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**VILLAGERS, BUREAUCRATS, AND FORESTS IN NEPAL:  
DESIGNING GOVERNANCE FOR A COMPLEX RESOURCE**

**George Varughese**

**Submitted to the faculty of the University Graduate School  
In partial fulfillment of the requirements  
For the degree  
Doctor of Philosophy  
In the School of Public and Environmental Affairs  
And the Department of Political Science  
Indiana University**

**December 1999**

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Accepted by the Graduate Faculty, Indiana University, in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

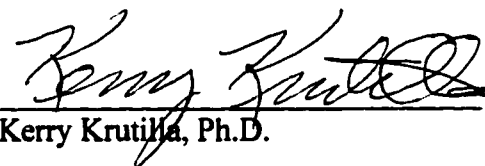


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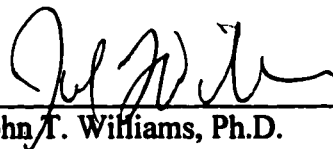


Vincent Ostrom, Ph.D.

Doctoral  
Committee



Kerry Krutilla, Ph.D.



John T. Williams, Ph.D.

15 June 1999

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## **ACKNOWLEDGEMENTS**

The years of graduate study at Indiana University seem rather fleeting now and to record my appreciation for all those who have helped along the way is, at once, a pleasurable duty as well as a formidable task.

I owe more than my sincerest thanks and deepest appreciation to Elinor Ostrom. For someone who has many burdens, Lin did not hesitate to sometimes carry me on her back, it felt like, when I struggled. And I struggled! As much as it means for me to have come from my roots as a child of school teachers in rural Nepal to attend graduate school at Indiana, to have studied and worked with Lin means even more because of all that is outside of formal learning that she has passed on to me. The pleasure and earnestness that she brings to hard work and learning, her compassion for others, and her collegiality with diverse individuals are characteristics that truly embody the self-development I have undergone under her tutelage. I'm truly grateful for her guidance and friendship.

I thank Vincent Ostrom for his encouragement in the early years and steady hand over the course of graduate study. His commitment to scholarship and morality in policy analysis, and his willingness to range kept me honest in my inquiries. John Williams and Kerry Krutilla have always been available and willing to work with me; for their low-pressure support, gentle correction, and keen inquiries I am very grateful.

The Workshop family has provided good cheer, camaraderie, and support during my sojourn at Indiana University. I'm grateful, in particular, to Patty Dalecki and Linda Smith—both have saved me from myself on numerous occasions. Paula Jerrells made sure I met my obligations to the IFRI program and to colleagues who visited us. Gayle Higgins quietly followed up on commitments I'd made. Bob Lezotte and Ray Eliason

helped me out several times with computer support. Charlotte Hess has been most generous with library resources as well as her artistic talents. I thank each of them.

Over several years now, I have worked with Julie England in Bloomington and in Nepal. Her kindness and willingness to help, and her sheer tenacity when faced with a problem make her a special colleague and friend. Robin Humphrey, straight-talking colleague, has become a friend indeed. Ours is a unique friendship in that my net benefits always exceed his! Arun Agrawal and Clark Gibson have helped me with my ideas and writing over the years. The repartee I've had with these two friends in diverse settings has lifted my spirits on many occasions. Tjip Walker, Mary Beth Wertime, Margaret Polski, Aseem Prakash, Nives Dolsak, and Wai Fung Lam have seen me through some trying times at Indiana. To these friends and colleagues also, I'm especially grateful.

My friends at the Nepal Forest Resources and Institutions research program have my deepest gratitude for friendship and support during fieldwork. Of these, Mukunda Karmacharya and Birendra Karna, whom I've known for over seven years, have shared blankets, food of dubious origin, "bottled" water, illness, and many days of fun in the hills and plains of Nepal. Their unflagging spirits and willingness to help in any way over the last two years has really helped me see this through.

During the period of time I spent in various districts and villages, especially 1996 through 1998, I capitalized on the generosity and assistance of Vishnu Niraula of Barbote, Tagendra Dahal of Chunmang, Ratna Prasad Dahal of Shantipur, Krishna Rana and Balaram Kattel of Raniswara, and Tilak Bahadur Malla of Bandipur. These selfless individuals became and remain good friends. I'm particularly appreciative of Bhumi

Raman Nepal of Basaha, Dhading who has been a friend and source of practical wisdom and great humor for almost a decade.

I am greatly indebted to several friends in Nepal for their hospitality and fellowship over the years. I'm especially grateful to Philippe Van der Grinten and Judith van Andel, Keshav and Shiva Kanel and family, Ganesh and Rama Shivakoti and family, Martin Schoenmakers and Miriam Lindwer, Jesper and Eva Ahrensburg, Eileen Lodge, the Thomases, Kabir Heimsath, Sudhir and Sarla Mahara, and Deepak and Aarti Rawal.

For their wise counsel and guidance, I'm grateful to Bal Gopal Baidya, Irene Tinker, Narayan Kaji Shrestha, Bina Pradhan, Narpat Jodha, Neeraj Joshi, Nirmal Sengupta, Mike Arnold, and Henning Karcher.

I am thankful to several organizations and program staff who have supported, financially and otherwise, various stages of my graduate study in conjunction with the International Forestry Resources and Institutions research program guided by Elinor Ostrom at the Workshop in Political Theory and Policy Analysis, Indiana University. In addition to Indiana University, these are: the Hills Leasehold Forestry and Forage Development Project and Arjen Sterk, Alfonso Box, Laurent Umans, Pascal Elegeert, Bijay Singh, and Bishnu Shrestha; the Participatory Upland Conservation and Development Project and Helle Qwist-Hoffman, Frits Ohler, and Basanta Rimal; the Nepal-UK Community Forestry Project and Hugh Gibbon, Nick Roach, Om P. Dev, and Machindra Maharjan; the Food and Agriculture Organisation of the United Nations and Marilyn Hoskins, Alice Ennals, Hivy Ortiz, and Anna Norrell; the MacArthur Foundation and Priya Shyamsundar; the Ford Foundation, New Delhi; the Institute of Agriculture and Animal Science, Tribhuvan University, Rampur; His Majesty's Government of Nepal and

Rabi Bista, Keshav Kanel, Amrit Lal Joshi, Harihar Sigdel, B.K. Shrestha, and the District Forest Officers of the districts I visited. I am also very grateful to the United Nations Development Programme for time off to complete the writing of this dissertation.

In addition to all the good friends I made in Bloomington, Patrick Corea, Sarah Warner, Nate Allen, Rita Noonan, Hakim Rahsul, Claudia Thieme, Jim Butler, Aaron Williams, Amy Brewer, Krister Andersson, and Zahra Ahamed have touched my life in many special ways. I'm very grateful for these friends and the members of my soccer team, Pax Union; my flying instructor, Tony Newbold; and my motorcycle mechanic, Phil Bowmer; for keeping me reasonably sane.

My childhood friend Alope and his wife, Yasmir, and his parents, General and Mrs. Mansingh have provided physical and emotional refuge time after time on two continents; for their many kindnesses I am thankful. Anand and Purnima Kumar are dear friends who have avidly followed the convolutions of my life in the last decade and, thus, served as sea anchors.

Lastly, I'm grateful to my family for their unconditional support of my academic pursuits. My siblings, Thomas, Ninan, and Sarah and their spouses Tina, Anisha, and Bernardo have taken turns at propping me up and cutting me down to size over the years. My oldest friend and brother-in-law, Bernardo, who shall have to finish after me for once, has shown me how to sleep with my eyes open and to study with them closed! My uncle and aunt, the Abrahams, have been pillars of support while I have lived in the United States and have my heartfelt appreciation.

Most of all, I'm grateful to my wonderful parents, Mary and Thomas, for their love and example. This dissertation is dedicated to them.

**VILLAGERS, BUREAUCRATS, AND FORESTS IN NEPAL:  
DESIGNING GOVERNANCE FOR A COMPLEX RESOURCE**

This study addresses the question of how institutions, together with various physical and socioeconomic attributes, affect the performance of forest resource systems in 18 locations in the middle hills of Nepal. Specifically, it investigates the impact of local institutions on forest resource management to gain a better understanding of how such institutions shape the actions of individuals at the community level. Drawing upon recent research in the analysis of cooperation, the study focuses upon the relationship between the institutional design of the governance of forest resources and (1) population change; (2) differences among users or heterogeneity; and (3) patterns of association seen as forms of social capital.


The findings from this study indicate that (1) change in forest conditions is not markedly associated with population growth but, rather, is strongly associated with local forms of collective action; (2) differences among users do pose challenges for groups of forest users in overcoming the incentives to free ride and shirk but not in a determinant fashion; and (3) levels of deliberate, long-term interaction do have a systematic relationship with levels of collective activity.

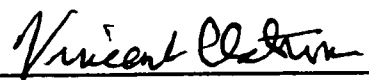
Successful groups cope with perceived changes in resource condition and user population and overcome stressful heterogeneities by crafting innovative institutional arrangements well-matched to their local circumstances. In the more successful cases, arrangements for identifying genuine users, determining harvest amounts and timing, and


active monitoring by users themselves emerge as important factors in managing forest resources.


This study suggests that development policy aimed at preserving the environment with local participation must recognize the significance of institutional arrangements at the local level to forest resource conditions at that level. Ultimately, the benefits and costs associated with forest resource conditions at the local level have considerable bearing on larger environmental issues. Furthermore, the study suggests that government policy on participatory resource management will be more successful if it facilitates institutional innovation and adaptation at the local community level.

Doctoral Committee

  
Elinor Ostrom, Ph.D., Chair

  
Vincent Ostrom, Ph.D.

  
Kerry Krutilla, Ph.D.

  
John T. Williams, Ph.D.



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## **Chapter One**

### **Forest Governance And Management In Nepal**

The past few decades have witnessed very substantial investments in efforts directed at reducing deforestation and related environmental concerns in the developing world. Vast amounts of money, time, and effort went into all manner of forestry activities with the objective of solving problems perceived as related to deforestation. Concurrently, the approach to the practice of forest resource management in the developing world underwent a somewhat painful evolution. A large shift in thinking took place, from technical forestry to what is now called community forestry. Nowhere has this shift to a people-centered approach to forestry been more visible than in Nepal, where both in government policy as well as in practice, halting and reversing deforestation by working through local communities is accepted as the norm.

However well intended in conception, the early stages of the transition, from technical to community forestry, were plagued by failures. This was partly due to the scope of the problems confronted, which changed from purely technical forestry issues to include governance and management issues associated with rural communities and local governments. This transition required more than just silvicultural expertise: receptiveness to local communities' needs, traditional practices, and local knowledge was necessary. Almost by compulsion lately, efforts that aim to support community-based resource management have become more understanding of the socioeconomic and institutional issues that are key to a people-centered approach.

Although there has been substantial change seen in the approach applied to forest management and governance, the overall performance record of programs to assist or support community-based forest management is not very encouraging.<sup>1</sup> Nevertheless, community-based forestry continues to be promoted in Nepal as a fix for deforestation as well as for poverty with little pause given to consider the factors that cause the mixed outcomes of many forestry experiments.

There are potentially many reasons for the inconsistent performance of community forest user groups and forestry assistance programs. This study uses an institutional approach to examine the variation in performance of 18 community forestry user groups in the Middle Hills of Nepal by studying a diverse set of groups, some of whom have active support from an external program and some who have little or no support. Given that there will be some form of assistance program in forestry in Nepal, ostensibly to improve upon what exists in terms of resource health and realize net positive benefits for rural communities and the larger community of citizens, the bases upon which these assistance programs are conceptualized, designed, and implemented become important. Further, given that over 80 percent of Nepal's population depends upon forest-based inputs for eking out meager livelihoods, a better understanding of the socioeconomic and institutional issues in their local contexts is critical for the sustenance of any long-term effort to improve the lives of rural folk.

### **Background on Forestry in Nepal**

Grim predictions of imminent environmental catastrophe in the Himalaya drew worldwide attention to the Kingdom of Nepal in the 1970s. Studies projected massive

declines in Himalayan forest cover and predicted a dark future for the forests and country of Nepal (Eckholm, 1975, 1976; World Bank, 1978). Initially, the cause for this potential calamity was seen as domestic fuelwood use compounded by rapid population growth, followed by expansion of agriculture, commercial logging, and tourism. However, the actual rates of deforestation, as well as its causes and consequences, remain very much in question. Studies indicate that while there is degradation from overharvesting in the hills, the total loss of forest cover has been relatively small (for example, Ives and Messerli, 1989). Others argue that losses have even been reversed in both forest area (HMG, 1988; Bajracharya, 1983; Metz, 1990; Gilmour and Nurse, 1991) and tree density (Messerschmidt, 1986; Gilmour and Fisher, 1992). Still others contend that while forest area is not decreasing in the hills, the quality of existing forests is suspect (Chakraborty et al., 1997; Subedi, 1997).

Much of the development policy of the time was justified on the basis of the theory of Himalayan degradation. Early attempts by the government and donor agencies to rectify the perceived problem emphasized the technical aspects of re/afforestation—primarily in the form of large-scale nursery and plantation schemes. This was part of the larger trend in other parts of the developing world where the technical forestry approach focused on shortages of timber and fuelwood and actively promoted massive plantation schemes. The widespread failure of those early efforts was instrumental in forcing the exploration and subsequent initiation of community-based approaches to forest management in the late 1970s and early 1980s. Recent initiatives such as community forestry programs and projects emphasize the participation of local forest users in forestry governance and management.

Even though the claims of dire environmental crisis might have been exaggerated, rising population, migration, increased industrial and commercial activity, and developmental pressures continue to place heavy demands on the forest resource base. In a country where over 80 percent of the population depends entirely upon agricultural and forest products for food, fodder, and fuel, forested lands always face the risk of being used at an unsustainable rate. Consequently, the issue of how best to govern forest resources in Nepal remains of critical concern to policy makers.

On the one hand, the area of land officially handed over to users as "community forests" is steadily increasing, especially in the Middle Hills of Nepal. Further, the importance of social processes has been recognized and terms like "people's participation" and "local institutions" are *sine qua non* in many project documents. On the other hand, these initiatives have had limited success. Why are many assistance programs in forestry not succeeding? This is a prominent empirical observation that has not been explained satisfactorily. While there is a demonstrated capacity for cooperative management of forest resources without individual competition, why is it that we see a significant number of failures in programs that have been designed and implemented to take advantage of this demonstrated capacity? This study specifically addresses the following questions:

- Why are some community forest user groups more successful than others?
- What components of assistance programs may be conducive to user group success?
- How can those who want to intervene to help improve local problem-solving capabilities, especially in natural resource management, do so?

## **Broad Trends in Forest Governance and Management**

The prevailing development policy stance of the 1960s and 70s for natural resources was based on either or both of two assumptions. The first, a common one, was that people—especially rural folk—are ignorant and need to be taught ("convinced of") the importance of trees. The second assumption was that common-pool resources (CPRs), such as forests and grazing lands, would inevitably be degraded and destroyed. The view that prevailed until the late 1980s was as follows: if a group of people is placed in a situation where each could benefit if all adopted a rule of restrained use of a common-pool resource, they will not do so in the absence of an external enforcer of agreements. Each individual has an incentive to ignore the social costs of his or her resource use for fear that others will capture the benefits of the resource. The lack of exclusion from the resource, thus, creates an incentive for a rate of aggregate use, which exceeds the physical or biological renewal rate of the resource.

Far-reaching proposals for institutional change in the management of common-pool resources have been justified by this kind of argument (Runge, 1986). According to one school, the establishment of full private property rights over the commons is a necessary condition for avoiding such a tragedy (Demsetz, 1967; Picardi and Siefert, 1976; Smith, 1981; Welch, 1983). According to another, only the allocation of full authority to regulate the commons to an external agency—usually meaning the state—can hope to succeed (Ophuls, 1973; Carruthers and Stoner, 1981; Hardin, 1978).

Prescriptions based on these theories became policies formulated and implemented widely in many countries including Nepal. Whether these were successful is an entirely



different matter. Studies by various researchers point clearly to the conclusion that policies based on theories of central regulation and privatization have frequently come up short in offering economically viable, sustainable solutions. In fact, centrally promulgated policies have had the effect of worsening the problem in some countries.<sup>2</sup> In many instances, the transfer of property rights from traditional user groups to others eliminated the incentives for monitoring and restrained use, converted owners-protectors into poachers, and exacerbated the resource depletion it was intended to curb (McKean and Ostrom 1995).

In recent years, forest policy initiatives mirror a shift in perspectives. This perspective—relatively new in its application, derives from the argument that individuals and groups or communities of individuals are capable of devising institutional arrangements that provide a viable alternative; the view that local communities may know of better ways to manage resources that they depend upon for their livelihood.<sup>3</sup> This shift in theoretical and policy perspectives is evidenced in new forestry laws that, variously, "empower" local communities; provide for the creation of "user groups" to govern forests; set up projects that create and support community and leasehold forests; and provide technical support. Assistance programs adopting the "community forestry approach" represent the largest attempt by development agencies and governments to bring about sustainable resource governance and management with the active participation of local forest users.

In Nepal, the results of these "new" or revised policies have been mixed at best. In many instances, user groups created by these policies have had the effect of breaking up traditional arrangements between groups, creating suspicion and mistrust toward forest

department officials, and fostering generally uncooperative behavior (Tamang, Gill, & Thapa, 1992; Gilmour and Fisher, 1992). In some cases, groups of users who have had a tradition of cooperation show little enthusiasm to work with staff from the Department of Forests (DOF). In others, there has been cooperation with the creation of some trust and community in collective action to manage forested lands (Griffin, 1988). Among scholars and practitioners there is disagreement over whether decentralized organizational forms bring about an improvement in the quality of life, power sharing, consensus in resource sharing activities, and the equitable distribution of costs and benefits (Gilmour and Fisher, 1992; Hobley, 1990). While there is agreement that the principles behind community forestry are valid, it is unclear how these can be translated usefully into sustainable efforts (Tamang, Gill, & Thapa, 1992). Little is known about the institutional and organizational arrangements for managing forest resources, especially in the context of assistance programs that are envisaged as facilitative and supportive of local communities (Dani et al., 1987; Gibbs, 1986; Fox and Fisher, 1990; Pokharel, 1997). This debate has widespread implications for community forestry management throughout the region and especially in Nepal.

While the area of forestland under the official umbrella of community forestry continues to expand and the number of legally recognized community forest user groups increases, the processes and conditions for facilitating and sustaining local capabilities for effective collective management of forest resources remain poorly understood. Given the expansion of community-based forestry, and the recent emphasis on facilitative government, there is need for research that integrates local-level findings with

appropriate institutional design of decision-making arrangements at local, regional, and national levels.

The term "community forestry" gives an impression of homogeneity of both place and practice that is unwarranted. This owes partly to the promotion of a "model" for community-based forestry by donors and governments. The evidence from Nepal, and indeed around the world, reveals the social and physical complexities that can affect the use, management, and governance of forest resources, which compels us to recognize that all attempts appear to be experiments. This recognition, however, is not too apparent in the design of numerous assistance programs that have tried, and continue to try, to enable communities to direct the establishment and sustained management of their local forests for their own benefit.

In Nepal, the user group-based approach to community forestry represents a very important experiment in decentralized natural resource management. A study of the articulation of this approach in field settings with a comparison of user group performance vis-a-vis their unique physical, socioeconomic, and institutional makeup is timely and necessary to elucidate some of the components that contribute to the differences in performance. Furthermore, a comparison of group-specific strategies of resource management in similar physiographic settings helps relate different outcomes to specific time-and-place contexts, thereby improving our understanding of micro and macro linkages and processes that otherwise might not be evident.

This study examines the similarities and differences in institutional arrangements pertaining to forestry governance and management in Nepal in 18 VDCs. It seeks to understand how these institutional arrangements affect the performance of forest resource

systems (FRS) given the physical attributes of the systems and the socioeconomic attributes of the community of participants.<sup>4</sup> The goals of the study are to enhance our understanding of forestry management and governance in the context of Nepal's community forestry program. By doing so, this study adds to our knowledge of how institutional arrangements may be better crafted to achieve positive working relationships among individuals in general, and those involved in resource governance and management in particular. This study focuses on the two key actors involved in experiments in forestry in Nepal: the users of community forests and the implementing agencies of community forestry program.

## **Evolution of Nepal's Forest Sector Policy**

### **Nationalization: Protective Regulation**

Until the late 1970s, policies related to the forestry sector in Nepal had been formulated and implemented based on the prevalent view of resource management—increased governmental control over forest resources and close supervision of resource use. From about 1957 till 1976, there was a trend in policy making toward more national control of resources, or centralization. The nationalization legislation of 1957 is a prime example of central-level policy planning. It changed the ownership of forestland from de facto and private owners to the government. While this law was designed ostensibly "to protect, manage and conserve the forest for the benefit of the entire country" it became, in fact, a highly disruptive factor in the overall well-being of the hill forests and related resources (Bajracharya, 1983). Partly because of this law, pre-existing and traditional practices of communal resource management were upset. Existing local political

structures in which communal control was embedded, with their customary rights and duties, became irrelevant (Bromley and Chapagain, 1984; Chapagain, 1984). Whereas communities previously sought to protect local forest resources against exploitation by outsiders through their traditional management systems, they now had no legal authority to do so. Furthermore, they now tended to view the forests as government property rather than their own, an attitude that seriously eroded their motivation to protect local forest resources (Arnold and Campbell, 1986).

Nationalizing the ownership of forests had been advocated on the grounds that local villagers cannot manage forests so as to sustain their productivity and their value in reducing soil erosion. After nationalization, however, many individuals and communities who had managed forest lands no longer had any right or incentives to continue to manage these lands. The government, while now controlling these lands in name, did not have sufficient manpower or resources to manage them. In Nepal, there are many instances where prior to nationalization villagers had exercised considerable restraint over the rate and manner of harvesting forest products. The consequence was that, just as in many other developing countries, nationalization created *open-access resources* where *limited-access resources* had previously existed (Ostrom, 1990). Subsistence farmers were able to expand their use of the forests to areas previously closed to them by individuals or communities. This increased usage coupled with inadequate forest productivity contributed to deforestation, soil erosion, and land degradation in a significant way.

In response to this problem, the government first attempted to outlaw destructive land use practices (Forest Act of 1961). Under this Act, the definition of forestland was

extended to include all lands that adjoined forest areas that were left fallow for two years (Manandhar, 1982). But, since the government still lacked the manpower and resources needed to enforce the law, the unofficial right of villagers to collect forest products was not affected. Effective government supervision of thousands of patches of forests scattered through remote hilly terrain, accessible only with great difficulty, proved impossible. The unrealistic regulations were difficult for households to obey and nearly impossible for the authorities to enforce.

### Decentralization: Panchayat-based Community Forestry as a Means of Local Participation

Almost twenty years after nationalization legislation and its counter-intentional outcomes, the government of Nepal enacted the National Forest Act of 1976 in which the involvement of the community was mentioned for the first time. However, only in subsequent amendments (1977 and 1978 Forest Amendments) did the government recognize that local participation is necessary for addressing forest lands management problems. Under these amendments, the Forest Department could enter into agreements to transfer forests to village *panchayats*.<sup>5</sup> These rules and amendments encouraged panchayat-based forestry, ostensibly designed to return some forms of communal management over forests and related resources to the local people. This was done by defining four categories of forests to be managed by panchayat, religious institutions, or individuals. The four new categories of forests were: Panchayat Forests (PFs), Panchayat Protected Forests (PPFs), Religious Forests, and Lease-Holder or Contract Forests.<sup>6</sup> The

1977 and 1978 amendments made it theoretically possible for 2.2 million hectares, over half the nation's forests, to be managed at the local level (Fox, 1983).

When the above legislation was first implemented it was intended that community forests would be managed by the local panchayat. This was the government's way of decentralizing authority to the community-level. It was intended that, under the new legal structure of forest management, formal law and centralized authority would remain but with some aspects of customary law, and local participation would be encouraged by a process of selectively melding them with the formal system (Messerschmidt, 1986). Although at the time this was thought to have had some merit as a development plan, subsequent observations have shown that decentralization (as legislated) turned out to be centralization (as implemented).

The effect of these decentralization efforts on communal forms of resource governance was not as intended, severe shortcomings became apparent. In terms of both forestry and irrigation, the imposition of the panchayat system provided a centrally defined structure of local government, one that effectively undermined customary structures and made them irrelevant. In addition, panchayats gave the "villages the most degraded lands, which required high investments for restoration and offered only delayed benefits" (World Bank, 1992). This outcome was partly due to the fact that they were large political-administrative units with little experience in forestry (World Bank 1992); and too far removed from day-to-day operational decisions involving forests to be effective in supervision and management (Colchester, 1994). In addition, three-fourths of the income from forest produce was retained by the panchayat, offering limited incentive to smaller groups of individuals to actively participate. Sensitive issues related to forest

ownership and recognition of user rights became major hindrances to the process of transferal of management to forest user groups (Karki et al., 1994).

During the early years, there was substantial resistance to authorizing the large-scale transfer of forest resources owing to the fears of many Forest Department officials that the local population would destroy them once government controls were lessened. In fact, the greatest barrier to community participation during the early years of community forestry in Nepal was the lack of widespread public knowledge of the purpose of the new strategy or the details of managing a PPF (Arnold and Campbell, 1986). A study by Koirala (1985) showed that 80 percent of villagers were unaware of the changes in forest legislation, while 92 percent voiced skepticism as to who would be the ultimate beneficiaries of the community forestry program.

Disenchantment--donor, government, and community-- with panchayat-based community forestry led to amendments in legislation that provided for management by smaller, user groups--those who actually use or would use a particular forest. Donors like the World Bank made the decision to support "efforts to encourage management by smaller groups more closely associated with particular forest tracts and to give them responsibility for forests in good condition, as well as for degraded land" (1992). The changes in government in 1990 completed the replacement of the panchayat-based approach with the user group approach to community forestry.

### **The Contemporary Approach to User Group-based Community Forestry**

There is much enthusiastic legislative reform and framing of rules and regulations, reflecting the intentions and direction of thinking in central government ministries in



Kathmandu these days. The new forestry legislation, consisting of the Forestry Act 1993 and Forest Bylaws 1995 has entirely revised the Forestry Act of 1978 to update existing forestry legislation in line with the Forestry Sector Policy of the Master Plan. The current government policy for community forestry formally acknowledges and legislates the focus on user groups as beneficiaries. In fact, according to the Act, a community forest user group is recognized as an “autonomous and self-governing institution” responsible not only for the management of community forests but also for undertaking other community development activities. The new policy states that all accessible forests are to be handed over to users; forest user groups shall manage and protect these forests; and forest user groups shall get all products and income from the forests. The intention is “to develop and manage forest resources through the active participation of individuals and communities to meet their basic needs” (CPFD 1997, p.14).

The major objectives of the government's community forestry policy are to: "hand over" or legally transfer all accessible hill forests to local communities; provide extension services; assist negotiations; and legitimize uncontested agreements about forest use-rights and management. The Forest Act of 1993 targets communities that have self-organized user groups as well as those that do not have organized user groups. In the former case, user groups are registered by the District Forest Officer (DFO). The certificate of registration constitutes legal authority to manage the community forest (an area selected by the group) under a forest management plan developed by the user group and approved by the DFO. In the latter case, the difference is that the DFO selects the forest area to be handed over in consultation with local users, creates and registers a user group; and approves a management plan. Every effort is made to ensure fair

representation of the user group. User groups thus registered are entitled to all income from the forest and, after forest-related expenditures are made, may use the surplus for other public activities. Ownership of the land remains with the government, management and control of the resources on the land belongs to user groups. So, for all practical purposes, most of the former indigenously-managed forests will revert back to communities, with government foresters acting only as extension agents to provide technical assistance (Pardo, 1993). Thus goes the **formal** version of user group-based community forestry in Nepal.

As of mid-year 1997, community forests—defined as forests handed over to be protected, managed, and utilized by local Forest User Groups—had been established for more than 352,000 hectares of designated community forestland to over 5300 user groups in the hills and the Terai of Nepal (CPFD, 1997). One study estimated the total potential area for community forests to be around 3.5 million hectares (Tamrakar and Nelson, 1991). This means that progress to date has achieved around 10 percent of the total possible. Under the program of the Master Plan for the Forestry Sector, all accessible hill forests are to be handed over to local communities by the year 2010 (HMG 1989). It is not too surprising, then, that there are some who worry about progress being made in handing over forests rapidly enough to adhere to the year-2010 timeframe.

User group-based community forestry as an approach clearly does not suffer from lack of legislation, in terms of sheer volume. What is not so clear is how successful the articulation of community forestry legislation—well intentioned as it now may be—has been, and what explains the variations in outcomes observed in diverse locations under the purview of various community forestry efforts. With regard to actual participation by

local communities in the community forestry program, Gilmour and Fisher observe, "[i]t is recognized that they [communities] are necessary to implement forestry activities but they are not placed at the center. Community forestry projects remain primarily foresters' projects, rather than community projects" (1992). Users remain at the peripheries of decision-making, relegated to service roles.

The devolution of authority to groups of forest users to manage forest resources is the main operational strategy of the community forestry program in Nepal. Paradoxically, the highly centralized and hierarchical bureaucracy of the Forest Department has been given the responsibility of operationalizing this strategy. Gilmour and Fisher (1992) point out the dilemma in this assignment: "the organization which has been given the responsibility for devolving control of the forests to local communities also represents the interest of those who have the most to gain by maintaining control of the forests themselves. The Forest Department is being asked to use its authority to give away its authority!" This, along with inadequate staff, partly explains the DOF's inability or reluctance to transfer forestlands, especially those in good condition (mostly in the Terai), thereby slowing down the entire process.

The literature indicates another puzzle: the disappointing performance of user groups after obtaining recognition. Why is it that official recognition to user-groups has become the death knell of many partnerships between forestry officials and forest users? Many user groups have become disenchanted with the whole process of "handing over" and prefer to look elsewhere for alternatives to community forest products; away from any involvement with the DOF for fear of breaking some rule, or out of well-founded

suspicion that the recently benevolent forest official will come back to reclaim the state's land.

Formal recognition of rights to access and use can potentially achieve at least two ends: (1) it legitimizes the groups' forest use-rights vis-a-vis the government and (2) it empowers user groups to exclude others. Frequently, the former gets written into law, which in many cases, never filters down to community levels anyway and, therefore, is of little consequence to users who have harvested forest produce for generations regardless of formal law. Furthermore, what is written tends to emphasize the rights of the Forest Department and the responsibilities of users. For the forestry bureaucracy, such documents serve to reassert the bureaucracy's authority and demarcate the limited rights of users. From experience in West Bengal and Irian Jaya, the value of an official document to a group of users is more in terms of strengthening the authority of that group to exclude others (Seymour and Rutherford, 1993). Empowerment of user groups in this context, then, has also to do consensual mechanisms of enforcement. Interaction in this sphere of cooperation is not so much in evidence in Nepal today and is not anticipated in community forestry circles. Rather, the handing-over of forests, or legitimizing communities' forest use, is where the action is concentrated and also where current research looks for answers. The district forest offices regard this as their primary responsibility and, to their credit, manage to turn over remarkable acreage of forests to communities despite severe staffing shortages. What remains to be seen is whether or not speedy handing over of forests is really a means to an end or just an end for the DOF. In other words, what are the nature, scope, and extent of the DOF's involvement with community forestry user groups once the handing over of forests takes place?

While there is general agreement that local communities can avail of external assistance, few government-supported community forestry efforts have been perceived as being helpful. Clearly, there are problems with the community forestry approach that question the assumption of ready cooperation once communities are given the right to use and manage community forests. Problems of coordination, communication, and replicability have been brought up as difficulties in implementation (Joshi, 1997; Kanel, 1997; Malla, 1997). There are problems with the conceptualization and design of the institutional arrangements of community forestry as practiced in Nepal, not least because of the complexity of actors involved or of the resource itself. Where it has been demonstrated in field settings that problems of cooperation and performance have been dealt with quite successfully, there is a paucity of comparative research that asks important questions such as: "Why do some user groups perform better than others?" or "What kinds of institutional environments are likely to enhance the performance of government-supported efforts?" or "What are the constraints and opportunities that forest users and forestry officials face in dealing with problems in community forestry?" or "Does the design of the community forestry process reflect the needs of those most affected, i.e., the forest users?"

### **Research on Community Forestry in Nepal and Significance of this Study**

The literature on forestry in Nepal reflects some of the evolution in theoretical and policy perspectives in development. The recent upsurge in interest in community-based resource management by policymakers (in the broadest sense) and development practitioners has generated a number of studies on forestry in Nepal. A major theme in

this literature is the organizational variety of indigenous systems. There is an emphasis on the importance of understanding local forest-use practices in a stream of publications from some of the project personnel who are involved in "implementing" community forestry, in particular, the NACFP and CFDP (see, for example, Gilmour, 1989; Fisher, 1989; Griffin, 1988; Mahat et al., 1986a&b and 1987a&b; Campbell, Shrestha, and Euphrat, 1987; Arnold and Campbell, 1986; and Campbell and Bhattarai, 1982, Molnar, 1981). In the main, these earlier publications dealt with the reality they face in the technical implementation of community forestry in light of existing user practices.

Others have catalogued indigenous efforts at forestry management mainly in the form of comparative case studies (see, for example, Chhetri and Pandey, 1992; Tamang, Gill, and Thapa, 1993; Dahal, 1994; Karki et al., 1994). The focus of these studies is on the nature of existing user-groups while touching fleetingly on some problems with the community forestry program that are not seen in indigenous practices. These studies are interesting to the extent that (a) they highlight some similarities and differences in physical and socio-economic factors across the cases, and (b) they provide detail about the forest-use practices of those communities.

Recent studies of Nepal's forest management practices have directed attention towards the importance of institutional arrangements and social mechanisms. Some researchers have pointed to the role played by local institutional arrangements in sustainable resource use (e.g., Gronow and Shrestha, 1991; Gilmour and Fisher, 1992), but none have undertaken a systematic comparative study of local institutional arrangements and their mediating effects on resource conditions. In a similar vein, studies have incorporated some descriptions of institutional arrangements within detailed

descriptions of forest user groups (Chhetri and Pandey, 1992; Dahal, 1994; Karki, Karki, and Karki, 1994; New Era, 1996; Acharya, 1997). While this work represents progress in Nepali forestry research, there is a paucity of social scientific research that brings an institutional approach to the study of local forms of community organization in forestry.

A related theme in the literature is the legal framework of the community forestry approach. Most of the recent case studies (mentioned above) discuss the rules and regulations of the latest national forestry policy. There are also studies done by outside consultants to evaluate the adequacy of current legislation. For example, Pardo (1993) argues that the major shortcoming of the new legislation is "its failure to include more policy directives to guide both those who administer the law and those who will use the law and monitor its implementation," therefore causing confusion and debate in developing regulations.

Recently, there is evidence of a growing trend towards analyses that go beyond descriptive reporting and struggle to adopt a broader perspective (see Gronow and Shrestha, 1991; Gilmour and Fisher, 1992; Soussan, Shrestha, and Uprety, 1995; Chakraborty et al, 1997; Kanel, 1995; Pokharel, 1997). Based upon their experience in the Koshi Hills Community Forestry Development Project, Gronow and Shrestha list modification of work environment, a climate of trust, and encouragement of consensus-building processes as some of the conditions that are necessary for forest users and DOF staff to cooperate (1991). Using their experience in participatory methodology in rural communities, their analysis of the bureaucratic work environment of the DOF draws attention to the need for participatory practices in forestry offices as well. Gronow and Shrestha argue that foresters' trust and participation in community forestry will lead to

villagers' trust and participation. They advocate a "deliberately sympathetic" approach to the reorientation of DOF staff supported by long-term institutional change within the department.

In their analysis of the practice of community forestry in Nepal, Gilmour and Fisher (1992) argue that the contemporary approach has had limited success because of two factors: (1) institutional incompatibility, between the institutional design of the bureaucracy and the framework of action and decision-making in the villages concerned, which inhibits effective transfer of authority and (2) competing interests and hidden agendas in the political and administrative arenas, creating an environment of "structured conflict" which results in decisions that "sometimes appear irrational and illogical." Gilmour and Fisher point to pre-existing social mechanisms for developing consensus used by indigenous user-groups that are of value to assistance programs strategies. They also call for "substantial institutional changes" within the bureaucracy of the Forest Department to change the behavior of staff to better match that of the users they deal with in forestry activities.

A detailed analysis of the "social dynamics" of deforestation in four districts in Nepal—two each in hills and Terai—relates the evolution and variation of local production systems and the external factors which condition the relationship of rural communities to their local resource base (Soussan, Shrestha, and Uprety, 1995). The study finds that a very important determinant of group effectiveness is the relationship of the forest resource handed over to the needs of the community. Further, the authors call for the construction of an "effective social context for participation" that assists groups to craft management arrangements that are flexible and appropriate to the characteristics of



the resource and the needs of the community. They argue that current policies are anchored in erroneous assumptions about forest users and point to flaws in the procedures and institutional arrangements of community forestry as the culprits that undermine genuine participation.

Pokharel (1997) questions the design of the community forestry approach in Nepal through an examination of the relationships between government and community organizations at the community forestry interface at the local level. This builds on studies by Gilmour and Fisher (1992) and adds to the growing literature that addresses the role of the government in current community forestry practice. Pokharel discusses how there exists a knowledge gap with regard to the relationship of forestry professionals to village communities, and argues that the design of a partnership between state and community should look carefully at the constraints and opportunities faced by forestry officials as well as by villagers (Pokharel, 1997). This is a thoughtful and thorough attempt to focus specifically upon the incentives for forestry officials in establishment of working relationships with forest user groups.

