Municipal Politics and Forest Governance: Comparative Analysis of Decentralization in Bolivia and Guatemala[*]

By: KRISTER P. ANDERSSON, CLARK C. GIBSON, and FABRICE LEHOUCQ

Andersson, Kristen P., Clark C. Gibson, and Fabrice Lehoucq. "Municipal Politics and Forest Governance: Comparative Analysis of Decentralization in Bolivia and Guatemala," World Development, Vol. 34, No. 3 (March 2006): 576-95.

Abstract:

Summary. — The success of efforts to decentralize governance responsibilities hinges upon the incentives of local politicians. We test this argument by studying the experiences of forestry sector decentralization in Bolivia and Guatemala. We analyze the survey responses of 200 mayors and show that local-level institutional incentives are systematically linked to variations in local politicians' interest and investment decisions in the forestry sector. Further, we find that a decentralization policy that transfers very limited decision-making powers to local governments stifles local interest in organizing resource governance activities.

Key words — Latin America, Bolivia, Guatemala, decentralization, incentives, forestry

Article:

1. INTRODUCTION

Policymakers across the globe have turned to decentralization reforms to improve the governance of forests. Until the 1970s, central governments tended to view forest governance as a top-down affair to maximize economic development. But given the perceived failure of these top-down forestry policies, decentralized policy has become a highly touted response to the difficulties of forest governance. The logic of this recent wave of forestry decentralization reforms is that local governments can design more appropriate policies because they are more familiar with both the local environment and the needs of local users.

Some scholars and policymakers argue that decentralization will work because local communities and politicians have the specific time and place information needed to construct better policies than central governments (i.e., Hayek, 1948; Oates, 1999; World Bank, 1988). Others indicate that decentralization operates differently depending on precisely what powers are

[*] We acknowledge financial support from the National Science Foundation (Grant #SES0004199) and the Center for the Study of Institutions, Population, and Environmental Change (CIPEC) at Indiana University (NSF Grant #SBR9521918). We thank the 200 mayors in Bolivia and Guatemala, whose voluntary participation in interviews made this study possible. We thank David L. Wall (Department of Geography, St. Cloud State University) for allowing us to use the database of Guatemalan census returns he developed with Lehoucq. We also express our gratitude to three anonymous reviewers, and to several of our colleagues who read and commented on earlier drafts of the paper. We especially thank Tim Bartley, Edwin Castellanos, Pam Jagger, Michael McGinnis, Elinor Ostrom, Diego Pacheco, and Frank van Laerhoven. Thanks also to Patty Lezotte, Sarah Kantner, and David Price for editing the paper. Final revision accepted: August 29, 2005.

decentralized (i.e., Cohen & Peterson, 1999; Litvack, Ahmad, & Bird, 1998; Ribot, 2002; Rondinelli, McCullough, & Johnson, 1989). Still others argue that decentralization may work, but only in the context of specific institutions that include mechanisms of accountability, oversight, and resource transfers (i.e., Agrawal & Ribot, 1999; Andersson, 2003; Blair, 2000; Fiszbein, 1997; Gibson & Lehoucq, 2003; Larson, 2002). Studies using relatively large samples of municipalities to test these hypotheses are uncommon for single-country studies and non-existent for multi-country studies. Consequently, we do not possess very much systematic evidence about one of the most significant policy innovations in the environmental arena in the past 50 years.

Building on the initial one-country studies by Andersson (2003) and Gibson and Lehoucq (2003), this study takes the analysis of institutional incentives for decentralized forest governance one step further by comparing the dynamics of municipal politics in two different countries. This allows us to explore whether these conditions are country specific or operate at a more general level. Another advantage of such a comparative effort is the possibility to analyze the effectiveness of the contrasting institutional designs of the two countries' decentralization reforms.

We posit that one of the fundamental conditions for decentralization policies to be effective is that the local government officials, to whom governance responsibilities have been handed over, are interested in carrying out their new mandate. Policy analysts should not take such interest for granted, especially when it comes to environmental governance. The problem is often that local governments bear substantial costs associated with environmental protection, but reap only a small part of the benefits. This collective-goods dilemma raises an important question: Why would local politicians be interested in forest governance?

We try to answer this question by constructing a theoretical argument that puts local politicians at the center of the analysis. More specifically, we explore the incentives that might affect local government mayors' interest in decentralized forest policy. Since the local government mayor—in his or her capacity as the local government executive—often has the last word when it comes to defining work area priorities and allocating municipal resources to those areas, it is crucial to consider the mayor's perceptions of the rewards and penalties associated with different allocation decisions.

Though focusing on mayors, our approach indirectly recognizes that other actors—such as local resource users, central government agents, and special interest groups—also play important roles in decentralized resource governance. We let their influence on municipal affairs manifest itself through the degree of political pressure and financial rewards that the mayor perceives when interacting with each of these actors.

Following this logic of decentralized governance, our prediction is that mayors are more likely to express interest in—and actively support—municipal forest governance when they see a political advantage in doing so.

We assess the usefulness of this argument by comparing local governments in Bolivia and Guatemala. In the mid-1990s, national governments devolved important responsibilities over

forests to the municipal governments. In 2000–01, our research team carried out extensive fieldwork in 200 randomly selected municipal governments in Bolivia and Guatemala. In each municipality, we interviewed the mayor for approximately two hours and collected data on the municipality's biophysical and socioeconomic characteristics.

The results of our fieldwork indicate that there is considerable variation in the political priority that the mayors place on forestry. We find that the relative strength of three institutional incentives at the local level helps explain why some mayors are more interested in forestry governance than others. Furthermore, Guatemalan mayors have significantly more interest and report taking more action regarding their forests than their Bolivian counterparts. We link this difference in outcome to the greater authority and experience that the Guatemalan mayors exercise over forest resources within their territories.

We develop our study in five sections. In Section 2, we provide an overview of the move to decentralize natural resource policy, especially in the developing world. Section 3 theorizes about local politicians' incentives in light of decentralized natural resource policy. We then introduce the particular decentralization trends in Bolivia and Guatemala in Section 4, paying particular attention to the tradition of municipal governance and forestry legislation that shape mayors' perceived incentives to get involved in forestry sector governance in each of the two countries. In Section 5, we present our hypotheses, variables, and methods. The final section discusses the implications of this study for environmental policy processes and future studies of decentralized natural resource governance.

2. DECENTRALIZING NATURAL RESOURCE MANAGEMENT: AN OVERVIEW

The last 30 years has seen significant shifts in ideas about the governance of forests and their role in development. Until the 1970s, policymakers and analysts generally agreed that central governments should exercise control over forests to meet national goals of development (for reviews, see Arnold, 1992, 1998; Wunsch & Olowu, 1990). The policies that flowed from such thinking emphasized the "rational" exploitation of forests with regard to economic returns (Richards & Tucker, 1988). Donor aid also followed such prescriptions by promoting the scientific and highly controlled management of forest resources: timber plantations and the expansion of industrial forestry were often the result.

