent off to the appropriate central government agency. Officers in other places, such as El Torno, San Ignacio, and San Rafael, play more of a technical advisor role, helping users to develop management plans. In these three municipalities, the officers often go beyond what the municipal forestry mandate asks of them. The municipal staff of El Torno, a fast growing town of about 25,000 inhabitants just 70 km west of Santa Cruz, is a case in point. Here, one of the officers spends an average of three days a week working together with an FAO-supported project and several rural communities on forestry-related issues. One of these communities, Lagunillas, used to produce and sell charcoal illegally. With the technical assistance of the municipal staff, however, they now manage their charcoal production according to a management plan and are able to negotiate a better price for their legal charcoal products.

Nowhere is the potential of municipal forest governance better illustrated than in the municipalities of San Ignacio and San Rafael in the Chiquitanía region of Santa Cruz. Both municipalities were selected for their relatively high level of connectivity between their municipal governance actors. Because of this region's recognized ecological importance, several forest conservation projects function in the area. Both municipalities have been skillful in coordinating activities with these projects and hence extending their forestry programs considerably. The assistance of the municipal forestry officers in these two territories has been instrumental in developing the country's first two experiences with community forest management on private land in the communities of San Juancito in San Ignacio and San Lorenzoma in San Rafael. In San Lorenzoma, it was the community members themselves who first approached the municipal forestry unit for assistance after hearing about the possibility of community management in an announcement from SIF. The municipality responded by inviting the outposted SIF officer for an initial discussion in the San Lorenzoma community. In 2000, the community sold the timber from their first harvest for a net profit of about US$2,000, which was divided equally among the community's 13 families.

(ii) *Repeated interactions and performance*

The case studies confirm that in municipalities where actors at the municipal level engage in repeated interactions with local forest users, the conditions for achieving positive results are generally better. But they also bring out a dimension of municipal governance that the quantitative analysis did not: the possible origins of repeated interactions and joint activities. For instance, one of the municipal officers in El Torno said,

> If it hadn't been for the invitation from the FAO project to start working together in these communities, I probably would not have gone in the first place . . . but now that we have been working for a couple of years I know the local folks, and when they need help with something they come to me, not to FAO. I respond to them, not to FAO (ETSC3). [18]

A community leader from San Juancito in Santa Cruz also notes the change in the community's relationship with the governmental authorities after they started working with the municipality to create their first forest management plan:

> Only a few years back we tried to have as little contact as possible with any of the [governmental] authorities . . . they only seemed interested in charging us for this and for that . . . or just inspecting our forests. When Don José came and suggested we could get permits to sell our timber, we did not believe him at first . . . but now it's different. He is with us (SISC18, fictitious name used).

By succeeding in producing mutually beneficial outcomes, the municipal actors in San Ignacio became more motivated to continue the cooperation. The experiences from the better-connected municipalities show that local actors can overcome the temptation to free ride and seek rents within the municipal governance system. Their repeated interactions with each other serve to reinforce their commitment to the collective process of forest governance, and trust between actors can begin to form.

(iii) *Obstacles to good municipal governance*

The municipal forestry office in Buena Vista enjoys several favorable conditions for effective forestry governance: a relatively solid financial situation; strong demand for technical assistance from forest users, especially related to ecotourism activities; and a well-trained forestry professional in charge of the municipal forestry unit. Despite these favorable conditions, the performance indicators are not good. One potential explanation for this result is the high turnover rate of forestry officers. During the three years that the office had existed, three different individuals occupied the post as municipal forestry officer. The officer who was interviewed for the case study had been on his post for less than six months. While he expressed the intention to start working more closely with local forest users he also said he did not have the time or the resources to visit local communities. Ultimately, the short period of time each officer has stayed on the job has prevented the unit from connecting with users and other governance actors to develop the institutions for collaborative governance.

The lack of continuity among municipal staff is a common problem throughout Bolivia, and a major obstacle to achieving effective municipal governance. Based on this study's survey results, the current "professional life expectancy" of a municipal forestry officer in Bolivia is just above 13 months. It is interesting to note that the better-connected municipalities (in terms of both vertical and horizontal interactions) have staff who, on average, stay more than four times as long on their jobs compared to the less connected municipalities. [19] A parametric correlation test between the independent variables and the permanence of municipal forestry officers showed that there is a significant correlation at the 5% level, between the permanence of staff and vertical interactions ($r = 0.56$) as well as with horizontal interactions ($r = 0.41$). This finding lends support to the argument that there may be underlying institutional conditions—such as the constitutional rules that allow an entering mayor to replace all municipal personnel—which will influence the occurrence of repeated interactions between actors.