Despite this recent broadening of perspective, and the attention that has been directed towards the importance of institutional arrangements and social mechanisms, social science research—especially of this nature—has yet to provide a solid foundation for policies that concern community-based forest management and governance. On the other hand, there has been substantial progress in the study of irrigation systems in Nepal. A recent study by Wai Fung Lam (1998) has explored the relationships between local communities, their institutions, and the performance of irrigation systems. In this comparative study of 150 agency- and farmer-managed irrigation systems, Lam addresses

a central question that has been of interest to scholars, public officials, and donors: why have many of the efforts to invest in the development of irrigation failed to improve infrastructure or increase productivity and economic well-being? Lam shows that institutional arrangements that facilitate cooperation and problem-solving at the local level are more important for the performance and sustainability of irrigation systems than just the construction of physical infrastructure (Lam 1998).

Several implications follow from this lacuna in research on governance and management of forest resources in Nepal. First, while few researchers have pointed to the role of institutional arrangements and their importance, none has undertaken a systematic study of institutional arrangements and their mediating effects.<sup>7</sup> Little attention has been given to institutional arrangements and their relationship to interactions of forest users or to forestry personnel. No one has examined how the diversity and the complexity of rules might possibly affect performance.

Second, while some perceptive practitioners have noted the importance of various forms of social capital that exist in communities of forest users, there has been little research done to understand how such social capital is or has been of use in the design and implementation of assistance programs. This can only be done by systematically and carefully looking at institutional arrangements being used in field settings i.e. rules-in-use. Finally, presumptions that tabular summaries of various socioeconomic and physical variables suffice to inform social science research and policy lead to shortcomings in understanding the complex nature of resource governance and management and potential pitfalls for various assistance programs.

The presumption that the mere existence or formulation of a particular set of institutional arrangements will, of its own accord, bring about particular, desirable results leads to myopic research that overlooks the manner in which institutional arrangements and other forms of social capital affect individual choice. In other words, the utility of the basis upon which a lot of forestry research has been conducted in Nepal is suspect. A lot of potentially useful data on a variety of pertinent issues is generated on a regular basis in Nepal. However, these do not tie into directed social science research. Consequently, the greater accuracy of social scientific knowledge of rural communities is often accompanied, unfortunately, by lesser relevance (see Dove, 1991).

### **Conclusion**

Legislation, formal definitions, operational plans, and guidelines comprise only parts of the institutional whole that individuals work within in their daily activities. Frequently, formal rules and regulations are not known; if known not understood; and if understood sometimes ignored. Clearly, such rules and regulations, if not known, have little effect; if not understood do not inform--and sometimes even confound--individual choice-making; and are ignored when they mean nothing to the cost-benefit calculus of individuals. Policy analysis based on just formal sets of rules and regulation run the danger of being of limited practical utility.

Instead of presuming that the legal framework of community forestry is the institutional environment of forest governance and management in Nepal, one has to be open to the possibility of other institutional arrangements. The analysis must include careful examination of how diverse rules-in-use are utilized by forest users, bureaucrats,

and others to relate to one another and to cope with problems they face in forest resource governance and management; and how these rules configure with rules at other levels to affect performance.

This study analyzes how formal and informal rules may complement each other so as to enable participants to better deal with problems. The analysis examines the role of government offices and associated implementing agencies in relation to the design and operation of these community forest resource systems. The study draws upon earlier theoretical and empirical work done in institutional analysis to take a fresh look at how institutional arrangements affect collective action in community forest resource systems.

In this first chapter I have provided a brief analysis of the origins of community forestry in Nepal along with a review of the policy and legislative framework within which community forestry has developed. In Chapter Two, I look at the structure of incentives that forest users and forestry officials face. This discussion is based on the premise that incentives, as created by various types of institutions, shape the behavior of forest users and officials with regard to forest resource management and governance. The puzzle of cooperation among users and between users and officials comprises the initial focus of the discussion in this chapter followed by a detailed discussion of the complexity of forest resources. In the latter part of Chapter Two, I discuss the framework of analysis, research questions, and methodology used in this study.

Chapters Three, Four, and Five comprise the empirical portion of this study with each chapter addressing a separate theoretical puzzle examined in the context of the field settings of the middle hills of Nepal. Each of the three empirical chapters (Three, Four, and Five) has a literature review and theoretical discussion that pertains specifically to

the proposition examined in that chapter. Chapter Three examines the relationship between the governance of forest resources and changes in population and forest resource conditions. Chapter Four looks at the influence of heterogeneity, i.e., differences among actors, upon the likelihood of organizing collective action for forest resource management. Chapter Five looks at the influence of patterns of deliberate association (as indicated by extent of interactions) upon cooperation, and the entrepreneurial roles played by certain key individuals and nonlocal forestry organizations in facilitating cooperation within forest user groups.

The study's concluding chapter reviews the "institutional" analysis of these eighteen groups and highlights important findings. The chapter goes on to address the question of institutional design for governing complex resources such as forests, which have all manner of interdependencies at multiple levels of use and management. Finally, weaknesses of the study are discussed and some suggestions for future research are made.

## Notes

1. For the purposes of this study, an assistance program or intervention is defined as any initiative external to the community of users of a forest resource, i.e. a non-indigenous effort, being implemented to better meet the needs of those users by improving the governance and management of that forest resource. Thus, programs like community forestry, leasehold forestry, and joint forest management are forms of intervention in the forestry sector.
2. See, for example, on Nepal (Arnold and Campbell 1986), on Thailand (Feeny 1988a) and, for India (Gadgil and Iyer 1989).
3. The literature on self-governance as the basis for the governance of resources has burgeoned in the last decade. Among the important recent works are McCay and Acheson (1987); V.Ostrom, Feeny, and Picht (1988); Berkes (1989); Pinkerton (1989); E. Ostrom (1990); and E. Ostrom, Gardner, and Walker (1994).
4. In the study, forest resource system (FRS) refers to the resource together with its system of governance and management.
5. After the demise of the Panchayati Raj system of government in 1990, this lowest form of political/administrative unit of government was named the Village Development Council (VDC) although this is about the only noteworthy change in the status quo; the structure and function remains the same as before. Note, that the term "Village" is misleading; in fact, a VDC is a territorial unit that consists of nine subdivisions called "wards" each having one or more villages. The population of a VDC can vary between 2000 and 5000, and the area varies according to topography and population density. The fact that the approach to community-based forestry is intimately linked to the VDC poses particular problems.
6. Since 1990, and the end of the panchayat system of government (Panchayati Raj), the terms PF or PPF are defunct; *samudayik ban* or community forestry is the term used nowadays to refer to any forest under some sort of user group protection and management.
7. Chhetri and Pandey (1992), Dahal (1994), Karki et al. (1994), and Pokharel (1997) are some of the recent researchers who have incorporated descriptions of institutional arrangements in their detailed case studies of forest user-groups. While their work represents remarkable progress in forestry research, there is a paucity of social scientific research—Pokharel (1997) excepted—that brings a theoretically grounded institutional approach to the study of forms of community organization in forestry.

## **Chapter Two**

### **The Analysis of Forest Resource Systems**

Although communities of forest users do play a significant role in solving collective-action problems in forest resource systems, potential pitfalls exist if insufficient attention is paid to factors that affect any of the actors' incentives to cooperate. One way to understand how different configurations of factors shape the structure of incentives facing forest resource users and government forestry personnel is to examine cases or experiments in natural settings. This study focuses on how institutions, defined as rules-in-use, mediate the actions of and interactions among various individuals involved in the governance and management of community forests in 18 different locations in the Middle Hills of Nepal.

In this chapter, I begin with the presentation of three related arenas of interaction that can occur in the context of community forestry in Nepal. This is followed by a brief introduction to the framework of analysis used in this study. I then look at the physical nature of forest resources with a view to explain how this may pose difficulties for organizing collective action. I conclude with a brief discussion of the study settings and the selection of cases for this study.

#### **Arenas of Interaction and the Analytical Framework**

This study focuses in particular on three related arenas of interaction that pose challenges in the context of forest governance and management. These are listed below along with a series of research questions to guide the inquiry in each arena of interaction.

**I. Interaction among forest users, including community members and user group members, in day-to-day forestry related activities like harvesting, forestation, monitoring and sanctioning.**

- How have forest users coped with differences among themselves in social, economic, and cultural standing? How are these relationships patterned or ordered?
- How have forest users, each with multiple interests, organized themselves as a collectivity to cope with problems? What are the characteristics of these self-organized collectivities? How effective or successful are these collective actions?
- How are rules and decision-making mechanisms that affect day-to-day forest-related operations put together? How do these vary from one level of organization to another? How do these affect forest users and forestry staff?

**II. Interactions within the bureaucracy of the community forestry program.**

- What are the features of the internal workings of the forestry department in general and the community forestry program in particular that affect the incentives of forestry staff? How are relationships structured between levels and within levels of staff?
- What are the terms of employment of the staff and how do these affect their lives, professionally and personally?
- What are the broader cultural and socio-economic factors that characterize the settings within which this department and program function?



**III. Interaction of DOF staff with forest users, including community and user group members, in implementation of various activities related to community forestry such as "the management plan" and the "handover process" in addition to the day-to-day activities related to forestry.**

- How is the day-to-day working relationship structured between users and forestry staff? How do forest users conceptualize their relationship with the forestry staff and vice versa? How do forestry staffers view their own role in community forestry? Are these views manifested in the rules that structure their working relationship?
- Do forestry staff members assimilate with or isolate themselves from forest users? How closely are they in touch with forest users? How do they communicate/confer/consult with users? What are the informal and/or formal channels of communication?
- What are the operating procedures for forestry staff with regard to daily forestry activities such as harvesting? How do these affect their interactions with forest users on a daily basis?

A lot can be learned from careful analysis of ongoing experiments if the discussion of each is arranged around a common framework of inquiry. This helps to identify key elements and potential relationships among these elements in each of the above-mentioned inter-related arenas of interaction that potentially affect collective action in these forest resource systems. Scholars associated with the Workshop in Political Theory

and Policy Analysis have developed such a framework--the Institutional Analysis and Development (IAD) framework--that helps to organize theoretical and empirical studies of diverse policy fields (Kiser and Ostrom, 1982; Oakerson, 1992; Ostrom, 1986). The IAD framework has been used as the central organizing paradigm for the general study of common-pool resources (Ostrom, 1990; Ostrom, Gardner, and Walker, 1994) and irrigation systems in particular (Ostrom, 1992; Tang, 1992; Lam, 1994). This study draws upon the IAD framework to examine community forest resource systems in Nepal.

The situation of community forestry comprises three groups of contextual variables: (1) the attributes of the relevant physical world that present opportunities and constraints to participants, (2) the attributes of the community of participants, and (3) the institutional arrangements used by participants to order their relationships. The incentives generated by physical and community attributes are modified by the institutional arrangements—or rules—used by individuals to order repetitive, interdependent relationships.

Rules prescribe what an individual must, may, and must not do in relation to other individuals and the physical world. In a rule-structured situation, individuals select specific actions from a large set of allowable actions in light of existing incentives. Rules are not self-formulating, self-determining, or self-enforcing (V. Ostrom, 1980:312). Humans design rules, apply them to particular situations, and attempt to enforce performance consistent with their designed intent. In other words, rules as social artifacts are subject to human design and intervention. By changing rules, it is possible to intervene to change the structure of incentives facing participants and the manner in which they relate to one another. Such interventions affect participants' capacities to

manage a resource. Thus, from a policy perspective, institutional arrangements are of most importance and, for this study, form the focal point of analysis.

Analyzing institutional arrangements also requires engagement at multiple levels of inquiry because of the configural nature of rules. The effects of one rule on incentives and outcomes frequently depend on other rules in use. *Operational rules* directly condition the decision-making of individuals in their daily activities. *Collective-choice rules* are institutional arrangements within which individuals craft operational rules. *Constitutional rules* stipulate the rights and responsibilities of individuals in relation to one another and the ways decision-making arrangements are constituted. Analytically, then, rules may be viewed at least three levels. First, an operational level of analysis views operational rules as the relevant decision-making arrangements, considers interactions among resource users, and evaluates outcomes. This level is nested within a second level of analysis that treats operational rules as an intermediate outcome and collective-choice rules as the relevant decision-making arrangement. Both levels are nested within a third level, which treats collective-choice rules as an intermediate outcome and constitutional rules as the relevant decision-making arrangement (Kiser and E. Ostrom, 1982; Oakerson, 1992). Thus, institutional change at one level is viewed as an outcome of patterns of interaction at another level.

While our analytic perspective views rules as multilayered, in reality, their effects on individual action and behavior in any given arena of interaction are concurrent. Furthermore, rules that affect individual choices at lower levels are influenced by rules at higher jurisdictional levels. Past studies on forest governance and management in Nepal have, in the main, focused on the operational and collective-choice levels separately with

scant attention to their linkages. How choices made at one level affect choices made at another level; what kinds of conceptualizations and rules underlie and affect decision-making arrangements; and what consequences are expected to flow and do flow from particular arrangements are some of the questions that are seldom addressed.

Furthermore, the variety of ways in which institutional arrangements are fitted or matched at different jurisdictional levels, and their consequent influences on patterns of action and interaction, merit attention.

The analytic approach adopted in this study posits a consistent model of actors with certain assumptions concerning their preferences and benefit-cost calculi in light of particular time and place contingencies. An individual's choice of action in any particular situation depends on how s/he weighs the benefits and costs of various alternatives and their likely outcomes. However, because the information-processing capabilities of humans are limited, choices are frequently made without considering all possible alternatives and likely outcomes. In other words, individual action or behavior is broadly rational but limited by cognitive capacities.

Individuals' choices are further constrained by incomplete information about the structure of particular situations. The lack of adequate information is one major source of uncertainty for individuals (Ostrom, 1990). For example, information about the boundaries and internal characteristics of the forest needs to be obtained to reduce uncertainty about the physical resource. Information about strategic behavior of users and how this affects others' behavior and, consequently, forest productivity, is necessary but costly to accumulate.

Further, individuals can be assumed to act opportunistically. Opportunism is defined as "self-interest with guile" (Williamson, 1975). The human penchant for opportunism increases the uncertainty and risks associated with interdependent action. When institutional arrangements are unclear and/or unenforceable and conditions are in flux, opportunities abound to seek personal advantage at others' expense.

Conceptually then, the attributes of a physical world and of the broader socioeconomic setting constitute the environments within which individuals act and interact. These environments present particular opportunities, constraints, and problems. To cope with these, and for mutual benefits, individuals use various institutional, or rule-ordered, arrangements to relate to one another.

This study looks at community forest resource systems as experiments in the organization of collective action between coproducers of forest governance and management. This perspective is further elaborated in a later section of this chapter. Coproduction occurs in settings characterized by a variety of physical and community attributes. These settings, called task environment in this study, consist of several attributes that affect their incentives to cooperate with one another and can potentially affect the organization of coproduction. In the context of Nepal, some important physical attributes are: the size of the forest resource, its proximity to roads/markets, topography of forest location, altitude, and so on. Some important community attributes are: size of forest user group, presence or absence of socioeconomic differences among user-households, differential access to forest resources, and so on.

Each of these attributes, by themselves or in combination with other attributes, comprise the task environment that affects the organization of collective action in

forestry. Thus, from a policy perspective, the opportunities and constraints posed by a particular task environment have to be taken into account in the institutional design of coproduction of community forestry. In Chapters Three and Four, this study looks at change in population (and user group size) and various types of differences within user groups. The effort in those chapters is to examine whether population change and differences among users pose difficulties in organizing forest resource appropriation and provision activities and how communities have coped with these difficulties. In the following section, I look at the physical attributes of forests and how some of these attributes present unique difficulties for organizing governance and management activities.

### **Ecosystem Services or Fuel and Fodder? Forests as “Composite” Resources**

Forest resources supply a wide range of goods and services of varying utility to humans across a broad socioeconomic spectrum. Unlike some other natural resources, benefits from forest resources come in a remarkable array of packages. Forests provide watershed protection, biodiversity reserve, and carbon sequestration services. Forests supply fruits, fodder, timber, herbs, and medicines. Forests provide benefits that are consumed by individuals at a local level (as energy, food, shelter and so on) as well as at regional and national levels (as clean air, stable ecosystems, water abundance and so on). But the basis upon which forests are ascribed value as natural resources differs from national (government) to local (community) levels because of the very same benefits they provide. The following two perspectives of the same location in Gorkha district, in the middle hills of Nepal, illustrate the point.

**The Government's Perspective:** The Bhusunde Khola Watershed is located in the middle hills of Gorkha District in Nepal about six kilometers from Gorkha Bazar, the district headquarters. The topography of this area is steep with around 70 percent of the total area having above 30 percent slope. The total annual rainfall is about 1900 millimeters. Of the total land area, 66 percent is cultivated and 25 percent is under forest cover. Drinking water is in chronic shortage all over this watershed and the problem of water supply is getting more and more acute every year. Trails, hacked from the hillsides, are getting harder to use, especially in the rainy season because parts of the trails get washed away. The quality of forest cover—especially that closest to settlements—is going from bad to worse. The soil on these slopes gets washed away through erosion gullies into irrigation channels and streams. Viewed from the opposite mountainside of Gorkha bazar, large parts of this watershed have reddish patches of lateritic soil visible throughout all seasons of the year. Agricultural productivity has declined and people have turned more and more to scarce off-farm employment for survival.

The Bhusunde Khola Watershed Project was initiated in this area five years ago by the District Soil Conservation Office of the government to improve rural infrastructure and watershed conditions. Specifically, the project supports conservation activities such as gully control, landslide treatment, plantations, community forestry; small scale infrastructure development such as water source protection, trail improvement, irrigation channel improvement; farming systems improvement; income generating activities; and social services.

**The Villagers' Perspective:** Chhoprak VDC of Gorkha district is about three hours hard walk from the nearest all-weather road. The southeastern part of this VDC contains a forest (Ratomate Ban) which is very degraded with the topsoil washed away in many places. There are six settlements scattered around this forest, each of mostly homogeneous composition in caste. The forest, and the watershed it is in, comprises part of the project area of the Bhusunde Khola Watershed Project, a 5-year old integrated development project. Residents of these settlements do not have any form of cooperation to protect and manage the Ratomate Ban, which has less and less forest produce to offer.

Timber, fuelwood, and fodder are not available in any useful amount from this forest. Most villagers go to their own bari (unirrigated land) for fuel and fodder requirements, which are further supplemented by going into a nearby government forest. Many villagers have reduced their livestock holdings. The forests surrounding Ratomate Ban have, one by one, become legally defined community forests with user associations which prohibit entry to nonmembers. In spite of obvious reasons to constrain use and begin protection of their own forest in an organized manner, people in this area continue to view each other and outsiders with considerable suspicion, and show a remarkable apathy to collective action.

The above illustration describes two views of the same problem, albeit at different scales. Asked what some of her problems are today, a woman in Chhoprak would respond with a list that started with dwindling fuelwood and fodder supply as the most pressing problems. She would add that some outside help to address these problems would be most welcome. Confronted with the same question, a forest or soil conservation officer in Gorkha (district headquarters) would respond that, in this watershed, hillsides and



valuable topsoil are continually being washed away, forests no longer have valuable stocks of timber or of nontimber forest products, and villagers worry and complain about increasing hardship. S/he would add that a lot of effort is necessary in this area to rejuvenate the watershed and improve the lives of villagers who live here.

But, surprisingly, Bhusunde Khola watershed, and this area in particular, have had projects centered around resource conservation and participatory development for over 15 years. Until quite recently, there was very little to show for the large amounts of “aid” and “expertise” supplied here. In fact, most locals agree that more harm than good has come of all these interventions. The last big project created the illwill and distrust that is evident and hard to overcome even today. When project staff are asked, they say that there is a history of non-cooperation with outsiders as well as among villages in this particular area. A user group has been formed twice and an enthusiastic young forest officer deputed by the district office is now making a third attempt. While most villagers do want to “grow” the forest, caste-related tensions, favoritism by projects, and a lack of education among the lower castes are given as the main reasons why villagers in this area find it hard to work together to manage a forest that has now “resisted” regeneration for 10-15 years.

In the illustration, the village woman and the forest officer relate to the same physical area and location in different ways partly because of the difference in forest goods and services they see as most relevant and beneficial. The problems they see as most pressing are related but different. It is evident that the problem of a lack of wood and fodder at the local level for a villager can mean a lack of trees at the watershed level for the soil conservation officer. This can mean a problem of soil erosion and river siltation. This

also means that while the benefits of cooking energy and cattle feed are not available to a villager, watershed benefits are also unavailable at the regional level. **Thus, there are differences in attributes of benefits (or goods and services) provided by forests resources.** These, in turn, affect how they are appropriated or harvested, how they are consumed, and most importantly, how they are governed.

### **Attributes of Forest Resources**

Before extending this discussion further, an analytical distinction needs to be made between what is called a forest resource, a forest resource unit, and a forest resource system. A forest resource is the “facility” that creates the conditions for the existence of a stock of forest resource units (forest products). This stock makes available a flow of resource units over time that is appropriable and subtractable in use. With respect to forest resources, as long as the number of resource units withdrawn or appropriated from the resource does not exceed the regeneration rate, the stock will not be exhausted (Ostrom, Gardner, and Walker, 1994). In this study, forest resource system refers to the forest resource together with its system of governance and management.

Two attributes help provide a critical classification of forest products into categories useful for understanding the complex nature of forest resources: **exclusion and consumption** (table 2.1). Exclusion refers to whether it is difficult or easy to exclude someone from using that product. The costs of exclusion will vary according to the size of the forest, its distance from human settlement, and the kind of forest product that is harvested. The problem of exclusion can be acute for forests that are shared by several settlements and are closer to some settlements than others. Consumption refers to

whether or not a good once consumed is available for others to consume. Thus, a tree felled for timber by one household is not available to another household—an example of subtractive consumption, whereas any household can enjoy the benefit of soil stability or clean air without subtracting from the amount available to another household—an example of joint consumption.

Table 2.1. Attributes of Forest Resources

	Consumption	
	Subtractive	Joint
<b>Exclusion</b>  Difficult  Easy	<i>Common-pool</i>  Fodder, Wood Herbs, Fruits Water	<i>Public</i>  Watershed protection, Carbon sink, Biodiversity reserve
	<i>Private</i>  Fodder, Wood Herbs, Fruits Water	<i>Toll</i>  Areas or Products of religious significance

Adapted from Ostrom and Ostrom (1977)

In table 2.1, four broad categories of goods and services are seen based upon whether or not consumption is subtractive or joint and exclusion is difficult or easy. The categories of goods and services are common-pool, public, toll, and private. Toll goods are those goods whose consumption is joint and for whom exclusion is relatively easy. For a forest resource, certain areas or trees may have religious significance. Access to these can be controlled at less cost while all enjoy the benefits of accessing religious areas. Similarly, views of wildlife and scenery can be constrained to a few but enjoyed

without subtraction. Private goods and services are subtractive in consumption and it is relatively easy to exclude someone from using a private good or service. Once harvested, most forest products fall in the category of private goods, where exclusion becomes easier and the benefits are subtractive. For both toll and private goods, because of the relative ease of exclusion, entrepreneurs are able to invest in the provision and production of these goods and services and collective action is not a necessity.

Prior to harvest, however, forests can be conceptualized as aggregations of various types of resource stocks and resource unit flows, each of which exhibits attributes that range on the continuum between pure public good and common-pool good. In this study, I'm most concerned about the common-pool good and public good aspects of forests resources because these pose the most problems for organizing investments in provision and production. However, before further discussing these inherently problematic aspects of forest resources, some unique characteristics of forest resources are elaborated below.

### **Stationarity and Storage**

In addition to the physical attributes of excludability and subtractiveness of consumption, forest resources can be distinguished by the characteristics of stationarity and storage. Products appropriable from forests are, for the most part, spatially confined prior to their harvest. Forest products like fuelwood and fodder are resource units that, unlike water, do not flow but remain stationary; users have to travel into forested areas to harvest them. This physical characteristic of resource units is called stationarity and, along with another characteristic, storage—the physical capacity to collect and hold resource units, is linked to systematic differences in users' strategies and in the

institutional arrangements developed to overcome appropriation and provision problems (Blomquist et al., 1991 & 1994).<sup>1</sup> Users have to travel into forested areas to carry out maintenance and protection activities. **The distance some users have to travel, or their relative proximity, to forested areas they use in relation to that traveled by other users affects the symmetry of relationships among forest users and their relationship with the resource.**

In terms of devising allocation rules, natural resources that have nonstationary or mobile resource units and lack of physical storage present the most problems. Forest resources have physical storage and, except for wildlife, forest resource units are stationary. This combination of physical characteristics in a resource is not as disadvantageous to users as, for instance, in fisheries; but we are concerned with how stationarity of forest resource units in combination with locational differences of user households pose problems in arranging resource maintenance, management, and the allocation of benefits.

The physical realities of the terrain in the middle hills of Nepal, with settlements and forests scattered over wide areas, support the proposition that proximity to the forest can be an important influence in determining the participation of user group households in collective action (Chhetri and Pandey, 1992; Shrestha, 1986). Users who live closer to the forest may have a more secure and accessible supply of produce regardless of whether or not there are allocation rules in place. These proximate users may not be as motivated to provide institutional arrangements to allocate duties and benefits as less proximate users. Users who live farther away may raise questions about the allocation of duties and benefits. When some users have to walk longer than others to participate in maintenance

and protection activities, allocating duties and benefits in a way that is perceived to be fair is problematic. These issues are discussed in more detail in Chapter 4.

### **Multiple Uses and Interdependencies**

In addition to the physical attributes of excludability, subtractability, stationarity, and storage, forest resource units have multiple uses and interdependencies. Forest resources may thus be called **composite** resources. The term 'composite' is used to represent the multiplicity of types of "resource units" appropriable from forests.<sup>2</sup> There is nothing like the resource unit (like a barrel of oil or cusec of water) for a forest. Various foods, fodder, timber, herbs, and medicines are appropriable. Further, not only can one species provide timber, it can also provide fodder, like *Shorea robusta*. *Schima wallichii* provides firewood and fertilizer. Several such species populate forests and are sources of a variety of resource units. This multiplicity of resource units (or species, generically speaking) along with the particular preferences of appropriators for particular individuals within species makes for a composite pattern of resource use. This heterogeneous character of the resource itself has implications for organizing governance of the use of forests and on consequent performance.

At issue also are interdependencies between and amongst resource units (which are ecological), interdependencies between types of resource units and appropriators, and interdependencies across appropriators for the same type of resource unit. The harvest of one type of resource unit by an individual may affect the harvest of another type of resource unit by another individual. Also, temptations to break rules can be stronger. An appropriator may have permission to harvest leaves on a fodder tree but may lop off a

few branches (not permitted) while at it. Monitoring and sanctioning can be much more complicated when the nature of the resource is composite. Thus, while patterns of appropriation from forests reflect not only appropriator preferences and capabilities but also heterogeneity of resource units, governance can be more complicated than in resources with similar units. Over time this can translate into destructive or productive use patterns depending upon the institutional arrangements devised to govern the use of forests.

In a subsistence economy setting, a forest is not just a source of resource units but rather the source of many kinds of resource units that provide for basic needs. Rural communities who depend upon forests as critical resources have, in many instances, crafted rules that take into consideration the types of forest resource units that are available and their multiple uses, in addition to a host of other factors. Thus, for the example of *Shorea robusta*, a harvesting rule may be that leaves from a tree may be harvested up to a certain height on the tree after a minimum growth period, but cutting the trunk, or even the branches, may not be permitted until after a specified number of years in the tree's life.

### **Common-pool Aspects of Forest Resources**

Many goods and services provided or appropriated from forests are not joint in consumption: they are subtractable (like private goods), and exclusion is difficult (like public goods) though not impossible. Forest products like trees, water, wildlife, are subtractable, and in most cases, exclusion will be problematic and costly. If one individual uses more, less remains for others. Forests are therefore potentially subject to

depletion or degradation, i.e. use which is pushed beyond the limits of sustainable yields (Blomquist and Ostrom, 1985). The governance and management of forest resources can thus be conceptualized as a collective endeavor of individuals in organizing for the provision of and appropriation from resources that have common-pool characteristics.

Analytically, forests, viewed as CPRs, can have two broad types of problems: problems of provision and problems of appropriation (Ostrom, Gardner, and Walker, 1994). Provision problems relate to enhancement and maintenance of the forest resource. Activities to address these types of problems include the organization of seed-planting and weeding activities, selective cutting, and maintenance of paths. Appropriation problems relate to exclusion of potential users and allocation of subtractable benefits. Arrangements to address these types of problems include agreed-upon harvest technology, time of harvest, and division of forest produce.

A variety of rules can be adopted to regulate the flow of subtractable forest products to individual users at specified times and conditions. Even when such rules of allocation are established—by forest officials or by users themselves—temptations to cheat always exist. Cheating can take many possible forms: harvesting more produce than authorized, harvesting the quantity of produce allocated but not contributing the required inputs to maintenance, harvesting produce at a time not authorized, and many other forms of rule-breaking. At times when agricultural residues are no longer available for uses like livestock feed or fuel, the temptation to break rules is much stronger than at other times. When the demand for firewood is high because of growing numbers or cash value, individual users may harvest more than the quantity authorized to stock up or hoard for



times of scarcity. Users whose livelihood depends primarily upon forest produce (such as blacksmiths, teashop owners, and landless peasants), may be more tempted than others.

Rules that allocate benefits affect the incentives of forest users to contribute to the maintenance of the forest resource. The design of allocation rules must reflect careful consideration of principles such as fairness and enforceability specifying who can appropriate how much of produce at what times and places and under what conditions (Ostrom, 1995). Furthermore, allocations of benefits have to be linked to provision responsibilities such that allocations are equitable and responsibilities are, in fact, shouldered.

In the rugged topography of the middle hills of Nepal, attempting physical exclusion for forest resources of even moderate sizes (a little larger than a traditional woodlot) is a non-trivial exercise. Forests grow in natural patterns and tend to spread up to the margins of cultivated land. Human and animal trails enter and exit forests at various elevations. It is physically possible to fence off forests, but very expensive. In addition, fences are difficult to guard and are easily breached. Frequently, forests are hard to fence off because of the nature of the terrain involved, their size, and the fluid boundaries that live resources typically possess.

Excluding potential appropriators becomes difficult when there are multiple points of possible entry into forested areas. Inducing individuals to contribute to maintenance of the forest is hard when anyone can slip in and out with a headload or bundle of produce with no one the wiser. Exclusion is especially difficult when several settlements encircle the forested area and inhabitants are all about. Therefore, provision is problematic. Most interventionist efforts have concentrated on resolving the production problem of forestry,

i.e., providing a well-stocked forest resource.<sup>3</sup> True, the costs of financing forestation schemes are usually better covered by those who possess the means (such as public agencies or donors). The assumption frequently made by forestry specialists and donor agencies that the massive planting of seedlings would resolve the problem of forest resource provision has been proved erroneous in numerous instances, in Nepal and around the world (e.g. Griffin, 1988; Arnold, 1992; Gilmour and Fisher, 1992). Planting seedlings, however, is not the only provision problem in forestry and, as such, is now recognized as only one of many inputs that may be necessary.

Resolving the provision problem for forest resources involves more than planting trees for communities. Recurrent efforts to mobilize adequate resources and care to maintain the resource are also essential. Whether or not the resource deteriorates significantly will be determined by arrangements—communal or external—to provide for maintenance, operation, and protection. The efficacy of these activities are determined by the incentives conditioning the environs within which those individuals operate.

### **Public Good Aspects of Forest Resources**

Forests also provide goods and services other than fodder, fuelwood, medicinal plants, and so on, that are even more difficult to prevent beneficiaries from obtaining. For example, reduced soil erosion or soil stability is a public good that is enjoyed by all villagers and much valued on the steep slopes of Nepal's hills. So are clean air, groundwater, wildlife refuge, and other ecosystem services. Since it is impossible to exclude anyone from enjoying the benefits of clean air or soil stability, the provision of these benefits becomes problematic. People who may have strong incentives to invest in

protecting trees for fodder or timber will have much less incentives to do so for public goods like clean air and soil stability because they fear others will “free-ride” on their efforts or because they can free-ride themselves. Those who do not invest because they see little direct benefit are still able to gain from the investments made by others.

The governance of forest resources can thus also be conceptualized as a collective endeavor of individuals in organizing for the provision of and appropriation from resources that have public good characteristics. Since individual interests are unlikely to drive the desirable management of public goods, the design of governance for forest resources has to include some elements of support from government to modify the incentives for individuals. Some tasks and responsibilities will have to be turned over to villagers and vice versa.

### **Providing for Forest Goods and Services**

The composite nature of forest resources poses specific challenges to those desirous of devising productive governance arrangements. In-depth knowledge about the forest resource in question and its interdependent use patterns becomes important in addition to information about other factors such as attributes of actors, existing institutional arrangements, and the prevailing socioeconomic and political situation. Further, by conceptualizing forests as common-pool resources, I have discussed how the physical attributes of non-trivial excludability and subtractability pose fundamental difficulties to individuals jointly using a forest resource. By examining the public good nature of forest resources, I have discussed how the difficulty of exclusion and the jointness of

consumption of benefits such as ecosystem services are problematic for designing effective governance.

The physical attributes of a resource and its products affect its governance and management arrangements. The interdependence in provision of both common-pool goods and public goods is problematic for the provision of forest resources. The costs involved are inseparable. On the one hand, villagers need wood and fodder from a forest. On the other, government officials who represent the needs of the larger community need ecosystem services from that same forest. Even if villagers organize to provide for a forest area to produce enough wood and fodder, government officials may find that the public good benefits from that forest area are under provided. How can villagers be induced to provide for public goods? It is unlikely that they can be induced, unless government officials find a way of reducing the costs of such provision. The role of government, as the representative of a larger community of citizens, is hard to deny in the provision of ecosystems services or other such public goods produced by forest resources. Thus, an arena of interaction exists to coprovide and coproduce these interdependent benefits, that of cooperation between villagers and the relevant government officials (activities in arena III earlier). The following discussion elaborates on the arena of coproduction in the context of community forestry and some of its inherent problems.

### **The Coproduction of Community Forestry**

Community forestry can be conceptualized as an enterprise of coproduction of forest governance and management. Indeed, a partnership between forest users and DOF staff

is explicit in the contemporary forestry-related legislation of Nepal. However, as discussed earlier, this "partnership" has had disappointing results in most instances. In a coproduction process, the efforts of forestry staff (the regular producers) and those of the forest users (the consumer producers) are largely interdependent; neither one can totally substitute for the other (Parks et al., 1982).

In Nepal, this interdependence, though unacknowledged in intervention design, is evident in various forestry-related activities. For instance, while foresters have technical training and experience concerning silvicultural aspects of forestry, forest users are a "sound repository" of substantial indigenous knowledge of practically useful forestry (Gilmour and Fisher, 1992). Foresters need to ensure that the productivity of community forests does not decline further, but is maintained or even improved. Users have significant need of particular forest produce of specific quality and quantity. Both have knowledge that, in combination, can enhance the performance of activities related to forestry governance and management. This illustrates how each party's cooperation is necessary to achieve mutually beneficial outcomes. It also highlights the importance of the design of appropriate institutional arrangements in forestry interventions such that their effective functioning complements users' efforts in forestry governance and management.

The process of coproduction has several obstacles that have to be confronted in order to perform with any measure of success. Among these, motivation, abuse of authority, and opportunistic behavior are discussed below.

## **Motivation of Coproducers**

For a coproduction process to succeed, incentives must be in place so that regular producers are motivated to serve the interests of consumer producers (Lam, 1995). An important concern in the implementation of community forestry is the organization of DOF staff such that they are motivated and committed to active participation (Gronow and Shrestha, 1991). Unfortunately, in the highly centralized and hierarchical DOF bureaucracy, incentive systems that link staff performance to user group satisfaction are practically nonexistent. There is no reward system to encourage DOF staff to work directly with forest users or to use local knowledge. Furthermore, staff who are low-paid and subject to transfer at any time (especially if certain targets are not met, in terms of trees planted, hectares of forests "handed over" or user groups created) are apt to be disinterested in any function that does not involve self-preservation.

Interactions between DOF staff and forest users depend upon how each regards the other. In many cases, previous work-patterns and roles of DOF staff have brought them into conflict with forest users and resulted in suspicion and antagonism on both sides (Gilmour and Fisher, 1992). Institutional innovation is even more important in motivating both parties to work together effectively in settings where coproduction has rarely occurred and considerable mistrust exists (see Ostrom, 1995). Tools that the DOF has habitually used to encourage user participation, such as free seedlings and silvicultural training sessions, have not been of significant value, partly because they are not designed into arrangements that complement productive investment activities.

### **Potential for Abuse of Authority**

Another difficulty in designing institutional arrangements to structure interactions between DOF staff and forest users emerges from the traditional (and present) position of authority enjoyed by DOF staff. The existence of authority systems provides considerable discretion to DOF staff like District Forest Officers and permits the substitution of their preferences for that of subordinates or, more importantly, of forest users. Opportunities abound for those who wish to abuse their position of authority--or determining powers (Thomson, 1992)--for personal gain. Studies quote villagers as having said that DOF field staff, who have been entrusted with licensing and "policing" roles, have long-established methods of carrying out their jobs with a degree of graft and corruption (Stone, 1989; Gilmour, 1989, Gilmour and Fisher, 1992). Such staff also have a strong vested interest in maintaining the status quo. This is a typical example of how institutional arrangements in "development bureaucracies" can produce a problem of coproduction (see Nicholson, 1994). The existence of unequal decision-making capabilities potentially gives incentives and opportunities for individuals in authority to exploit and prey upon the efforts of others (V. Ostrom, 1991, 1995). Such institutional arrangements can become even more problematic when some members of the "consumer" or target community assume or are assigned positions of authority within the offices of local government.