The perceived failure of top-down forestry policies generated two major approaches to decentralization. The first seeks to devolve property rights over the forest to local individuals and communities. Based on the idea that local communities that live within forests, are primary users of forest products and create de facto rules that significantly affect forest conditions, scholars and policymakers argue that better and more equitable outcomes can be reached by transferring de jure rights over forests to the local level (Arnold, 1990; Ascher, 1995; Bhatt, 1990; Clugston & Rogers, 1995; Dei, 1992; Ghai, 1993; Ostrom, 1990; Perry & Dixon, 1986; for reviews, see Agrawal & Gibson, 1999; Baland & Platteau, 1996; Wiesner, 1990). The core idea is that local users hold important time- and place-specific knowledge necessary for the creation of successful institutional arrangements (Berkes, 1989; Bromley et al., 1992; Gibson, 2001; McCay & Acheson, 1987; McKean, 1992; Ostrom, 1990, 1992; Peters, 1994; Wade, 1987). As the idea of community management of forests took root, donors supported dozens of projects that featured

significant roles for local people and pushed for enhancing local rights (for a review, see Agrawal, 2001).

The second approach to forestry governance advocates the decentralization of the formal powers of government to its own subunits. Decentralization's proponents voice arguments quite similar to those who advocate community forest management: making local governments responsible for the provision of a wide variety of goods and services that should result in more efficient, flexible, equitable, accountable, and participatory government (Blair, 2000; Chubb, 1985; Crook & Manor, 1998; Feldstein, 1975; Ferejohn & Weingast, 1997; Maro, 1990; Oates, 1972; Rondinelli et al., 1989; World Bank, 1988). Unlike national-level agencies, local politicians and officials should design more appropriate policies because they are more familiar with the characteristics of both the local environment and the needs of resource users. According to the World Resources Institute, at least 60 countries are decentralizing[1] some aspects of the governance of natural resources (Ribot, 2002).

Debates also exist within the decentralization literature about the ingredients necessary for successful decentralized natural resource policy. Two theories are prominent. First, many analysts contend that decentralization efforts fail because central governments do not provide local units with sufficient financial and administrative resources.[2] Their argument is that even if some political power were decentralized, central governments may pass off their environmental duties to subunits without support, essentially providing an unfunded mandate and undermining de facto decentralization (e.g., see Agrawal & Ribot, 1999; Boone, 2003; Gibson, 1999).

Pacheco and Kaimowitz (1998), for example, argue that the lack of municipal action in the forestry sector for nine Bolivian municipalities stemmed from limited financial and human resources, and not from the municipalities' lack of interest in forest decentralization (see also Kaimowitz, Vallejos, Pacheco, & Lopez, 1998; Kaimowitz et al., 2000). Pacheco's (2000) revisits to the same municipalities found similar results: the extent of municipal forest governance relates to varying levels of finances, institutional capacity, and central government funding, even though such funding flows regardless of performance. Larson (2002) also finds that wealthier municipal governments perform better under Nicaragua's decentralized forestry policy.

Second, in addition to sufficient resources, some scholars argue that effective decentralization requires a combination of devolution of significant powers to the local government and downward accountability. Several recent studies assert that positive decentralization outcomes require effective local institutions that can make the empowered local politicians respond to the preferences of their constituents (Blair, 2000; Crook & Manor, 1998; Manor, 1999; Rolla, 1998). Local-level elections are the form of accountability most scholars explore; they find that regular, fair, and competitive elections induce politicians to create policies that can turn decentralized powers into efficient and equitable outcomes (see Blair, 2000; Crook & Manor, 1998; Echeverri-Gent, 1992; Fiszbein, 1997).

Both the lack of resources and accountability approaches are useful in moving us away from the uncritical acceptance of decentralized policy as the panacea to all environmental ills. Both bodies of work (unlike the public finance literature in which local politicians are assumed to be benign implementers) assume that local politicians and officials have their own goals in mind that might

impede or distort decentralized policy. However, only a handful of authors specifically analyze the factors that might influence the local politicians' interest in carrying out their decentralized mandate. One of them, Larson (2002, p. 28), finds that the varying quality of municipal forestry governance depends partly on the economic motivation of local politicians: municipal governments are less likely to carry out activities in the forestry sector when there are few financial benefits to municipal officials from doing so.

Fiszbein (1997, p. 1034) finds similar results in his study of municipal governance capacity in Colombia. Among other factors, he points to the importance of a motivated mayor for decentralization to succeed. Andersson (2003) and Gibson and Lehoucq (2003) specifically analyze the factors that influence the varying levels of local politicians' motivation to get involved in natural resource governance activities. Independently, these two studies conclude that institutional incentives—such as pressure from organized forest user groups, central government support and supervision, and timber royalties—are key factors to consider when explaining varying levels of municipal-government interest in natural resource governance.

This study seeks to make three new contributions to this body of literature. Our first objective is to discern how different institutional designs for decentralization reforms affect local interest in forestry. As such, we compare the level of local interest in forest governance and the factors that influence the formation of such interest in two distinct national policy environments. Second, we aim to improve on existing analyses of the factors that may influence mayors' interest in forestry by considering a large sample of municipal governments. Finally, we seek to illustrate the usefulness of employing a greater variety of analytical methods to this area of research. We argue that cross-national comparative studies that use quantitative methods have the potential to provide new insights and robust tests of existing ideas about decentralized governance systems. They are an important complement to the qualitative case study approach that currently dominates the study of decentralized forest governance systems.

3. ANALYZING LOCAL POLITICIANS' INTERESTS

We approach the problem of forest governance from the perspective of local politicians. As opposed to decentralization studies that assume beneficent local governments interested in maximizing social welfare (and falling short only because of a lack of technical competence or appropriate resources), we view local politicians as individuals who worry about staying in power. Staying in power, in turn, means that local politicians must make choices about how to employ their limited time and resources to serve political as well as programmatic goals. Given this view, decentralized natural resource management may or may not change local politicians' preferences in a way that protects forests. The important point is to view the interests of local politicians as distinct from the interests and goals of the central government and its decentralization policy.