6. CONCLUSION

Given many of the adverse institutional conditions in the Bolivian forestry sector it is not difficult to explain why some local governments fail to provide effective responses to problems in the forestry sector. Lack of funds, human resources, traditional domination of political and economic elites, and a weak rule of law are just some of the forces that work against effective decentralized forest governance. It is more difficult to explain how some Bolivian municipal actors have been able to

overcome the difficult institutional conditions to provide and produce relatively effective services in the sector. This study offers an institutional explanation to these unexpected occasions of apparent success.

The study's results support the hypothesis that municipalities that have developed institutions for repeated interactions between the core actors in the municipal governance system are more likely to be more effective providers of public services in the forestry sector. The study finds that by facilitating communication among actors in the forestry sector, municipal governments can play a crucial role in forging cooperative ties. Their role as facilitators, however, is often severely constrained by high turnover rates, the low priority given to forestry by many municipal administrations, as well as their rather limited fiscal and regulatory mandate in the forestry sector.

Repeated, face-to-face interactions over time have the potential to raise the performance of the governance system, because good communication is the cornerstone for participatory governance. Even so, communication may not be *sufficient* to make forestry governance effective. Even if the municipal actors are well connected and receive essential information as a result of frequent meetings, the actors may not always know what to do with the acquired information. If information exchange is to have an effect, the actors must learn how to use the information effectively. Nevertheless, by studying who is talking with whom within the municipal governance system, it is possible to assess the conditions for inter-actor cooperation.

Finally, this study has demonstrated that the effectiveness of municipal forest governance is related to the performance of the governance *system* as a whole. The individual municipal actors are complementary parts of the larger municipal governance system, who, if they cooperate, can achieve collective goods that none of them could achieve alone. The collective effort of constructing participatory governance institutions relies on fluid communication, not just for acquiring essential information about local conditions and operational day-to-day decisions, but also for developing trusting relationships between actors. The greatest transformation in governance performance is likely to occur when actors begin to trust each others' commitment to contribute to the group effort. Without continuous interactions between actors, where they receive confirmation of the other actors' true intentions, such trust is unlikely to develop.

NOTES

1. *World Development*'s own publishing record reflects this trend as the number of published articles related to decentralization of natural resource governance has increased from two articles during 1983–92 to at least 16 articles during 1993–2002.

2. Some municipalities, however, are known to break this rule and have taxed and fined users as they see fit.

3. The Forestry Law refers to these community concessions as ASL concessions. ASL stands for *Agrupa ciones Sociales del Lugar*, loosely translated to Local Social Groups.

4. *El Comité de Vigilancia* is an association of local community representatives, empowered by the 1994 Popular Participation Law to monitor the performance of the municipal government.

5. Miller states, "There is no way to make an organization of diverse individuals into a machine... Individuals in hierarchies inevitably find themselves in situations in which their own self-interest is in clear conflict with organizational efficiency" (Miller, 1992, pp. 198, 232). This is consistent with Singleton's finding from the problem of regulation in the fishery sector. She notes that in theory, "successful management is possible with the creation of institutions... but since such institutions are themselves public goods, their creation and maintenance constitute [collective] problems in their own right" (Singleton, 1998, p. 10).

6. Common collective-action problems within hierarchies include free riding, shirking, and rent seeking.

7. See also Brinkerhoff (1996) for the importance of interagency communication and coordination.

8. The survey used in the interviews with the mayors is almost identical to the survey developed by Gibson and Lehoucq for their research in Guatemala (see Gibson & Lehoucq, 2003).

9. Since the hypothesized explanatory variables have to do with the local conditions for communication and cooperation among the municipal governance actors, the selection of cases sought to maximize the variation of the strength of these institutions across the six cases. Three municipalities with low values of connectivity and three with high levels were selected, as shown in Table 2.

10. Individual properties larger than 200 ha were excluded from this calculation to capture smallholder properties only.

11. Both elected officials and professional staff are included in this category.

12. Though not directly involved with the governance of forest resource, INRA is a critical actor. For the SIF to issue any forest property rights, the lands associated with such rights must first be certified by INRA as uncontested private or communal property.

13. The variable was constructed with data from Superintendencia Forestal (2001) and Government of Bolivia (2000).

14. From Government of Bolivia (2000).

15. This variable was calculated using a geographic information system by overlaying INRA's records of population and municipal boundaries with the SIF's map of forest lands designated to forestry by the national land-use planning process. The SIF map is referred to in Spanish as the "Tierras de Producción Forestal Permanente."

16. When the interactions with SIF are dropped from the vertical interactions variable, the index loses its significance at the 5% level.

17. This is true for both measures of effectiveness: user approval and smallholder property rights (see Marginal Effect data in Table 5).

18. Codes are used as references to personal interviews to protect the anonymity of interviewees.

19. The average time of duty for professional staff in low-connected municipalities was 5.2 months, compared to 23 months for well-connected municipalities.

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