### **Opportunistic Behavior**

The interdependence of efforts creates the potential for opportunistic behavior by any of the parties involved in coproduction, especially when roles in the coproductive effort

are unclear. Many DOF staff have had some training in "technical" forestry. Traditionally, however, they have performed mostly licensing and policing functions leaving technical work to "outside staff" or "project staff." This notion of differential importance, between the primary tasks of policing and the secondary task of silviculture persists (Gilmour and Fisher, 1992) and is responsible for the blurring of responsibilities in the current context of community forestry implementation. Thinking that forest users will get outside help in technical forestry, foresters focus on policing activities and expend little effort in extension activities. Thinking that DOF staff are the forestry experts (partly because most of the physical inputs are from outside the community), forest users leave silvicultural responsibilities to the "regular producers." Consequently, cooperative efforts to maintain or enhance productivity of community forests may not be successful.

### **Background of the Study Setting**

The physiographic zone of the Middle Hills of Nepal provides the broad setting of this study. In the Middle Hills, the population is estimated at 8.4 million (45.5 %) with a growth rate of 1.61 percent for 1981-1991 (Central Bureau of Statistics, 1995). (Nepal's total population was 18.5 million with an annual growth rate of about 2.08 percent for the same time period.) The population remains largely rural, with fewer than 10 percent of the total in towns and cities. Subsistence agriculture is still the main occupation, although villagers do not hesitate to supplement their livelihoods by entering the market economy whenever opportunities arise.



The rural population in the Middle Hills is mainly distributed in small villages or hamlets that are sometimes parts of larger, dispersed settlements. A common pattern of forest-land distribution in these hills is for small patches of forests to be scattered throughout larger areas of cultivated land. These are vital sources of fuelwood, fodder, and leaf litter for animal bedding and composting, especially in the winter months when agricultural residues are exhausted. In 1985-1986, forestland (of about 5.5 million hectares) accounted for a substantial proportion (38 %) of the total land area (about 14.7 million hectares) in the country. The Middle Hills contained about 1.8 million hectares (32.6 %) of forestland in this time period (HMG, 1988).

The change in use of forest resources in the hills has not been ascertained with any accuracy. However, a recent study of over 3,300 households in Nepal found that 93.7 percent of rural households collected firewood and 86.8 percent used firewood as cooking fuel. Of all the households collecting firewood, 25.3 percent collected from their own land, 12.5 percent collected from community forest land, 59.7 percent used government forest land, and 2.6 percent obtained firewood from other sources (Central Bureau of Statistics, 1996). Evidently, nonprivate forest lands continue to supply the majority of firewood for households in the hills, upwards of 70 percent. The figures for community and government forest land usage are only useful in estimating nonprivate land use. Frequently what is officially government land is actually communal by use. The figures also do not supply acreage of various lands used for forest products. It could well be that the community forests and private lands are less used because of management regimes in effect.

Community forestry in the Middle Hills is being implemented through the administrative structure of the Department of Forests, facilitated by various donor-aided programs. These range in size from bilateral projects covering one or two districts, such as the Nepal-Australia Community Forestry Project and the Nepal-UK Community Forestry Project in seven districts, to the largest—the Community Forestry Development Project—which provides technical assistance and financial support, by way of World Bank assistance, to 35 hill districts. The 18 sites included in this study are from districts in the Middle Hills, most of which have various sorts of community-based integrated development program activities, including the community forestry program of the government of Nepal.

### **Mode of Analysis and Case Selection**

In order to examine the roles of physical, socioeconomic, and institutional attributes in understanding the performance of forest resource systems, this study employed a two-stage analysis in each of the three empirical examinations (Chapters Three, Four, and Five). The first stage of analysis provides a broad understanding of trends in the attributes examined and the association of these trends with (1) foresters' and villagers' perceptions of forest conditions (changes in tree density and in forest area) and (2) evidence of local-level organization and cooperation in resource management in the set of 18 cases.<sup>4</sup> The second stage of analysis focuses in on a subset of cases that helps to illustrate the patterns discerned in the initial analysis. The task is to identify and examine how the crafting and operation of institutional arrangements generate different outcomes for groups with similar structures of incentives.

In the design and conduct of this study, I have used the International Forestry Resources and Institutions (IFRI) research program and database as a major resource. This is for two reasons: the use of existing primary data and use of well-developed data collection protocols. One of the main countries of interest and collaboration for IFRI is Nepal. The Collaborating Research Center in Nepal has made significant progress in collecting data in several sites in various locations and most of these sites are within a single physiographic zone. The primary data from field visits to these sites were supplemented by with secondary data from project documentation and library research.

The IFRI data collection protocols are purposely designed to collect a large amount of information about forest resources and institutions. Many of the variables of interest to this study are already designed into questions asked in these data collection instruments. They have been extensively pretested in Nepal and incorporate several techniques of data collection that are important considerations for case-study research. Using a tool such as this ensures that data collection procedures can be repeated reliably. The IFRI protocols have the added strength of incorporating converging lines of inquiry in data collection so as to strengthen construct validity (Yin, 1994). In addition to the use of interviews to collect information from multiple respondents in the community, the data collected reflects triangulation from sources such as historical records, outsiders who have worked in or with the community (e.g. DFO staff, NGO staff), and impressions from members of the research team. In many instances, key informants will have reviewed the information collected for accuracy.

The process of data collection and data organization used in this study addresses one of the oft-mentioned shortcomings of forestry research in Nepal, i.e. the lack of

consistently collected cross-sectional data (see, for example, Subedi, 1997). Frequently, the inherent weaknesses of a study done in a single time-period can be overcome if a sufficient number of similar studies are done using the same research methodology and theoretical framework in a single time-period. This study addresses this gap in knowledge by looking at local-level information on socioeconomic and forest parameters across 18 locations in the Middle Hills visited in a single time period and also validates the information on forest condition and socioeconomic characteristics of one-third (or six) of those sites by conducting revisit after an interval of four years (as discussed earlier in measurement of forest condition).

Four tests may be considered relevant in judging the quality of a research design: construct validity, internal validity, external validity, and reliability (Yin, 1994). The strategy I have outlined above was used to collect information and addresses each of these concerns except that of internal validity. The problem of making sure that relationships shown to exist are not spurious is addressed in part by detailed description of the context and field settings within which these relationships exist.

The cases included in this study are shown in table 2.2 in the chronological order in which they were visited by the International Forestry Resources and Institutions (IFRI) research program team in Nepal. These cases comprise a larger set of IFRI studies conducted in two physiographic zones of Nepal since 1992. The data for these particular cases were obtained over a period of three years. Each case was studied by a five-member team composed of natural science and social science researchers, over a period of four weeks, using IFRI research methods (see Ostrom, 1998a).

The 18 cases in this study represent locations within Village Development Committees (VDCs) in the Middle Hills of Nepal, and range from the easternmost district of Ilam in the Eastern Development Region to Gorkha and Tanahun districts in the Western Development Region (see Figure 2.1). For the purposes of this study, the names of settlements are omitted and, instead, locations are identified using the names of the VDC within which the settlements and forests were studied. All but two of the studies (Manichaur and Sunkhani) conducted in the Western and Central Development Regions are part of a series commissioned by the Hills Leasehold Forestry and Forage Development Project of the government to monitor the effect of the project in those locations over time. As part of that monitoring plan, some of these locations have already been revisited since the first round of baseline studies; other locations were revisited in the spring of 1998. The Manichaur and Sunkhani locations were studied as baseline assessments of forest use patterns in the Shivapuri Integrated Watershed Development Project north of Kathmandu valley.

In the Eastern Development Region, the cases are part of a longitudinal series of IFRI studies, funded by the MacArthur Foundation, that examine forest resources and institutions in locations that have varying access to markets and roads, and that are in areas of high and low intervention by government and donor agencies. Thus, the locations of study were mainly determined on the basis of project or agency criteria. However, the data obtained show variation on the factors I examine in this study.

## **Notes**

- 1. This study is particularly concerned with problems associated with the stationarity of forest produce. Forests have storage, for products such as timber, which means that users have the ability to "bank" surpluses or use them when most needed. However, for the reason that villagers in Nepal have government restrictions on timber harvest in community forests, I focus on the stationarity of forest produce as the more influential characteristic.**
- 2. The literature on common-pool resources assumes a factory-like production line with a "stream...of undifferentiated product" which is subject to appropriation (see, for example, Oakerson, 1992:42).**
- 3. In this study, I am concerned mainly with provision problems of the maintenance type and not so much with production or complete creation of a forest. In most instances, the resource stock—or forest—has existed prior to initiation of management efforts, albeit in varying stages of health. Efforts to constrain use include maintenance activities like selective harvesting, complete closure, weeding, planting in sparse areas, etc.**
- 4. The indicators used for forest condition were of two kinds: forest stock and trend in forest condition. The indicator forest stock provides a subjective assessment of forest condition at the time of the study by the forest specialists on the research team with respect to speciation and abundance of vegetation. In most of the 18 cases, the professional assessments of the district forest officials in those study sites were also obtained to validate the research team's subjective assessment. The trend in forest condition is a subjective assessment of forest condition derived from the historical perceptions of diverse local forest users, and, in many instances, of local government forest officials, about the relative abundance of produce, disappearance of valuable species, and change in forest area. A validation exercise performed to establish the relative accuracy of these subjective assessments completely supported the assessments (see Appendix A).**

**Table 2.2. Descriptive statistics for 18 sites**

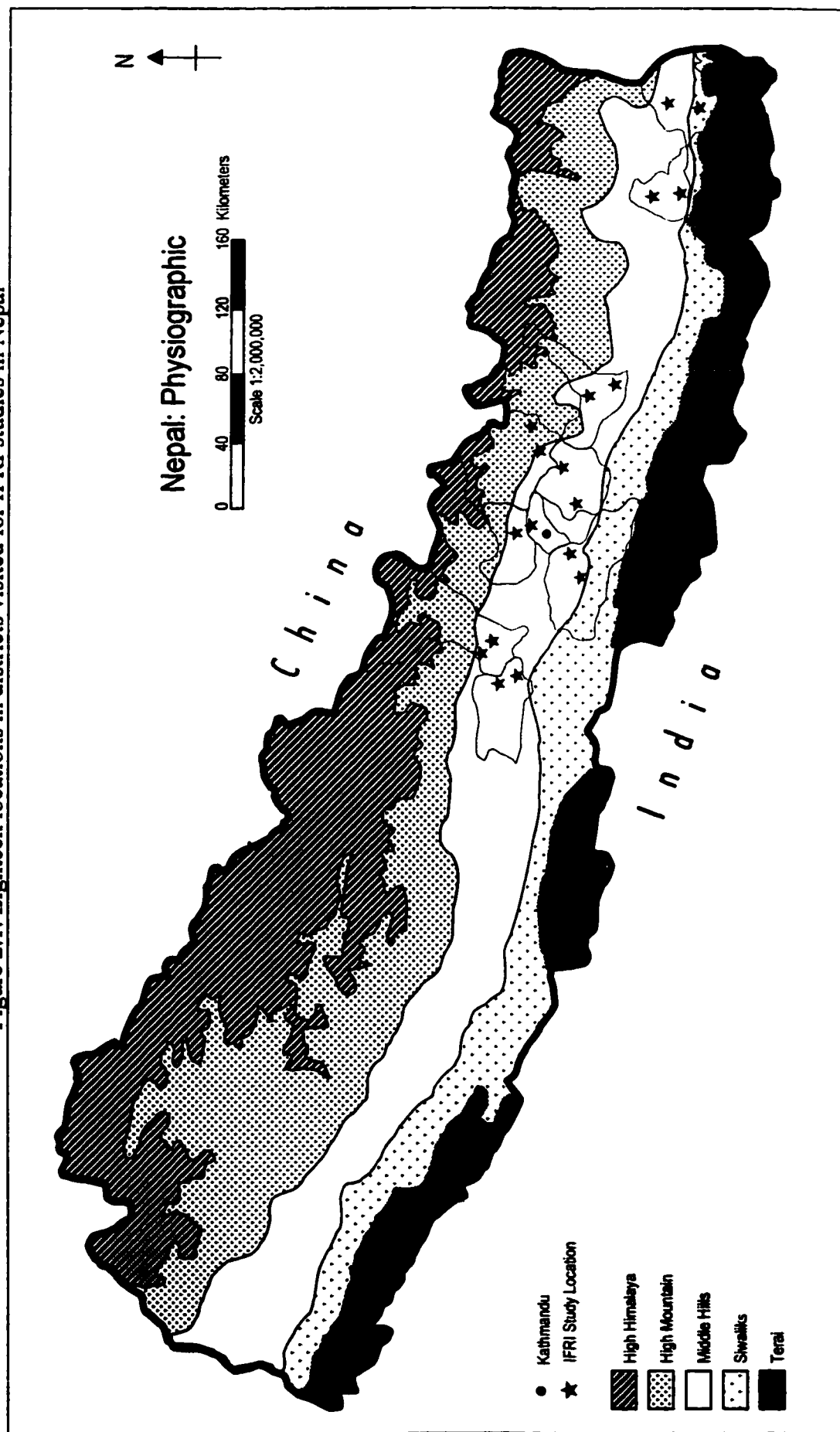
<b>Site location</b>	<b>Date of 1st Visit</b>	<b>Households</b>	<b>Forest Area (ha)</b>	<b>Forest Stock</b>
Churiyamai VDC (Makwanpur)	March 1994	750	85	Average
Baramchi VDC (Sindhupalchowk)	May 1994	36	75	Below Average
Riyale VDC (Kavre Palanchowk)	May 1994	92	29	Average
Bijulikot VDC (Ramechhap)	June 1994	145	53	Average
Thulo Sirubari VDC (Sindhupalchowk)	April 1995	105	16	Average
Doramba VDC (Ramechhap)	May 1995	26	107	Average
Agra VDC (Makwanpur)	June 1995	70	190	Average
Bhagwatisthan VDC (Kavre Palanchowk)	June 1995	70	108	Below average
Manichaur VDC (Kathmandu)	June 1996	242	115	Average
Sunkhani VDC (Nuwakot)	September 1996	144	290	Below average
Chhimkeshwari VDC (Tanahun)	December 1996	28	45	Average
Chhoprak VDC (Gorkha)	January 1997	106	25	Below Average
Raniswara VDC (Gorkha)	February 1997	404	300	Average
Bandipur VDC (Tanahun)	February 1997	183	75	Above Average
Barbote VDC (Ilam)	May 1997	260	145	Average
Shantipur VDC (Ilam)	May 1997	29	90	Average
Chunmang VDC (Dhankuta)	June 1997	152	225	Average
Bhedetar VDC (Dhankuta)	June 1997	82	125	Above average

Forest Stock: assessed by forester based on tree density and speciation during period of study and cross-checked where possible with district forest officials.

VDC: Village Development Committee.

Names in parentheses are districts.

Figure 2.1.1. Eighteen locations in districts visited for IFRI studies in Nepal





## **Chapter Three**

### **Population Growth, Group Size, and Collective Action**

Population change lies at the heart of the debate on how best to govern forest resources in Nepal, as it does for resource management and development policy globally. While for many, population growth is accepted as a primary or intermediary cause of resource degradation (Ehrlich and Ehrlich, 1991; Brown, Wolf, and Starke, 1987; Bilsborrow and DeLargy, 1991), for others an increasing population is a stimulus to economic development and innovative resource management practices (Boserup, 1965, 1981; Simon, 1981, 1983, 1990; Binswanger and Pingali, 1989). In general, it has been difficult to find agreement on what the relationship is between population growth and natural resource condition.

This chapter examines the relationship between the governance of forest resources and population in the middle hills of Nepal. Specifically, it investigates the significance of local institutions in forest resource management to gain a better understanding of how such institutions shape the actions of individuals at the community level. By focusing on local institutions, this study becomes less concerned with what or who is the agent of environmental degradation than with what has helped forest users to cope with environmental and population change. Indeed, for the 18 locations in this chapter, the findings indicate that change in forest conditions is not significantly associated with population growth. Rather, change in forest conditions is found to be strongly associated with local forms of collective action. This implies that policymakers' preoccupation with population growth as a primary determinant of resource degradation may be ill-advised.

Instead, the facilitation of institutional growth and innovation at the local level may be more relevant to the robustness of the natural resource base.

The first section of this chapter provides a general overview of the ongoing debate about the relationship between population growth and the environment. This overview provides the backdrop for a review in the second section of research that addresses forest resources in Nepal. The third section provides a description of the research setting and the approach used to conduct the study. The fourth section introduces the variables used for the study and reports the findings for the 18 locations. The fifth section provides a closer look at a set of six cases selected to understand differences in physical outcomes across the 18 locations. The chapter concludes with a discussion of some of the key factors that help explain differences between communities that have coped with population and resource change.

### **Population and the Environment**

A great deal of research has focused on the relationship between population change and the environment, and the debate continues. Since Malthus, scholars have argued forcefully that population growth is the primary cause of environmental degradation (Abernathy, 1993; Brown, Wolf, and Starke, 1987; Ehrlich and Ehrlich, 1991; Myers, 1991; Wilson, 1992). While demographers in this tradition have shown that population growth has some negative consequences, others have shown that population growth can also lead to technological advances and innovative uses of natural resources (Simon, 1983, 1990; Boserup, 1965, 1981; Binswanger and Pingali, 1989). Increasingly, research addressing the relationship between population change and the environment demonstrates

that their linkages are complex and yet to be understood fully (Bilsborrow and DeLargy, 1991; Cruz et al., 1992; Jolly, 1994; Netting, 1993; Shivakoti et al., 1997). While it is clear that demographic change does influence resource use, population growth is but one variable of a larger set of important variables whose numerous interactions affect the natural resource base.

Part of the difficulty in understanding the linkages between population change and the environment is that, methodologically, much of the extant research examines agents of environmental change at a high level of aggregation. By resorting to a macro perspective, most of these studies have handicapped their ability to exploit micro-level research to understand the complex workings of population and environment linkages (Arizpe, Stone, and Major, 1994). Scholars of microinstitutional solutions to commons problems have long argued that local communities can craft durable institutional arrangements that enable them to successfully manage local natural resources, even when confronted with political, economic, and demographic pressures (Acheson, 1989; Feeny et al., 1990; Ostrom, 1990). These scholars recognize, however, that successful local solutions are more difficult to achieve where (1) demographic change is rapid, (2) a local community is not dependent on the resource in question, (3) substantial heterogeneities of interest exist, (4) little local autonomy exists to make and enforce rules, and (5) the resource system itself is very large (see, for example, Ostrom, 1998b). Thus, studying how local communities cope with different kinds of population pressures is a major topic of theoretical and policy interest.

In more focused research on factors that mediate environment-population interactions in the Kumaon Himalaya of India, Agrawal and Yadama (1997) have argued that by

studying micro relationships at the community level it is possible to gain an understanding of how variables such as population, economic growth, and forest area get aggregated at a macrostructural level. Their study of 275 rural communities finds that local institutions play a critical role in mediating demographic and socioeconomic influences.

This study explicitly recognizes that factors such as population change can influence resource use in a variety of ways. But, rather than be determinative of human behavior, the study investigates how resource users might craft institutional arrangements to cope with demographic and environmental forces.

### **Research on Population-Environment Linkages in Nepal**

The growth of population and its supposed effect on the Nepali Middle Hills has been the subject of several studies. The earliest and most influential was conducted by Eckholm (1975, 1976), who drew attention to population growth in the Nepali hills and rather tenuously linked it to "denuded hillsides" and "deteriorating environments" where "the pace of destruction is reaching unignorable proportions" (1975: 764-65).

Subsequently, it was shown that this connection between an increase in population and catastrophe in the hills was simplistic and misleading (Bajracharya, 1983; Ives, 1987; Ives and Messerli, 1989; Mahat, Griffin, and Shepherd, 1986a, 1986b).

In addition to rapid population growth, government policies of nationalization in the 1950s and 1960s have been identified by most researchers as one of the main causes of deforestation. Placing the ownership of forests with the national government disrupted pre-existing and traditional practices of communal resource management. Since the

government lacked sufficient manpower or resources to look after newly nationalized forests, what was once communally governed property became open to exploitation by anyone. On the other hand, traditional management practices that have endured and more recent innovative community forestry legislation have been credited for enabling the forest conservation and regeneration that has taken place in the Middle Hills since the 1960s (Arnold and Campbell, 1986; Mahat, Griffin, and Shepherd, 1986a, 1986b, 1987a, 1987b; Messerschmidt, 1986; Griffin, 1988; Hopley, 1990; Exo, 1990; Gilmour and Fisher, 1992; Chhetri and Pandey, 1992; Dahal, 1994; Pradhan and Parks, 1995; Subedi, 1997).

While the population in the Middle Hills continues to grow close to an annual rate of 2 percent at present, its effects on the surrounding patchwork of forestland are not so clear. One reason has been the absence of longitudinal data on forest condition and forest use. Few researchers have studied the same location over time. One notable exception is the study conducted by Jefferson Fox in a Nepali village in the Middle Hills in 1980 and 1990. Fox found that forest conditions were improved substantially, even though population density increased significantly over a period of ten years. Fox's finding had little to do with the dynamics of population parameters. Rather, changes in the authority of villagers to manage nearby forests, the construction of a road that reduced the costs of inputs needed to adapt traditional agricultural practices, and the provision of external help in the form of knowledge rather than financial aid, appeared to be the most important factors for improved forest conditions (Fox, 1993). Clearly, population parameters alone did not drive these outcomes.

Another reason for the knowledge gap on the effects of population changes has been the lack of consistently collected cross-sectional data (Subedi, 1997). This chapter, however, does address this gap to some extent by looking at local-level information on demographic and forest characteristics across eighteen locations visited in a single time period.

### **Trends In Population Change And Association With Forest Resource Change**

In order to examine the roles of institutions and population in forest resource change, this chapter employs the two-stage analysis described in Chapter Two. The first stage of analysis provides a broad understanding of trends in population change and the association of these trends with (1) foresters' and villagers' perceptions of forest conditions (changes in tree density and in forest area) and (2) evidence of local-level organization and cooperation in resource management in the set of 18 cases. The second stage of analysis focuses in on six cases that help illustrate the patterns discerned in the initial analysis. The task is to identify and examine how the crafting and operation of institutional arrangements generate different outcomes. The cases used for this analysis are shown in table 3.1 in the chronological order that they were visited. As mentioned in Chapter Two, the locations were determined by project or agency criteria. However, the data obtained show variation on the factors I examine in this chapter—the indicators of population growth and change in forest condition, and the degree of collectively organized activity by forest users.

The study initially uses descriptive indicators such as household and individual population, average household size, and forest area and stock condition to provide some

idea of the locations visited (Table 3.1). In particular, the indicator **forest stock** provides a subjective assessment of forest condition at the time of the study by the forest specialists on the research team with respect to speciation and abundance of vegetation. In most of the eighteen cases, the professional assessments of the district forest officials in those study sites were also obtained to validate the research team's subjective assessment. This assessment also gives researchers an initial idea of the natural endowment that each group of users possesses. By itself, this assessment is not a good longitudinal indicator of forest condition, but when combined with some measure of change in forest condition (see Table 3.2), one is able to obtain a general picture of resource use patterns and management. The indicators used here for forest condition are limited to assessments made by villagers, researchers, and foresters. In other IFRI studies, more rigorous measures of vegetative stock are used in addition to measures based on assessments (see, for example, Becker, Banana, and Gombya-Ssembajwe, 1995).<sup>1</sup>

In the 18 locations studied, household and individual population, average household size, and forest area exhibited considerable variation (Table 3.1). The number of individuals in a group of forest users varied from 139 to 4,500 and the number of households per group varied from 26 to 750. Across the sites studied, this gives a range of 5.3 to 8 individuals per household for average household size across the sites studied. The average household size across all 18 locations is 6.43 individuals per household. In comparison, a recent survey by the Central Bureau of Statistics (CBS) on Nepal Living Standards found the average household size to be 5.33 in this physiographic zone (CBS, 1996). The area of forestland used as a primary source of forest produce by villagers in these locations varied from 16 hectares to 300 hectares with an average across sites of

116.56 hectares. The condition of most of these forests was found to be within the average range in this physiographic zone. Only two locations had above-average stocks and three had below-average stocks. This assessment is made relative to typical forest stocks to be found in this zone as determined by the Department of Forests.

Table 3.2 provides comparisons of population **growth rate**, average **households per hectare of forest area**, and **trend in forest condition**. The population growth rate is obtained by taking the difference in households, from the time of the visit to five years prior, and averaging it over five years. The five-year rate is preferred here because the assessments of forest condition in this study are also based on a five-year period. The ten- and twenty-year growth rates were also available but are used only to supplement the discussion.<sup>2</sup>

Table 3.2 is more useful in understanding changes for each site and provides some interesting findings. In general, the population growth rates (averaged over five years) vary from a negative growth rate of -1.33 to well over 7 percent per annum with a range of 8.70 and a mean of 3.26 percent per year. For a ten-year period, the growth rates vary from 0.37 to 10 percent per annum with a range of 9.63 and a mean of 4.08 percent per year. It is important to note that these growth rates are well above the national average for this physiographic zone, calculated to be 1.61 in 1991 (CBS, 1995). The household-to-forest ratios in these locations also exhibit dramatic variation, from 0.24 to 8.82 households per hectare of forest area with an average of 2.10 households per hectare. These figures show that there can be considerable variation from place to place in demographic characteristics across a physiographic zone.



However, is this variation reflected in forest condition? Across the 18 locations, there are six forests in improving condition, five in stable condition, and seven in worsening condition. But, if the growth rate is taken as a first demographic measure, the two highest rates (7.37 and 5.42) seen in Doramba and Churiyamai have a forest stock that is average and improving. The lowest rates (-1.33 and 0.29) seen in Chhimkeshwari and Agra have a forest stock that is average in condition but is stable (in Chhimkeshwari) or worsening (Agra). Furthermore, if the number of households per hectare of forest available is taken as a second indicator, the two highest ratios (8.82 and 6.56) seen in Churiyamai and Thulo Sirubari, respectively, have an average forest stock that is improving (Churiyamai) or holding stable (Thulo Sirubari). The two lowest ratios (0.24 and 0.32), in Doramba and Shantipur, are associated with an average stock that is either improving (Doramba) or worsening (Shantipur).

Furthermore, Table 3.3 indicates that there is little association between forest condition and population growth for these 18 communities even though they experienced higher growth rates than others in the region. The tau measure of association between the two variables is quite low at 0.24. In locations with above-average population growth, 67 percent of forests are improving or stable in condition. In locations with below-average population growth, 55 percent of forests are improving or stable, while 45 percent are worsening. These data demonstrate that a simple negative relationship between population growth and forest condition does not hold for these 18 cases.

These brief comparisons illustrate a simple point: explanations of forest condition that rely primarily on population pressure may be too simplistic. The entire range of forest conditions can be seen to be associated with high or low values of demographic

indicators. Clearly, demographic variables by themselves do not appear to satisfactorily explain forest condition. Two pertinent questions emerge from this finding: (1) how is it that some forests are in better condition in locations where population growth and population density per unit area of forest is high? And (2), how is it that locations with low population growth and density have deteriorating forests?

A look at Table 3.4 shows the association of trend in forest condition with a different kind of measure. This measure, called **degree of collective activity**, indicates the extent to which local residents have organized themselves to manage forest use. The degree of collective activity is derived from a set of questions that ask whether there are rules (formal and informal) related to entry into a forest, harvesting in a forest, and monitoring of a forest, and how the group organizes its forest-related activities.

A low degree of collective activity is noted for cases in which individuals are aware of forest degradation and resource scarcity and observe harvesting constraints on their own, without any group-level activities or rules of harvest. For this study, I classify low collective activity along with no collective activity. A moderate level of collective activity is noted when a group of individuals have harvesting and entry rules, planned minimal forest-related group activities, but have little or no monitoring of rule breakers. A high level of collective activity is noted when a group of users have harvesting and entry rules, monitoring by members, and organized forest-related group activities. These, of course, comprise just a small portion of the repertoire of rules that may exist at any location and are used here as minimum indicators of collective activity. The locations in Table 3.4 are arrayed according to the trend in forest condition observed, from improving to worsening.

In Table 3.4, five of the six improving forests are associated with high levels of collective activity, while one forest is associated with a moderate level of collective activity by users. All six had stocks that were at least average in condition for this physiographic zone. Four of five forests in stable condition have a moderate level of collective activity associated with them, while one has a low level of collective activity. Three of these stable forests have average stocks and two have below-average stocks. Six of seven forests in worsening condition had low or zero levels of collective activity by villagers, while one forest had villagers engaging in a moderate level of collective activity. Of these seven forests, one had above-average forest stock, three had average forest stocks, and three had below-average forest stocks.

A strong degree of association is evidenced by the tau measure of association for Table 3.5. Where a high level of collective activity related to forest management was seen, all forests (100%) were improving in condition. There was little or no collective activity being undertaken by the local community in locations where more forests (75%) were found to be deteriorating. In the majority of locations where the users were engaged in at least moderate collective action, the forest resource was seen to be neither deteriorating nor improving, i.e., forest conditions were stable.

### **Discussion of Selected Cases**

For almost all of the locations in this study, the level of collective activity undertaken by users is found to be positively associated with forest condition. To understand the mechanisms that lie behind these positive associations, this section examines in greater depth two cases for each type of forest trend observed (Table 3.6). These cases are

selected because they are representative of the larger set in terms of the variance of the factors to be examined and because their case histories provide the most salient detail for the purposes of this study (IFRI, 1995, 1996, 1997a, 1997b).

### **Improving Forest Conditions**

Raniswara. This location is marked by large size, a high level of population growth, and fluctuating migratory patterns. It is also very close to the bustling Gorkha bazaar, the major commercial center in the area. The residents of this VDC have one of the most successful, nationally recognized, active and well-endowed community forest associations. There are 11 settlements around a large forest (300 ha), with all but two divided along caste lines. There has been no external intervention to speak of in this area; villagers regard the government neither as a source of support nor of hindrance.

The forest association for this group of users was formed informally seven years ago (with no prior history of organizing in this manner), and legally registered two years later, making it the oldest registered group in the district and one of the oldest in the country. The primary reason for forming the association was to initiate an organized way of protecting a completely denuded hillside—the result of prolonged government neglect, overuse by locals, and land grabbers. In time, the protected area increased and the association has now petitioned the forest office to add an additional 125 degraded hectares to the forest area. In anticipation of a positive response they have initiated planting and protection of seedlings. Forest products are plentiful but the association strictly regulates consumption. Although timber trees are abundant, the annual consumption of timber is being reduced and closely monitored. Very minor infractions

take place. Most of the users have switched to using privately grown fodder trees and agricultural residue for their stall-fed cattle, although grass may be cut from the forest floor at all times. Less and less agricultural land is being used for staples because most of the youth labor force is in school. Many farmers are experimenting with fruit trees and vegetables.

This forest association has fashioned several innovative solutions to day-to-day forest-related problems. To deal with political partisanship (which is wrecking many user groups in Nepal), they have banned political discussions in any forum related to this association. To deal with their large numbers (over 2,600 individuals), they have created smaller subcommittees specifically oriented to reducing the load on the executive committee and enhancing their ability to cope with large, complex tasks. Users' households are divided along ward lines into subgroups for weeding and protecting the forest area closest to their settlements. To use their time most efficiently in forest-related work, users synchronize weeding, pruning, and coppicing activities with forest product allocation and distribution activities.

To monitor the use of valuable products such as timber, this association has an investigative subcommittee that monitors the amount requested for a particular use by a user, the amount granted by the association harvest subcommittee, and the ultimate use of the harvested timber by that user. During periods of high usage they increase the number of forest guards and patrols. To reduce the use of fuelwood, they give small grants to those who want biogas plants, enough to cover expenses incurred in addition to the available government subsidy.

The association has a regular outreach effort that encourages settlements near the forest borders to join the association, or to form their own association. The rationale is that if currently unauthorized users were to become part of the association, costs related to monitoring and sanctioning would decrease, and the pool of labor available for protection and maintenance activities would increase. If unauthorized users form their own association for forestland in their own areas, heretofore-unprotected forestlands get protected and there are fewer occasions of unrestrained harvesting in surrounding forested areas. The Raniswara forest association also regularly sends two trainers to participate in government-sponsored training programs that are held for fledgling forest associations in the region.

Churiyamai. This site is located about eight kilometers northeast of Hetauda municipality, the center of Makawanpur district, and is accessible by an all-weather road. The three settlements in this site comprise an informal forest association with a total of 750 households and 4,500 individuals. This association has a 19-member executive committee to manage their community forest of about 85 hectares. While agricultural production is comparatively low, most residents here have supplementary cash income from selling milk and some poultry. The milk-producing buffalo is stall-fed in all homes. Most of the other livestock is grazed in fields, bunds, and risers. Almost every household has someone working on an off-farm job in neighboring Hetauda or in Kathmandu. Twenty-five percent of the households also have a member working as seasonal labor.

The community forest has two distinct blocks, one of which is a 27-year old former government research tract and the other a tract initially developed by the Terai Community Forestry Development Program seven or eight years ago. In 1990, the

households of the two proximate settlements formed a forest association with a committee to manage both blocks as one community forest. The third settlement disputed this arrangement because the villagers in this settlement were also traditional users and because some parts of the forest were within their boundaries. As a countermove, this settlement formed a forest association and committee for its own area of the forest. This arrangement was not satisfactory and led to conflicts over boundaries and membership between the three settlements. Merging the two groups into one forest association and allowing all three settlements to avail of the entire forest area resolved the problem.

This larger group of users from the three settlements operates on an informal level and is yet to be registered as a forest association under community forestry law. However, they function as a well-organized association, with rules specifying entry, harvest of particular products, and times of harvest. Grazing and felling of live trees is prohibited. Collection of fallen leaves and grass is permitted upon payment of a fee. These fees and proceeds from sale of deadwood or fallen trees provide cash income for the association. The income is used to pay for two full-time forest monitors at present. These measures have considerably improved the condition of the forest. The association members also feel that once their application for formal recognition is accepted by the forest office, they will be able to further this improvement by implementing some forest management, plantation, and erosion control activities that they have planned.

The strict conservation practices have resulted in people planting fodder trees on private land and using a government forest that is almost two hours distant by foot. Residents have also increased their use of agricultural residue and grass from fields and roadsides to supplement animal feed requirements. Like Raniswara, this group has a large

repertoire of enforced rules on entry and harvest and users have high levels of rule awareness and compliance. There are no plans to ease restrictions on cutting of tree fodder or felling of trees.

### **Stable Forest Conditions**

Riyale. Three settlements with a total of 92 households constitute the users of a forest area of 29 hectares in this location in Riyale VDC. The forest is within a 20 minute walk of the settlements. There is a market 10 kilometers distant and accessible by a fair-weather road. This VDC is geographically close to Kathmandu valley, but residents have not taken advantage of their location to obtain agricultural inputs or exploit markets for their produce. There is a dairy cooperative nearby that obtains some of its milk supply from the residents of this group.

The forests in this area did not have an organized form of forest protection or management in the past. There was an increasing trend towards degradation until the late 1980s when mature trees of several valuable timber species were removed. As the forest area deteriorated, villagers started restricting their own harvest of timber as well as any use of their forest by outsiders. The local forest office underwrote a major plantation effort in 1992 and deputed a forest watcher for a period of five years to help monitor the plantation. It is uncertain whether this arrangement will continue after that period. The forest association was legally recognized by the forestry office in 1994, but was not functional in its formal form until late 1995.

This forest association has been able to close the forest to grazing and harvesting of tree products, but allows collection of grass and deadwood. There have not been any



efforts to raise funds for the association and, besides the initial plantation of saplings, members have not participated in maintenance and protection activities. This is the extent to which they have implemented their management plan. Activities like weeding, thinning, and pruning are planned but yet to be carried out. The presence of a government-paid monitor has reduced illegal activities, but not stopped them. There are some violations of the timber harvesting, grazing, and tree fodder rules. However, there are no fines levied and no records are kept of violations.

The forest has not deteriorated since the association was organized in 1991. The general restriction on tree harvest and grazing, and the presence of the forest watcher, has resulted in some regrowth of natural vegetation.

Barbote. Barbote VDC of Ilam district is about a two-hour walk by all-weather road (40 minutes by bus) from Ilam Bazaar. This VDC contains a large forested area (120 ha) that has been looked after by a formally registered forest association for the last six years. There are nine settlements in the immediate surroundings with several others nearby. While the forest in this area did not undergo the rapid deforestation that occurred in central and west Nepal in the 1970s, there was a distinct period of time about 8-10 years ago when the forest had degraded. The forest improved after villagers started protecting the area. However, in the last three years or so, the forest has begun to show signs of degradation again, and villagers have begun to worry about the future availability of supplies of timber, fuelwood, and fodder.

The community forest boundaries have not been demarcated at any time; a rough estimate was made at the time of the formation of this association. There are many members of this association who dispute the existing boundaries of the community forest.

These members have maintained agricultural plots within, or encroaching upon, existing forestland. They hope to claim ownership over these plots if and when the community forest gets demarcated properly.

Population growth is stable with very little fluctuation. Most of the villagers have been here for five or six generations. The executive committee of this association has undergone some upheavals in the past two or three years owing to the resignation, on corruption charges, of the secretary and chairman. The users in the immediate vicinity are not very active but do participate in a bare minimum fashion that allows them to remain members.

There are more registered users than actual users; merchants in the nearby market are registered as members but in reality do not use the forest and do not help with any maintenance activities. Villagers point to this membership problem as the reason for the breakdown in cooperation. Falsely registered members outnumber actual members in the register and are able to affect quorum requirements for any change in rules, especially those related to membership. Thus, by their absence they guarantee their membership. When approached by executive committee members to help in the matter, the District Forest Office has stated that the forest is now a community forest and, therefore, unless the majority of users complains about a problem, the government can do nothing.

There is one member who acts as the organizer, facilitator, and adviser-at-large for this association. He mobilizes users from time to time for certain activities, but now says that it has been getting harder and harder to get the association enthused about the community forest, especially because of the membership and politics problems. As in Riyale, the users in Barbote also have rules constraining entry and harvest, but there is no

arrangement for regular monitoring and there are infractions that are not punished.