Our approach builds on the work of the new institutionalism school of political economy. (We draw mostly on Bates, 1998; Knight, 1992; North, 1990; Ostrom, 1990.) New institutionalists examine the impact of institutions on political behavior. An approach that focuses on the incentives of local politicians allows these pivotal individual actors in decentralized natural resource management to hold explicitly political preferences that may overwhelm the dictates of economic or environmental efficiency. Given that local politicians are the individuals charged

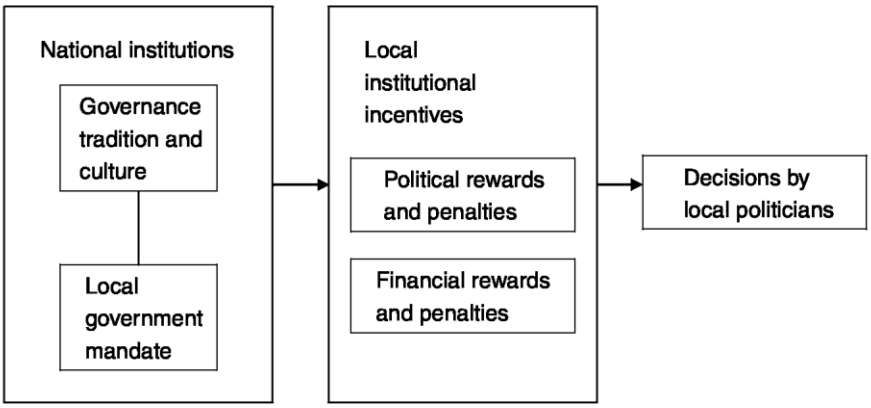
with carrying out decentralized policies, explaining their interest in carrying out such policies requires the exploration of the incentives and constraints that local politicians face.

We view the decisions of local politicians to be shaped by both national and local-level institutions, as illustrated by Figure 1. The local politicians' incentive structure is composed of the perceived rewards and penalties from political as well as financial perspectives. These incentives emerge from the patterns of interactions between local politicians and a variety of actors, such as resource users, central government representatives, and private interest groups. We propose that the characteristics of these interactions at the local level will in part depend on national-level institutions, such as the particular mandate given to local governments and their experience in local governance. Our principal argument is that local politicians will invest their time and resources into forestry activities if they reap political and/or financial rewards from doing so. Investing in a municipal forestry program may, for example, enhance or constrain their official powers, their municipality's revenues, or their electoral chances. More specifically, we argue that these rewards will vary with three conditions:

(1) The degree of fiscal and/or regulatory power granted to local governments.[3] We hypothesize that local politicians are more likely to express interest in forests if they are granted more fiscal and regulatory powers from the central government. Local politicians are ever searching for increases in revenues. (For forestry-specific findings on this issue, see Kaimowitz, Pacheco, Mendoza, & Barahona, 2001.) If a decentralized forestry policy allows for this, mayors should be interested in such new policy. The powers of regulation may also allow the politician to distribute benefits or costs within his or her constituency.

(2) The strength of demands from local interest groups.[4] We reason that locally organized interest groups will shape the mayor's behavior, especially since mayors in both Bolivia and Guatemala can stand for re-election. The possibility for re-election means that mayors do not want to ignore potential sources of votes or campaign finance resources. Such interest groups may be a farmers' cooperative, a local community, a forestry firm, or an international conservation group working in the municipal territory. If a group can articulate an interest to the municipal government or mobilize citizens, it can become a constituency that mayors will want to placate.

(3) Central government support and supervision.[5] Local politicians are likely to invest more time and effort in forest governance activities, the greater the oversight from central government. Central governments can impose costs for non-compliance, creating interest on the part of a local politician. And if central governments provide resources for the policy and monitor how these are used, investments in mandated activities should increase.



There are at least two alternative theories to account for local politicians' interest in decentralized environmental policy. One relates to those variables reflecting the personal characteristics of the mayor—such as his or her level of education, political party membership, and the length of local residence—that might influence his or her attitude toward the forestry sector (Baiocchi, 2001; Houtzager, 2003). Some scholars argue, based on the experiences of industrialized countries, that local politicians' interest in environmental issues may be associated with a post-materialist political culture (e.g., see Dalton, Recchia, & Rohrschneider, 2003; Inglehart, 1989; Rohrschneider & Dalton, 2002). The basic theory of these studies is that the more the affluent and educated members of society are, the more environmentally aware and active they will be.

There are also several biophysical and socioeconomic factors that might influence the motivation of local politicians. The availability and value of forest resources will affect decisions to invest in forest conservation (see Andersson, 2003). If there are extensive forests that might generate income and employment opportunities for the electorate, then a local politician might respond positively to any new powers bequeathed to him or her by the central government. Market access may also increase the value of forest resources and encourage local governments to protect (or exploit) these natural resources.[6] Many analysts also argue that the presence of indigenous populations— groups that often have a high degree of dependence on natural resources for their livelihood and therefore possess intricate, long-term knowledge of the ecosystem where they live— are more likely to protect environmental resources (Becker & Leo´n, 2000; Birk, 2000; Elias, 1998).

4. THE CASES OF BOLIVIA AND GUATEMALA

In 1996, lawmakers in two of the poorest Latin American countries introduced what many today consider the most innovative decentralization programs in the region (FAO, 1999; Ferroukhi, 2003). Even though Bolivia and Guatemala introduced forestry decentralization reforms in the very same year, there are several significant differences—both in the historical and contemporary roles of municipal governments in each country's forestry sector.

In Bolivia, the control over forestry sector activities has never been firmly in the hands of municipal governments. Even in the late nineteenth century—a period during which the

country's local governments enjoyed extensive autonomous decision making in essentially all spheres of economic and political life—such autonomy did not apply to the forestry sector (Fifer, 1967; Kohl, 2002; Rodriguez, 1995; Tambs, 1966). At the time, the country's most valuable forest resources were under private control in the form of extensive concessions from central government to private third parties who had exclusive rights to extract timber from these areas.[7] After the 1952 revolution, the Bolivian government relied on a top-down, hierarchical governance structure to implement their centrally planned economic model of development. The new government saw itself as the "powerful, direct administrator of the productive sectors" (Mesa, 2001, p. 88). By the 1970s, the public sector had grown to encompass a total of 520 bureaus and agencies (World Bank, 2001).

Bolivia's central planning model supported the exclusive right of private timber companies to exploit forest resources through the establishment of timber concessions, which at one point exceeded 21 million hectares (Pacheco, 2000). Municipal governments would not have any say in the governance of the forestry activities within the boundaries of its territory until 1996, when the decentralized regime was introduced through Forestry Law #1700 (Government of Bolivia, 1996). The recent reforms redistributed the governance responsibilities in the forestry sector somewhat, but the sector still remains under more centralized control relative to other sectors, such as agriculture, health, and education.

In contrast to Bolivia, Guatemala's central government has relied more heavily on municipal governments for the governance of natural resources. Historically, the municipal government jurisdiction in Guatemala has included the governance of significant forest resources within the municipal territory (Ferroukhi & Echeverria, 2003). The historical evidence of the relatively prominent role of municipal governments in Guatemala's forestry sector can be traced back to colonial documents in the seventeenth century, when the Spanish recognized the powers of municipal-level authorities to administer and lease out municipal forest lands, or ejidos municipales, to rural communities (FLACSO, 2002). Many of the current formal responsibilities seem to have originated from previously informal practices that were just recently codified into official government policy through the forestry decentralization reform.