Because of an ugly history of abuse of authority by office bearers of this association and, now, politics, there is always suspicion among the general body of users about the motives of any activity proposed by an office bearer. There is limited interaction between users and they rarely assemble in full strength. Decisions requiring general body agreement are not made, and in the case of Barbote, are almost impossible to make because of the difficulty in reaching the quorum requirement.

### **Worsening Forest Conditions**

Agra. This site is within a half-hour walk from a national highway and market. The forest used is about 190 hectares and is within a 15-minute walk of the two settlements in the site. Residents of both settlements belong to the same ethnic group and religion and are the traditional users of the forest, although residents of neighboring villages are not barred from harvesting forest products in this forest. For a period of 18 years up to 1989, there was some system of forest protection by the villagers of the locale. In fact, from 1987 to 1989, the users had formed an executive committee to oversee forest management activities in a formalized manner for the users of the two settlements. In 1990, following political upheaval in the country, this system broke down and there was no organized form of forest protection or use. Users divided along party lines and few were willing to reconcile in the matter of resource protection and management. In 1993, villagers from the two settlements again defined a group of users for this forest and elected an executive committee with the objective of preventing tree felling by anyone and of stopping neighboring villages from using the forest. This lasted until 1995 and

then again dissolved because there was no agreement over the fines to be levied on rule-breakers.

Although there is no organized activity at present, the users of these two settlements have once again defined a user group for this forest, formed an executive committee, and drafted an article of association in preparation for being recognized by the district forest office. The neighboring villagers, however, are opposed to this limited user group and want to be part of it. The main reason these neighbors want to be members appears to be the presence of a slate quarry of 10-12 hectares that lies within the forest boundary closest to their villages. Several members of those villages have profited from the slate quarry until now, and this important source of income would become off-limits once the forest office recognizes the proposed user group. The application for the forest association is stalled at the forest office because of this opposition, partly because the license for quarrying slate was issued by the district development committee office, a higher-level authority.

Villagers of the two proximate settlements have appealed to the district soil conservation office to stop the slate mining because large-scale erosion is taking place at the site. The erosion gullies and runoff are destroying vegetation in the immediate forest area. In the meantime, valuable herbs are being harvested indiscriminately and sold to outside contractors, and unrestrained grazing and cutting of fodder takes place.

Chunmang. The site in this VDC is not very accessible: a steep downhill walk of three hours from the road head, Hile (at 2300 m), gets one to the site (between 600 and 900 m). The nine settlements in this location are scattered on the west-facing slope of a mountain; six settlements are closer to the area's forest; and three settlements are farther

away. All the settlements are situated higher than the forest area, which ends at the streambeds along the base of the mountain. The residents of this site live in settlements differentiated mainly along caste lines; all castes are present. One particular caste is dominant, politically and socioeconomically, by virtue of their numbers. The local representative to the political party in power is from this caste. They also have a loyal following of some members of lower caste, who depend on them for employment and land.

There has been discord over organizing these settlements to manage the nearby forest in the past several years, owing mostly to the various hindrances put up by the dominant caste. Of the nine settlements using this forested area over the last several decades, there is divided opinion over the options for managing the forest area. The users have been discussing variations of two options: (1) combine all nine settlements and form one association and one large forest area with different management units or (2) form two associations and split up the forest area according to relative distance to forest from settlements. Of the six settlements that are closer to the forest, two (led by the dominant caste) are unwilling to form a large association that combines both far and near settlements and utilizes the entire forest area. Their first proposal is to have one portion (the larger, more valuable forest) allocated to the six settlements and another portion (the smaller, more degraded) allocated to the three distant settlements, thus forming two associations with two separate areas. Their second proposal is simply to exclude the three distant settlements and form one association for the entire forest area. Neither option is acceptable to the three settlements because they see the allocation of forest area as unfair

in the first case, and their complete exclusion from forest use as an insult to their traditional rights in the second case.

The opposition put up by the dominant caste members in one of the six proximate settlements has been frustrating to the more cooperative villagers who belong to other castes in these six settlements, especially because the forest is currently open to anyone for use. As a result, many areas in the forest are getting degraded, with other areas soon to follow. Most of these villagers are willing to form a single association with the three distant settlements, or even participate in an equitable apportioning of the forestland to two associations. Without some form of collective action, all agree, there will be problems in the near future with regard to forest products.

This situation has also been frustrating for the staff of the district forest office, who tried about four years ago to establish an association but were rebuffed in their efforts by the dominant caste. Since then, however, there has been no attempt by anyone outside these communities to try again. There are several individuals in and around the area who would like to assist in forming an association for this forest, but these individuals say that they would like a third-party to act as an intermediary to mediate and give advice on other options for all these forest users. In the meantime, the forest is a source of timber, fodder, and fuel for all these settlements and even for some outsiders.

As in Agra (and Barbote), district officials have failed to act upon petitions in Chunmang. This lack of action has created uncertainty for the users and has helped opportunistic individuals take advantage of the lack of any organized form of forest protection by harvesting timber and encroaching upon forestland. In both Agra and Chunmang, villagers are aware of the deteriorating condition of their forest resources, but

no group activity is evident, partly because of factionalization of the community owing to politics and economic ties. However, there was a time in both locations when some form of organized activity had started and subsequently failed; both locations have had group-building efforts by outside agencies four or five years in the past but none going on at present.

### **Conclusion**

This chapter examined the relationship between population, institutions, and forest conditions in the Middle Hills of Nepal. The analysis indicates that the variation in population growth rates across the locations studied had almost no discernible correlation with the variation of forest condition in those locations. The analysis did, however, show a strong association between local collective action and variation in forest conditions across the 18 cases.

By identifying some of the characteristics of institutional arrangements used by villagers, the analysis in this chapter sought to appraise an undervalued facet of the complex presentation of the population-environment dynamic. That local forest users can cope with perceived changes in resource condition and in user population is evident from the cases studied in this chapter. In the more successful cases, arrangements for identifying genuine users, determining harvest amounts and timing, and active monitoring by users themselves emerge as important factors in managing forest resources (Table 3.7).

Where users were unable to define the extent of forest boundaries or the number of users in a group clearly, the ambiguity allowed opportunistic individuals to encroach

upon forested land. Investments in monitoring, in particular, significantly determine the difference between a flourishing resource and one just able to meet the needs of users. In the locations with higher populations but improving resources, Raniswara and Churiyamai, user groups invested in monitoring, even to the point that extra guards were assigned during seasons of greater need. This finding follows a study by Agrawal and Yadama (1997) who, in their sample of 279 communities, found that the most important form of user participation was the level of investment by the user group in monitoring and protecting activities.

Much of the literature on collective action has discussed the negative association between group size and collective action. Yet, in groups such as in Raniswara, users had ways to deal with large numbers. The adaptation of user group structure by creating levels of subgroup activity was one way to deal with the increased complexity of tasks and the difficulty of coordination that is brought on by large memberships. The village administration and forestry officials who participated in the meetings that assign duties and responsibilities to various subgroups facilitated this sort of innovation at times.

The group in Raniswara has also actively pursued the objective of increasing the area of forest they use by soliciting the membership of neighboring villages who, then, attach their adjacent forestlands to that of the group. Arranging for regular interactions between users, other villagers, and external parties in positions of authority and influence had the effect of reducing suspicion, facilitating information diffusion and raising awareness throughout the area, and garnering public support for management and conservation ideas. A breakdown in community relations and an undermining of collective organization and action was seen in Barbote, Agra, and Chunmang where the public was



divided in its opinion (due to kinship, economic ties, allegations of corruption, and politics) and no third party was available (or interested) to mediate the conflict.

The World Bank has stated that "...because the people who cut or plant trees typically *have no incentive* [emphasis added] for considering the environmental and social consequences of their actions, externalities inexorably lead to excessive deforestation and insufficient planting of new trees" (World Bank, 1991: 9). Such statements have been acted upon in the past with the result that disproportionately large funds have been allocated to reforestation and strengthening the administrative functioning of government forest offices. However, the findings of the analysis in this chapter suggest a different direction and point of emphasis in policy research and application. The recognition of the mediating effects of local institutional arrangements in the population-environment dynamic has important ramifications for those who seek to support community forestry and, more generally, participatory approaches to governing natural resources. This chapter suggests that development policy aimed at preserving the environment must recognize the significance of institutional arrangements at the local level to resource conditions at that level. Ultimately, the benefits and costs associated with resource conditions at the local level have considerable bearing on larger environmental issues. Furthermore, the chapter suggests that government policy on participatory resource management will be more successful if it is facilitative of institutional innovation and adaptation at the village level.

### **Notes**

1. A validation exercise performed to establish the relative accuracy of these subjective assessments completely supported the assessments (see Appendix A).
2. The trend in forest condition is a subjective assessment of forest condition derived from the historical perceptions of diverse local forest users, and, in many instances, of local government forest officials, about the relative abundance of produce, disappearance of valuable species, and change in forest area: “worsening” indicates a clear depletion of species and reduction in forest area; “improving” indicates at least a perceptible increase in abundance of tree species and shrubs. The locations are arrayed from high to low rates of population growth in Table 3.2.

**Table 3.1. Descriptive statistics for 18 sites**

Site Location	Date of Visit	Population		Average Household Size	Forest Area (ha)	Forest Stock Assessment
		Individuals	Households			
Churiyamai VDC (Makwanpur)	March 1994	4500	750	6.0	85	Average
Baramchi VDC (Sindhupalchowk)	May 1994	244	36	6.7	75	Below Average
Riyale VDC (Kavre Palanchowk)	May 1994	644	92	7.0	29	Average
Bijulikot VDC (Ramechhap)	June 1994	980	145	6.7	53	Average
Thulo Sirubari VDC (Sindhupalchowk)	April 1995	843	105	8.0	16	Average
Doramba VDC (Ramechhap)	May 1995	139	26	5.3	107	Average
Agra VDC (Makwanpur)	June 1995	434	70	6.2	190	Average
Bhagwatisthan VDC (Kavre Palanchowk)	June 1995	471	70	6.7	108	Below average
Manichaur VDC (Kathmandu)	June 1996	1550	242	6.4	115	Average
Sunkhani VDC (Nuwakot)	September 1996	1065	144	7.4	290	Below average
Chhimkeshwari VDC (Tanahun)	December 1996	192	28	6.8	45	Average
Chhoprak VDC (Gorkha)	January 1997	781	106	7.4	25	Below Average
Raniswara VDC (Gorkha)	February 1997	2661	404	6.6	300	Average
Bandipur VDC (Tanahun)	February 1997	1021	183	5.6	75	Above Average
Barbote VDC (Ilam)	May 1997	1467	260	5.6	145	Average
Shantipur VDC (Ilam)	May 1997	162	29	5.6	90	Average
Chunmang VDC (Dhankuta)	June 1997	922	152	6.1	225	Average
Bhedetar VDC (Dhankuta)	June 1997	477	82	5.8	125	Above average

Forest Stock: assessed by forester based on tree density and speciation during period of study and cross-checked where possible with district forest officials.

Note: Names in parentheses are districts.

**Table 3.2. Preliminary comparisons of population growth with forest condition**

<b>Site Location</b>	<b>Population Growth Rate (%)</b>	<b>Households per Hectare (HH/ha)</b>	<b>Trend in Forest Condition</b>
Doramba (Ramechhap)	7.37	0.24	Improving
Churiyamai (Makwanpur)	5.42	8.82	Improving
Shantipur (Ilam)	5.22	0.32	Worsening
Bhedetar (Dhankuta)	5.14	0.66	Worsening
Raniswara (Gorkha)	4.71	1.35	Improving
Chunmang (Dhankuta)	4.13	0.68	Worsening
Baramchi (Sindhupalchowk)	4.00	0.48	Stable
Barbote (Ilam)	3.64	1.80	Stable
Bijulikot (Ramechhap)	3.39	2.74	Improving
Riyale (Kavre Palanchowk)	3.00	3.17	Stable
Sunkhani (Nuwakot)	2.68	0.50	Worsening
Bhagwaisthan (Kavre Palanchowk)	2.60	0.65	Worsening
Chhoprak (Gorkha)	2.55	4.24	Worsening
Manichaur (Kathmandu)	2.28	2.10	Improving
Thulo Sirubari (Sindhupalchowk)	2.11	6.56	Stable
Bandipur (Tanahun)	1.44	2.44	Improving
Agra (Makwanpur)	0.29	0.37	Worsening
Chhimkeshwari (Tanahun)	-1.33	0.62	Stable

Forest Trend: assessed by villagers based on local historical understanding and corroborated, in most instances, by district forest officials.

**Table 3.3. Association of population growth with forest condition**

<b>Forest Condition</b>	<b>Population Growth</b>		<b>Total</b>
	<b>Above Average</b>	<b>Below Average</b>	
Improving	4 (45%)	2 (22%)	6
Stable	2 (22%)	3 (33%)	5
Worsening	3 (33%)	4 (45%)	7
<b>Total</b>	9 (100%)	9 (100%)	18

tau ( $\tau$ )=20.9

**Table 3.4. Preliminary comparisons of forest condition with collective activity**

<b>Site Location</b>	<b>Forest Condition Trend</b>	<b>Forest Stock Condition</b>	<b>Collective Activity</b>
Churiyamai (Makwanpur)	Improving	Average	High
Bijulikot (Ramechhap)	Improving	Average	High
Doramba (Ramechhap)	Improving	Average	High
Raniswara (Gorkha)	Improving	Average	High
Bandipur (Tanahun)	Improving	Above average	High
Manichaur (Kathmandu)	Improving	Average	Moderate
Riyale (Kavre Palanchowk)	Stable	Below average	Moderate
Thulo Sirubari (Sindhupalchowk)	Stable	Average	Moderate
Barbote (Ilam)	Stable	Average	Moderate
Baramchi (Sindhupalchowk)	Stable	Below average	Low
Bhedetar (Dhankuta)	Worsening	Above average	Moderate
Agra (Makwanpur)	Worsening	Average	Low
Chhimkeshwari (Tanahun)	Worsening	Average	Low
Chunmang (Dhankuta)	Worsening	Average	Low
Bhagwatasthan (Kavre Palanchowk)	Worsening	Below average	Low
Sunkhani (Nuwakot)	Worsening	Below average	Low
Chhoprak (Gorkha)	Worsening	Below average	None
Shantipur (Ilam)	Worsening	Average	None

Collective Activity: organized collective action level at the user level.

Low = individuals may observe harvesting constraint on their own, no group activities.

Moderate = as a group, individuals have harvesting constraints, minimal group activities, little or no monitoring.

High = enforced harvesting constraints, organized group activities, monitoring by members.

**Table 3.5. Association of level of collective activity with forest condition**

Forest Condition	Collective Activity			Total
	High	Moderate	Low or None	
Improving	5 (100%)	1 (20%)	0	6
Stable	0	3 (60%)	2 (25%)	5
Worsening	0	1 (20%)	6 (75%)	7
<b>Total</b>	5 (100%)	5 (100%)	8 (100%)	18

tau ( $\tau$ )=0.80

**Table 3.6. Cases selected for discussion**

Site Location	Population Growth (%)	Households per Hectare (HH/ha)	Forest Stock	Forest Condition	Collective Activity
Raniswara (Gorkha)	4.71	1.35	Average	Improving	High
Churiyamai (Makawanpur)	5.42	8.82	Average	Improving	High
Riyale (Kavre Palanchowk)	3.00	3.17	Below Average	Stable	Moderate
Barbote (Ilam)	3.64	1.80	Average	Stable	Moderate
Agra (Makawanpur)	0.29	0.37	Average	Worsening	Low
Chunmang (Dhankuta)	4.13	0.68	Average	Worsening	Low

**Table 3.7. Some institutional characteristics of select cases**

Site Location	Forest Condition	Institutional Characteristics		
		Entry and Harvest Restrictions	Monitoring Arrangements	Adaptive or Innovative Mechanisms
Raniswara (Gorkha)	Improving	Yes	Yes	Yes
Churiyamai (Makawanpur)	Improving	Yes	Yes	Yes
Riyale (Kavre Palanchowk)	Stable	Yes	Yes	No
Barbote (Ilam)	Stable	Yes	No	No
Agra (Makawanpur)	Worsening	No	No	No
Chunmang (Dhankuta)	Worsening	No	No	No

## **Chapter Four**

### **Differences Among Forest Users and Collective Action**

Despite existing consensus about several of the variables that may affect cooperation among actors, many theoretical puzzles remain, especially with regard to the organization of collective action for governing resources such as forests and irrigation systems.

Looking at the puzzle of group size, collective action, and forest change, Chapter Three showed how population growth is but one variable of a larger set of variables whose numerous interactions affect the natural resource base. In doing so, the chapter touched upon the question of variations in group size and the effect of those variations on collective action. Further, Chapter Three also showed that institutional arrangements crafted at the local level helped to mediate the dynamic relationship between rural populations and their natural environments.

Another major theoretical puzzle relates to the influence of heterogeneity, i.e., differences among actors, upon the likelihood of organizing collective action. The sources of heterogeneity are diverse and include differences in opportunity cost, appropriation skill, information, ethnicity, wealth, political influence, technology, and physical location. In particular, forest governance and management in Nepal occurs in settings characterized by a variety of physical and community attributes that can potentially affect the organization of collective action. Some of the physical attributes are: the nature of the forest resource and its size, proximity to roads/markets, topography of location, climate, altitude, and so on. Some of the community attributes are: size of the community of resource users, locational differences among users with respect to forested



areas, differences in forest users' incomes and presence or absence of economic/social/religious/ethnic disparities, availability of alternate forest resources, and so on, that affect their incentives to cooperate with one another. Each of these attributes, by themselves or in combination with other attributes, comprises the task environment that affects the organization of collective action in forestry. The opportunities and constraints posed by a particular task environment have to be taken into account in the institutional design of community forest governance and management. In particular, this chapter looks at locational differences, wealth and sociocultural disparities among members of forest user groups, and differences in women's representation on forest user committees (FUCs) as attributes that have importance as sources of heterogeneity that pose particular difficulties in organizing forest resource system (FRS) appropriation and provision activities in Nepal.

### **Heterogeneity and Collective Action**

Much of the analysis of problems of collective action at a local level has assumed homogeneity among those involved (Ostrom, 1998b). The assumption of homogeneity has been used by researchers both in formal research settings as well as in empirical research settings partly because it simplifies the problem parameters and partly because of another variable—size—that has been assumed as closely linked to heterogeneity (Baland and Platteau, 1996; Ostrom, 1998b). The smaller a group the more likely it is to be homogeneous as well and vice versa and, thus, studying group size is more salient. The initial research focused mainly on groups where the relationships among members were relatively symmetrical with regard to their assets, interests, and physical situation.

Considerable evidence from field studies and laboratory experiments shows that such (homogenous) groups are able to organize themselves to make and enforce rules in a sustainable fashion (Ostrom, 1990; Ostrom, Gardner, and Walker, 1994; Wade, 1994; Berkes et al., 1989; McKean, 1992; Bromley, 1992). However, in reality, heterogeneity among individuals and their communities is more the norm and frequently conspicuous in common-pool resource situations; for example, as substantial differences in socioeconomic attributes, information, natural resource endowments, physical circumstances, and so on.

An important finding that has emerged from the case study and experimental literature is that cooperation can be more difficult when actors have heterogeneous characteristics (e.g. Blomquist, 1992; Hackett, 1992; Kanbur, 1991; Ostrom, 1990; Libecap, 1989; Isaac and Walker, 1988; Johnson and Libecap, 1982). The costs of reaching agreement can increase when both capabilities and interests are highly disparate among groundwater producers (Blomquist, 1992). Heterogeneous communities are more likely to be riven with factionalism, and rule formation, rule enforcement, and conflict resolution are more difficult in such communities (Baker 1998, 1994; Blair, 1996; Chambers et al., 1989). Heterogeneous discount rates can create governance problems. Users with multiple alternative choices may discount the future value of a resource at a higher rate than those without options and therefore may prefer to harvest products in the short-term without investing in maintenance or regulation.<sup>1</sup>

However, an increasing number of studies show that heterogeneity can either facilitate or hinder cooperation, depending on the type of heterogeneity and the context. Groups can differ along a diversity of dimensions including their sociocultural

backgrounds, interests, and endowments (see Baland and Platteau, 1996, 1998). Each dimension may operate differently under a variety of circumstances. For example, the concentration of capabilities in a few actors may facilitate provision activities related to common-pool resources, but only if these actors would benefit significantly from such provision. This follows Olson's argument in *The Logic of Collective Action* that an actor with a preponderant interest in a public good will unilaterally provide it to the benefit of all (1965). The personal benefit that one or more individuals may expect to receive from the collective good may exceed the costs of providing that good. Thus, those individual may be willing to bear a disproportionate portion of the initial costs of organization. Similarly, Russell Hardin showed that a few actors with greater interest and resources within a group may provide collective benefits for many others in the group (1982). Formal mathematical analysis has shown that, since heterogeneity increases with group size, "the expected number of individuals willing and able to give at any specific contribution level will always be higher for a larger group" (Marwell and Oliver, 1993: 52). Increases in group size may thus actually lead to the formation of subgroups that have an interest in providing the collective good.

In experimental settings, actors with heterogeneous capabilities were able to achieve agreement when allowed to communicate; which in turn, allowed substantial increases in rents earned from a common-pool resource (Hackett, Dudley, and Walker, 1995; Hackett, Schlager, and Walker, 1994). In field settings, when all heterogeneous users were provided with information about the physical structure of their resource and about past harvesting practices, agreements could be reached about the distribution of future costs and benefits (Ostrom, 1995, 1990).

On the other hand, the sociocultural composition of a settlement or group of settlements may result in a difference of interests among forest users that influences the organization of forest governance and management. Differences in social class and ethnicity can make consensus building and norm-enforcement difficult (Blair, 1996). Cernea (1988, 1981) has reported that class differences can cripple efforts at organizing resource management in villages. The presumption that groups from diverse sociocultural backgrounds will have a more difficult time self-organizing to govern a common-pool resource is because of the assumed problems of distrust and lack of mutual understanding. The process of trying to reach a set of rules that everyone may agree upon, may involve a very high level of conflict and differing groups may be unwilling to abide by a single set of rules.

If groups coming from diverse sociocultural backgrounds share access to a common resource, the key question affecting the likelihood of self-organized solutions is whether the views of the multiple groups concerning the structure of the resource, authority, interpretation of rules, trust, and reciprocity differ or are similar. In other words, do they share a common understanding of their situation? Thus, there is no necessary relationship between sociocultural diversity and conflict over the use of a common-pool resource. Wade's study of South Indian farming communities showed that accommodations can be made between members of groups that are socioculturally stratified (1994). If the diversity is a result of new settlers to a region, the settlers may simply learn and accept the rules of the established group, and their differences on other fronts do not affect their participation in governing a resource. On the other hand, new settlers are frequently highly disruptive to the sustenance of a self-governing enterprise

when they generate higher levels of conflict over the interpretation and application of rules and increase enforcement costs substantially.

When the interests of appropriators differ, achieving a self-governing solution to common-pool resource problems is particularly challenging. This problem characterizes some fisheries where local subsistence fishermen have strong interests in the sustenance of an inshore fishery, while industrial fishing firms have many other options and may be more interested in the profitability of fishing in a particular location than its sustained yield. The conflict between absentee livestock owners versus local pastoralists has also proved difficult to solve in many parts of the world. Two or more fundamentally different types of users can give rise to conflicting uses of a resource. A subgroup of farmers interested in preventing soil erosion and siltation in their irrigation tank may want to ban grazing in a forested area that is used by local or nomadic grazers (Sarin, 1996).

Agreement in this case can be costly unless alternate grazing areas are provided. The interests of women as a segment of the rural population that is most involved with harvesting forest products vital to household subsistence lies at the heart of the debate about equal representation and its effect on cooperation in male-dominated rural communities. Different interests for men and women can lead to different perceptions of costs and benefits.

A considerable amount of theoretical and empirical research has focused on the heterogeneity of assets. There are theoretical arguments for how asset heterogeneity is positively, negatively, or not at all related to successful efforts to regulate the use of a common-pool resource. Some theoretical and empirical studies lead to a presumption of a U-shaped relationship. Johnson and Libecap (1982) reason that the difference in the

skills and knowledge of different kinds of fishers frequently prevents them from arriving at agreements about how to allocate quantitative harvesting quotas (see also Scott, 1993).

In this case, heterogeneity of endowments and of interests coincides. Heterogeneity of wealth or power may or may not be associated with a difference in interests. Some authors have argued that as market institutions penetrate rural areas formerly heavily dependent on common property institutions, previously accepted ways of assuring cooperation may:

come under strain and may even completely break down as inequalities and divergence of interests among resource users increase along with the marketisation of the rural economy.... It would seem that sustainable common property resource management is more difficult to achieve in a community with highly uneven than in one with a relatively better distribution of private wealth (Shanmugaratnam, 1996: 166).

On the other hand, Quiggen (1993) disputes the assumption that participants need to be relatively similar in regard to their income and wealth in order to sustain common property since other factors, such as economies of scale, are the primary reason for managing resources in common.

While many have argued that heterogeneity of assets is negatively related to the capacity of a group to self-organize, Mancur Olson (1965) argued that groups were “privileged” when there existed one or several members who owned a higher proportion of assets that would be benefited by some form of collective action. A theoretical paper by Bergstrom, Blume, and Varian (1986) presents a general model of a public good setting where wealth redistributions that give more assets to a positive contributor to a public good induce a higher level of contribution from that individual. This theory was

tested in the experimental laboratory by Chan, Mestelman, Moir, and Muller (1996) and given modest support.<sup>2</sup>

An alternative theoretical approach is presented in Dayton-Johnson and Bardhan (1997) where two players are independently deciding upon their harvesting strategies from a fishery. They explore the question of how inequality of assets affects the timing (and thus the conservation) of harvesting activities and how increasing inequality does not, in general, favor a conservation equilibrium. However, if inequality is relatively great, further inequality may result in conservation. Thus, the model supports the hypotheses that there is a U-shaped relationship between inequality of assets and economic efficiency.

Prior empirical studies have shown that the organization of cooperation can depend on the type and extent of heterogeneity that is seen in a given group of resource users. Further, the effect of certain kinds of heterogeneity on the expression of individual interests can be conditioned by the presence of prior experience in cooperation and by leadership. A study of 20 villages in Chota Nagpur, Orissa, India, shows that community-based forestry efforts are “more successful in villages with preexisting local organizations and slightly unequal patterns of wealth distribution” (Baker, 1998: 61). Baker argues that while too much disparity in wealth distribution diminishes shared interest in the collective good (and subsequent capture by elite), some inequality of wealth provides incentives for certain individuals in the community to bear a disproportionate share of the costs associated with organizing collective action.

A study of the Fulani of Mali, while unable to find a systematic relationship between heterogeneity and success in collective action, suggests that cooperation may possibly be

enhanced by heterogeneous social structure except when such heterogeneity is “tantamount to heterogeneity in economic interests and political power” (Vedeld, 1997: 321). Heterogeneity of wealth and of ethnicity do not prevent “uniform interests” among elite and subordinate groups in collective agreements. Rather, Vedeld argues, the “political elite” (consisting of clergymen and cattle-rich craftsmen) can assume leadership in such a case and provide an authority structure for rule-enforcement because economic interests of all groups in the common-pool resource are similar (a mix of agriculture and pastoralism). On the other hand, conflict was observed in a similar setting when economic interests differed with regard to the use of the common-pool resource (agriculture versus pastoralism).

An interesting study by José Molinas (1998) of 104 local peasant committees in a poorer region of Paraguay also provides some interesting findings regarding heterogeneity. Molinas evaluates the performance of all committees by the level of activities undertaken and a complex set of measures of local user participation and evaluation. Using this performance score, Molinas examines the impact of unequal land ownership as well as other key attributes of these groups on outcomes. He finds that in “highly equal communities a coordination problem may arise among peasants because nobody has a differentiated incentive to be the committee’s organizer” (Molinas, 1998: 420). He also finds that a moderate level of inequality in the amount of land is associated with higher levels of committee performance but that high levels of inequality make it more difficult for committee’s to operate effectively.

Some researchers have pointed to gender, caste, and ethnicity as the major factors behind the diversity of interests in rural communities and observed that “social



institutions" played a key role in the negotiations between diverse parties and are therefore important as a mechanism for expression of diversity (Berkes et al., 1998). They argue that social heterogeneity makes the management of commons more difficult because of the diversity of interests of different actors but point to local institutions as key in mitigating the complexities presented by such situations.

Some studies in irrigation have shown that self-organized groups are sometimes able to overcome strong asymmetries by devising rules that allocate costs and benefits in rough proportionality (Lam, 1998; Ostrom and Gardner, 1993; Tang, 1992; Ostrom, 1990; Wade, 1994). Given the locational asymmetries between tailend irrigators and headend irrigators a considerable amount of negotiation is needed before a fair supply of water to both parties can be delivered. In systems that required a large amount of maintenance over time, cooperation was achieved because farmers at the headend and the tailend depended on each other—the former for the resources provided by tailenders for maintenance and the latter for a reliable and adequate supply of water from the headend of the system. The strong bargaining position of the tailenders enabled them to negotiate rules that helped overcome the disadvantages of their location in the irrigation system.

Thus, field research has brought about the realization that, despite the recurrent argument that homogeneous groups are more effective, heterogeneity may not have a uniform effect on the likelihood of organizing collective action and little if any effect on the sustainability of such collective action. The mechanisms by which differences or similarities among users may affect collective outcomes are not well explained. The conditions under which certain types of heterogeneity may undermine or enhance collective action remain largely unknown. Further, clarity is lacking as to whether it is

simply the attributes of a given community of users that affects the likelihood of collective action, or whether, given those attributes, users have devised some institutional mechanisms to reduce costs and enhance cooperation. Extant field evidence shows that users may design institutions to cope effectively with heterogeneities. It is essential, therefore, to begin to understand how users act to cope with particular heterogeneities given the differences that arise in almost all communities in individual perceptions of costs and benefits.

### **Important Sources of Heterogeneity in Nepal**

#### **Locational Differences**

Locational differences among forest users can complicate the task environment of forestry. In the Nepali context, proximity to the forest has sometimes been cited as an important influence in determining the participation of user group households in collective action (Chhetri and Pandey, 1992; Chhetri, 1993 Shrestha, 1986). The physical realities of the terrain in the Middle Hills support this argument. Settlements usually comprise two or more small hamlets surrounded by a patchwork of agricultural land and smaller areas of forested land. Rainfed agricultural lands may be found closer to the settlements while canal-irrigated fields are found in the less steep lower lands. Forests of varying size and, frequently, of modest proportions, are found in spaces between these two types of cultivated land, and rarely immediately adjacent to any house (Figure 4.1).

Products (or resource units) that can be harvested from forests (or resource systems) are, except for fauna and water, are stationary prior to harvest. Forest products like fuelwood and fodder are taken from trees and users have to travel into forested areas to

harvest them. Furthermore, users have to travel into forested areas to carry out maintenance and protection activities. The distance some users have to travel, or their relative proximity, to forested areas they use in relation to that traveled by other users affects the symmetry of relationships among forest users and their relationship with the resource.

In many forest resource systems, users who live closer to the forest have a more secure and accessible supply of produce regardless of whether or not there are allocation rules in place. These proximate users may not be as motivated to provide institutional arrangements to allocate duties and benefits as less proximate users. However, the need for contributions to maintenance, protection, and even fund-raising activities can bring about negotiations between parties to settle allocation and provision problems by making agreed-upon rules. Residency in proximity to a forest is often required for the practical involvement necessary for sustainable management. Those living closer have greater dependence on the forest and thus display more commitment to engage in the collective action that is required for forest governance. Communities in Haryana, India have made "permanent residency next to the forest a non-negotiable condition" for user group membership (Sarin, 1996: 175).

Users who live farther away from a forest may raise questions about the allocation of duties and benefits. When some users have to walk much longer than others to participate in maintenance and protection activities, allocating duties and benefits in a way that is perceived to be fair is problematic. The distance some users have to travel, or their relative proximity, to forested areas they use in relation to that traveled by other users affects the symmetry of relationships among forest users and their relationship with

the resource. In many forest resource systems, users who live closer to the forest have a more secure and accessible supply of produce regardless of whether or not there are allocation rules in place. These proximate users may not be as motivated to provide institutional arrangements to allocate duties and benefits as less proximate users. Users who live farther away from a forest may raise questions about the allocation of duties and benefits. When some users have to walk much longer than others to participate in maintenance and protection activities, allocating duties and benefits in a way that is perceived to be fair is problematic.

For some, participation might be worthwhile if there were some assurance that those who live closer would not take more products or that benefits were allocated in a manner that took account of additional costs to those who live farther away. Or, since it is easier for those who live closer, perhaps they should shoulder more provision responsibility and no doubt, get more benefits? This becomes more complicated when users come from a settlement other than where the forest is legally located and even more so when the forested area lies in more than one jurisdiction.

These problems are especially evident in at least two rural scenarios in Nepal where households with diverse benefits and costs use a mostly contiguous area of forested land. In the first scenario, a group of user households are from a dispersed settlement, where houses are scattered throughout an area (see Figure 4.1). For example, in some villages in Western Nepal, people who live farther away than others show less interest in contributing grain for the guard (*manapathi*) or actively involving themselves in protection and management because they feel that most of the benefits go to those living near the forest (Chhetri and Pandey, 1992; Chhetri, 1993). In the second scenario, user

households are from more than one settlement and from settlements across political and administrative boundaries (see Figure 4.2). For example, users who live closer claim “primary use-rights” and want those who live farther away, in another jurisdiction (i.e. ward), to pay for the forest products they use. The individuals from other wards are reluctant to participate in any maintenance activity related to this forest even though this is the only forest they could use for their needs (Shrestha, 1986). In both cases, differences in relative distance to the forest in question give rise to differences in the costs-benefits calculus of user households.

Significant variation in distances among user households relative to the location of the forest resource can also give rise to opportunistic behavior. Those who live closer can be tempted to sneak into the forest at unauthorized times or harvest unauthorized amounts which can be easily concealed in nearby houses. For a resource that has subtractable benefits, too many such incursions can have deleterious effects, especially if a forest is on the verge of regeneration. Arrangements to monitor each other’s use of a forest effectively can become costly and complicated when some users live much closer to the forest than others.

For some households, the effort of participation in one forested area may not be worthwhile because they have access to another, closer forested area. While frequently one forested area is used as a primary source of forest products, households do use other forested areas as well for at least two important reasons: availability of products and convenience of access. First, they may find that some types of forest products are available in better quality or quantity in different patches of forest. Thus, the supply from the primary forest is augmented or replaced by the secondary sources. Second, it may just

be more convenient (and less costly) to use other forests. Villagers may find that some forests are not regulated and thus see these as more attractive to use than a forest that has restrictions of access and use. Or, they may find that some patches of forest are closer to their homes and, therefore, easier to access.

The organization of groups with locational differences among user households can be complicated because of their alternate use of other forests located in and around the area. Four scenarios can be envisaged with regard to the interaction of locational difference and use of alternate forests (Table 4.2). In scenario S1, one would expect organization of collective action to be the hardest because of the greater differences in distance to the patch of forest in question for most users and their current use of alternate sources of forest products. Some users may live close to the primary forest and an alternate forest, some users may live far from the primary forest and close to an alternate forest. For the households with an alternative source closer at hand, cooperation to protect and maintain the primary forest farther away may be seen as an unnecessary cost, when some benefits are readily available in the alternate forest area at lower cost. Furthermore, since those who live closer to the primary forest have use of both primary and alternate forests, the proportion of benefits to costs varies radically from those who live farther away from the primary forest.

**Table 4.1. Interaction of Locational Differences and Alternate Forests**

	<b>Alternate Used</b>	<b>No Alternate</b>
<b>High Locational differences</b>	S1 (hardest for cooperation)	S3 (intermediate for cooperation)
<b>Low Locational Differences</b>	S2 (intermediate for cooperation)	S4 (easiest for cooperation)

Most user households found in S4 could be expected to value cooperation at a higher level (all other factors being equal) because they have no alternatives and the forest is at about the same distance for most households. Since less cheating can be expected (because of locational parity) and expectations are that others will also participate (because most households have no alternatives), the potential benefits of cooperation are perceived to be greater than the costs. The costs-benefits calculus for user households would be the same as in the discussion in the previous section about lower locational differences.

In S2, households in a user group have low locational differences but do use products from other forests. The quality and quantity of products may vary across all the available forests and/or access to the primary forest may be more restrictive than the alternate areas. In cases where households are at different distances from the primary forest and no other forests are used (S3), higher costs of organizing and sustain<sup>3</sup>ing collective action can be expected. These would be the same as in the discussion in the previous section about higher locational differences but not as high as S1. In S1, the locational

heterogeneity is substantial in addition to the availability of forest products from at least one additional forest.

### **Differences in Wealth Within Forest User Groups**

Differences in wealth may be associated with differences of interest among users of a common forest resource. In the rural areas of the Middle Hills of Nepal, differences in wealth (or economic endowments) relate directly to the extent of economic stratification within the group (or relative economic well-being) which, in turn, partially depends upon the occupation or livelihood strategy of each household. People's interest in forest resources differ based on whether or not they raise cattle for milk or goats for meat; run a teashop or restaurant; weave baskets and mats; make charcoal or furniture; prepare medicine from forest products; use oxen for draught; or just cook food for the family. Most households need the forest for almost all of the above reasons but only for subsistence. In other words, in the general poverty of the Middle Hills, most user groups depend upon forests as an integral part of their daily subsistence, and few within any group have commercial interests in communal forests. The village blacksmith and the local teashop owner are two important exceptions.

So, while most are subsistence farmers, differences in wealth are evidenced more by the extent of land and livestock holdings. Wealthier households have greater need for animal fodder and agricultural compost. Wealthier farmers are frequently able, however, to construct alternative fuel sources such as methane gas producing compost pits, which supply them with cooking and lighting gas. They tend to have some surplus food and cash for modern medicine as well, and depend less than the poor do upon forests for fuel,



food, and herbal cures. These differences, even among subsistence farmers, can generate different incentives among them for forest use and for devising cooperative arrangements for forest governance and management.

In some cases, those with greater assets may bear the higher initial costs of organizing collective action while the benefits from such organization may accrue to a larger, less wealthy community. Individuals with more livestock have an interest in assuring a secure and adequate supply of fodder. If these individuals also have large landholdings, they may have substantial interest in the compost benefits of forest byproducts. In this case, while assets may be distributed unevenly within a group, the interests of both rich and poor are similar with regard to the need for forest resources. On the other hand, the wealthy of a community may have many more alternatives to using a particular forest for their livelihood than the less endowed members of that community, making for an imbalance of interest in organizing governance and management of a forest.

In many Nepali villages, the wealth of some households can be attributed to regular remittances sent by male household members working in the British and Indian armies. In addition, retired soldiers have substantial savings and pensions that represent earnings well above the national average. Some of these households (especially those with male members still working abroad) may have less interest in participating in group activities related to forests because they have a steady cash income from an alternate source. All across Nepal's hills, however, retired soldiers can be found occupied in gainful enterprise and in leadership roles in their communities. Many village level organizations spring up and flourish because of the ability of these retired servicemen to supply financial

resources, time, and the knowledge obtained elsewhere, to invest in activities that benefit their communities and themselves.

### **Sociocultural Differences**

In Nepal, villagers of different ethnicity or caste frequently reside in physically separate clusters (hamlets or *toles*) in a given settlement. How this affects their ability to cooperate is neither well understood nor researched in depth.<sup>4</sup> It is not uncommon to find that settlements (when looked at as user groups) have one or two castes that outnumber the rest. This may not translate directly into dominance, however, since lower castes can frequently be found in greater numbers than higher castes. This may also be why some studies, citing examples of difficulties in organizing and sustaining cooperation within ethnically heterogeneous user groups (e.g. Chhetri and Pandey, 1992), have been unable to observe such difficulties in a systematic fashion across multiple cases.

Sociocultural composition has been observed to influence educational, economic, and political opportunities in Nepal. Whether this is less true now than in the past is unclear, but rural populations have generally shown an ability to cooperate in a variety of sociocultural settings. There are sufficient cases documented within Nepal of rural communities cooperating over decades in the management of natural resource systems. In irrigation systems, irrigators of different ethnic or caste backgrounds have cooperated with success in several instances. The need for capital and labor to take care of maintenance and monitoring activities may override boundaries that separate different groups of users. The skills that one group brings may complement those of other groups and, in some cases, be indispensable. In forest user groups, the more educated are

sometimes from the higher castes. These bring writing and bookkeeping skills that are essential to organization. Thus, the secretary or treasurer may be of a higher caste. Lower castes who use forests for more specialized products than others, such as the artisans who work with iron and leather, bring their knowledge of flora and fauna to the group. Thus, for marking boundaries or trees, a tradeoff may be applied, whereby some of the lower castes do most of that work.

### **Differences in Participation of Women in Decision Making**

The seminal work of Acharya and Bennett (1982) forced the recognition of the very significant role of women in the subsistence economy of rural Nepal. That women in Nepal play the prominent role in harvest and use of fuelwood, fodder, and other forest produce is widely accepted (Gurung, 1993). Time spent by women in forest-related activities constitutes over seventy-five percent of the total time spent on such activities in rural areas (Kumar and Hotchkiss 1988). Women often know more than men about forest species and their uses and can perceive and predict fluctuations in forest produce supply (Shrestha, 1990; Pandey, 1990; Tinker, 1990; Shiva, 1988). Women also form the stable core of rural households. Men may travel for extended periods of time for trade and employment while women manage the livestock and tend to household needs.

Thus, gender roles are strongly differentiated in the natural resource-based subsistence economy of the Middle Hills and such differences in roles can be expected to affect forest use and management. Yet, as a group that traditionally has not had much voice, women play a less prominent role in decision-making when it comes to forest governance and management. This means that women may go along as reluctant

participants with decisions that they find disagreeable while bearing the responsibilities that others' decisionmaking confers upon them. If women feel that their interests are not represented when decisions are made about rules for access or use, they may be less likely to conform and to participate in enforcing the rules. The costs of monitoring and enforcement, for example, could rise if those who break rules are women.

The sociocultural and economic attributes of a household can further exacerbate gender differences. Women of lower caste or poorer households may have more of a burden because of their heavy dependence upon forests (Agarwal, 1994; Beck, 1994; Jodha, 1990). Whether women of such households participate in user group decisionmaking can be more critical to the sustainability of governance arrangements. On the other hand, the casting of women in the Hills in a subservient, silent light may be misleading. While they may still be less educated than the men, on average, they do possess extensive knowledge of their natural environment and the proven ability to manage household, farm, and communal resources. This also gives them a certain degree of freedom in action and voice in meetings of their own communities (Acharya and Bennett, 1983).

### **Findings: The Association of Collective Action with Differences Among Forest Users**

In the previous chapter, Tables 3.4 and 3.5 showed the association of collective action with trends in forest condition and with forest stock conditions. The level of collective activity was seen to be strongly associated with forest condition. In all forests that were improving in condition, a high level of collective activity related to forest management was seen. In locations where more forests were found to be deteriorating, there was little

or no collective activity being undertaken by the local community. Now, in this chapter, I wish to ascertain whether heterogeneity is associated with the level of collective activity in a site.

### **Locational Differences**

Information was obtained regarding **locational differences** for each user group information about the size of each settlement and distribution patterns of all houses within the user group; number and distribution pattern of forested areas used; and the distance from each settlement in the user group to the forested areas used. This information was utilized to create an index of locational differences from low to high for each of the 18 groups. Groups with fragmented or noncontiguous forest patches at a distance from settlement were considered high on the index of locational differences. Groups with one contiguous area of forest in close proximity to settlement were considered low on the index of locational differences.

Across the 18 locations studied, 11 had less difficulty with regard to the location of settlements and forest distribution (Table 4.2). Among these 11, five groups manifested higher levels of collective activity and six groups manifested lower levels of collective activity. While areas with greater difficulty due to distances were expected to have lower levels of collective action, the finding was contrary to expectations. Five of seven cases with greater locational differences (71%) had higher collective activity despite the difficulty due to relative distances to forest. There is negligible association between locational differences and the organization of collective action for this group of 18 sites ( $\tau=0.25$ ). To examine the effect of alternate forest usage on collective action in cases

with and without locational differences, the set of 18 cases is further categorized by whether or not users make use of the alternate forest resources that are available.

For the 18 cases studied, villagers in ten sites use other forest resources (communal or government) *in addition* to their own communal resources (Table 4.3). Within this set of ten cases where more than one forest is used, three groups faced high locational differences while the other seven groups faced low locational differences. Although collective action is not expected to take place at a high level in this category (S1 = high locational differences and alternate forest usage), one group shows a high level of collective activity while two groups showed a moderate level of collective activity. Five of seven groups in S2 (over 70 percent) showed low levels of collective action while the remainder (two groups) showed high levels of collective action. The association between groups who use alternate resources *and* have locational differences is moderately strong ( $\tau=0.65$ ), but the number of cases is small.

Among cases that had *no* alternate forest resource usage (S3 and S4), the distribution of groups with locational differences was even (two each) across levels of collective action while three of four cases without locational differences showed higher collective action. There is a negative but negligible association between collective action levels and locational differences in this category of cases ( $\tau=-0.26$ ). The differences between the two categories of user groups in the direction and strength of association also shows that the levels of collective action in user groups are affected by villagers' use of alternate resources especially when they have locational differences.

## **Differences in Wealth**

Wealth disparity in a group was determined by obtaining information on the local definition of wealth; the number of households who were wealthy and poor by that definition; and any obvious wealth disparities in a group. This information was then used to create an index of wealth disparity in a group. This index was then utilized to separate the 18 groups into high and low categories of wealth disparity.

Of the 18 locations studied, six were viewed by users to have higher levels of wealth disparity between forest users while 12 had little or no disparity of wealth between users (Table 4.4). In cases where there was a low disparity of wealth, eight out of the 12 cases (67%) had collective activity ranging from moderate to high. However, where the disparity of wealth was greater, four of six cases (67%) had not organized for collective action. The measure of association indicates a modest negative relationship between level of wealth disparity and collective action ( $\tau=-0.32$ ).

## **Sociocultural Differences**

Sociocultural differences in a group were determined by information obtained on a minimum of three (if present, with no maximum) caste and ethnic types for each of the 18 groups. An index of fractionalization was used to measure sociocultural heterogeneity (caste/ethnic), computed by:

$$A = 1 - \sum_{i=1}^n (P_i)^2$$

where  $P_i$  is the proportion of total population in the  $i$ th ethnic/caste type.  $A$  varies from 0 to 1 and measures the probability that two randomly selected persons from one user

group will not be of the same sociocultural type. This index was then used to separate the 18 groups into low, moderate, and high categories of sociocultural heterogeneity.

Across the 18 locations studied, 13 were observed to be more heterogeneous in sociocultural composition, varying from moderate to high levels of heterogeneity (Table 4.5). The cases where sociocultural heterogeneity was high were also where collective action was seen to be high (four of 5 cases or 80%). In the cases where heterogeneity was moderate or lower, there was almost no difference seen in the level of collective action. The measure of association indicates a negligible positive relationship between sociocultural heterogeneity and the organization of collective activity for the 18 cases studied ( $\tau=0.20$ ).

### **Differences in Participation of Women in Decision Making**

A first measure of women's participation in decision making is determined by obtaining their membership numbers within the executive body of a forest user group—usually the forest users' committee (FUC)—from the data on the Forest Association. The data on the presence of women in the user group committee revealed that six groups lacked female office-bearers. These groups also turned out to be six of eight groups that were earlier classified as having little or no collective action with regard to forest governance and management. These six were then discarded in the analysis of women's participation in decision making within a forest user group.

Of the remaining 12 groups, all but one group had at least one female member in the FUC. Given that there was almost no variation among the 12 cases as regards the presence or absence of women on the FUC, the analysis went one step further to obtain



the proportion of women members in the FUC. This was done (a) to see if better variation could be observed and (b) to account for the intuitive reasoning that the proportion of female FUC members relative to the male members should be positively correlated to the degree of participation in decisionmaking processes for the group.

The proportion of females was determined by dividing the number of women members by the total number of members in the FUC. Groups with female representation below a third of the total FUC membership (including one case which had no representation) were classified as low.

Of the 12 groups in Table 4.6, four had higher proportions and eight had lower proportions of women members in their respective user group committees. Of the groups seen to have a lower proportion of women members in their FUC, seven out of eight (88%) had a high level of collective action. Of the groups with higher proportions of women on their FUC, three out of four (75%) were seen to be associated with high levels of collective action. In other words, similar proportions of cases with high collective action levels were seen in both categories for women's participation.

The level of collective action was seen to be consistent across both high and low values of women's participation in all twelve cases, without a predictable pattern. The tau measure of association between collective action and the participation of women in the FUC shows a negative and negligible relationship ( $\tau = -0.15$ ). At first glance, this could be interpreted as meaning that the participation of women in decision making is either detrimental or marginal to the fostering of collective action in a group. However, of the four groups with a higher proportion of women in table 6, only one group is seen to have

a low level of collective action while the other three have moderate or high levels of collective action.

These findings suggest that the presence (or absence) of women in decisionmaking positions within a forest user group does not by itself affect the likelihood of higher levels of collective action that is specifically geared towards forest governance and management. This may be not be the case for women-only groups, which are not looked at here. The groups studied here are, in the main, formally registered with the government and, thus, required to have a minimum female membership. Few user committees exceed this minimum and field observations suggest why this may be the case. First, women are the busiest members of the household. In most cases, women (and often children) harvest the fuelwood and fodder. In many cases, women also help graze or stallfeed the household animals. In every case, women do essential household chores like cooking, cleaning, and washing. These activities consume their days. In several of the locations visited, women members of the FUC have lamented that the additional burden of FUC responsibilities is one they are loathe to bear, especially given that the men may not, of their own accord, help out at home instead. Thus, women may willingly participate in group activities for the sake of the household benefits that may accrue but may not be as active in FUC decisionmaking activities.

Second, across most of the locations studied, men outnumbered the women members of the FUC. In a sociocultural context where women have traditionally had very little say in intrahousehold matters let alone community matters, being outnumbered in a forest user committee hardly encourages active participation. During the period of study in these locations, women members were seen to be more active outside of the setting of the

FUC, both in speech and in deed. Within the FUC setting, they were most active during discussions of maintenance activities, group organization, and harvesting practices and timings.

Taken together, this paints a picture of collective action where women are sidelined or are minor actors in community involvement. This may be misleading because many a group has been able to enhance the quality of participation (especially of women and children) solely because of female representation on the user committee. While this analysis looked at membership at the committee level as a measure of women's participation, the true measure may lie elsewhere—in the implementation of decisions. This is especially true of most maintenance activities. For instance, women committee members are able to mobilize women group members quickly and in large numbers. Further, women are as proficient and diligent, if not more, as men at maintenance and improvement activities such as weeding, thinning, trimming, coppicing and so on. The committees of groups such as Raniswara, Bandipur, and Barbote report that the forest areas assigned to women for maintenance tend to be in much better condition than those assigned to men and youth.

Whether or not a group that gives voice to women in collective action may partially determine whether or not governance and management for the forest in question is sustained (Nightingale, 1998). Further, giving voice at group meetings where anyone can speak may not be enough to ensure a balance of power between men and women with regard to decision-making in forest governance and management. Including women in the management structure of a forest user group may be a first step to giving them more voice (Sarin, 1996). Analyses need to examine differences among groups that include or

exclude women as members of the forest user committee—the executive body of the forest user group—an issue that is not examined here.

Finally, it is important to note that efforts to include women in governing bodies of such forest groups are still in their early stages and, as such, changes in institutional structure and in collective outcomes because of these efforts may not be apparent. Further, this study has only looked at mixed user groups (having both women and men). A comparison with user groups comprised entirely of women would be very instructive, especially because early evidence from the field suggests that such groups are highly motivated and successful. Such a study may also find support for some of the assumptions of homogeneity of group members.

### **In-Depth Analysis of Findings**

Table 4.7 has an array of the level of collective action and the measures of heterogeneity for all 18 cases. Heterogeneity is certainly not a strong predictor of successful collective action. Only one of the five most successful user groups (Doramba) is relatively homogeneous across all of the attributes I have examined in this chapter. It is apparent in examining Table 4.7 that groups with similar patterns of attributes in regard to location, wealth, and sociocultural composition, do not have similar levels of collective action. Doramba, Riyale, and Chhoprak (Sites 3, 7, and 17), for example, all have *low* levels of differences in regard to location, wealth, and sociocultural attributes (while two of these have alternative usage), but Doramba has a high level of collective action, Riyale has a moderate level of collective action, and Chhoprak has a low level of collective action. Alternatively, Bandipur, Barbote, and Chunmang (Sites 5, 9, and 14)

are all coded as having *high* differences in all three attributes but vary from high to low levels in terms of collective action.

In some of the cases with high levels of collective action and who also face substantial heterogeneity, forest users have designed a set of rules that specifically take into account the heterogeneity they face. This is particularly the case when users face locational differences that arise over time or are present at the time of constituting a user group. Raniswara and Bandipur (Sites 4 and 5) present particularly interesting cases for further analysis. Both sites have highly organized user groups or associations with written rules and regulations governing user behavior with regard to the forest. In fact, both associations have overtly recognized that their membership is scattered and that the access to forested areas varies by settlement. In both cases, there are substantial advantages to the group to include settlements that are farther away, and the rules of the group have been crafted accordingly. Both have a two-tier system of user membership: those who live further away can pay an extra fee in exchange for reduced monitoring duties. In addition, those who cannot participate in joint maintenance, harvesting, or monitoring activities can pay special membership fees so as to avail themselves of forest products at special, below-market rates. In Raniswara, special membership is noted after payment of a fee, written requests for forest produce have to be processed by the Harvest Subcommittee, and the committee provides products to the member at a special rate.

Over time, membership can increase to include users from the most distant settlements. The Raniswara user group has been particularly receptive to the opportunities as well as the constraints of an increasing membership and the importance of carefully defining the rights to harvest related to a specific forest patch located nearest

to a member rather than related to the entire community forest. In addition, attention is paid at the time a member joins (or wishes to change their membership category) to the responsibilities they are expected to bear via either labor contributions or monetary fees.

In Bandipur, members have to purchase tokens of different colors, each color specific to their membership type. These tokens are to be shown upon request of any member at any time in the forested area. In both associations, members who live at a distance but prefer to participate are organized by settlement. Each settlement is assigned the closest forested area for harvesting and maintenance activities. However, a member of the association committee is responsible for monitoring that subgroup's behavior. During periods of greatest danger to the forested areas, guards from two different settlements are assigned to the same area.

For Raniswara, the members who live at a distance from the forest are mainly traders, teashop owners, or restaurant owners in Gorkha bazaar. Some are salaried as teachers or government employees as well. While most of these second-tier members use gas for their everyday cooking needs, they also need large quantities of firewood for their businesses. The costs of buying firewood in the open market is prohibitive as opposed to obtaining it at a discounted rate as a group member, even after paying higher membership fees. These members do not have the time to invest in forest maintenance activities but do have the resources to substitute cash for limited participation. The group also requires income on a regular basis, both from membership fees as well as sale of wood. Thus, the benefits to the group and individual members exceed the costs of arriving at a cooperative agreement. A similar calculus applies to members of the Bandipur group who live in the market area. In addition, past experience of scarcity always encourages

members to stock up on firewood supplies, especially when available at a lower-than-market rate.

The supply of timber for house construction is another highly valued benefit of membership in forest user groups. Despite the fact that there are considerable disparities in distance, members who live further away are willing to pay more, both for membership and for timber, because this enables them to obtain timber at relatively low cost in contrast to the open market. The prices of timber and firewood as well as membership are negotiated and agreed upon at group meetings. Supplies of both timber and fuelwood, while plentiful, are still subject to annual quota review by the Harvest Subcommittee (for Raniswara) and the regular Users Committee (for Bandipur).

A third site that faces high internal locational heterogeneity and, in addition, now faces the problem of alternative forest use is Site 1, Churiyamai.<sup>5</sup> When the users first organized in 1990, villagers lived in three separate settlements and used a community forest comprised of two distinct blocks. One of the blocks is a 27-year old former government research tract and the other block is a tract initially developed by the government's community forestry seven or eight years ago. At that time, the households of the two proximate settlements formed a forest association with a committee to manage both blocks as one community forest. The third settlement disputed this arrangement because the villagers in this settlement were also traditional users and because some parts of the forest were within their administrative boundaries. Further, as a countermove, this settlement formed a forest association and committee for its own area of the forest. This arrangement was not satisfactory and led to conflicts over boundaries and membership between the three settlements. Resolution to the problem (of differences in distance) was

reached through several meetings conducted among the three settlements. Residents agreed to a merger of the two groups into a new forest association which would, in turn, allow all three settlements to avail themselves of the entire forest area.

This larger group of users from the three settlements functions as a well-organized association, with rules specifying membership, entry, harvest of particular products and related fees, and times of harvest. Fees and proceeds from sale of deadwood or fallen trees provide cash income for the association. The income is used to pay for two full-time forest monitors at present. These measures have considerably improved the condition of the two blocks of forest used by the three settlements. The association has placed severe restrictions on both blocks of the community forest. As alternatives to cutting fodder, some members now stall-feed their animals or graze animals in fields and by the roadside. The rules regarding firewood are strict. Consequently, many members now walk a considerable distance (two hours by foot) to a third forest owned by the government. It is hard to say at this point whether the complex relationship between strict rule enforcement in the community forest and the opening of an alternative supply will lead either to the destruction of the alternative forest or to a lack of interest in the community forest.

Even within organized user groups, when users are unable to come to an agreement over an issue such as locational differences and the allocation of benefits, collective action is likely to falter. The mechanism for such failure can be complex in its working. In Barbote (Site 9), for instance, collective action is moderate, forest condition is stable, and forest stock is average (as seen in Chapter 3, Table 3.4). This group is unable, however, to reach a quorum for any group meeting. A mistake in identifying bonafide



members at the time of forming this group gave rise to the “quorum” problem in Barbote. Identifying bonafide members included establishing which households settled around the distant market used Barbote’s forest and which of these distant households paid dues in proportion to their costs and benefits (and those of the group).

The inability of this group to separate out members with different interests (based partly upon their location) resulted in net benefits being disproportionately large for those who lived at a distance (because they wouldn’t participate in maintenance activities yet could obtain products). Those who lived at a distance numbered more than those who lived closer to the forest; thus, their bargaining position was stronger. In such a case, the implementation of a membership rule was faulty which, in turn, caused locational differences to exacerbate problems of cooperation.

Another issue that adds to the problem of sustaining cooperation among members of the Barbote group is the extensive use of alternate patches of forest by users who live farthest away from the community forest. Residents of settlements that are almost an hour away from the community forest observe that it makes little sense for them to trek two to three hours for a load of firewood when the nearby government forest is accessible, albeit in poorer condition. Similarly, for those users who live near the market or trade there, there are small patches of forests that are closer than the community forest. These forest patches can be readily accessed since there are no rules restricting access or harvest for them. Core members of this group have tried several times to reconstitute their community forest user group to take account of these differences in interest but have been unable to do so because of the attendance problem.

In Bhedetar (Site 10), collective activity is observed to be moderate, forest condition is worsening, and forest stock is above average (see Table 3.4 in Chapter Three). The five settlements in this site use one forested patch as their main sources of forest products with two other patches as supplementary sources. The main forested patch has a major highway bordering it on two sides. The majority of households are settled immediately above this forest in three settlements and farm for a living while there are two settlements at the forest base, along the highway, selling food, tea, and liquor. This forest has had a active user group for the past five years and is among the first to be formally recognized by the District Forest Office.

The alternate patches of forest lie away from the settled area. These patches of forest were until very recently parts of another large community forest area located above this site. When the user group initiated for managing this community forest failed over a period of three-four years, a patch was demarcated and handed over to the five settlements by the district forest office to use as a community forest in addition to their main forest below.

Although the DFO cites their community forest as a successful example, the villagers and committee officers themselves are dissatisfied with the level of participation of users, the support of DFO, the level of conformance to rules constraining harvest of timber, and poaching of valuable timber species along the road. There is a lot of political ferment in the settlements despite the homogeneity of wealth and caste. Some users who live closer to the alternate patches are excluded from rights of usage from the main forest because, it is argued, they use more of the alternate forests and show less interest in managing the main forest. For now, there are no complaints about the adequacy of forest produce,

though most fear that the lack of cohesion in the groups could lead to breakdown in monitoring activities and to an increase in illegal sale of timber from the fringes of the forest farthest from the settlements.

Groups with privileged subgroups can be detrimental if the privileged discount the value of the forest and do not depend upon it. In Chunmang (Site 14), a community of users who have had recurring difficulties in organizing governance for their forested area, a dominant sociocultural group (also wealthy) has resisted all attempts at creating a forest user group. While this case is characterized by severe locational differences, the dominant sociocultural subgroup lives in close proximity to the forest and is known to engage in unrestrained harvesting. While other subgroups scattered near and far have no objection to forming a user group that has rules to allocate benefits in proportion to costs, this particular subgroup demurs. The politicians and wealthy of this area come from this subgroup. They have large landholdings, a grain and oil mill, and employ some of the poor families of the group. Since they also have land bordering another forested area, they have become members of that distant user group. While they live closer to one forest and choose not to support cooperation nearby, they have taken membership in a distant user group by virtue of owning land there! Thus, living close to a forest may not make much of a difference to the organization of collective action if individuals with more assets in a group also have low discount rates related to that forest.

## **Conclusion**

The findings from this chapter's analysis indicate that differences among users do pose challenges for groups of forest users in overcoming the incentives to free ride and

shirk. Heterogeneities, however, do not have a determinant impact on the likelihood or success of collective action. The attributes of different groups affect the structure of constitutional and collective choice arenas within which users decide how to organize themselves and which rules to adopt to allocate rights and duties as well as costs and benefits. Successful groups overcome stressful heterogeneities, by crafting innovative institutional arrangements well-matched to their local circumstances. Thus, the simple presence of heterogeneities is not sufficient to predict outcomes in field settings where participants do have considerable autonomy to make their own rules, if they take hold of this opportunity. Where there are substantial benefits to be gained from an effort to devise rules to cope with heterogeneities, users may be able to invest more heavily in finding effective rules that are considered fair, effective, and efficient to most users. In other words, where the incentive to change is substantial, it is possible for users to pay higher costs of devising new rules, and monitoring more complex rules.

The debate about the effect of heterogeneity (or size) is focusing on the wrong variables. Instead of focusing on wealth, locational differences, sociocultural differences by themselves (or, on the size of the group by itself), it is important to ask how these variables are embedded in situations that themselves vary substantially in regard to the benefit-cost calculus of those involved in negotiating and sustaining agreements. Where there are very substantial benefits to be obtained through collective action, users may be able to do as the users from Bandipur (with high differences on all three attributes) and Raniswara (with high locational differences) did, to create diverse forms of membership with different rights and duties. They thereby found a way to capture benefits of value to those who lived further from the forests as well as to receive the monetary resources they

were willing to contribute. Their rules are consistent with Design Principle Two in E. Ostrom (1990). Further, they help neighboring groups to organize their own forests so that the benefits of membership are not diluted by lax enforcement over community forests nearby.

The group in Site 1 (Churiyamai), consciously expanded group size as a way of reducing conflict that arose due to the location of forests used in more than one jurisdiction. In another site (Chunmang), the debate over benefits and costs to villagers who lived at varying distances from the forest completely hobbled any efforts to start collective action. This was not helped by the differences that existed in economic and political assets in that group.

In yet another site (Barbote), locational differences were a considerable barrier to the continued organization of labor for maintenance and protection activities and could not be overcome due to the flawed rules governing membership. Further, in Barbote as well as in Bhedetar, the use of alternate sources by user group members exacerbated the problems posed by locational differences. While in the former case (Barbote), users were struggling to find an institutional solution with the leadership of a very informed resident, the latter (Bhedetar)—and the District Forest Office concerned—had yet to establish the costs of having neighboring forests opened up to unrestrained use while trying to sustain cooperation for the community forest.

That differences among users can lead to differences in interests comes as no surprise. However, such differences in interests can lead to a multiplicity of outcomes that are impossible to influence or predict in the absence of institutional arrangements

that constrain user behavior, stabilize mutual expectations, and provide some assurance of reliability.

Even in a group that differs on many variables, if at least a minimally winning subset of appropriators from a threatened but valuable resource is dependant on it, share a common understanding of their situations, have a low discount rate, include some with more assets and similar interests among their members, trust one another, and have autonomy to make their own rules, it is more likely that they will estimate the expected benefits of governing their resource greater than the expected costs. Whether the rules agreed upon distribute benefits and costs equitably depends both on the collective-choice rule used and the type of heterogeneity existing in the community. Heterogeneity is not a variable with a uniform effect on the likelihood of organizing and sustaining self-governing enterprises.

### **Heterogeneity and the Initiation and Sustenance of Collective Action**

Another puzzle that is tangentially addressed in this chapter is that of the distinction between organizing collective action and sustaining collective action.<sup>6</sup> Just as Agrawal showed that group size can have a significant bearing on organizing versus sustaining collective action (1998), certain types of heterogeneity can impose costs at the initiation of collective action as well as during the course of collective action. For instance, what effect did difficulties due to location have in organizing villagers in Chunmang? And, how did difficulties due to location and alternate sources of forest products affect the course of collective action in Barbote and Bhedetar? Importantly, what can external intervention do to help when such heterogeneity can be very costly for villagers?

## **Notes**

- 1. Heterogeneous preferences across goods at different points in time can hinder or complicate cooperation. Further, the type of CPR goods can be a source of heterogeneity (as discussed earlier in Chapter Two). Beyond a variety of possible uses of the same kind of resource unit appropriated from a forest resource system, there are a variety of resource units also available. Thus, the governance of such a resource will involve different rules for different types of resource units in addition to different rules for different types of uses of those units. Rules of allocation and distribution can similarly vary across resource units as well as actors. Some have argued that heterogeneity of goods may increase the likelihood of collective action (e.g. Hardin, 1982). Hardin points out that such heterogeneity allows a certain “jointness of production” by a variety of actors with different preferences and resources, together bringing to bear a greater proportion of effort in collective action. On the other hand, heterogeneity of goods can also create dissent among actors about an agreeable mode of appropriation of such goods.**
- 2. Finally, asymmetry in regulations by a government may have heterogeneous effects such that the costs and benefits of such regulations fall on different parties. For the purposes of this chapter, these effects are considered the same on forest users and officials across all locations studied.**
- 3. The theory predicts the direction but not the magnitude of the change that occurs in group contributions to a public good when income is redistributed towards those who already had contributed.**
- 4. Locational differences may operate quite independently of sociocultural differences although these may be correlated in the Middle Hills since different ethnic/caste groups tend to live in their own hamlets that may be at different distances from forested areas.**
- 5. This discussion of Churiyamai borrows heavily from the discussion in Chapter 3.**
- 6. While Agrawal (1998) has argued persuasively that there is a difference between sustaining collective action and successful collective action, for almost all the eighteen cases studied here, there is little disjuncture between sustained and successful, as the previous chapter has shown.**

Figure 4.1 Dispersed settlement pattern

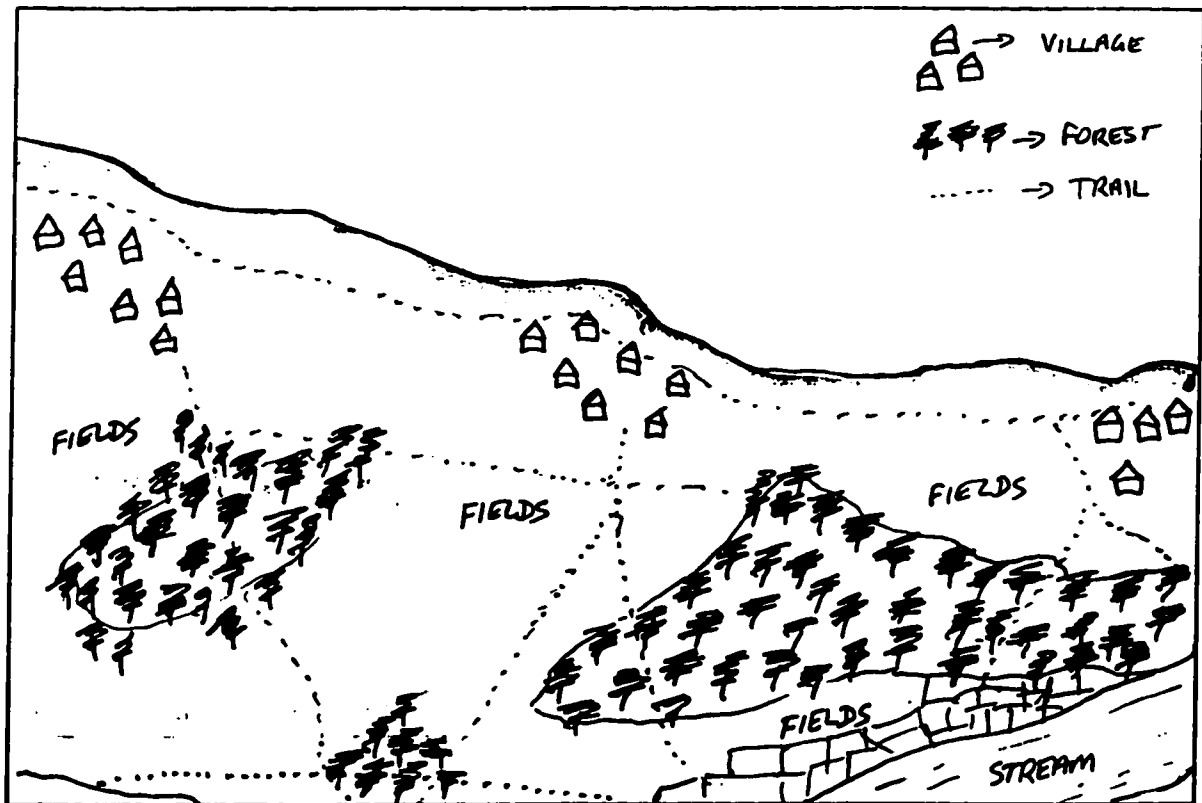
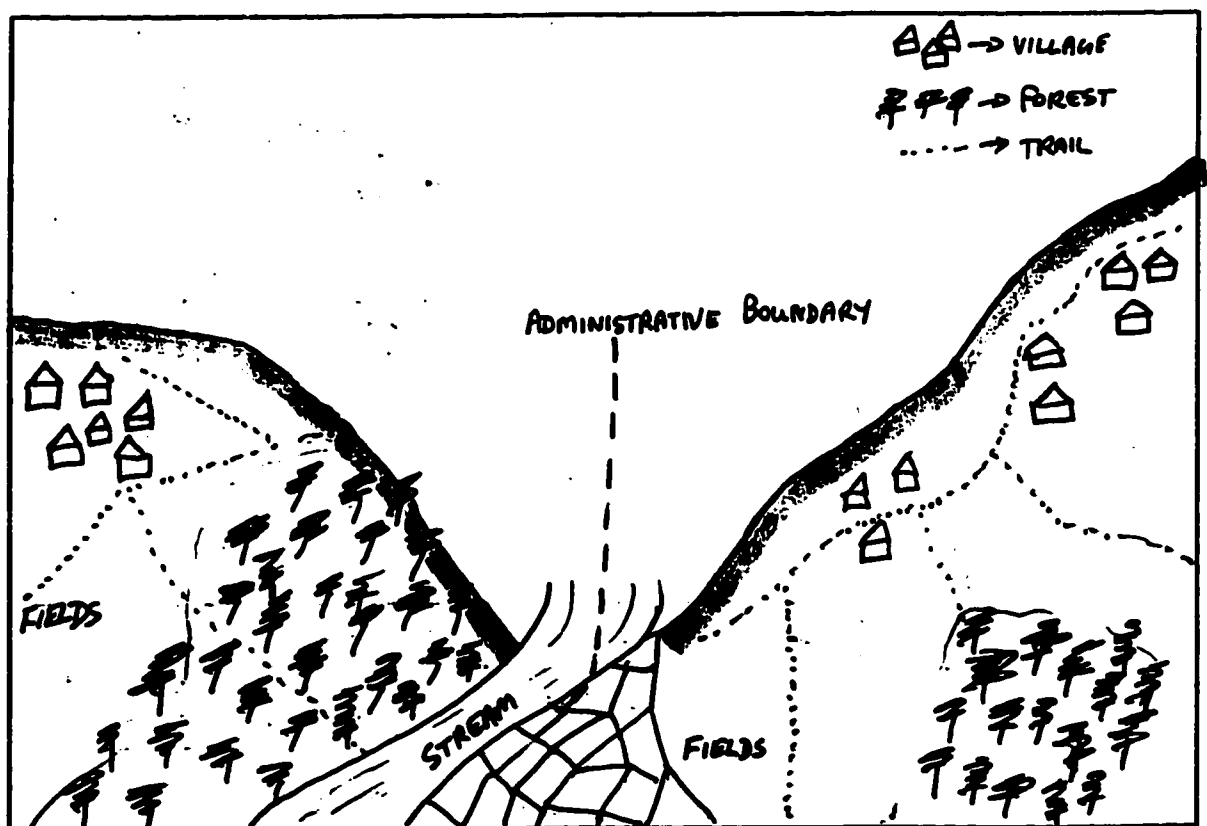


Figure 4.2 Dispersed settlement pattern across administrative boundaries





**Table 4.2. Collective Action by Locational Differences**

<b>Collective Activity</b>	<b>Locational Differences</b>		<b>Total</b>
	<b>High</b>	<b>Low</b>	
High/Moderate	5 (71%)	5 (45%)	10
Low	2 (29%)	6 (55%)	8
<b>Total</b>	7 (100%)	11 (100%)	18

tau = 0.25

**Table 4.3. Collective Action by Locational Differences and Alternate Forest Use**

<b>Collective Activity</b>	<b>Locational Differences and</b>					
	<b>Alternate Forest(s) Used</b>			<b>No Alternate Forest(s) Used</b>		
	<b>S1 (HiDiff)</b>	<b>S2 (LoDiff)</b>	<b>Total</b>	<b>S3 (HiDiff)</b>	<b>S4 (LoDiff)</b>	<b>Total</b>
High/Moderate	3	2	5	2	3	5
Low	0	5	5	2	1	3
<b>Total</b>	3	7	10	4	4	8

tau = 0.65

tau = -0.26

S1=High locational difference; alternate used; S2=Low locational difference; alternate used  
S3=High locational difference; no alternate; S4=Low locational difference, no alternate

**Table 4.4. Collective Action by Differences in Wealth**

<b>Collective Action</b>	<b>Differences in Wealth</b>		
	<b>High</b>	<b>Low</b>	<b>Total</b>
High/Moderate	2 (33%)	8 (67%)	10
Low	4 (67%)	4 (33%)	8
<b>Total</b>	6 (100%)	12 (100%)	18

tau = -0.32

**Table 4.5. Collective Action by Sociocultural Differences**

<b>Collective Action</b>	<b>Sociocultural Differences</b>			
	<b>High</b>	<b>Moderate</b>	<b>Low</b>	<b>Total</b>
High/Moderate	4 (80%)	4 (50%)	2 (40%)	10
Low	1 (20%)	4 (50%)	3 (60%)	8
<b>Total</b>	5 (100%)	8 (100%)	5 (100%)	18

tau = 0.20

**Table 4.6. Collective Action by Proportion of Women in FUC**

<b>Collective Action</b>	<b>Proportion of Women</b>		
	<b>High</b>	<b>Low</b>	<b>Total</b>
High/Moderate	3 (75%)	7 (88%)	10
Low	1 (25%)	1 (12%)	2
<b>Total</b>	4 (100%)	8 (100%)	12

tau= -0.15

**Table 4.7. Comparison of Collective Activity with Differences Among Forest Users**

Site Location	Collective Activity	Locational Differences	Locational Differences x Alternate Usage	Wealth Disparity	Sociocultural Heterogeneity
1. Churiyamai (Makwanpur)	High	High	S1 (Hardest)	High	High
2. Bijulikot (Ramechhap)	High	Low	S4 (Easiest)	Low	Moderate
3. Doramba (Ramechhap)	High	Low	S4 (Easiest)	Low	Low
4. Raniswara (Gorkha)	High	High	S3 (Intermediate)	Low	High
5. Bandipur (Tanahun)	High	High	S3 (Intermediate)	High	High
6. Manichaur (Kathmandu)	Moderate	Moderate	S2 (Intermediate)	Low	Low
7. Riyale (Kavre Palanchowk)	Moderate	Low	S2 (Intermediate)	Low	Low
8. Thulo Sirubari (Sindhupalchowk)	Moderate	Moderate	S2 (Intermediate)	Low	Moderate
9. Barbote (Ilam)	Moderate	High	S1 (Hardest)	High	High
10. Bhedetar (Dhankuta)	Moderate	High	S2 (Intermediate)	Low	Moderate
11. Baramchi (Sindhupalchowk)	Low	Moderate	S4 (Easiest)	Low	Moderate
12. Agra (Makwanpur)	Low	Low	S1 (Hardest)	High	Low
13. Chhimkeswari (Tanahun)	Low	Moderate	S2 (Intermediate)	Low	Moderate
14. Chunmang (Dhankuta)	Low	High	S2 (Intermediate)	High	High
15. Bhagwaishan (Kavre Palanchowk)	Low	Moderate	S2 (Intermediate)	Low	Low
16. Sunkhani (Nuwakot)	Low	Moderate	S3 (Intermediate)	High	Moderate
17. Chhoprak (Gorkha)	None	Low	S2 (Intermediate)	Low	Low
18. Shantipur (Ilam)	None	High	S3 (Intermediate)	High	Moderate

## **Chapter Five**

### **Interaction, Trust, and Collective Action: The Role of Enterprising Individuals and Nonlocal Forestry Organizations**

Communities are not just political, administrative, or geographic groupings of individuals. Especially with reference to rural Nepal, communities are groups of interdependent individuals who are linked by a variety of rules, norms, and other institutional arrangements. These links are created and nurtured by patterns of association that, over time, create a reservoir of common understanding, trust, and reciprocity among individuals. By the same token, these links can also be weakened and damaged, and that reservoir depleted, by destructive patterns of individual and group behavior. Distrust rather than trust may grow and threaten the possibilities of effective collective action.