In 1996, policymakers in Bolivia and Guatemala decided to delegate major responsibilities and substantial funds to municipal governments with the democratization and stabilization of politics in the 1980s. In 1994, Bolivian politicians enacted a Popular Participation Law that transformed provincial sections into municipalities and transferred substantial powers and resource to the democratically elected municipal governments.[8] Mayors in both countries may be re-elected for a maximum second term. In 1985, the Guatemalan Constituent Assembly decided that 8% of the national budget should be funneled to local governments, a figure that a constitutional amendment raised to 10% in 1993.

Both countries' forestry laws devolved significant authority and financial means to municipalities to administer public forests within their jurisdictions. In Guatemala, the forestry law formalized a combination of municipal governance arrangements related to forests that had been based largely on customary rights that originated from the Spanish colonization (Alonso & Lautaro, 1999; FLACSO, 2002) with a set of new and more specific environmental responsibilities (Ga´lvez Borrell & Camposeco Hurtado, 1997). Today, both countries'

municipal governments are responsible for providing technical advice to local forest users and assisting the central government's forestry authority to enforce the national forestry laws.

But the countries' decentralization policies vary in three important ways (see Table 1). First, Bolivian municipalities are not allowed to collect any taxes on forestry activities, charge user fees for the forestry services produced, or impose fines on individuals who are caught disobeying government laws and regulations. In contrast, Guatemalan municipalities do enjoy those rights. Second, municipal governments in Guatemala, but not in Bolivia, have the authority to own their own forest land, which they can manage according to their own management rules and even rent out to local users. Not all municipal governments have taken advantage of these rights, however, partly because of the scarcity of municipal property of forested lands in certain areas. Finally, the local governments in Guatemala, but not in Bolivia, may cede the responsibility of resource governance to rural communities via local agreements.

Our comparison of the existing institutional arrangements for decentralized forest governance in the two countries suggests that mayors in Guatemala enjoy more regulatory and fiscal authority in the forestry sector than mayors in Bolivia. This difference in mandate and governance tradition leads us to believe that mayoral responses to the decentralization policies are different in the two countries. We test this assertion with empirical data from interviews with 100 mayors from each country.

5. DATA, TESTS, AND RESULTS

We employ a variety of data and tests to explore our argument about the causes of local politicians' interest and actions in the context of decentralized environmental policy. To obtain data about mayoral incentives, attitudes, decisions, and actions, we surveyed 100 randomly selected municipal governments in Bolivia (out of a total of N = 314) and another 100 in Guatemala (out of N = 331) in 2000–01. The selected municipalities are displayed in Map 1.

In each selected municipality, we interviewed the elected mayor who held office during the 1996–2000 term; each interview took approximately two hours in a face-to-face meeting. The survey instrument (258 questions) was designed to elicit information regarding the mayor's policy priorities, staff, relationship with central and non-governmental agencies, and relationship with citizens. It uses a variety of techniques to understand mayoral incentives and behavior. Checking mayors' responses with census data, we believe the survey is highly reliable.[9] In addition to the survey data, the research teams collected structural, biophysical, and socioeconomic information for each municipality from subnational census data and the national forestry databases. For Bolivia, we take data from the 1992 and 2001 census (INE, 1993, 2002). For Guatemala, we draw upon the 1994 Population Census (INECELADE, 1997).

We asked mayors to consider the importance of different sectors relative to others according to an ordinal scale ranging from 1 (much less important than other sectors) to 5 (much more important than other sectors). Mayoral responses in Figure 2 reveal that mayors in both countries are less interested in forestry than other sectors. Forestry is one of the lowest- ranked sectors in both Bolivia and Guatemala. The median ordinal score given to forestry by

Table 1. *Municipal forestry mandates in Bolivia and Guatemala*

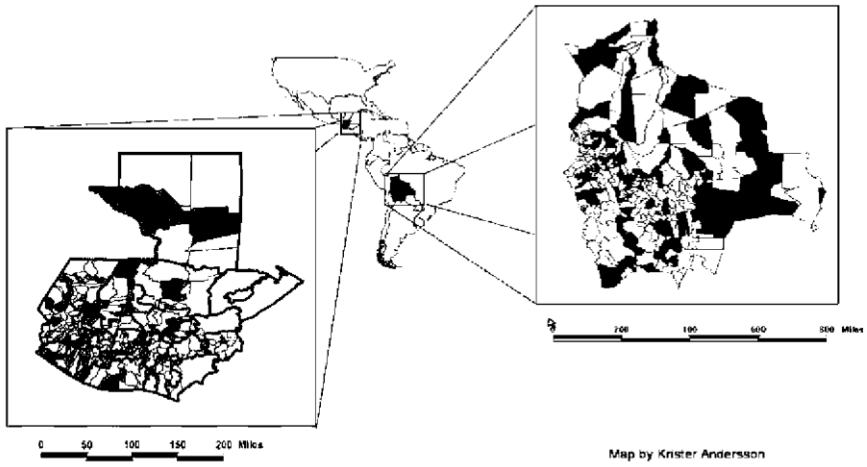
Mandate	Bolivia	Guatemala
Judicial	—The State owns all natural forests —Municipal Governments (MGs) are asked to assist the central government in monitoring and enforcement of national forestry law and regulations —MGs may propose municipal forest reserve for associations of local forest users on up to 20% of the total forested public land within the municipality —MGs should assist local user groups in making forest management plans. MGs should report transgressions of the forestry law to the central government, which decides what sanction to impose, if any. Fines paid go to the central government	—Private ownership of forest resources is possible —MGs may own and manage forest resources —MGs may make user and management rules and decisions in municipally owned forests —MGs are asked to monitor compliance with forestry law and offer technical advice when it comes to other parties' activities in public and private forests —MGs are authorized to issue forest management licenses for up to 10 cubic meters of timber —MGs may apply sanctions and collect fines directly from transgressors
Fiscal	—MGs receive 25% of commercial logging royalties collected by the central government (USD 1 per hectare of managed forest) —MGs are *not* allowed to charge user fees for services provided or to charge any property or management taxes in the forestry sector	—MGs receive 50% of all commercial logging taxes collected by the central government (10% of commercial value of standing timber) —MGs may charge user fees for services provided —MGs may rent out forested municipal *ejido* land to residents
Technical	MGs give technical advice to local forest users to acquire formal management rights and to prepare forest management plans	MGs give technical advice to local forest users to acquire management rights and to prepare forest management plans
Socioeconomic	—Organize training for user groups —Facilitate and promote commercial undertakings and private-sector participation in the municipality —Supply data for the national forestry registry database	—Disseminate forestry legislation —Help users legalize their forest use —Formulate sector investment projects —Supply data for the national forestry registry database