All interactions involve individuals with diverse interests and incentives, who may or may not choose to cooperate depending on their perception of costs and benefits. The actions of forest user groups composed of individuals with a variety of interests and incentives constituted the inquiry in the previous chapter. In this chapter, I look at the influence of patterns of association (as indicated by extent of deliberate interactions) upon cooperation, and the entrepreneurial roles played by certain key individuals and nonlocal forestry organizations (see definition on page 142) in facilitating cooperation within forest user groups.

I begin by discussing the importance of interactions as processes of association that may help to construct stable mutual expectations among participants in any cooperative activity. This discussion sets the stage for examining interactions among individuals in

forest-using communities as well as interactions between forest-using communities and relevant government functionaries in the eighteen cases in this study. The primary task is to understand how these two arenas of interactions influence the initiation and continuation of local collective activity in forest governance and management. A second task is to understand how key local individuals have pivotal roles in these arenas of interaction. Given the prevailing policy climate of decentralized resource management and the facilitative role envisaged for government organizations, interactions gain importance as deliberate processes of association that encourage the formation of trust and common understanding between the parties involved. The third task for this chapter is to examine some cases in detail to understand how groups who face similar problems in organizing collective action have disparate outcomes.

### **Interactions and Social Capital**

When self-interested individuals enter into cooperative endeavors, there are potentially many outcomes. The specific outcomes to emerge often depend on the way participants perceive each other's intentions. From this perspective, a primary objective of many institutional arrangements is to facilitate the construction of stable mutual expectations among participants about each other's willingness to cooperate. Institutional arrangements can be conceptualized not only as formal rules and regulations but also as norms, culture, convention and so on. Both formal and informal institutional constraints affect the way in which individuals relate to one another. These norms and conventions can enhance commitment and cooperation by extending, elaborating, and modifying formal institutions (Miller, 1992; North, 1990).

The concept of social capital has been used in recent times to explain the positive relationship between civic engagement and net positive benefits for citizens. Social capital makes society more efficient by facilitating coordination and cooperation and more productive by making attainable certain outcomes otherwise not possible (Coleman, 1990; Putnam 1993, 1996). The high levels of civic engagement seen through social networks and organizations have explained successful outcomes in a variety of fields, such as poverty, crime, health, and education. There is a need to know how different types of civic engagement or interaction, both formally structured and informally structured, relate to one another in the process of social capital formation.

While formal institutional constraints emanate from authoritative organizations, informal constraints, such as norms, evolve from social interactions and social structures (Coleman, 1987, 1988). Interactive processes encourage participants in organizations to create credible commitment amongst themselves (Tang ,1994). Processes of association that encourage "meaningful contact" (E. Ostrom, 1995) help build trust and common understanding by aligning individual and collective interests that, in turn, lead to mutually reinforcing expectations (Miller, 1992). Whether or not interactive processes are conceived of and engaged in deliberately, can make the difference between building common understanding and mutual trust among interdependent individuals and the stagnation or erosion of cooperative arrangements in communities.

Association through deliberate interactions can be especially important in relationships that are new and evolving, where parties to the relationship need to stabilize their mutual expectations, build trust, and be able to reduce uncertainty. In settings where traditional decision-making arrangements have been authoritarian and top-down, a

change to participatory and shared decision making would require multiple types of interactions that are of a deliberate nature, directed towards creating trust by overcoming the prejudices, misgivings, and doubts of all parties in the relationship. Interaction seen as deliberate patterns of association among participants directed towards collective activity can be crucial to the organization and successful continuation of that collective activity.

Social capital most often emerges in the course of long-term interdependent relations. Mutually reinforcing expectations in a culture of cooperation can be established and maintained only with consistent strong support from all parties involved. Consistency means that the same level of support for the same set of principles agreed upon is maintained over time. Thus, by working together with the same party over a period of time, elements of social capital are created and modified in an ongoing process. When the same set of actors use mutually recognized norms of behavior, mutual expectations are stabilized and productive cooperation become possible.

The emergence of social capital can be facilitated and maintained in a cooperative endeavor by the leadership or entrepreneurship shown by certain individuals within the concerned community and the relevant aspect of collective activity. This sort of facilitation can be particularly important where there is a history of distrust and misunderstanding within a community or between a community of users and nonlocal organizations. The following discussion addresses the importance of entrepreneurs to processes of interaction and the establishment of trust.

## **Entrepreneurs**

The notion that certain individuals in positions of prominence can influence the outcomes for collective action in a community has held sway in scholarly discussions of leadership for quite some time. Leaders can help develop commitment among participants to a common cause (Popkin, 1988; Shepsle, 1991; Miller, 1992).

In this discussion, I refer to individuals who are enterprising and who perform certain leadership duties in local settings as entrepreneurs. In the Nepali context, these may or may not include those who are frequently called “leaders” in the literature, such as traditional chiefs, landlords, or elected officials. This distinction is important because such individuals may not always be in a position of leadership or be enterprising outside of the immediate arena of collective action. In many instances, their reputation, more than the reputation of the average forest user, enables the aggregation of individuals in a settlement who may not otherwise come together for that particular collective activity. The role of such individuals can be wide ranging—from merely guaranteeing compliance with agreements to initiating and organizing collective action towards a specific end. They may also act as trusted spokespersons who are relied upon to represent their respective groups to nonlocal organizations and, in turn, act as relays back to their communities. In societies where traditional leaders or elected officials may not always be seen as egalitarian and impartial, enterprising individuals can function as emissaries outside traditionally established channels of communications between local communities and nonlocal organizations. More often than not, such individuals are also found to be held in high regard (in Nepali, *maan* or *summaan*) and include teachers, retired soldiers, social workers, and sometimes even past government servants.



Entrepreneurs can be of importance both at the time of initiating collective action as well as during ongoing collective activity. Sometimes entrepreneurs may be those who have some wealth. In that case they may be willing to bear the initial costs of organizing if they foresee net benefits, as discussed in the previous chapter. Further, if an enterprising individual is as dependent on the forest resource as most in the community are s/he may expend as much effort as necessary. This effort can involve bringing reluctant parties together, as a mediator. Strategic and coordination requirements for ongoing collective action have costs that can be mitigated by individuals with special skills. Individuals with leadership skills can help focus the behavior of a group onto activities that are of a higher priority than other activities. This sort of guidance helps efficiency of effort and of information transmission within a group. The experience of a retired soldier in teamwork may stand him and his community in good stead if he wants to try out some techniques or ideas seen in his time of service outside of the community. Experienced and educated individuals, both young and old, can be sources of ideas or inspiration for communities. The more their entrepreneurial interests parallel those of the community with regard to forest resources, the more likely the chances that they will play key roles. Thus, on the positive side, patterns of association and the assistance of entrepreneurs can be complementary.

On the other hand, individuals only remain reputable if they are seen to be fair and are subject to some sort of scrutiny by others of the community. If entrepreneurs abuse the trust they enjoy, erosion of public confidence can be expected with concomitant loss of reputation. In arenas where entrepreneurs had valuable roles, the costs of cooperation

can be expected to rise. The same can be true, of course, for those traditionally viewed as leaders.

It is important to note that even when effective leadership exists, achieving cooperation among participants can be a time-consuming process (North, 1993). This may be because of a great degree of diversity or incongruence of interests among participants, which requires an extended process of negotiation and compromise. In this case, the presence of a leader can help start and move along a process that may not even be initiated.

While enterprising individuals may be found in many rural settings in Nepal and elsewhere, whether or not they come forward of their own accord in times of group exigencies related to forest resources, and why, are important questions. In other words, why would an individual be willing to invest effort and resources in initiating or facilitating user group cooperation? Further, did members of the community call upon such an individual in times of group exigency or did the individual unilaterally invest resources? What exactly did s/he do to motivate participants to act in furtherance of common goals? These are questions that are addressed in the discussion of findings in this chapter.

### **Facilitation as a Role for Nonlocal Forestry Organizations**

Current forestry practice in Nepal exists in a legislative framework that reflects the larger, overarching philosophy of decentralized decision making in all aspects of governance. Community forestry in particular has in recent times been at the heart of the decentralization push of the government. The government, through its legislation,

recognizes that villagers can, in many instances, be better managers of local forest resources than government forestry officials located at the district, regional, or national levels. While the current adoption of community forestry may not be a wholehearted embrace of the ability of locals to govern their own resources, it is a grudging acceptance of the difficulty of the task faced earlier when forests were nationalized, to be managed by the centralized department of forestry (DOF). Now, the role of the DOF is not to manage but to facilitate and support the practice of community-based forest resource management.

As outlined earlier in Chapter Two, one of the areas of cooperation I wanted to examine in this study is the arena of interaction related to forest-user/DOF staff cooperation. Interaction between DOF staff and forest users is of particular importance to understand one of the central puzzles of this study: **why some forest user groups perform better than others**. The DOF is represented at the local level by the district forest office (DFO) and its range posts. The DFO is the locus of all nonlocal forestry-related activities in the rural settings of Nepal. By nonlocal I refer to that which *is not of the local community or group of users* in this study. Many nonlocal forestry-related activities of the DFO are supported by financial or technical assistance of donor countries and organizations. I use the term nonlocal forestry organizations to convey the idea that, while community forestry is facilitated through the administrative structure of the department of forests, the not-so-insignificant assistance provided by various donor-aided programs is very influential in the delivery and character of facilitative services. Thus, the term is inclusive of the DFO and any other forestry-related organization in the locale of each of the eighteen cases I examine in this study.

In light of the importance of deliberate interactions being patterns of association that potentially generate trust and common understanding, facilitation can be conceptualized as a set of interactions between local forest users and nonlocal forestry organizations that is meant to help achieve effective, efficient, and equitable forest governance and management. The design of this set of interactions then becomes important in understanding the extent of facilitation achieved by nonlocal forestry organizations. Given that intervention by nonlocals can exacerbate existing asymmetries in communities and bypass or undermine existing social organization, the importance of designing appropriate facilitative arrangements is magnified.

In Chapter Two, I argued that community forestry in Nepal can be conceptualized as a coproductive endeavor between citizen producers and regular producers, especially because of the composite nature of forest resources. The physical attributes of a resource and its products affect its governance and management arrangements. The interdependence in provision of both common-pool goods and public goods is problematic for the provision of forest resources. The costs involved are inseparable. On the one hand, villagers need wood and fodder from a forest. On the other, nonlocal forestry organizations (such as government officials, environmental NGOs, other representatives of the larger community of citizens) would like ecosystem services from that same forest. However, even if villagers organize to provide for a forest area to produce enough wood and fodder, government officials may find that the public good benefits from that forest area are underprovided. How can villagers be induced to provide for a public good? They may not be induced, unless a way of reducing their costs of obtaining benefits from such provision is found. The role of nonlocal forestry

organizations as cost-attenuators is hard to deny in the provision of ecosystem services or other such public goods produced by forest resources. Thus, an arena of interaction exists to coprovide and coproduce these interdependent benefits: this is the arena of collective action between villagers and relevant nonlocal forestry organizations.

While those who drew up the community forestry laws may not have used this theoretical reasoning, there is some level of interaction mandated in the law that relates to organizing, oversight, and enforcement. The level of interaction called for in organizing relates directly to identifying and mobilizing forest users to form formally defined and recognized “forest user groups” to take community control over national forestland. Following that flurry of organizing activity, the DFO stands down and “facilitates” via oversight and enforcement. An oft-cited reason for the oversight legislated for the district forest office in the law is the worry that “villagers [may] take advantage of their newfound power and cut down trees and resort to selling them. What shall we do then?” This oversight is ostensibly intended to ensure that national interests and the interests of the larger community of citizens are protected. In addition to oversight, the enforcement function of the DFO is dormant until there is a written complaint from user group members about intractable problems related to the community forestland in question. Thereafter, it is up to the DFO to investigate and apply sanctions if deemed necessary.

The extent of any of these interactions depends completely upon the District Forest Office's inclination and staff resources. Frequently, paucity of the latter is used as an (almost credible) excuse for the very thin service coverage provided by the DFO to forest users. Even assuming that personnel are available to forest users, the kind of help offered is limited in scope. Neither oversight nor enforcement authority necessarily translate into

**coproduction. If, only oversight and sanctioning functions were envisaged as comprising the set of interactions upon which trust and common understanding were to be built, a coproductive endeavor in community forestry seems improbable at the very outset.**

**The arena of interaction between the department of forests (and other nonlocal forestry organizations) and forest users can be understood in three logical steps. First, in terms of the scope of the interaction as provided for in the community forestry framework. Second, in terms of the extent of interaction during and after the process of user group formation (or if already formed, of legitimization). Third, the presence of other forestry-related organizations who may supplement or complement interactions between forest officials and forest users, before, during, and after user groups are formed and legitimized.**

**Some of the questions that inform this inquiry are:**

- How is the day-to-day working relationship structured between users and forestry staff? How do forest users conceptualize their relationship with the forestry staff and vice versa? How do forestry staffers view their own role in community forestry? Are these views manifested in the rules that structure their working relationship?**
- Do forestry staff members assimilate with or isolate themselves from forest users? How closely are they in touch with forest users? How do they communicate/confer/consult with users? What are the informal and/or formal channels of communication?**

- What are the operating procedures for forestry staff with regard to daily forestry activities such as harvesting? How do these affect their interactions with forest users on a daily basis?

### **Interaction Between Forest User Groups and Nonlocal Forestry Organizations**

Beginning with the Decentralization Act of 1987, a legislative framework for decentralizing a wide range of governmental activities was established. Specifically for forestry, the Master Plan for Forestry (1989) encapsulated the government's new approach to forestry management and governance—that of empowering local communities to manage local forest resources. For the hills of Nepal, particularly, this meant that all accessible forests were to be handed over for community control forthwith (HMG, 1997). This policy stance was adopted partly as a reaction to the government's inability to effectively manage previously nationalized forests and partly because of donor pressures.

The operationalization of this new policy stance began in the late 80s and early 90s, from the last few years of the Panchayat regime to the beginnings of new, democratic processes of government. While the demise of the Panchayat system substantially changed the political context of decentralization at large, and of community-based forestry management, the legislative framework has remained essentially the same, with only minor changes in favor of further facilitation of community-based natural resource management. It is fair to say that the current policy environment, and indeed, the legal framework of forestry in Nepal, is supportive of community-based management. However, whether or not this has resulted in a sharing of power (with regard to forest

governance and management) at the community level is seldom examined and constitutes part of the inquiry in this chapter.

The handing over of national forests to local communities is the focal point of the new role of the department of forestry, as enacted in the 1993 Forest Act and provided for in the 1995 Forest Bylaws. Consequently, much of the effort put forth by the functionaries of the department revolves around expeditiously forming (legally constituting a forest user group) and turning over a given tract of forestland to that group to manage. In fact, the performance of local forestry officials and, by extension, the department, is measured by the acreage of forests handed over and the number of groups formed in a given year. Even the National Planning Commission of the government sets targets for its Five-Year Plans using these performance measures (see, for example, NPC 1992). While objectives and targets are important to have in order to plan, the exclusive use of these measures makes for a tendency to dwell upon information that may not be entirely pertinent for the purpose of assessing sustainability of efforts. For example, the number of registered groups that are in some form of breakdown or have filed complaints, or the extent of benefits—beyond fuel and fodder—that have actually accrued to groups, are indicators that are not used in measuring progress. For one thing, such data is rarely collected or available. As seen in Chapters Three and Four of this study, more than one legitimized user group among the eighteen had problems that were threatening cooperation (e.g. Barbote in Ilam district, Bhedetar in Dhankuta district, Bhagwatisthan in Kavre Palanchowk).

The Forest Act and the Bylaws provide for a systematic process of handing over management control of national forests to local communities.<sup>1</sup> However, the ownership



of the forestland, including rights to transfer management authority or ownership, continues to rest with the national government. In order to hand over management authority to local users, the District Forest Office has to provide technical assistance in researching and preparing a constitution for the user group to be constituted and recognized, and an operational plan for the forest tract that is to be handed over. The user group constitution specifies membership requirements, identifies members (by name), provides rules for establishing an executive body (forest user group committee), lays out rules for the use of revenues generated by sale of forest products, and specifies types and extent of sanctions for rule violators. Unlike the membership rules of the Panchayat days, members of a user group nowadays may be from any administrative jurisdiction just as long as their pattern of local forest use is established.

To function as a legitimate user group, the group has to be registered by the DFO. This takes place after scrutiny of their application and constitution. The next step is to determine and delineate the tract of forestland to be used as community forest. An operational plan is then submitted to the DFO, which contains details of the location and condition of the forestland, silvicultural methods to be applied to protect and improve the forestland, and monitoring and enforcement arrangements to be used in conjunction with management of the forestland. Once the operational plan is approved (after revisions by the DFO if necessary), the DFO issues a legal document that certifies that the user group is authorized to take over management control of the tract of forestland specified in the plan.

The operational plan may be revised by the DFO or by the group after approval by the DFO. The Forest Act and Bylaws provide for oversight of such user groups by requiring

group accounts to be audited and the annual report of state of the group and of the community forest to be submitted to the DFO. The DFO can take back control of the handed-over forest if s/he makes the determination that the operational plan is not being followed or that the group is following destructive practices. The group can appeal the DFO's decision to the Regional Director. The Regional Director makes a final determination, and that determination cannot be appealed.

### **The Extent of Interaction with District Forest Office**

It is clear from the procedures laid out in the Forest Act and in the Bylaws that once the user group constitution and the operational plan are both approved, the role of the DFO is primarily that of oversight and of last-resort assistance in enforcement of user group rules. The majority of the interaction that is mandated and that really occurs between forest users and forest officials takes place before and during the process of handing over national forestland to community forest user groups. The extension role of forest officials while mandated and talked about is not too much in evidence, owing partly to insufficient staffing levels, inadequate training, and a general atmosphere of distrust and suspicion that continues to taint the decades-long relationship between user and official.

In addition to the above-mentioned factors, the physical difficulties associated with Nepal's middle hills pose problems for organizations that seek to support rural community-based resource management. This is especially true of forest resources because of the scattered and altitudinally varied physical distribution of forestlands (Chapter Four). Nowadays, forest or grazing land is usually land that cannot be cultivated

due to the terrain and, as a consequence, is often difficult to access. The reluctance of nonlocals to make deliberate, repeated forays into such physically challenging locations can be understood to some extent because of the hardship involved.

In addition, if a group of users is located distant from the DFO, it is reasonable to expect that they have a much lower level of interaction with nonlocal forestry organizations owing to the remoteness of their location. Visits to such communities by personnel of the DFO and other nonlocal forestry organizations can be as low as once in one or two years. In many of such cases, a group of users may remain informal (as in not recognized) for years, as they continue to be in many parts of Nepal. If there have been intractable problems within the community with regard to the organization of collective activity, help from nonlocal organizations can be expected to take a while. In most cases, the reality is that, regardless of physical location and terrain, most communities try to cope with exigencies and only as a last resort wait upon or solicit nonlocal assistance. In some instances, neighboring communities with experience in organizing may help with particular difficulties in forest management, as happens often in Dhading, Gorkha, and Tanahun districts, for example.

If a group of forest users is located close enough to the local forest office (district forest office or range post), the interaction that is supposed to take place encompasses the prehandover, handover, and posthandover stages as mentioned above. While the chances of deliberate interaction are much higher in such a circumstance, it does not necessarily occur. When interaction does take place, the extent of interaction tends to follow a downward trend from the prehandover stage. What does tend to occur, almost by default,

is a greater level of monitoring by the local forest office; in that sense, the DFO has a visible presence that can be apparent at relatively short notice.

Another very important factor that influences the efforts put forth by DFO personnel as facilitators is the availability of funds or personnel dedicated specifically by donor organizations and governments for community forestry in Nepal. This is discussed in further detail in the following subsection.

### **The Role of Donor Agencies**

The current role of donor agencies with regard to forestry reflects a change in philosophy of assistance to the forestry sector in Nepal. The 1960s and 1970s witnessed an overwhelming emphasis on halting deforestation and increasing the forest cover in Nepal through what may be called technical forestry. This emphasis was partly in response to a worldwide concern about environmental degradation in developing nations. The philosophy of forestry practice in the 1980s and 1990s mirror changes in development thinking not only in Nepal but also around the world—that top-down, finance-heavy assistance was at least not helpful and at most detrimental to long-term development goals. The emphasis was shifted to development work at the grassroots level and community forestry was born of this paradigm shift in development thinking.

Assistance programs of many nations and some multilateral organizations operate in the forest-related sector in Nepal. These donor-aided programs range in size from bilateral projects covering a few districts, such as the Nepal-Australia Community Forestry Project in two districts and the Nepal-UK Community Forestry Project in seven districts, to the largest—the Community Forestry Development Project—which provides

technical assistance and financial support, by way of the World Bank, to 35 hill districts. The 18 sites included in this study are in districts that have various sorts of community-based integrated development program activities, some of which include the community forestry program of the Department of Forests.

The new prioritization of objectives in community-based development efforts has resulted in a variety of modes of assistance to rural communities. For example, the World Bank's assistance for community forestry is delivered exclusively through the auspices of the forest department in multiple districts that have no other bilateral ongoing project. A large portion of this assistance at the local level goes towards strengthening the district forest office's (DFO) administrative capacity by funding more staff and training existing staff for the new role of facilitating community forestry. Like the World Bank, bilateral donors also work through the Department of Forests but have local project offices and project staff.

Another mode of assistance is that rendered by the Nepal Australia Community Resource Management Project in two hill/mountain districts—Sindhu Palchowk and Kavre Palanchowk—in central Nepal. This project has moved away from an emphasis on community forestry and now focuses on wider issues of natural resource management, such as upper slope management, private forestry, and agroforestry, and supports the strengthening of NGOs to assist the community forestry and community development process.

A somewhat related way of assisting user groups is by integrating community forestry efforts with broader community development projects. For example, the Nepal Resource Management Project is funded by the United States Agency for International

Development and implemented in six VDCs of two hill districts. A major focus of this project is adult literacy and skill development in basic construction and maintenance technique, bookkeeping, sanitation, and so on (Kanel, 1997). The basic approach of the project is through the facilitation of group formation to implement the construction and management of drinking water systems, management of community forests, and conduct resource awareness classes. In addition to improvement in physical wellbeing, an impressive outcome has been the establishment of positive working relationships among villagers as well as between villagers and government staff (Kanel, 1997).

On the other hand, donor-funded programs, while viewed as essential, have met with mixed results. While a lot of the success has been seen during the term of a project or program, once some of these projects are terminated, the investments made begin to disintegrate. In addition, because many of these programs are capital and material intensive and only of four to six years' duration (Kanel, 1995), their termination seems to have a major effect partly because their inputs are substantial and packed into a short period of time. In this sense, the current *modus operandi*—of working through the DFO—conceals from outsiders the disturbance of program termination experienced by the user groups involved. Without the financial support of a donor project, the DFO staffing levels drop with an accompanying decline in existing services to local communities.

The sustainability of these programs is suspect in many instances because of the basis upon which their roles in assistance are conceptualized. While all donors have the objective of community development through community forestry, and all of them work with the Department of Forests, the approaches deployed vary from donor to donor. In

most instances, these approaches are distinguishable by the structure of their partnership with the Department of Forests and the manner in which assistance is implemented at the local level. A comparison of these approaches is not part of this study; however, I do look at the effect of donor assistance in some of the cases in my study.

Using the discussion of interaction above, the study now turns to a comparison of the eighteen cases with a view to understand how the extent and nature of their interactions affect the creation and maintenance of elements of social capital such as trust and common understanding.

### **Findings**

The strength of association between collective action of any sort in the present can be ascertained in part by the record of collective action in the past for the group. This collective action refers to the organization of collective activity excluding the quotidian interactions that are the norm of village life. Has the group come together to find solutions to other resource problems? For example, do they have an irrigation water user group or drinking water user group, at present? What about in the past? Further, in their current forestry-related interactions, whether or not group members meet periodically in any organized forum to discuss group issues, ideas, and conflicts determines to some extent their mutual understanding and certainty about each other's behavior. In table 5.1, information about these questions is arrayed for each of the eighteen sites.

The information in table 5.5 indicates that eight of the 18 cases have some type of collective activity ongoing at the current time that is organized around community resources other than forests. Of these eight cases, six (sites 3, 4, 5, 6, 9,10) have moderate

to high levels of collective activity organized currently around forest governance and management while two (sites 15, 16) have low levels. The table also shows that ten of the 18 cases have had experience with these kinds of collective activity in the past. Five of these ten cases (sites 3, 4, 5, 6, 9) are those that currently show moderate to high levels of collective activity in forest and other resource management. One of these ten cases (site 15) shows currently low levels of collective activity with regard to forest resources. Three of these ten groups (sites 12, 13, 17) show little on no collective activity organized around any natural resource (including forests) in their communities while one of these ten groups (site 2) shows a high level of collective activity with respect to forest resources but none with respect to other resources.

For this study, the cases which have little or no collective activity at present but have had some activity in the past (table 5.1: sites 12, 13, 15, 17) point to at least two explanations: *(a)* the reason for past cooperation may no longer be salient and *(b)* past cooperation may have created some negative social capital, i.e., there may have been a costly breakdown of group relations resulting from the cooperative activity. The former explanation is not very plausible given that the question relates to collective activity organized around the management of natural resources—unless the resource ceased to exist, the reason for cooperation can be expected to remain salient especially in these marginal, agriculture-dependent areas. The more likely explanation is that patterns of interaction in the past resulted in the breakdown of positive relations between parties to the interaction. The analysis in this chapter does include a closer look at the cases that have had cooperation only in the past to try and understand what may be some barriers to cooperation at present (see discussion).



In a further step of the analysis, the responses to the questions on interaction were then used to create an index of interaction to understand the association between interaction of a deliberate kind within groups and levels of collective activity seen in those groups. If a group is organized for collective activity in any other resource area at present, an interaction score of 1 was assigned. Similarly, if the group had been organized in the past (and not necessarily at present), an interaction score of 1 was assigned. Not being organized in other resource management activity at present or in the past got a score of 0. The current level of interaction in forest-related activity was scored by assigning values of 1, 2, and 3 to the low, moderate, and high levels, respectively, of meetings noted for the forest user committee and for the general user group body. This permitted a maximum value of 8 and a minimum value of 0 on the index of interaction. This index was then used to categorize high and low levels of deliberate association within groups, which, in turn, is used to compare levels of collective activity in the eighteen groups studied (table 5.2).

Table 5.2 shows that half each of the 18 cases show high or low levels of deliberate association within the groups. Eight of nine cases (89%) with high levels of deliberate association have moderate to high levels of collective activity while seven of nine cases (78%) with low levels of association have low levels of collective activity as well. Across table 5.2, in all five cases with high levels of collective activity, high levels of deliberate association are seen. In seven of eight cases with low collective activity, low levels of deliberate association are seen. Table 5.2 shows that in a simple comparison, patterns of deliberate association within the groups are strongly and positively associated with levels of collective activity in forest governance and management in the 18 cases ( $\tau=0.79$ ).

The information for evidence of entrepreneurship or leadership shown by an individual was obtained from a question that asks whether or not any individual has acted as a leader or entrepreneur and invested time, effort, or money in activities related to this group. This information was then confirmed by studying the written history of the group (if available) and by the accounts of diverse individuals in the settlements comprising the study site. Table 5.3 arrays evidence of entrepreneurial and leadership activity by individual members in the eighteen cases.

Among the 18 cases, only five evidenced entrepreneurial or leadership activities by individuals. Of these, four were seen in cases that had high levels of collective activity (2, 3, 4, and 5) while one was seen in a case with moderate levels of collective activity (site 9). There was no evidence of entrepreneurship or leadership shown (except in politics) in the cases that had low levels of collective activity in forest management or governance. In Chunmang (site 14), however, there was one individual—sometimes accompanied by some others—who was beginning to get quite involved in raising questions about the current state of affairs regarding the use of the forests in and around their community. This site, as discussed in Chapters Three and Four, is divided along ethnic and caste lines and has been subject to some manipulation by the elite of the locale. The individual in question, although from a higher caste, is quite liberal in philosophy and practice and has been labeled a reactionary by the dominant group.

Most of the cases in this study (13 of 18) can be considered influenced by external intervention, i.e., one or other type of development program of the government or donor agency is being implemented in the vicinity. However, whether or not these are general development projects or forestry-specific efforts focused on any of these groups is

another question. For example, the government's own community forestry program is implemented in some of the districts in this study. In other districts, there are donor agencies that work through and with the government's offices to facilitate the process of forming and legalizing community forest user groups. The outcomes of these forestry-related efforts are influenced in part by the approach deployed in project implementation. In this comparison (table 5.4), one can see that most of the groups in this study have exposure to at least one more nonlocal forestry entity (besides the local forestry office).

On the surface, the distribution across the 18 cases shows that the presence of a nonlocal forestry-related organization does not systematically compare with levels of collective activity in the groups. As such, this observation may obscure the efforts put forth by nonlocal forestry organizations in the districts of this study—such as the Hills Leasehold Fodder and Forage Development Program, Nepal-UK Community Forestry Program, Shivapuri Integrated Watershed Development Project, and Participatory Upland Conservation and Development project—who have invested substantially in building organizational and technical skills and encouraging local-level collective action in their project areas through the district forest office and their own project offices. Efforts of such nonlocal forestry organizations and their investments through the DFO constitute the core of nonlocal efforts at encouraging community-based forest management and governance. The outcomes of these projects has been mixed.

A closer look is warranted at what the district forest office and related organizations do in the course of their forestry-related work that may facilitate cooperation in these groups. One way to take a look at the functioning of such organizations is to compare them on the basis of the extent of interaction they have with local forest users. Whether

or not a group is formally recognized by the DFO indicates some level of interaction at the time of formation and legitimization. Donor agencies are frequently involved at these times of interaction. In addition, whether or not there are any interactions ongoing at the present time indicates to some degree the current level of facilitation. The information pertaining to these questions is presented in table 5.5.

Of the 18 cases in table 5.5, eight have been handed over by the DFO to the local communities and have been legally recognized community forest user groups, the oldest being six years old (site 4) and the youngest one year (site 7) at the time of this study. Four groups are in the process of being handed over (sites 1, 2, 15, and 17). This indicates that some level of interaction is going on between users and nonlocal forest organizations in the area with respect to drafting of constitutions and operational plans for the soon-to-be community forest user groups in these sites. Only one of these cases (site 17) shows a high level of current interaction—indicating the likelihood of being formalized as a community forest user group in the near future—unlike the other three which range from low to moderate levels of current interaction.

This information was then used to create an index of interaction to understand the level of association between interaction of a deliberate kind with nonlocal organizations and level of collective activity seen in user groups. If a group was formalized (as in “registered”) or in the process of being formalized, the interaction score assigned was 1, while being informal or not in the process of being formalized got a score of 0. The current level of interaction was scored as in table 5.2 by assigning values of 1, 2, and 3 respectively to the low, moderate, and high levels of interactions noted. This permitted a maximum value of 4 and a minimum value of 0 on the index of interaction. This index

was then used to categorize high and low levels of deliberate association between local forest users and nonlocal forestry organizations, which, in turn, is used to compare levels of collective activity in the eighteen groups studied (table 5.6). The presence or absence of nonlocal forestry organizations *besides* the DFO was not used in constructing the index because, as noted earlier, in the districts of this study these organizations work through the auspices of the DFO organizational structure to support community forestry.<sup>2</sup>

The level of deliberate association was seen to be high in only seven of the eighteen cases (table 5.6). Of these, six (86%) showed moderate to high levels of collective activity. Of the 11 cases with low levels of deliberate association, seven (64%) showed low levels of collective activity while four showed moderate to high levels of collective activity. Looking across table 5.6, four of five cases with high levels of collective activity were noted to have a high level of deliberate association with nonlocal forestry organizations. Of the eight cases seen to have low levels of collective activity, seven had low levels of deliberate association with nonlocal forestry organizations. The association between levels of deliberate association and of collective activity is positive and moderately strong ( $\tau=0.59$ ).

## **Discussion**

The information in the tables illustrated somewhat the variation in collective activity levels with variation in levels of deliberate association. Table 5.7 summarizes the findings for patterns of deliberate association up to this point of the discussion along with evidence of entrepreneurship or leadership. A cursory look indicates that levels of deliberate association do have a systematic relationship with levels of collective activity.

What is more interesting to note is that almost all cases with low levels of association within groups (except 14), as well as between groups and nonlocal forestry organizations (except 17), had low levels of collective activity in forest-related matters. Further, these groups did not have any individual who performed in a leadership role or as an entrepreneur in forest-related matters. In the cases with moderate to high levels of collective activity, there was more variation seen with respect to levels of deliberate association although greater interaction within groups continued to be consistently associated with high levels of collective activity. The same was true for user group interaction with nonlocal forestry organizations, with the exception of site 2, Bijulikot in Ramechhap district.

Having noted the systematic variation of collective activity with levels of interaction, it becomes necessary to understand how that variation occurs. From the earlier discussion, we have seen that long-term interaction among interdependent actors can lead to the generation of elements of social capital. Under normal circumstances, patterns of association within groups can be expected to be of a longer term than patterns of association with nonlocal organizations. With that as a point of departure, a look at the eighteen cases above brings up two pertinent questions:

- Why do some rural, natural-resource dependent communities have lower interactions among themselves when it is in their interest to do the opposite, i.e., to cooperate?
- Are high levels of association with nonlocal forest organizations a result of successful interaction (and collective action) within groups?

The cases that show low levels of intragroup association are of much interest particularly because these present potential entry-points for assistance programs which seek to promote cooperation at local levels. The design of assistance programs depends as much on the lessons learned from such cases as it would from those cases that have been successful. The cases that show high levels of intragroup association will help elucidate the role of entrepreneurs or leaders and the manner in which high levels of interaction with nonlocal organizations may have resulted.

### **Low Levels Of Interaction**

Turning to site 17, in Chhoprak VDC of Gorkha district, we note that collective activity is nonexistent, association within the group of forest users is low, and association with nonlocal forest organizations is high. Although this site is about three-hours' hard walk from the nearest all-weather road, it is not considered remote, and the settlements are quite old. The forest is very degraded with topsoil washed away into gullies in many places. There are six settlements scattered around this forest, each mostly homogeneous of composition in caste. Residents within a settlement may cooperate but do not with those of other settlements, least of all for protecting the forest in question which has less and less to offer. Most villagers have gotten used to going to their own *bari* (unirrigated land) for fuel and fodder, which they supplement by going into a nearby government forest. Most households have reduced their livestock holdings for lack of fodder supply. The forests neighboring this site have, one by one, been turned over as legally registered community forests to other communities and restrict entry to the residents of these six settlements. In spite of the obvious reasons to begin constrained use and protection of

their own forest, people in this area continue to view each other and outsiders with considerable suspicion.

The forest, and the watershed it is in, comprises part of the project area of the Participatory Upland Conservation and Development (PUCD) project, a 5-year old integrated development project that works through the District Soil Conservation and District Forest Offices. This area has had projects focused on resource conservation and participatory rural development for over 15 years, of which the PUCD project is the latest. Until quite recently, there was very little to show for the large amounts of aid and expertise supplied here. In fact, most locals agree that more harm than good has come of all these assistance programs and it is hard to find an outsider who would disagree. The last big project—Resources Conservation and Utilization Project funded by USAID—created a lot of illwill among members of the communities and distrust for outsiders. Some of the communities were discriminated against by these projects because their traditional caste-related position forced them to be secondary and tertiary beneficiaries, whereas the higher-caste villages got more project attention and largesse.

A separate, fenced-in project field office was established in the early days and to this day continues to serve as a training facility and nursery for the PUCD's forest-related work in the area. From time to time, villagers are hired for piecemeal labor in maintenance and other activities of the project. When PUCD project staff are asked, they say that there is a history of non-cooperation among villages as well as with outsiders in this particular area. A user group has been formed twice for this forest with no success, and a third attempt is now being made by a eager young forest officer from the Terai who brings a lot of enthusiasm to the task.



While most villagers want to “grow” the forest and view the latest efforts more favorably than past ones, they also blame caste-related tensions, favoritism for certain village groups by projects, lack of education among the lower castes, and so on, as the some reasons why villagers in this area find it hard to work together. Recently, a concerted effort by the PUCD to use local community members as group facilitators for the promotion of adult literacy, resource conservation, credit and savings, and so on, have met with the approval and cooperation of the local residents. According to the residents of this area, a lot more interaction of this nature will be required to overcome prejudice towards projects and help build trust among communities who were alienated from each other by earlier development efforts.

In Bhagwatisthan VDC of Kavre Palanchok district, collective activity in community forestry is low, interaction within the forest user group is high, and interaction with nonlocal forest organizations is low. This site is about 54 km east of Kathmandu and is accessible by an all-weather road. There is regular public transportation to and from Kathmandu and the average time taken to travel this distance is 3 hours. However, most local development offices are located nearer this site and provide administrative, credit, and agricultural input facilities. This site is popular among religious tourists who come to pay homage to the Bhagwati goddess whose temple is located within the VDC and less than 20 minutes walk from the site. A lot of the income-related activities relate to capturing tourist revenue from the visitors to the temple. In addition, selling land to the elite from Kathmandu, raising cash crops, and sending a household member to urban areas for employment are other sources of income.

This site has three settlements that lie on ridgetops close to each other along the road that provides access to the site. The forested area is 108 hectares and, before 1994, the entire forest was available for use to residents of the three settlements, as the primary users. Since then, this forest has been separated into a community forest compartment of 30 hectares and a leasehold forest compartment of 78 hectares under the Hills Leasehold Forestry and Forage Development Project (HLFFDP) of the government. The community compartment is available to the entire community (of these 3 settlements) for restricted use. The leasehold compartment is further divided into 8 blocks and assigned exclusively to 8 lessee groups.

Until 1994, even though there was informal organization for forest protection and regulation of use, the conservation measures adopted by the community to protect the forest were lax, and if harvesting had continued at the pre-1994 rate the sustainability of the forest could have been endangered. This was one important reason given for the HLFFDP to initiate its program in 1994. Now, the lessee groups protect their areas from grazing and make sure that the regulations for harvesting forest products are strictly followed in the leasehold area. The leasehold blocks provide grass that is sold for thatch and fuel adequate for household use but have very few trees. The community forest portion, however, has degraded even further although not completely.

Part of the accelerated decline in community forest condition came about after the HLFFDP established leasehold groups for degraded patches seen in the larger community forest area. Lessees are typically the most marginal of households (usually landless and minorities) in a community; giving them patches of forestland in lessee groups—however degraded—is one way to provide some support for their livelihoods. In Bhagwatisthan,

almost all of the households were identified as marginal (59 of 70) and, thus, divided into lessee groups and apportioned degraded land carved out from existing forestland.

It is not clear how all households qualified as “marginal,” especially in an area where alternate income-generating opportunities exist and where several households are visibly better off than the rest. It is quite clear, however, that this externally-sponsored transformation of use-rights served to dissipate community efforts that were traditionally geared towards a large, common forest and diverted the entire community’s energies to newly formed leasehold forests in the site while making no arrangements for the remaining forest area. This may not have been the case if a better understanding had been gained about the community’s socioeconomic characteristics and existing patterns of resource use before establishing leasehold groups.

The above two cases illustrate problems of assistance programs that left a legacy of negative social capital that is proving quite difficult to deal with (Chhoprak) and exacerbated the problem that assistance was designed to address (Bhagwatisthan). In the former case (Chhoprak), extant internal differences were made worse by earlier interventions. The current project (PUCD) has adopted a more interactive approach that invests most effort in self-assessment of problems and needs by the communities of Chhoprak. The extent of interaction between communities is still low under this approach, whereas project interaction is quite high and less costly to communities. In Bhagwatisthan, there is not much interaction with regard to nonlocal forestry organizations despite the fact that there have been plans made to hand over the community forest segment since 1995. The forest ranger assigned by the HLFFDP has multiple responsibilities and finds it quite hard to maintain a regular visiting schedule. On

the other hand, the interactions within the community are somewhat high because of their involvement with temple affairs, commerce (shops, rice and oil mills, and youth clubs), and politics.

Another case with low internal and external interactions, Shantipur VDC of Ilam district, illustrates problems of dealing with a history of corruption and abuse of authority by government officials coupled with unconstrained use by local residents. This site is four hours walk from a fair-weather road and six hours from the nearest market; the thick and lush government forest of 90 hectares is degrading rapidly. There is indiscriminate felling of valuable trees, used more for fuel than for timber. Many trees show signs of being hacked for no apparent reason. Wood rots on the forest floor. The four villages immediately surrounding this forest are caste-based settlements, with one recently formed of members of an ethnic group who migrated into this area. These settlements do not have a common understanding or position about the state of their forest nor for the need to constrain use. The population is stable and other villages do not use this forest. There is widespread land grabbing using the ages-old method of planting a few crops in some forestland and then claiming that land as one's own. The District Forest Office regards this area remote and forest rangers have been here only once in the last three years. Government officials are not liked here, villagers make reference to a time few years back (before democracy in 1990) when forest guards used to roam at will around here extorting money, liquor, and chickens in exchange for not arresting someone on some trumped-up charge. At the same time the guards obliged the ones who paid by looking the other way when timber was stolen.

The villagers say that times are better now, even with the degrading forest, without having to deal with the forest guards. Even if resources are more than enough for present needs, some of the villagers think that it is important to begin some efforts to protect the forest. However, no one within the settlements has proposed the forming of a group; nor has the government shown any interest in this area. When asked, the district forest officials indicated that they were not welcome in this area and that, with all the other work they have to do, forming a user group in Shantipur is the least of their worries.

### **High Levels Of Interaction And The Role Of Entrepreneurs Or Leaders**

In the cases with high collective activity, leadership or entrepreneurial activity with regard to forest-related activities is seen in four of five (2, 3, 4, 5). Here, the role of a leader or entrepreneur varied from that of facilitator (preparing notices and minutes, training) to innovator (e.g., new methods of silviculture, innovative membership rules and management guidelines) to mediator (between users and between the group and forest officials). While it is hard to say that any one individual initiated the high level of collective activity in these cases, the efforts put forth by individuals in specific roles helped groups to cope with a slew of problems that came along in the course of the groups' efforts at forest management.

For example, in Raniswara (site 4), two individuals work in tandem in problem solving. In technical matters involving silviculture, training, and group organization, the secretary (also the primary schoolteacher) plays the active role. He is involved in going to regional workshops to be trained in silvicultural techniques, which he then passes on to the group. He also is responsible for designing some of the rules of maintenance and

subcommittee formation. The chairman of the group, on the other hand, is more involved in visiting with the district forest office and the VDC offices. Both participate in training members of other user groups in the area and have been office bearers for a long time. Because of their active involvement in group activities and the trust they enjoy, nonlocal organizations first approach these two individuals for most matters that concern any of the settlements that comprise this forest user group. The group has become the entire community's entry point for all manner of interactions with outsiders.

In Bandipur (site 5), the chairman of the group is particularly involved in mediation, enforcement, and public relations. He has half-seriously lamented that other members of the committee for this user group prefer him to do a majority of these tasks because of his reputation as an honest, literate, and knowledgeable individual (he is a retired soldier). He has introduced innovative conservation schemes, recycling techniques, and even some strict sanction mechanisms in this group. Further, he has been instrumental in representing the group in litigation involving the proposed use of a portion of their community forest by a private tourism agency. Above all, his facility with written and verbal communication, some knowledge of the law, and ease with those in positions of authority or influence (the district officials, NGO representatives) has enabled this group to take advantage of NGO and government assistance programs that are offered in the area.

Groups with high levels of interactions also tended to have membership rules that required a minimum level participation. Just like the rules that pertained to harvest, these rules applied in a graduated fashion, although relatively heavier in application. For example, missing a group meeting once is liable to a fine that is increased for a second

violation. Primary membership can be revoked by a vote at the general body meeting of the user group if a household continues to miss group meetings or activities. Depending on the user group, this household can then become a secondary or tertiary- type member. In an interesting variation of a membership rule that applies to participation and attendance, those who attend group meetings or activities are not allowed to discuss politics. First offenders get reprimanded; second-time offenders get fined; and third-time offenders risk losing their membership. The seriousness of this rule shows how divisive and costly (the talk of) politics can be in rural Nepal.

### **Some Interesting Variations**

In Chapters Three and Four, I discussed the case of Barbote VDC (site 9 in Table 5.7) of Ilam district in far-east Nepal, where there is a community forest that is looked after by a group formally registered as a user group six years ago. I noted that most of the villagers had lived in the area for 5-6 generations and that, despite a history of cooperation, after the formation and registration of the user group by the district forest office, things began to break down. The executive committee of the group has undergone some upheavals in the past three or four years owing to corruption charges made upon the secretary and chairman. These tensions caused substantial suspicion for officeholders and the purpose of a formal user group. Table 5.7 shows that collective action in this group is moderate; internal association is moderate; and interaction with nonlocal forest organizations is low. This group has problems owing to indistinct membership, locational difficulty, and mistrust of group office bearers. I also noted that there is one individual in this group who acts as the organizer, facilitator, and advisor-at-large. This individual also

happens to be a former career forest guard who, after retirement, decided to be involved more deeply with forest management in his area (personal communication). This former forest guard is involved in, and usually initiates most of the activities that relate to managing the community's forest. He also is the one who writes petitions and complaints on behalf of the group to the district forest office. It is safe to say that, were it not for him, group cooperation would have completely broken down long ago. This fact has been attested to by several group members and it may be only a matter of time that even he, without internal or external assistance, will find his efforts making less of a difference.

Two of the sites visited for this study are located in Dhankuta district (sites 10 and 14). This district has a long history of donor-led assistance that has mainly been in the form of British-funded assistance in infrastructure development (roads), research and technical assistance in the "green" sector (e.g. agriculture, forests, agroforestry, seeds), and institutional capacity building for various government entities. The Nepal-UK Community Forestry Project has been involved in Dhankuta—as it has in three other districts of east Nepal and three more in west Nepal—for several years now with the primary aim of enhancing the capability of the Department of Forests to support community forestry, and, thus, helping forest user groups to sustainably use community forests (DFID 1998). In addition, Dhankuta has extensive NGO involvement.

While site 14 (Chunmang) has not had any interaction to speak of with the project or DFO offices, site 10 (Bhedetar) has had a registered user group for the past five years and was among the first to be formally recognized by the DFO in this district. Although the DFO cites their community forest as a successful example, the villagers and committee officers themselves are dissatisfied with the level of participation of users in maintenance



activities, the support (or lack thereof) of the DFO, the level of conformance to rules constraining harvest of timber, and poaching of valuable timber species along the road bordering the community forest.

In addition to the usual costs they face in terms of managing the forest, the committee members find that it is getting too costly to adhere to the guidelines of the DFO in this district. The chairman of the group goes for training and interaction sessions every quarter, organized by the NUKCFP. He finds that these required sessions take too much time away from his farmstead and also costs too much money for a user group to bear on its own. According to the chairman, there is more benefit realized for the DFO than the user groups by these meetings. For one, each group chairman has to prepare quarterly progress reports and present these at the meetings. The district forest office uses these reports to monitor progress on each of the groups that are part of the community forestry program. On the other hand, except for a couple of notices asking the group to explain the felling of timber trees along the road and the occasional annual visit from the ranger office, the officials at the DFO do not come to the community's settlements and, rather, rely on the chairman's reports for information. The villagers think that the government is shirking some of its duties by passing on the costs of forest management to villagers. They also do not understand why, in the presence of a very active and strong donor, costs to the community are higher than when the group was an informal one.

### **Conclusion**

The findings of this chapter's examination of interactions as generators of social capital are threefold: (a) interactions within groups are important for success in

cooperation and leaders play a critical role in facilitating these; (b) successful groups define the level and extent of their interactions with nonlocal forest organizations on the basis of need and in the presence of some functional autonomy; and (c) low levels of interactions within groups can result from socioeconomic cleavages within a group or from the exacerbation or creation of such cleavages by ill-informed efforts on the part of external assistance programs.

These findings suggest that groups with low levels of internal interactions may present the best cases for outside assistance after careful research of their particular circumstances and of previous external assistance (if given). Communities like Shantipur (site 18), who have adequate forest resources but show a lack of concern for their forest's slow but sure degradation, may need a different approach from Chhoprak (site 17), where neither is the forest adequate nor have users succeeded in cooperation. The situation in Shantipur may be because of the relative ease of accessibility of forest products. Where products are relatively accessible, may not actively participate in forest management activities (Gilmour, 1987). Where there is a perceived need, villagers have proved themselves to be quite capable of positive response (Fisher, 1988).

In groups with high levels of internal interaction, some understanding of specific needs as articulated by members or their representatives is necessary. Frequently, such groups, whether or not formalized, have a good understanding of pressing needs that cannot be addressed by the group alone. The durability of cooperation within groups can hinge upon adequate solutions for such needs. Therefore, instead of following a strategy of leave-alone after handing over, or of despairing because of the lack of resources to actively support groups, a mechanism to address specific needs of a group (separate from

handing over) can be designed. Such a mechanism can utilize low-cost modes of interaction and resources that can be made available through nonlocal forestry organizations in addition to the government's agencies. Conversely, an all-out effort at handing over forests without careful assessment of extant circumstances or specific needs may generate counterintentional outcomes that are costly to a group and detrimental to the long-term goal of sustainable community forestry.

We have seen that certain individuals play critical roles in community organization, from facilitating and innovating to mediating and leading. In none of these cases were these individuals the richest nor were they political leaders. Instead they were the more experienced or more educated. In one case where external assistance was not available (Barbote), a single person's efforts were holding a group together against great odds to perform the minimum activities necessary to sustain their community's forest. Similarly, certain individuals in the user groups of Bijulikot, Doramba, Raniswara, and Bandipur play important roles in the smooth functioning of forest-related activities. Thus, instead of regarding all leaders or entrepreneurs as threats to cooperation at the very outset, careful and transparent interaction with individuals who show leadership and enterprise during the course of assistance to a user group may serve to reduce some of the costs associated with fostering cooperation.

One of the important findings from two of the successful groups in this study is that of the fortuitous emergence of "spaces" within which these groups have enjoyed relative freedom to innovate and experiment with ideas. These spaces were accidentally discovered when group members started taking advantage of the gaps in supervision or oversight by the DFO. Instead of toeing the government line in terms of adhering to the

user group blueprint for institutional arrangements, some groups, with the help of enterprising individuals, have come up with ideas that help them deal with problems unique to their circumstances. While one group does this with amazing frequency and gumption—saying that as long as their community forest is in good shape, the DFO won't care—the other does so with some trepidation, since flexibility in institutional choice is not an option currently within the legal framework of community forestry in Nepal. It would follow that less successful groups would be even more leery of exploiting some of this “freedom-by-chance” that exists in the absence of active DFO involvement. In the next chapter, I argue that legally creating “space” for user groups to experiment without fear of repercussions may actually be beneficial for both parties.

This chapter began by looking at the importance of interaction between actors as a form of social capital as well as a means to generate social capital. The value of social capital in reducing uncertainty and stabilizing mutual expectations was discussed. In particular, trust or trustworthiness is of great value to partnerships; trust is a rare commodity in user-official relationships in Nepal and sometimes even among forest users. There are multiple reasons to suspect and mistrust someone, often, valid reasons. In Nepal, development interventions have often ignored or invalidated preexisting social capital such as rules-in-use, norms, and forms of social organization, which have evolved or have been crafted by rural, interdependent households and communities over an extended period of time. Especially in natural resource-based arenas, ill-designed and ill-equipped programs of assistance have had deleterious effects on longstanding patterns of trust, reciprocity, and common understanding in rural communities. The history of illwill and distrust in forest-related interactions between government and rural folk has created

an atmosphere of uncertainty about mutual expectations between users as well as with government forest staff.

When an experiment in community forestry begins with the perspective that pre-existing social capital such as indigenous rules are too primitive and unreasonable or that social capital just does not exist (this is less the case nowadays), implementation becomes problematic. Institutional arrangements, whether indigenously crafted or externally sponsored, depend upon a host of elements to become functional and effective. Elements such as common understanding and trust take a significant amount of time to develop. Such elements are already present in most cooperative situations and they need to be recognized and nurtured. When prior social capital is ignored in the design of intervention mechanisms, the cooperative effort is hobbled at the outset.

Institutional arrangements can be designed to help interdependent individuals overcome obstacles to cooperation by reducing the uncertainties associated with inadequate information and opportunistic behavior (Ostrom, 1990; Lam, 1998). However, the viability of such arrangements is also dependent upon the creation and nurture of other elements of social capital such as mutual trust and reciprocity, accountability, and common understanding, a lot of which may already exist between individuals. These elements, together with existing rules-in-use, are not a result of happenstance; they emerge as a result of social processes and are fragile creations in constant need of attentive care. The erosion, and often destruction, of social capital may be the unintended consequence of institutional designs that fail to overtly recognize its instrumentality to cooperative problem solving. Viewed in this light, assistance programs

for community forestry in Nepal—if envisaged as partnerships—stand a better chance if they are designed with mechanisms that nurture and create trust.

Too often, interventions create or increase gaps between DOF staff and forest users that work against partnership. Institutional arrangements do not incorporate features that encourage processes of association between DOF staff and forest users other than in situations where enforcement or "training" has to take place. These arrangements frequently create divisions among users as well, which result in tensions. When "partners" associate and interact only to enforce, social capital may not be created or nurtured. Mutual trust emerges out of association with one another (V. Ostrom, 1995) and community forestry initiatives that encourage meaningful interactions between individuals, both staff and users, create stable and credible expectations.

I have argued that the complexity of forests and the interdependence of the multitude of forest benefits require forms of partnership that go beyond what is currently implemented in Nepal. Questions that relate to the design of productive partnership in community forestry constitute the focus of the next chapter of this study.

## **Notes**

1. The rest of the discussion in this subsection draws extensively on HMG 1993, 1995 and 1997.
2. I have chosen not to discuss the relationship of formalization of user group to level of collective activity precisely because it is too much of a “black box,” and an analysis centered on group formalization tends to be a little misleading. Instead, I have looked at what takes place before, during, and after this process—in a sense “unpacking” the box—so as to point to some places that we might look to for answers to current as well as potential problems of cooperation.

**Table 5.1. Extent of Deliberate Association Within Groups**

<b>Site Location</b>	<b>Collective Activity</b>	<b>Present Collective Activity (besides Forestry)</b>	<b>Any Past Collective Activity</b>	<b>Committee Meetings</b>	<b>General Assembly Meetings</b>
1. Churiyamai (Makwanpur)	High	No	No	High	High
2. Bijulikot (Ramechhap)	High	No	Yes	High	High
3. Doramba (Ramechhap)	High	Yes	Yes	Moderate	Moderate
4. Raniswara (Gorkha)	High	Yes	Yes	High	High
5. Bandipur (Tanahun)	High	Yes	Yes	High	High
6. Manichaur (Kathmandu)	Moderate	Yes	Yes	Low	Low
7. Riyale (Kavre Palanchowk)	Moderate	No	No	High	High
8. Thulo Sirubari (Sindhupalchowk)	Moderate	No	No	Low	High
9. Barbote (Ilam)	Moderate	Yes	Yes	High	Low
10. Bhedetar (Dhankuta)	Moderate	Yes	No	High	Moderate
11. Baramchi (Sindhupalchowk)	Low	No	No	Low	Low
12. Agra (Makwanpur)	Low	No	Yes	Low	Low
13. Chhimkeswari (Tanahun)	Low	No	Yes	None	None
14. Chunmang (Dhankuta)	Low	No	No	None	None
15. Bhagwatisthan (Kavre Palanchowk)	Low	Yes	Yes	Moderate	Moderate
16. Sunkhani (Nuwakot)	Low	Yes	No	None	None
17. Chhoprak (Gorkha)	None	No	Yes	None	Low
18. Shantipur (Ilam)	None	No	No	None	None



**Table 5.2. Collective Activity by Deliberate Association within Groups**

Collective Activity	Level of Deliberate Association		
	High	Low	Total
High	5 (56%)	0	5
Moderate	3 (33%)	2 (22%)	5
Low	1 (11%)	7 (78%)	8
<b>Total</b>	<b>9 (100%)</b>	<b>9 (100%)</b>	<b>18</b>

tau = 0.79

**Table 5.3. Collective Activity, Evidence of Enterprise and Leadership by Individuals**

Site Location	Forestry Collective Activity At Present	Enterprise & Leadership by Individuals
1. Churiyamai (Makwanpur)	High	No
2. Bijulikot (Ramechhap)	High	Yes
3. Doramba (Ramechhap)	High	Yes
4. Raniswara (Gorkha)	High	Yes
5. Bandipur (Tanahun)	High	Yes
6. Manichaur (Kathmandu)	Moderate	No
7. Riyale (Kavre Palanchowk)	Moderate	No
8. Thulo Sirubari (Sindhupalchowk)	Moderate	No
9. Barbote (Ilam)	Moderate	Yes
10. Bhedetar (Dhankuta)	Moderate	No
11. Baramchi (Sindhupalchowk)	Low	No
12. Agra (Makwanpur)	Low	No
13. Chhimkeswari (Tanahun)	Low	No
14. Chunmang (Dhankuta)	Low	No
15. Bhagwatisthan (Kavre Palanchowk)	Low	No
16. Sunkhani (Nuwakot)	Low	No
17. Chhoprak (Gorkha)	None	No
18. Shantipur (Ilam)	None	No

**Table 5.4. Sites with Nonlocal Forestry Organizations (besides DFO)**

<b>Site Location</b>	<b>Forestry Collective Activity At Present</b>	<b>Nonlocal Forestry Organizations (besides DFO)</b>
1. Churiyamai (Makwanpur)	High	Yes
2. Bijulikot (Ramechhap)	High	Yes
3. Doramba (Ramechhap)	High	Yes
4. Raniswara (Gorkha)	High	No
5. Bandipur (Tanahun)	High	No
6. Manichaur (Kathmandu)	Moderate	Yes
7. Riyale (Kavre Palanchowk)	Moderate	Yes
8. Thulo Sirubari (Sindhupalchowk)	Moderate	Yes
9. Barbote (Ilam)	Moderate	No
10. Bhedetar (Dhankuta)	Moderate	Yes
11. Baramchi (Sindhupalchowk)	Low	Yes
12. Agra (Makwanpur)	Low	Yes
13. Chhimkeswari (Tanahun)	Low	No
14. Chunmang (Dhankuta)	Low	Yes
15. Bhagwatisthan (Kavre Palanchowk)	Low	Yes
16. Sunkhani (Nuwakot)	Low	Yes
17. Chhoprak (Gorkha)	None	Yes
18. Shantipur (Ilam)	None	No

**Table 5.5. Group Collective Activity by Interaction with Nonlocal Forestry Organizations**

Site Location	Forestry Collective Activity At Present	(Being) Formalized?	Years Since Formalized	Current Frequency of Interaction
1. Churiyamai (Makwanpur)	High	(Yes)	N/A	Moderate
2. Bijulikot (Ramechhap)	High	(Yes)	N/A	Low
3. Doramba (Ramechhap)	High	Yes	4	High
4. Raniswara (Gorkha)	High	Yes	6	High
5. Bandipur (Tanahun)	High	Yes	5	Moderate
6. Manichaur (Kathmandu)	Moderate	Yes	3	Moderate
7. Riyale (Kavre Palanchowk)	Moderate	Yes	1	Low
8. Thulo Sirubari (Sindhupalchowk)	Moderate	Yes	5	Moderate
9. Barbote (Ilam)	Moderate	Yes	4	Low
10. Bhedetar (Dhankuta)	Moderate	Yes	5	Low
11. Baramchi (Sindhupalchowk)	Low	No	N/A	Low
12. Agra (Makwanpur)	Low	No	N/A	Low
13. Chhimkeswari (Tanahun)	Low	No	N/A	None
14. Chunmang (Dhankuta)	Low	No	N/A	None
15. Bhagwatisthan (Kavre Palanchowk)	Low	(Yes)	N/A	Low
16. Sunkhani (Nuwakot)	Low	No	N/A	Low
17. Chhoprak (Gorkha)	None	(Yes)	N/A	High
18. Shantipur (Ilam)	None	No	N/A	None

**Table 5.6. Collective Activity by Deliberate Association with Nonlocal Forestry Organizations**

Collective Activity	Level of Deliberate Association		
	High	Low	Total
High	4 (57%)	1 (9%)	5
Moderate	2 (29%)	3 (27%)	5
Low	1 (14%)	7 (64%)	8
<b>Total</b>	<b>7 (100%)</b>	<b>11 (100%)</b>	<b>18</b>

tau = 0.59

**Table 5.7. Levels of Association within Groups and with Nonlocal Forestry Organizations**

<b>Site Location</b>	<b>Forestry Collective Activity At Present</b>	<b>Association Within Group</b>	<b>Association With Nonlocal Forestry Organizations</b>	<b>Enterprise &amp; Leadership by Individuals</b>
1. Churiyamai (Makwanpur)	High	High	High	No
2. Bijulikot (Ramechhap)	High	High	Low	Yes
3. Doramba (Ramechhap)	High	High	High	Yes
4. Raniswara (Gorkha)	High	High	High	Yes
5. Bandipur (Tanahun)	High	High	High	Yes
6. Manichaur (Kathmandu)	Moderate	Moderate	High	No
7. Riyale (Kavre Palanchowk)	Moderate	High	Low	No
8. Thulo Sirubari (Sindhupalchowk)	Moderate	Moderate	High	No
9. Barbote (Ilam)	Moderate	Moderate	Low	Yes
10. Bhedetar (Dhankuta)	Moderate	High	Low	No
11. Baramchi (Sindhupalchowk)	Low	Low	Low	No
12. Agra (Makwanpur)	Low	Low	Low	No
13. Chhimkeswari (Tanahun)	Low	Low	Low	No
14. Chunmang (Dhankuta)	Low	Low	Low	No
15. Bhagwatisthan (Kavre Palanchowk)	Low	High	Low	No
16. Sunkhani (Nuwakot)	Low	Low	Low	No
17. Chhoprak (Gorkha)	None	Low	High	No
18. Shantipur (Ilam)	None	Low	Low	No
		tau=0.79	tau=0.59	

## **Chapter 6**

### **Designing Governance for a Complex Resource: Conclusions**

This study began with an introduction to community-based forest management and governance as it is conceptualized in policy and practice in Nepal. Drawing upon an analytic approach based upon the institutional analysis of problems of collective action, particularly in dealing with common-pool resources, I argued that there was a fundamental incompatibility of interests of the main actors in community forestry. Further, the nature of forest resources as a composite of different physical attributes was shown to complicate the relationship between those who use/manage and those who govern forests.

In Chapters Three, Four, and Five, I argued that popular thinking about the relationships between forest condition and physical and socioeconomic attributes in community forestry settings in Nepal are simplistic and, perhaps, misleading. Further, I questioned the assumptions under which current community forestry policy is implemented: that a “blueprint” approach works in all settings and that minimizing interaction with government officials after “handing over” national forests to local communities is essential for the growth and sustainability of fledgling groups. The eighteen community forestry user groups in this study were seen to behave differently in response to the dynamics of their particular settings, i.e., to the unique structure of incentives that each group faced.

In this concluding chapter, I first present some issues for consideration in the design of community forestry in Nepal. I then review the institutional analysis of the 18 groups

in this study and highlight the study's findings. I go on to address the question of institutional design of a partnership to govern complex resources such as forests, which have all manner of interdependencies at multiple levels of use and management. I end the chapter with a discussion of some possibilities for future research.

### **Some Considerations for Community Forestry Design**

The recent focus on explicating the complex of relationships and attributes that make up the settings of rural communities and the forests they use shows a commitment towards understanding more about the process of facilitating community-based forest management and governance in Nepal (see, for example, Soussan et al., 1998; Chhetri, Tiwari, and Sigdel, 1998; Kanel, 1996, 1997, 1998; Springate-Baginski et al., 1998; Chakraborty et al., 1997; Pokharel, 1997). Further, these efforts signal the recognition that working with communities of individuals, especially in rural settings, is a slow, painstaking process and that the design of assistance programs must reexamine some fundamental assumptions of the community forestry approach as currently practiced.

Given that donors supporting community forestry programs in Nepal have initiated most of these research efforts, the self-reflection could be useful for any reforms planned of the legal framework that heretofore has undergirded the move to community-based resource management and governance. Three issues are necessary to consider in reviewing design of community forestry in Nepal, but these do not figure prominently in current discussions or critiques in Nepal. These are (a) complexity of forest resources, (b) the question of how much autonomy to grant user groups, and (c) the role of nonlocal actors. These issues are central to the future of community-based natural resource

governance and management mainly because Nepal's forest users have gone beyond practicing conservation and protection and now face the challenge of utilizing the multiple benefits of forests to improve their livelihoods.

### **The Complexity Of Forest Resources**

In the earlier portion of this study, I discussed some of the physical attributes of forests that present unique difficulties for organizing governance and management activities. Forest resources supply a wide range of goods and services of varying utility to humans across a broad socioeconomic spectrum. Forests provide benefits that are consumed by individuals at a local level (as energy, food, shelter and so on) as well as at regional and national levels (as clean air, stable ecosystems, water abundance and so on). However, the basis upon which forests are ascribed value as natural resources differs from national (government) to local (community) levels because of the very same benefits they provide. Thus, there are differences in attributes of benefits (or goods and services) provided by forests resources. These, in turn, affect how they are appropriated or harvested, how they are consumed, and most importantly, how they are governed.

I argued that, prior to harvest, forests can be conceptualized as aggregations of various types of resource stocks and flows, each of which exhibits attributes that range on the continuum between pure public good and common-pool good. In this study, I was most concerned about the common-pool good and public good aspects of forest resources because these pose the most problems for organizing investments in provision and production. The governance and management of forest resources was thus conceptualized as a collective endeavor of individuals in organizing for the provision of and

appropriation from resources that have common-pool characteristics as well as public good characteristics. I argued that, since individual interests are unlikely to drive the desirable management of public goods, the design of governance for forest resources has to include some elements of support from government to modify the incentives for individuals. Some tasks and responsibilities will have to be turned over to villagers and vice versa.

Further, in addition to the physical attributes of excludability and subtractiveness of consumption, forest resources have the characteristics of stationarity and storage, which are linked to systematic differences in users' strategies and in the institutional arrangements developed to overcome appropriation and provision problems (Blomquist et al., 1991 & 1994). Because most forest benefits are stationary, users have to travel into forested areas to carry out harvest, maintenance, and protection activities. Therefore, I argued, the distance some users have to travel, or their relative proximity, to forested areas they use in relation to that traveled by other users affects the symmetry of relationships among forest users and their relationship with the resource.

Forest resource units also have multiple uses and interdependencies. I termed forests as composite resources because of the multiplicity of types of "resource units" appropriable from them. This multiplicity of resource units, along with the particular preferences of appropriators for particular individuals within species, makes for a composite pattern of resource use. This heterogeneous character of the resource itself has implications for organizing governance of the use of forests and on consequent performance. At issue also are interdependencies between and amongst resource units (which are ecological), interdependencies between types of resource units and



appropriators, and interdependencies across appropriators for the same type of resource unit. The harvest of one type of resource unit by an individual can affect the harvest of another type of resource unit by another individual.

The physical attributes of a resource and its products affect its governance and management arrangements. Importantly, the interdependence in provision of both common-pool goods and public goods is problematic for the provision of forest resources. The costs involved are inseparable. Thus, I argued that the role of government, as the representative of a larger community of citizens, becomes hard to deny in the provision of ecosystems services or other such public goods produced by forest resources.

### **Autonomy**

The term autonomy or even self-governance frequently surfaces in community forestry parlance as either a desired objective for successful self-governing forest user groups or as an intermediate step in the process of decentralizing government authority to local levels and sharing decisionmaking capabilities with local communities. However, autonomy is often confused with what is actually a generous apportioning of operational-level authority to user groups to make decisions about day-day-to activities related to forest management such as what to harvest when, whose turn it is to monitor, and so on. While these are important decisions to make, they do not represent the sharing of authority to govern but rather only the authority to manage. This can be misleading. To be sure, it is an auspicious start because it signals a certain commitment to involving rural folk in the process of management. In the sense of empowering user groups, however,

permitting users to make decisions at another critical level of choice—that of collective choice—is even more important. The very fact that any changes in user group composition, operational plan, constitutional rules, and so on, have to be approved by the DFO, shows the lack of choice groups have.<sup>1</sup> Prominent problems, such as fraudulent membership rolls, can be attributed to the lack of ability of groups to make collective-choice decisions about changing the composition of their membership or enforcing operational rules of participation effectively.

The tension in community forestry in Nepal has to do mostly with the government's dilemma of whether to trust or to control. What is seen is mostly control with the appearance of attempting to trust. On the other hand, user groups have already had the experience of government control in the past and, thus, find it hard to trust a partner who is reluctant to cede any authority. Confidence in the ability of user groups can only be signaled by trusting them with some degree of autonomy to make decisions at the institutional choice levels. The deliberate building of trust involves the deliberate apportioning of decision-making authority with a system of institutional checks and balances that hold both parties accountable for their actions.

### **The Role of Nonlocal Actors**

Given that there are many situations in which users have the capacity for self-management, it makes administrative and economic sense to involve them in resource management. Communities of resource users are, however, no longer relatively isolated and resources often have multiple uses, as discussed earlier. Recent and ongoing changes in the circumstances of local communities and forest user groups are making it more

difficult for them to cope completely on their own. The pressures of commercial and industrial development, migratory patterns, and political upheavals have introduced different dynamics to traditional resource use patterns. In situations where group conflicts cannot be settled or groups lack the material capacity to embark upon forest management, or where powerful economic interests are in play, the government may need to enter into a partnership with local communities (Baland and Platteau, 1996). Helping to set up a self-organized monitoring system for forests may be critical for the survival of smaller, poorer groups of users. This can involve assistance in financially supporting forest guards hired from the user community for a period of time until the group evolves to a stronger form (see Agrawal 1996).

It makes sense for government and other nonlocal organizations to play a role in resource conservation and allocation among communities of users. This role can vary from shared governance, as in joint forest management in West Bengal, to purely advisory, as in some community forestry projects in Nepal. Such co-management can capitalize on the local knowledge and long-term self-interest of users, while providing for coordination with relevant uses and users over a wide geographic scope at potentially lower transaction (rule-enforcement) cost (McKay, 1988; Acheson, 1989a; Pinkerton, 1989).

However, saying that co-management can work does not imply that it automatically will work. There are several obstacles to overcome. Nonlocal actors like forests or soil conservation departments do not easily relinquish control, many bureaucrats and government-employed personnel do not readily concede that they may be less knowledgeable and less able than local forest users. This reluctance can be

compounded by the actions of organizations that are looking for a quick fix to deforestation. Fortunately, the number of such organizations is dwindling.

With the understanding that forests are complex resources with multiple, interdependent benefits that accrue to more than one community, and that the management and the governance of forests needs to be a partnership of the potential beneficiaries, this discussion now turns to a review of the findings of this study.

### **A Review of Findings**

Understanding how physical and institutional attributes affect patterns of interaction and outcomes cannot be achieved without giving serious attention to the attributes of the community of individuals in question. Understanding how the attributes of a community affect individuals' relationships to one another in regard to collective problem solving requires knowledge of, at one level, the characteristics of community members, such as the presence or absence of social, occupational, economic, cultural, religious, or locational differences and, at a related level, their conception of relationships with one another, such as generally accepted norms of behavior and common understanding about the structure of particular arenas of interaction and attendant problems.

In Chapter Three, I looked at the relationship between population change (and tangentially, user group size) and forest condition with the intention of understanding how institutional arrangements may mediate the dynamics of such a relationship. I used an indicator of collective action, called degree of collective activity, to indicate the extent to which local forest users had organized themselves to manage forest use. I found that that the variation in population growth rates across the locations studied had almost no

discernible correlation with the variation of forest condition in those locations. Instead, I found that there was a strong association between local collective action and variation in forest conditions across the 18 cases. That local forest users can cope with perceived changes in resource condition and in user population is evident from the cases studied in Chapter Three. In the more successful cases, arrangements for identifying genuine users, determining harvest amounts and timing, and active monitoring by users themselves emerge as important factors in managing forest resources. Where users were unable to define the extent of forest boundaries or the number of users in a group clearly, the ambiguity allowed opportunistic individuals to encroach upon forested land. Investments in monitoring, in particular, considerably determine the difference between a flourishing resource and one barely able to meet the needs of users.