Sources: *For Bolivia*: Government of Bolivia (1994, 1996). *For Guatemala*: Government of Guatemala (1996), Ferroukhi and Echeverría (2003), FLACSO (2002).

the mayors in the two countries corresponded to "less important than other sectors." While forestry ranks relatively low in both countries, Guatemalan mayors rank forestry higher than their Bolivian counterparts (Guatemala = 3.3; Bolivia = 2.7), and this difference is statistically significant ($p < 0.05$). The survey also asks mayors about the number of staff that they have in the forestry sector, from which we calculate the percentage share of all staff they say they employed. These results are presented in Figures 2 and 3. Approximately half of Bolivian (48%) municipalities do not have any staff assigned to forestry tasks, a proportion that jumps to over 60% in Guatemala. While
the number of municipalities that have some staff working in forestry is greater in Bolivia, the difference between the average number of forestry-related staff per municipality in each country is not statistically significant (Guatemala = 0.95; Bolivia = 1.10).

Figure 4 displays our survey results regarding the share of the municipal budget that the mayors allocate to forestry activities. Guatemalan mayors give an average of 3.5% to forestry. Bolivian mayors, in contrast, fund forestry with an average of 1.7% of the municipal budget. The

difference of mean budgetary allocation for each country is statistically significant ($p < 0.05$). These results indicate that forests



Map 1. *Selected municipalities in Bolivia and Guatemala (n = 200).*

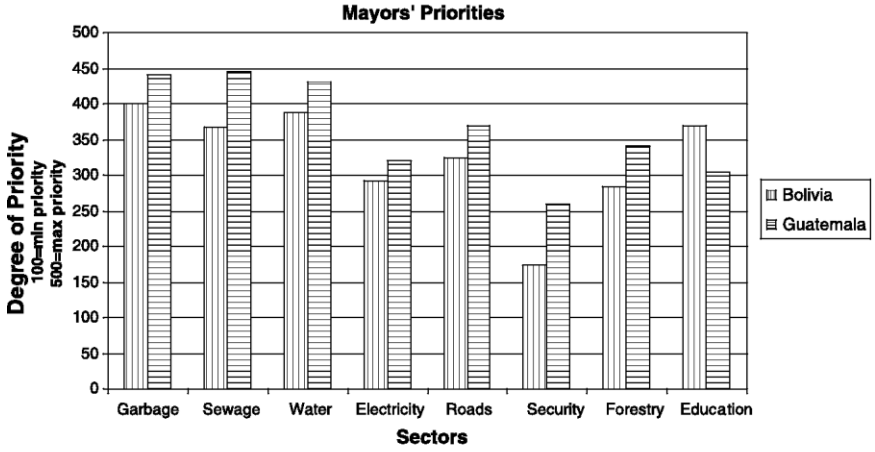


Figure 2. *Results of mayors' ranking of priority sectors.*

are not a priority for the majority of mayors in either country as measured by their rankings of sectoral priorities, or their staff and budgetary allocations, though the results also indicate that there is variance within and between the two countries. To unpack these variations, we employ multivariate tests.

We use a series of ordered logistic regression equations to test the effect of the mayoral incentives on three different measures of mayors' attitudes and decisions because our dependent variables are ordinal.[10] The models were estimated from a pooled sample of all observations in both countries with dummy variables included for country, defining Guatemala as the comparison case (xcountry = 0). The models' dependent and independent variables are described below; their descriptive statistics are shown in Table 2.

(a) ***Dependent variables***

We employ three proxy measures of the mayors' interest in forestry sector activities: (1) the level of municipal budget allocated to forestry activities, (2) the level of municipal staff assigned to forestry, and (3) the relative level of importance assigned to the forestry sector by the mayor. The dependent variables are all three-step ordinal variables, for which a value

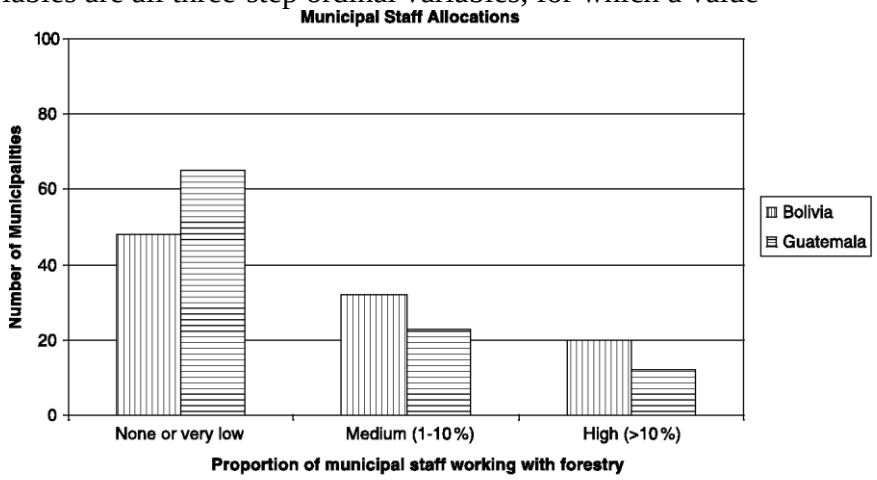


Figure 3. *Distribution of municipal forestry staffing (n = 200).*

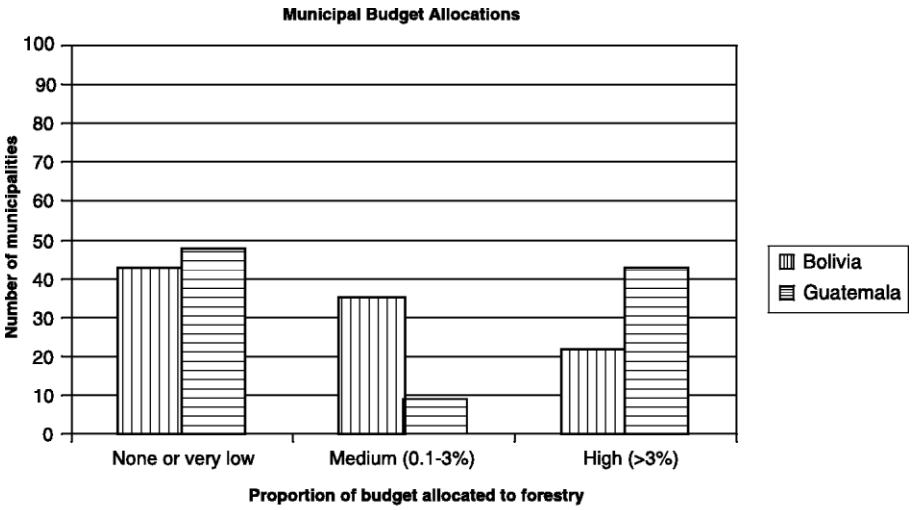


Figure 4. *Municipal budget allocations to forestry sector activities (n = 200).*

of 1 means "very low," 2 means "medium," and 3 means "high." 11

(b) ***Independent variables***

Each independent variable measures one of the following possible sources of mayoral behavior: (1) the personal characteristics of the mayor, (2) the biophysical and socioeconomic characteristics of each municipality, and (3) the institutional incentives that are potentially present in the mayor's decision making. In the first category of independent variables, we include measures of the mayor's level of education, political orientation, and political-party affiliation. The municipalities' biophysical and socioeconomic characteristics are captured by the percent of forest cover, per capita municipal income, population density, proportion of indigenous population, level of infrastructure development, and country. It is important to

include these variables in the comparative analysis, as they may influence the likelihood of a mayor to be interested in forestry, and therefore need to be held constant.

Table 2. *Descriptive statistics*

Variables	Description	Bolivia				Guatemala			
		Min	Max	Mean	Med.	Min	Max	Mean	Med.
Dependent variables									
Political importance of forestry[a]	The mayors' ranking of forestry relative to other sectors	1	3	1.81	2	1	3	2.16	2
Municipal staff working in forestry[b]	Proportion of municipal staff in forestry sector	1	3	1.94	2	1	3	1.66	1
Municipal budget assigned to forestry[b]	Proportion of resources allocated to forestry activities	1	3	1.79	2	1	3	1.95	2
Independent variables									
Central enforcement[c]	Frequency of central government's visits	0	5	1.77	1	0	5	1.61	1
Local demand[c]	Frequency of formal forestry meetings between mayor and local organizations	2	8	5.09	5	2	10	4.10	4
Timber income[d]	Importance of timber receipts from central government	1	5	2.15	2	0	5	1.97	2
Population density	Inhabitants per km^2	.12	504	25.05	10.26	4.22	3084	202	99.91
Education	Mayor's years in school	1	18	13	12	0	18	10	12
Indigenous population	Proportion of total population that is indigenous	.05	.97	.71	.87	.01	.99	.50	.55
Political orientation of mayor[e]	Self-assessed political orientation, from extreme left (1) to extreme right (10)	1	9	5	5	1	10	5	5
Municipal income	Gross per capita income (1,000) USD	0	.53	.04	.03	0	.15	.03	.03
Total forest cover	Percentage of forest cover	0	100	20.40	10	0	75	22.77	17.50
Infrastructure	Index of electricity, sewage, water infrastructure	.01	1.59	.42	.33	0	.03	.01	.01
Party affiliation	Is the mayor a member of the ruling party? (1 = yes, 0 = no)	0	1	.24	0	0	1	.38	0

[a] 1 = low; 2 = medium; 3 = high.
[b] 1 = lowest third of sample; 2 = middle third; 3 = highest third.
[c] 0 = never. . .5 = very frequently.
[d] 0 = no importance; 5 = very high importance.
[e] 1 = extreme left; 10 = extreme right.

Finally, we include our variables of interest that measure the strength of different institutionally based incentives for municipal action in the forestry sector. First, we consider the mayors' perceptions of the demands from local community-based organizations (CBOs) and non-governmental organizations (NGOs). We add the 5-point ordinal scores of the perceived strength of demands for each of the two types of organizations, resulting in a value that ranges from 2 (very weak local demand) to 10 (very strong local demand). Our second institutional incentive variable gauges the mayors' perceptions of central government supervision and support. This is an ordinal variable for which 1 is the minimum (very weak central involvement) and 5 is the maximum (very strong). Finally, our third institutional incentive variable measures the mayors' perceptions of the importance of timber receipts from the central government. The mayors were asked to place their perceptions on a scale from 1 to 5, where 1 meant "very low importance" and 5 "very high importance" for the municipal government's budget.

(c) *Regression results*

Table 3 presents the results of three different regression models. For all three models, may-

Table 3. *The effects of institutional incentives on three different measures of municipal government interests in forest governance*

Independent variables	Model 1 Share of forestry in municipal budget	Model 2 Municipal staff assigned to forestry	Model 3 Political priority of forestry
Personal characteristics			
Education	0.081 (0.036)**	0.118 (0.041)***	0.018 (0.042)
Political orientation	−0.029 (7.752)	9.813 (8.511)	−0.022 (0.7198)
Party affiliation	−0.252 (0.343)	0.081 (0.374)	−0.216 (0.329)
Socioeconomic and biophysical characteristics			
Municipal income	1.111 (3.103)	9.151 (6.384)	7.032 (4.867)
Indigenous population	0.963 (0.501)*	−1.178 (0.520)**	−0.205 (0.468)
Infrastructure	−0.036 (0.569)	−0.425 (0.626)	−0.036 (0.600)
Population density	0.000 (0.001)	0.000 (0.001)	0.002 (0.001)*
Forest cover	0.338 (0.347)	0.345 (0.379)	0.262 (0.329)
Institutional incentives			
Timber income	0.379 (0.157)**	0.161 (0.172)	0.237 (0.147)*
Local demand	0.313 (0.086)***	0.269 (0.091)***	0.448 (0.084)***
Central enforcement	0.396 (0.133)***	0.402 (0.142)***	0.107 (0.124)
Bolivia	−0.976 (0.475)**	0.718 (0.509)	−1.177 (0.489)**
Pseudo-R^2	0.16	0.18	0.15
N	200	200	200

OLM coefficients with standard errors in parentheses.
* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

oral incentive variables perform consistently better than the biophysical and socioeconomic as well as the personal characteristic variables in explaining variation in the mayors' attitudes and decision making in the forestry sectors of Bolivia and Guatemala. Demands from local organizations have a positive and statistically significant effect ($p < 0.01$) on all three measures of the mayoral interest in the forestry sector. The predicted probabilities presented in Table 4 indicate that when a mayor perceives local pressure to be at a minimum, the probability for high budget allocation is 11.1%, holding all other variables constant at their means. It jumps to 68%, however, when local pressure is at its maximum. The effect of local pressure on the mayor's ranking of forestry is even more dramatic as the probability to rank forestry high goes from less than 7.9% when local pressure is at its lowest to over 83% when it is at its highest.

The effects of the central governments' monitoring and enforcement activities and municipal income from centrally collected timber taxes are more ambiguous. Both have a significant and positive effect on the share of forestry in the municipal budget, but only timber income positively affects the mayors' ranking of priorities. When it comes to municipal staff allocations to forestry, central government actions—not timber taxes—have a significant positive effect.

Apart from the incentive variables, the mayor's level of education also positively influences his or her decision concerning the allocation of staff and budget to natural resource management. However, Table 4 suggests that education's effects are not as strong as that of the incentive variables. When all other variables are held constant at their means, the probability that a municipal government assigns a high proportion of its budget to forestry is 13.5% when a mayor has a minimum of schooling. When the mayor has the maximum of formal education, it increases to 40.1%.

Our results speak indirectly to a topic of increasing concern to policy analysts: corruption and clientelistic relationships between local administrations and special interest groups. While some analysts argue that decentralized systems are more effective in addressing corruption as they facilitate efforts to

Table 4. *Changes in predicted probabilities for mayors' interest in forest governance*

	Model 1 Share of forestry in municipal budget is high	Model 2 Municipal staff assigned to forestry is high	Model 3 Political priority of forestry is high
Local demands			
min (2)	0.113	0.144	0.079
max (10)	0.680	0.654	0.830
Difference	0.567	0.510	0.750
Timber income			
min (0)	0.152	–	0.209
max (5)	0.543	–	0.464
Difference	0.391	–	0.255
Central enforcement			
min (0)	0.475	0.233	–
max (5)	0.818	0.602	–
Difference	0.343	0.369	–
Education			
min (0)	0.135	0.104	–
max (18)	0.401	0.492	–
Difference	0.267	0.388	–
Population density			
min (0.12)	–	–	0.265
max (3084)	–	–	0.980
Difference	–	–	0.715
Indigenous population			
min (0.01)	0.180	0.472	–
max (0.99)	0.361	0.220	–
Difference	0.181	–0.252	–
Country			
Guatemala (0)	0.389	–	0.437
Bolivia (1)	0.194	–	0.193
Difference	–0.196	–	–0.244

hold government accountable, there is also widespread concern that decentralization can make local officials more susceptible to corruption because of increased powers and resources at their disposal (Klooster, 1999; McCarthy, 2004; Smith, Obidzinski, Subarudi, Suramenggala, 2003). In forestry, the concern is that corrupt local officials will try to satisfy small, special interest groups and divert municipal investments away from forestry-related activities even when demanded by local groups and/or central government. When such illegitimate instruments are employed to influence the municipal forestry decisions, one would expect relatively low municipal investments in forestry, even in municipalities where the institutional incentives for municipal interest in forestry are strong. However, our results do not support such a scenario. In the cases where all three incentives are above the sample mean, the municipal administrations consistently allocate high priority and resources to forestry activities.

In our entire sample, we found only four cases in which strong incentives did not translate into a high level of municipal interest in forestry (considering all three measures of interest). These outlier cases may or may not represent corrupt administrations and, with our existing data set, it is impossible to draw any definite conclusions about the situation in these four municipalities. The results do, however, suggest that there is no systematic and pervasive effect of corruption on our three measures of municipal interest in forestry in Bolivia and Guatemala.

In line with our central claim that the tradition of municipal forest governance, as manifested by current forestry legislation, encourages Guatemalan mayors to do more things than their Bolivian counterparts, the coefficient for the country dummy variable is significant in two of our three models and has the expected signs in all three. According to the results, mayors in Guatemala rank forestry sector activities higher and invest a higher proportion of their municipal budgets in forestry than mayors in Bolivia. Comparing the outcomes for the two countries, the results in Table 4 indicate that Guatemalan mayors are 24% more likely to rank forestry as a high political priority, and 19% more likely to invest a high proportion of their budget in forestry.

These results are consistent with the theoretical expectation that a municipal government with more political and fiscal autonomy is more interested in providing forestry sector services than a counterpart who enjoys a lesser degree of such discretionary powers. As mayors in Guatemala are looking for ways to increase municipal revenues and please their constituents in order to be re-elected, the forestry sector provides opportunities that are absent in Bolivia. For instance, Guatemalan mayors have more room for political maneuvering in this sector, as they are entitled to devolve governance responsibilities to local communities, issue permits for harvesting timber, rent out their municipal forests, and sell technical services to local forest users. The lack of such prerogatives may explain why Bolivian mayors do not value forestry as highly as their Guatemalan colleagues, despite the fact that Bolivian municipalities generally have more financial resources, are endowed with more forest resources, and elect more educated mayors.

This interpretation raises the question as to why the observed differences between the countries do not show up in all three measures of mayoral interest, but just in two out of the three measures. One plausible explanation is that staff allocation is a more complex indicator of mayoral motivation. The complexity is related to the fact that there seems to be a threshold effect that influences the mayors' staff allocation decisions. While all municipal governments—regardless of income levels, size, and availability of forest resources—are able to assign some proportion of their budget to forestry or give a high ranking to forestry, not all municipalities can afford to hire a forester. Even if Guatemalan mayors have a more extensive mandate in the forestry sector, this effect is likely offset by their generally smaller budgets, which makes them less able to hire staff.

If the observed differences are due to the greater autonomy enjoyed by Guatemalan mayors and their relatively greater reliance on local contributions when compared to Bolivia, one would expect to see significant differences in the strength of different types of institutional incentives that make local politicians more or less interested in forestry in the two countries. We posit that the contrasting histories and mandates of municipal forest governance have shaped local politicians' incentive structures so that some incentives are more important in Guatemala and others in Bolivia. To test this idea, we let the country dummy variable interact with each of the

independent variables in the pooled sample. We then perform a Wald test to see whether the difference in effect on the dependent variables is statistically significant. The results of the Wald test suggest that the effects of the three institutional incentives account for the difference between Bolivia and Guatemala, a result that is consistent with our theoretical expectations.

We find that local pressure has a greater effect on mayors' ranking of forestry as a priority area in Guatemala than in Bolivia ($X^2 = 5.03$, df = 1; p = 0.02). This result supports our hypothesis that Guatemalan mayors, who have relatively more autonomy and rely more on contributions from users (taxes, fees, and rent) for their day-to-day operations, will be more motivated by local pressure than Bolivian mayors, since the latter enjoy less autonomy and rely exclusively on external sources of funding for forestry activities. Following that same logic, one would then expect the effect of central government enforcement to be stronger in Bolivia. We find that this is also the case when considering central enforcement effects on budgetary allocations ($X^2 = 2.62$, df = 1; p = 0.10).

This does not mean that support from the center is not important in Guatemala. In fact, the effect of timber receipts from the central government on forestry budget shares is significantly stronger in Guatemala than in Bolivia ($X^2 = 5.98$, df = 1; p = 0.01). We believe this result is driven by the ability of Guatemalan mayors to raise their own forestry-related revenue—be it through the rent of forest lands to local users, sales of technical services, or the smallholder timber tax. The effect of external timber receipts on the municipalities' allocation of resources to forestry is likely to be stronger when a municipality has already raised some of its own forestry income. A mayor who receives timber receipts from the central government as a complement to locally raised forestry revenue from forest users (Guatemala) has stronger incentives to reinvest the external income into forestry compared to a municipality that relies exclusively on external timber receipts (Bolivia) to finance its forestry operations. We would expect that the probability of a mayor prioritizing forestry is higher when both local forest users and the central government hold the mayor accountable. Bolivian mayors receive timber income from the central government regardless of past performance, which might explain why the effect of timber receipts on forestry budget allocations is not significant for Bolivia.

We further test this explanation by dropping those Guatemalan cases from the regression that have some municipal ejido land within their territories, since these municipalities are most prone to raise their own forestry income. When doing so, the difference in effect between Bolivia and Guatemala disappears. This result suggests that local government powers to raise its own complementary revenue promote the downward accountability of local politicians.

6. CONCLUSION

Decentralization has been a significant tool of political reform over the last quarter century. Governments worldwide have devolved authority to various subunits over an extensive range of policies. Multilateral agencies and donors have also encouraged central governments to empower subnational jurisdictions, such as regions and municipalities. Environmentalists and policymakers have echoed the call to let democratically elected local politicians take more responsibility over many natural resources, including forests, one of the most important and difficult natural resources to govern.

Local politicians play an increasingly critical role in environmental governance because they may conform to, filter, or completely ignore their new decentralized mandate. They decide to what extent environmental regulations are enforced, vulnerable ecosystems protected, and local users are offered assistance to manage their resources. This new political reality underscores the need to understand under which conditions local politicians are more likely to invest in environmental governance.

Previous accounts point to the influence of the local politicians' personal characteristics, their political orientation, and their constituents' general level of economic affluence. We show that decentralization outcomes are better understood if we, in addition, pay attention to the institutional incentives perceived by local politicians. If local politicians perceive potential financial or political benefits associated with environmental governance, they are more likely to take an active interest in such activities. We test this argument empirically in the forestry sectors of 200 municipal governments in Bolivia and Guatemala and find that local incentive structures are strong predictors of municipal government interest and investments in forestry activities.

We also find that the type of powers decentralized to mayors had a significant effect on their interest in forestry. The extensive devolution of political and fiscal powers in Guatemala appears to encourage Guatemalan mayors to invest more of their staff and budget into forestry-related activities, at least in comparison to their Bolivian colleagues.

There is, in other words, a political logic to decentralization. Of course, conventional impediments to successful policy implementation—for example, lack of training and administrative capacity—should also impair compliance with forest protection responsibilities. But our study shows that politics are important in explaining the efforts of local-level politicians in the forestry sector. While decentralization may have its supporters in central governments, conservation organizations, and donor agencies, we argue that the incentives of local politicians are also important determinants of policy outcomes.

While this study's focus is limited to just one policy in two countries, we believe that the political logic to decentralization is likely to be important across a range of policy areas and countries. There is little reason to believe that environmental policy is unique. Local actors, regardless of the policy areas, will have incentives to win re-election and obtain financial resources. Central governments and donor agencies would do well to consider these incentives when designing any type of policy or program. There is also little reason to suspect that this logic is confined to Bolivia and Guatemala.

These two countries may have decentralized their forestry policy more than others, but the political logic of decentralization is likely to exist everywhere.

NOTES

1. For the purposes of this paper, we define decentralization as any act in which a central government formally cedes power to actors and institutions at lower levels in a political-administrative and territorial hierarchy (see Agrawal & Ribot, 1999; Cheema & Rondinelli, 1984; Mawhood, 1983; Smoke, 2003).

2. The literature that discusses the problems with an unfunded local government mandate includes Adamolekun (1991), Smoke (2003), Prud'homme (1994), Parry (1997), Mello (2000), Crook and Manor (1998), Agrawal and Ribot (1999), Blair (2000), Bird and Vaillancourt (1999), Bahl and Linn (1994), and Bahl (1999). Some critics even warn that central governments can use the guise of decentralization to extend rather than diminish their authority (e.g., Gibson, 1999; Murombedzi, 2001).
3. Previous studies that have noted the importance of this variable include May, Neto, Denardin, and Loureiro (2002), Oakerson (1999), Hadenius (2003), and Agrawal (2005).
4. This is often referred to as "downward-accountability" and is one of the most commonly cited conditions for successful decentralization outcomes' studies. It is discussed in Agrawal and Ostrom (2001), Andersson (2004), Gibson and Lehoucq (2003), and Mun˜oz Elsner (2000).
5. The literature also refers to this as "upward accountability" from local to central government, and this concept is discussed in Andersson (2002), Altman and Lalander (2003), Behrendt (2002), and Pacheco (2000).
6. At least two studies find such a relationship: Hecht (2005) and Curran et al. (2004).
7. For instance, in 1900, the entire region of Acre (about 100,000 square kilometers) was given as a concession territory to a private contractor (see Tambs, 1966).
8. While several new municipalities were created in connection with the 1994 reform, many already existed before 1994. Democratic elections of the municipal government officials date back to the mid-1980s. There is also some evidence that suggests that some municipal governments had an informally organized set of municipal forest governance institutions in place, long before the 1996 forestry decentralization reform.
9. We took several steps to ensure the reliability of the interview data by first field-testing questions in several municipalities in both countries to make sure they were well understood and then adjusting the survey before starting the interviews. We also carefully avoided pitching this as an interview about forestry, but presented the topic of our research as the general performance of the municipality in dealing with the new decentralized structure. While it is theoretically plausible that mayors exaggerated their commitment to all sectors in which they had a mandate, we see no reason why they would have exaggerated forestry more than other sectors. Even if they did, both Bolivian and Guatemalan mayors would have been inclined to do so. Since our analysis is comparative and we use relative measures, such exaggerations would not bias the analysis.
10. The Brant test results suggest that the parallel regression assumption holds for the variables of interest in all three models and it is therefore adequate to use ordered logit for analyzing this data: first model ($72 = 5.20$, df = 3; p = 0.158), second model ($72 = 3.69$, df = 3; p = 0.297), and third model ($72 = 3.91$, df = 3; p = 0.271).
11. The DV "political priority of forestry" is an ordinal variable that we derived from a question on the mayoral survey, which asked the mayor to rank the priorities of 15 different activity areas including forestry. The DVs for the first two models (budget and staff allocations) were collapsed into three-point ordinal variables. We did this transformation for three reasons: (1) the comparison between the effects of independent variables in all three models is more straightforward when the same estimators is used for all three models, (2) using Ordered Logit with the categorical DVs did not render any significantly different results compared to using Ordinary Least Squares with the untransformed DVs, and (3) the categorization of the DVs yielded more reliable results because it reduced the influence of extreme values (about a dozen

Guatemalan mayors reported uncharacteristically high percentages of both budgetary and staff allocations to forestry).

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