Despite the considerable discussion of the negative association between group size and collective action in the literature, Chapter Three found that users had ways to deal with large numbers. The adaptation of user group structure by creating levels of subgroup activity was one way to deal with the increased complexity of tasks and the difficulty of coordination that is brought on by large memberships. Increasing the area of forest used was another way. By soliciting the membership of neighboring villages who, then, attach their adjacent forest lands to that of the group, one group was able to assure a larger stock of forest resources. Further, arranging for regular interactions between users, other villagers, and external parties in positions of authority and influence had the effect of reducing suspicion, facilitating information diffusion and raising awareness throughout the area, and garnering public support for management and conservation ideas.

In Chapter Four, I looked at the importance of differences among users, or heterogeneity, for organizing and sustaining collective action at the local level. In particular, I looked at locational differences, wealth and sociocultural disparities among members of forest user groups, and differences in women's representation on forest user committees as attributes that have importance as sources of heterogeneity that pose particular difficulties in organizing forest resource system appropriation and provision activities in Nepal. I found that differences among users do pose challenges for groups of forest users in overcoming the incentives to free ride and shirk. Heterogeneities, however, do not have a determinant impact on the likelihood or success of collective action.

Successful groups overcome stressful heterogeneities, by crafting innovative institutional arrangements well matched to their local circumstances. Where there are substantial benefits to be gained from an effort to devise rules to cope with heterogeneities, users may be able to invest more heavily in finding effective rules that are considered fair, effective, and efficient to most users. In other words, where the incentive to change is substantial, it is possible for users to pay higher costs of devising new rules, and monitoring more complex rules. The simple presence of heterogeneities is not sufficient to predict outcomes in field settings where participants do have considerable autonomy to make their own rules, if they take hold of this opportunity.

Chapter Five looked at the influence of patterns of association (as indicated by extent of deliberate interactions) upon cooperation, and the entrepreneurial roles played by certain key individuals and nonlocal forestry organizations in facilitating cooperation within forest user groups. I discussed the importance of interactions as processes of association that help to construct stable mutual expectations among participants in any

cooperative activity. This discussion set the stage for examining interactions among individuals in forest-using communities as well as interactions between forest-using communities and relevant government functionaries in the 18 cases in this study. The primary task was to understand how these two arenas of interactions influence the initiation and continuation of local collective activity in forest governance and management. Another task of that chapter was to understand how key local individuals have pivotal roles in these arenas of interaction.

The study showed that there are tangible benefits seen in community forestry groups who engage in deliberate long-term patterns of interaction within groups. This could be understood on the basis of the notion of social capital, such as norms and common understanding, within communities. The underpinnings of institutional arrangements in a community are the shared conception of relationships among community members. This shared conception—or common understanding—is rooted in the sociocultural predispositions of a community and is the basis upon which rules acquire meaning and function (Lam, Lee, & Ostrom, 1994). The crafting of many rules takes place within this context as also do many problem-solving activities and interactions. The extent of common understanding thus influences the effectiveness of rules. Furthermore, the accumulation of shared experience in collective problem solving by individuals within a community provides an endowment to draw from in coping with exigent problems of a collective nature. Thus, forest user groups who engaged in interactions to problem-solve had more capability to cope with the problems of organizing forest management activities.

The study also showed that certain individuals play critical roles in the smooth functioning of forest-related activities, from facilitating and innovating to mediating and leading. Careful and transparent interaction with individuals who show leadership and enterprise during the course of assistance to a user group may serve to reduce some of the costs associated with fostering cooperation. The low levels of interactions seen within groups were the result of both extant socioeconomic cleavages and of poorly informed and designed external assistance programs.

### **Creating Synergy in Community Forestry: Implications**

We have seen how communities of forest users have different community and physical attributes and to what extent these affect their ability to cooperate. Forest user groups have demonstrated the ability to cope with different types of problems with varying degrees of success using rules to guide user behavior. In the short-term, a considerable amount of conservation has taken place in many of the successful cases. In the long-term, conservation alone would not contribute to the wellbeing of those who conserve if some form of sustainable use practice is not instituted. In a region (and country) where the rural population depends heavily upon forests for every manner of livelihood input, success in conservation would be short-lived without usage of forests. And, sustainable use would be impossible without durable institutional arrangements to regulate the harvest and distribution of forest products.

Some problematic issues with the policy and practice of community-based forest management and governance in Nepal owe to the lack of trust and common understanding between villagers and forest officials. While a lot of the mistrust and



suspicion that villagers harbor towards the government can be traced to the nature of past relationships, some of it stems from ill-designed attempts to help villagers. The trend of handing over forests to village communities to manage is helping to temper the tension between what is seen as “the government’s” and what is seen as “the villagers’.”

However, the lack of interaction between villagers and officials except to enforce rules or exercise oversight does not make for an atmosphere that leads to stable mutual expectations in what is envisaged as—and needs to be—a partnership.

Viewed in this light, assistance for community forestry (and other natural resources) that can be designed with mechanisms that create and nurture trust stand a better chance if viewed as a partnership. The accretion of social capital depends upon the support of an enabling institutional environment. When individuals are allowed and encouraged to associate in problem-solving activities common understandings on the basis of consensus becomes possible. When processes of association are supported by complementary institutional structures, the coproduction of community forestry becomes a probable partnership. I have argued that the complexity of forests and the interdependence of the multitude of forest benefits require a form of partnership that goes beyond what is currently seen in Nepal. Such a partnership can begin by designing a number of mechanisms, two of which are particularly important: (1) processes of deliberate, long-term interaction and (2) structure of institutional-choice processes.

### **The Need for Long-term Interaction**

Given the prevailing policy climate of decentralized resource management and the facilitative role envisaged for government organizations, interactions gain importance as

deliberate processes of association that encourage the formation of trust and common understanding between the parties involved. However, interaction is neither mandated by law (after handing over) nor practiced by forestry staff.

Facilitating the creation of formal and informal, noncompetitive arenas for users, government officials, and nongovernmental parties to interact on a regular basis can promote the diffusion of information and knowledge and serve as forums for airing of grievances and concerns. Successful user groups, such as in Raniswara, have multiple forums available; for example, the Village Development Committee's special subcommittee for forest user groups, their own general body meetings where representatives of the District Forest Office and VDC were present, special hearings called by the executive committee of the group, and meetings requested with the DFO. On the other hand, the continued conflict seen in less successful user groups like those of Barbote and Agra is partly due to the lack of a forum to approach for conflict resolution.

Their lack of interaction can also hinder the decision-making ability of both forest users as well as officials because each lacks complete information about the structure of a number of potentially cooperative situations. The lack of adequate information is one major source of uncertainty for individuals (Ostrom, 1990). The uncertainty can exist within user groups, thus hindering intragroup cooperation, or between user groups and government officials, affecting their ability to cooperate. In the former case, this uncertainty can be addressed in part by providing reliable information to users about the boundaries and internal characteristics of their forest resources and enabling users to know the spatial extent of the resources they use prior to and during the handing over process. Working with villagers to identify bonafide forest users and to demarcate forest

boundaries to the satisfaction of users can help prevent the free-riding and encroachment seen in some of the cases in this study. Assistance in the identification of a distinct and genuine user group and of a distinct forest area to be used affects future cooperation among villagers and between villagers and outsiders, and, ultimately, the state of the resource.

Regular interactions enable the combination of specific, complementary knowledge that both forest users and forest officials possess and can bring together from time to time in a cooperative situation. The certainty that there is assistance available can go a long way towards building trust and partnership. The creation of a coordination group comprised of at least district-level user group representatives (both men and women), a designated District Development Committee member, and a member each from the DFO and District Soil Conservation Office could be instrumental in providing balanced oversight for user groups as well as for government officials. The responsibilities of such a group could include hiring of foresters to fill the need for technical support, resolving conflict that is at a supra user group level, setting taxes on forest products to fund some of the coordination and technical support, and so on. This could function in cooperation with the operational framework of a federation of user groups such as the Federation of Community Forest User Groups in Nepal.

Regular interactions also allow nonlocal organizations to have a better understanding of the particular circumstances of a community and of previous external assistance (if given). This enables informed decision making as to the need of interventions to assist a community.

## **The Extension of Autonomy to Institutional-Choice Processes**

At first reluctant partners, department of forestry staff are now regarded as “sleeping” partners by the more progressive user groups in this study. While they are not viewed as threats, they are not viewed as committed partners either. An unintended consequence of the limited and, some argue, nebulous role of the forestry department is the creation of space, as in “breathing room,” for enterprising groups to innovate. This outcome is a de facto happenstance and not something provided for or envisaged in the legal framework of community forestry. As seen in earlier chapters of this study, a combination of benign district forestry officials and the willingness of entrepreneurs to take advantage of the space allowed the crafting of innovative institutional arrangements that, in turn, allowed the groups to cope with diverse challenges. Note that the members of these groups fully supported such innovations.

At the same time, there are other groups who would like to make some changes and experiment with rules without fear of legal (read DFO) repercussion, actions that do not fall within their limited mandate of operational decision making. These have not done anything so far for a number of reasons. For example, one reason frequently given is the lack of a clear legal basis for this sort of decision making. Another is because they lack knowledgeable individuals or because there are some members who claim political clout and threaten legal action or political reprisal.

The formal decision-making structures of a partnership have durable effects on the level of trust partners place upon each other and in the endeavor. Whether or not institutional-choice mechanisms serve as arenas for individuals to engage in rule-crafting and rule-modifying activities is important in securing cooperation. If community forestry

is perceived as an endeavor that involves government officials in institutional-choice processes and forest users in operational decision making, low levels of participation and counter-intentional outcomes can be expected. Institutional arrangements that recognize forest users' rights to make collective-choice decisions create conditions for the development of mechanisms that balance the interests of both parties and signal commitment to cooperation. This is one way of sharing authority by dispersing authority (see V. Ostrom, 1995).

Institutional arrangements in community forestry can be designed that provide mechanisms for forest users to participate in collective-choice processes. If some of the autonomy they now enjoy in operational decision-making is extended to some areas of collective-choice, a greater congruence of individual interest and increase in commitment to the process of forest governance and management can be expected. The sharing of authority at the collective-choice level can be designed such that institutional arrangements clearly specify the duties and responsibilities of both DOF staff and forest users and hold each accountable to what was mutually agreed upon. This will create credibility and reduce shirking (see Ostrom, 1995). Trust in a partnership can be destroyed if those who break prior commitments are not held accountable and sanctioned.

Facilitating the creation of institutional arrangements that allow users to adapt to changes in circumstance, to innovate, and to negotiate arrangements with other entities is important. Crafting rule systems that go beyond granting autonomy in just operational decision making enable users to make decisions without fear of crossing jurisdictional boundaries of local government offices. For example, if users are able to decide, without dissent among themselves and without having to seek forest office approval, who may

become a member and who may use certain forest areas (as seen in the case of Raniswara), considerable effort and time is saved when forming or expanding a user group.

In this way, the creation of social capital and the nurture of existing social capital also become possible. The process of making decisions together helps both forest users and government officials learn continuously through acting and interacting with one another. The facilitation of this learning process through collective-choice arenas allows the partners in community forestry to craft and modify institutional arrangements in light of what they have learnt by integrating new knowledge and information. Thus, social capital is created and further modified. These arrangements, in turn, take account of elements of social capital that may already exist and are useful to nonlocal assistance efforts.

Synergy in partnership can come about by greater and longer-term interaction (to generate elements of social capital), mutual monitoring and sanctioning mechanisms (to preserve social capital), selective autonomy in both operational and collective choice activities (to signal commitment, encourage trust and reciprocity, and allow innovation). On the other hand anomie can result from institutional conditions that provide for interaction geared only toward oversight and enforcement and impose constraints on local decision-making capabilities.

The findings of this study suggest important ramifications for those who seek to support community forestry and, more generally, participatory or community-based approaches to governing natural resources. Development policy aimed at preserving the environment and improving the livelihood of rural folk must recognize the significance of

institutional arrangements at the local level to resource conditions at that level.

Furthermore, the study suggests that government policy on participatory resource management will be more successful if it is facilitative of institutional innovation and adaptation at the village level.

### **Possibilities for Future Research**

In this study I have identified various physical, community, and institutional attributes that affect patterns of outcomes in community-based forest resource systems in Nepal. I used 18 cases to examine propositions derived from recent research on cooperation. The number of cases used to examine these propositions was relatively small given the number of variables I utilized. This, at once, somewhat reduced the options available for a rigorous quantitative analysis while also hampering an examination of potential interdependencies among the variables. Instead, a qualitative study was done with a mix of cross-tabulations and case description to look at the relationships posited. By listing crucial contextual variables side by side for the cases, I was able to examine and make observations about the configurations of these variables. Advanced methods of dealing with the low number of cases, such as bootstrapping, could be used in a more sophisticated analysis. Even then, it may be necessary to augment the number of cases. A larger study of community-based forest resource systems in Nepal will be possible in the near future with new IFRI studies being added to the existing data set at a rate of six to eight per year.<sup>2</sup>

Another way to use a larger data set for the examination of one or two of the propositions would be to use the international data set of the IFRI research program. This

larger data set would enable a quantitative analysis while controlling for certain variables. A larger set of data would subject some of these relationships to more rigorous examination by using finer measures than those utilized in this study. Especially because of the large number of interdependencies and complex interaction effects that characterize the human-natural resource interface, a larger data set with finer measures would identify patterns that are not discernible using a dichotomous measure. Finally, a more detailed study could be done of the effects of donor-led assistance programs if a larger data set were used because of the enhanced ability to make a balanced comparison: there was not much variation seen in the effect of such programs in the 18 cases of this study.

A strength of this study is that the entire set of 18 cases is within one country and one physiographic region. Thus, some of the spurious effects that can result from cross-national studies were reduced. On the other hand, some of the relationships and the findings in this study can be examined in similar physiographic settings across national boundaries within the Indian subcontinent. For example, one research possibility would be a study of communities in similar Himalayan middle-mountain settings that are common to the Indian Himalaya (Himachal Pradesh, Uttar Pradesh, Sikkim) and Bhutan.

Yet another way to reduce spurious effects would be to examine the changes within a set of forest resource systems over an extended period of time. This study examined 18 cases cross-sectionally and six of those 18 cases over time. Although each case did have extensive oral and written histories, a series of visits over a period of 10-15 years would really strengthen analysis and findings. This, however, would be difficult to sustain for a large number of cases without a long-term program of research.<sup>3</sup>



This study has looked at extent of user group organization as indicated by presence of rules-in-use that organize entry, harvest, monitoring, and other forest-related activities. This measurement of collective activity needs more validation because it may not adequately capture the quality of collective activity, i.e., there is a strong presumption that high levels of collective activity equal high performance. While the link between levels of activity and forest condition is sufficient to understand performance for this analysis, a stronger link between collective activity and outcomes such as equitability of benefits and fairness of rules would make the measurements more satisfactory.

Women and children have critically important roles in the natural resource-rural livelihood relationship. While this study has looked at users only as individuals without a specific treatment of the roles of women or children (except for a subsection in Chapter Four), it does not obviate the importance of including serious consideration of such roles in any study of rural livelihoods. One way would be to include some cases of wholly women's user groups in studies such as this, as a way to understand the variation in influence of women's participation in mixed user groups. This was not possible for this study because of the unavailability of primary data for such groups. A partial improvement in my findings may have been seen, however, by looking at activities outside of just decision-making arenas. That is, instead of looking at women's participation in just the Forest User Committees, one could have examined the type and number of activities they initiate, organize, or participate in during maintenance, harvest, or distribution.

## **Notes**

- 1. Recent legislation empowers Village Development Committee to oversee the activities of user groups within their jurisdiction (Local Self-Governance Bill 1998). The initial reaction of user groups has been that of skepticism because they don't see how that gives them any more autonomy. It only devolves authority to another local government body, albeit at a more local level.**
- 2. The Nepal Forest Resources and Institutions research program is currently involved in a set of studies funded by the MacArthur Foundation that looks at community forests in eastern Nepal, and a set of studies that looks at the Parks and People Program of the Government of Nepal and the United Nations Development Programme.**
- 3. The International Forestry Resources and Institutions research program has this objective and is now in its sixth year of operation in Asia, Africa, and South America (including, among others, Nepal, India, Tanzania, Madagascar, Uganda, Kenya, Guatemala, Ecuador, Mexico and Bolivia).**

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## **APPENDIX A. A Comparison of Forest Vegetation Change Over Time**

In the analysis of forest conditions for the eighteen forest resource systems examined in this study, I used perceptions of villagers, government forest officials, and IFRI researchers with regard to the current forest conditions as indicated by trend in forest condition (Chapter Two). This indicator was derived by triangulating the responses recorded from multiple individuals of their historical perceptions of local forest conditions. At first glance, this use of perceptions as a valid measure of what really has happened over time seems inadequate. Indeed, in the face of the lack of systematic data for the same forest area over time (except in four sites), this was the second-best option. However, by obtaining responses (perceptions) from three different sets of individuals, all with different interests in forests, one was able to arrive at some reasonable indication of trend in forest condition. Coupled with a forest stock assessment based on the trend of forests in similar ecologies, the study was able to obtain an overall picture of forest health in each site.

During the analysis and write-up period of this study, the opportunity to revisit two more sites presented itself. Thus, it was possible to have a total of six revisits for the 18 cases in the study. This represented one-third of the data and appeared a more appropriate number to conduct a minimal test of the validity of perceptions as noted for the entire set of eighteen. The gap in repeat visits was from three to four years for these six sites. (This is in keeping with the long-term strategy of the IFRI research program, which envisages revisiting sites multiple times over an extended period of time.)

The forests in these six sites were sampled using stratified random sampling with 30 to 90 circular plots, depending on forest size (see IFRI 1998), to examine the change in forest condition. The vegetation in each of these plots was examined as three separate vegetation classes (tree, sapling, and shrub species) and density (stems per hectare), average diameter, and species richness computed (table A1).

**Table A1. Three Measures of Vegetation for Six Revisited Forests**

Site	Visit	Tree			Sapling			Shrub		
		Stem/ha	dbh	Rich	Stem/ha	dbh	Rich	Stem/ha	dbh	Rich
<b>Raniswara</b> (Gorkha)	<b>1997</b>	<b>404</b>	<b>20.6</b>	<b>8</b>	<b>8506</b>	<b>5.5</b>	<b>15</b>	<b>94</b>	<b>3.1</b>	<b>1</b>
	1993	247	19.9	8	2247	4.9	9	18	2.8	1
<b>Bandipur</b> (Tanahun)	<b>1997</b>	<b>346</b>	<b>20.0</b>	<b>12</b>	<b>5621</b>	<b>5.2</b>	<b>19</b>	<b>389</b>	<b>3.1</b>	<b>4</b>
	1993	77	25.0	10	746	6.0	10	19	1.6	1
<b>Riyale</b> (Kavre Palanchowk)	<b>1998</b>	<b>119</b>	<b>13.5</b>	<b>3</b>	<b>2932</b>	<b>5.0</b>	<b>10</b>	<b>51</b>	<b>2.5</b>	<b>1</b>
	1994	6	13.5	2	7044	4.2	19	4214	3.3	12
<b>Baramchi</b> (Sindhupalchowk)	<b>1998</b>	<b>124</b>	<b>15.8</b>	<b>6</b>	<b>6795</b>	<b>4.8</b>	<b>17</b>	<b>2230</b>	<b>3.1</b>	<b>7</b>
	1994	43	13.8	5	2317	4.4	13	1221	3.2	8
<b>Chhoprak</b> (Gorkha)	<b>1997</b>	<b>254</b>	<b>25.8</b>	<b>7</b>	<b>2477</b>	<b>5.7</b>	<b>9</b>	<b>165</b>	<b>3.2</b>	<b>3</b>
	1993	312	26.2	14	858	4.6	10	101	2.5	2
<b>Chhimkeswari</b> (Tanahun)	<b>1997</b>	<b>409</b>	<b>21.9</b>	<b>16</b>	<b>3203</b>	<b>5.0</b>	<b>16</b>	<b>492</b>	<b>3.9</b>	<b>5</b>
	1993	149	33.7	11	784	6.3	11	74	5.6	2

Note: Stem/ha = density; dbh = average diameter at breast height (except shrubs); Rich = species richness

While the above table allows one to study the detail in changes in vegetation over a period of four years, a simplified version of this table would facilitate comparison for the purposes of this study. Table A2 arrays the changes seen for the three measures noted above. It is important to note that I have not indicated the relative proportion or

magnitude by which vegetation has changed. Instead, I have indicated whether or not there is a change and, if so, whether the change was positive or negative.

**Table A2. Change in Vegetation for Six Revisited Forests**

<b>Site</b>	<b>Tree</b>			<b>Sapling</b>			<b>Shrub</b>		
	<b>Stem/ha</b>	<b>dbh</b>	<b>Rich</b>	<b>Stem/ha</b>	<b>dbh</b>	<b>Rich</b>	<b>Stem/ha</b>	<b>dbh</b>	<b>Rich</b>
<b>Raniswara</b> (Gorkha)	+	+	=	+	+	+	+	+	=
<b>Bandipur</b> (Tanahun)	+	-	+	+	-	+	+	+	+
<b>Riyale</b> (Kavre Palanchowk)	+	=	+	-	+	-	-	-	-
<b>Baramchi</b> (Sindhupalchowk)	+	+	+	+	+	+	+	-	-
<b>Chhoprak</b> (Gorkha)	-	-	-	+	+	-	+	+	+
<b>Chhimkeswari</b> (Tanahun)	+	-	+	+	-	+	+	-	+

Note: Stem/ha = density; dbh = average diameter at breast height (except shrubs); Rich = species richness; "+" indicates increased; "-" indicates decreased; "=" indicates stable.

The above table shows a comparison of vegetation change over a period of four years in six of the 18 sites examined in this study. It becomes clear that, at one extreme, the community forest in Raniswara has positively developed in quality and quantity in all three vegetation classes. The development of the forests in other sites (Bandipur excepted) is somewhat difficult to ascertain because of the extent of variation seen between vegetation classes. From the perspective of tree species, Chhoprak is clearly the worst in quality and quantity. From the perspective of saplings, the forest in Riyale appears to be the poorest in condition, followed by the forest of Baramchi. A discussion of usefulness of measures for shrubs follows. The most frequently occurring measure

with negative indication was that of average diameter (or girth). In other words, the decrease in average diameter of stems in the three vegetation classes was the most commonly seen problem.

## **Discussion**

A close relationship can be observed between forest condition and the arrangements groups have to manage their forests. With respect to trees, in Raniswara, Bandipur, Riyale, and Baramchi, the tree plant density has increased because saplings have grown into trees owing to protective measures during the past few years. On the other hand, the chopping of old trees in Chhoprak has reduced the tree density in that forest. The users in Chhimkeswari have no means of harvesting valuable trees that grow on steep slopes so these continue to grow and proliferate in spite of the absence of any tangible institutional arrangement for maintenance.

With respect to saplings, since the forests of Raniswara and Bandipur are sal (*Shorea robusta*) dominated, the saplings of this valuable timber species have thrived because of the careful weeding and management done for their regeneration and growth. In Chhoprak, sapling numbers have increased because of multiple rounds of plantation of tree seedlings in recent years. In Chhimkeswari, the sapling density has increased because the forest is situated on steep slopes and because sal's (*Shorea robusta*) natural regeneration is high. It should be noted that this measure can be misleading because, unless managed through a program of clear felling, thinning, and so on, the resulting adult trees can be quite useless for construction or furniture. Thus, while forest cover may ultimately increase, the trees may never be utilized.

With respect to shrubs, an increase in density may not necessarily indicate a healthy forest. Unless careful observations have been made of the kinds of shrubs seen, it is possible to see increases in density that are a result of lack of weeding practices in a forest. In all forests except that of Riyale, shrub density has increased. The increased density is mostly due to weed populations that are not useful for consumption. In Riyale forest, the density of shrubs has decreased because of some weeding/thinning operations that had been undertaken a few days before the research team visited this site. By the same token, sites such as Raniswara and Bandipur that, we shall see in the discussions in following chapters, have well-established practices for maintenance and show growth in shrubs. This circumstance has come about because one site (Raniswara) has acquired more forestland recently (of degraded quality), and the other (Bandipur) does weeding once in three years for most of its forest compartments. The earlier IFRI visit was conducted immediately after a round of maintenance and the latter visit prior to the next round of maintenance.

For the purposes of this study, it makes some sense to use only measures of change in tree vegetation, especially because of the difficulty in ascertaining the timing and cause of change in sapling and shrub classes. The changes in tree vegetation are quite interesting. Except for Chhoprak, most show an increase in density and species richness. While the forest in Chhoprak shows a worsening trend of overall tree conditions, the forests of Bandipur and Chhimkeswari show a decrease in average girth for trees while Riyale shows no change.

## **The Difference between Perceived Condition and Actual Condition**

The purpose of this brief comparison of six sites was to ascertain whether or not the perceptions of local forest users and other individuals are adequate for initial comparisons of change in forest condition. The earlier table (A2) arrayed the trends in three types of measures for three different classes of vegetation. Table A3 arrays trend in forest conditions as perceived by local residents against actual changes in forest conditions (as measured at two points in time, four years apart, for trees).

**Table A3. Comparison of Forest Condition: Perceived versus Actual**

<b>Site</b>	<b>Forest Stock Assessment</b>	<b>Perceived Trend in Forest condition</b>	<b>Actual Trend in Forest Condition</b>
<b>Raniswara</b> (Gorkha)	Average	Improving	Improving
<b>Bandipur</b> (Tanahun)	Above Average	Improving	Improving
<b>Riyale</b> (Kavre Palanchowk)	Average	Stable	Improving
<b>Baramchi</b> (Sindhupalchowk)	Below Average	Stable	Improving
<b>Chhoprak</b> (Gorkha)	Below Average	Worsening	Worsening
<b>Chhimkeswari</b> (Tanahun)	Average	Worsening	Improving

The above table shows that trends in forest condition as perceived by forest users and other local individuals (district forest officials, other villagers) have close correlation to actual measurements of forest condition for five of six sites as aggregated from three measures of forest condition. For Raniswara, Bandipur, and Chhoprak, the perceptions of local residents accurately reflected actual conditions. For Baramchi and Riyale, the

perceptions of local residents were on the conservative side. The sixth case (Chhimkeswari) differed from the perceived trend with regard to density and species richness, indicating an improving trend rather than a worsening trend. Going back to table A2, five of the six sites returned stem counts for trees that validate the perceptions of the residents and the observations of the foresters recorded during initial visits. Further, species richness as reported by local residents did not differ much with actual trends, except for Raniswara (which had no change—a positive indicator) and Chhimkeswari. The average diameter for trees fluctuated among the six sites.

The comparison above brings a couple of points to the fore worth mentioning. First, among the three measures of forest condition used here, only two—density and richness—seem to be of utility in reflecting reliably the perceptions of villagers. This seems logical given that tree density and species richness would be somewhat easier to notice in day-to-day forest use. Second, the perceptions of local residents can vary based on their interests in the forest resource in question, although care was taken to triangulate information based on the responses of diverse individuals. For instance, the worsening condition reported by respondents in Chhimkeswari reflected a concern with clearly observable recent encroachment and slash-and-burn practices by two households around the margins of the forest that lay closer to settlements. Further, no historical information was available on this forest from district forest offices because of the “remoteness” of the location. Combined with the fact that the IFRI methodology seeks to take a representative sample of the entire forest and not only those portions closest to settlements, the distribution of sample plots—and the resulting assessment—may not adequately reflect

**such localized disturbances. Further comparisons using a larger data set will better establish the value of local perceptions of forest condition as a valid initial measure.**



# **VITA**

## **George Varughese**

### **PERSONAL**

Born 29 May 1965; Ampipal, Gorkha, Nepal; Single; Male

**Present Address:**

United Nations Development Programme  
P.O. Box 107  
Kathmandu, Nepal

Phone: +977-1-523200

Fax: +977-1-523991, 523986

E-mail: [george.varughese@undp.org](mailto:george.varughese@undp.org)

### **EDUCATION**

**Ph.D. (Public Policy, Political Theory, Environmental Policy)**

**Joint Doctoral Program in Public Policy**

Department of Political Science and School of Public and Environmental Affairs

Indiana University, Bloomington, Indiana, U.S.A.

December 1999

**Master of Business Administration (Strategic Business Policy, Marketing)**

School of Business, Indiana State University, Terre Haute, Indiana, U.S.A.

July 1991

**Post-Graduate Diploma in Industrial Relations and Personnel Management**

Institute of Management Studies, New Delhi, India

August 1987

**Bachelor of Sciences (Zoology, Botany, Chemistry)**

University of Delhi, Delhi, India

May 1986

### **ACADEMIC AWARDS AND HONORS**

**Dissertation Fellowship**

Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington

August 1996 - August 1997

**Doctoral Fellowship**

Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington

Academic Year 1991 - 92 and August 1994 - December 1994

**Academic Scholarship**

School of Graduate Studies, Indiana University, Bloomington, Indiana

May 1992 - July 1995

**Academic Scholarship**

School of Graduate Studies, Indiana State University, Terre Haute, Indiana

January 1990 - July 1991

## **SELECTED PROFESSIONAL EXPERIENCE**

### **Programme Development Advisor**

United Nations Development Programme, Kathmandu, Nepal

Programme revision and development of UNDP activities in the country. Responsibilities include conceptualization and development of new initiatives, coordination of programme-specific research, review of current programming, building of research capacity in country office, and production and editorial support of National Human Development Report.

July 1999- Present

### **Country Research Coordinator**

International Forest Resources and Institutions (IFRI) Research Program

Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington

Coordination of IFRI research for Nepal and Madagascar at Indiana University. Responsibilities include assisting country coordinators in team selection and training, fundraising and budgeting, analysis and publication of data, liaison with funding agencies, and planning and design of research.

July 1997 – June 1999

### **Programme Development Consultant**

United Nations Development Programme, Kathmandu, Nepal

Revised or finalized project/programme documents for: Upper Mustang Biodiversity Conservation; Himalaya Ecoregional Cooperation; Nepal's Accession to the WTO; and Participatory Hill Agriculture Diversification. Prepared and finalized programme/project concept papers and terms of reference for: Village Tourism for Poverty Alleviation and Strengthening the Rule of Law. Provided programme support for: Participatory Disaster Management; Rule of Law Mission; and 1999 Election Observation Mission research.

December 1998 – March 1999

### **Social Sciences Consultant**

Forests, Trees and People Programme, Food and Agriculture Organization, Rome, Italy

Technical Report prepared for 2nd International Task Force Meeting on Community Forestry and Population Issues INT/94/040, Food and Agriculture Organization of the United Nations, Rome.

January 1998 - April 1998

### **Field Research Coordinator and Trainer**

Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington

Research conducted for IFRI research program at the Universite d'Antananarivo, Madagascar, supported by the MacArthur Foundation. Responsibilities included selection and training of two interdisciplinary teams, research site selection in southwest Madagascar, orientation of team leaders, and leading fieldwork.

November - December 1997

Research designed and conducted for IFRI research program and Ph.D. dissertation in western, central, and eastern Nepal, supported by the FAO, the Ford Foundation, the MacArthur Foundation, and the Workshop in Political Theory and Policy Analysis, Indiana University.

April 1996 - July 1997

Initial training of IFRI (Nepal) staff in database management skills and preliminary analysis of institutional and physical data of pilot studies in Kathmandu, Nepal, supported by the Hills Leasehold Forestry and Forage Development Project of HMGN/FAO/IFAD.

Summer 1994

**Social Sciences Consultant**

Hills Leasehold Forestry and Forage Development Project of HMGN/FAO/IFAD, Kathmandu, Nepal.

Provided social science research and editorial support for baseline survey and research report of leasehold forestry sites in middle Nepal.

April 1996 – June 1996

May 1994 – August 1994

**Research Team Member**

Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington

Core member of the International Forest Resources and Institutions (IFRI) research program team. Involved closely with baseline monitoring of natural resource systems in Nepal and Madagascar; fund-raising; design and execution of research projects funded by and carried out for the Food and Agriculture Organization of the United Nations (FAO), the Ford Foundation, the MacArthur Foundation, and Indiana University; and analysis of intertemporal and interspatial data related to natural resource policy concerns.

September 1992 – June 1999

Design of training curriculum for researchers from Asian, African, and South American collaborating centers; research instrument design, development of instructional manuals for the IFRI research program, at the Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington, supported by the FAO.

September 1992 – March 1996

**Graduate Associate**

Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington

Research instrument pretesting and development of field research methods for the IFRI research program, supported by the FAO and Deutsche Gesellschaft Für Technische Zusammenarbeit in Dhading District, Nepal.

Summer 1992

Data analysis with the Nepal Irrigation Institutions and Systems research program team, Bloomington.

Spring 1992

**Research Associate**

Center for Research and Management Studies/ Small Business Development Center, School of Business, Indiana State University, Terre Haute, Indiana

Coordinated and supported faculty research, designed and implemented research projects for the local business community, and instructed undergraduate students in statistical methods. Conducted surveys for the Center for Research and Management Services and for the Small Business Development Center at the School of Business, Indiana State University, Terre Haute, Indiana.

June 1990 - August 1991

Conducted in-depth study of economic and demographic characteristics of trade area comprised of specific Indiana and Illinois counties, for the Small Business Administration, Washington, D.C.

Fall 1990

Designed and implemented a research project that examined the effect of age, sex, and body mass on the physical performance of children in collaboration with the University School, School of Education, Indiana State University, and the American Heart Association.

Spring 1990

**Office Manager**

Prestige Tile, Inc., Aurora, Illinois

Prepared bids and contracts, supervised office personnel and administered payroll.

August 1988 - July 1989

**Assistant Executive Officer**

Confederation of Indian Industry, New Delhi, India.

Liaised with government agencies and departments on behalf of member companies; assisted in organizing conferences, seminars and workshops; prepared and edited reports and brochures on the engineering industry in India; one of four supervisors of physical arrangements and layout of the 7th Indian Engineering Trade Fair in 1987.

January 1987 - August 1987

**OTHER SELECTED EXPERIENCE****Volume Editor**

*People and Participation in Sustainable Development: The Dynamics of Natural Resource Systems*. Edited by Ganesh Shivakoti, George Varughese, Elinor Ostrom, Ashutosh Shukla, and Ganesh Thapa. Published by The Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington, Indiana and The Institute for Agriculture and Animal Science, Tribhuvan University, Rampur, Nepal.

March 1997

**Occasional Editor**

Editorial duties for select publications at the Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington, Indiana.

1993 - June 1999

**Graduate Tutor**

Academic Counseling, Department of Athletics, Indiana University

Tutor student athletes in writing, science, statistics, and management courses.

September 1995- June 1999

**Copy Editor/Production Assistant**

*The Indiana Statesman*, Indiana State University

Edited material for the student newspaper and assisted in production.

February 1991 - May 1991

**Teaching Assistant**

University School, School of Education, Indiana State University

January 1990 - May 1990

**SELECTED PUBLICATION WORK**

*Population and Forest Dynamics in the Hills of Nepal: Institutional Remedies by Rural Communities*. In Clark Gibson, Margaret McKean, and Elinor Ostrom, editors (forthcoming). *People and Forests: Communities, Institutions, and the Governance of Forests*, Cambridge, MA: MIT Press.

*The Contested Role of Heterogeneity*. With Elinor Ostrom, Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington. Working paper no. W98-32. Presented at the first meeting of the MacArthur Inequality and Economic Research Performance Network, MIT Faculty Club, Cambridge, Massachusetts, October 30-November 1, 1998. Submitted to *World Development*, December 1999.

*Coping with Changes in Population and Forest Resources: Institutional Mediation in the Middle Hills of Nepal*. In Clark Gibson, Margaret McKean, and Elinor Ostrom, editors (1998). *Forest Resources and Institutions*. Forests, Trees, and People Programme, Working Paper no.3. Rome, Italy: FAO.

*People and Participation in Development: The Dynamics of Natural Resource Systems*. 1997. Edited with Ganesh Shivakoti, E. Ostrom, A. Shukla, and G. Thapa. Indiana University, Bloomington, and Tribhuvan University, Rampur, Nepal.

*Conceptualizing Sustainability*. 1997. With John Dixon and Prem Sharma, in *People and Participation in Development*.

*Achieving Sustainable Development*. 1997. With Ganesh Shivakoti and Elinor Ostrom, in *People and Participation in Development*.

*Planning Partnerships: A Critical Look at Experiments in Community Forestry in Nepal*. With Keshav R. Kanel, Under Secretary, Ministry of Forests and Soil Conservation, His Majesty's Government of Nepal. Working paper in progress.

*Self-Governed Forest Institutions in Nepal*: Invited graduate seminar taught at School of Public & Environmental Affairs, Indiana University, Bloomington, Fall 1992 and Spring 1993; and Summer 1998.

*Irrigation Systems in Dhading*. Nepal Irrigation Institutions and Systems Database Technical Report No.1. Nepal Irrigation Institutions & Systems Research Program, Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington, Indiana, April 1992.

*A Study of Economic and Demographic Characteristics of Illiana Trade Area*: Small Business Development Center, Terre Haute, Indiana and the Small Business Administration, Washington, D.C., December 1990.

## **COMPUTER SKILLS**

Spreadsheet and Database (Lotus, Excel, dBASE, FoxPro, Rbase); quantitative analysis (SPSS-X, STATA, MINITAB, SYSTAT); qualitative analysis (QCA); word-processing (Word Perfect and MSWord); design and graphics (Harvard Graphics; Aldus Pagemaker; PowerPoint); IBM-PC and Macintosh literate including Internet communications.

## **LANGUAGE ABILITY**

Fluent in English, Nepali, Hindi; speak Malayalam and some Spanish.

## **OTHER INTERESTS**

Single-engine aircraft, hot-air balloons, single-cylinder motorcycles, rappelling, rowing, squash, and soccer.

## **REFERENCES**

### **Dr. Elinor Ostrom**

Arthur F. Bentley Professor of Political Science, Co-Director  
Workshop in Political Theory and Policy Analysis  
Indiana University  
513 North Park, Bloomington  
Indiana, USA  
Telephone: +1-812-855-0441  
Facsimile: +1-812-855-3150  
Email: [ostrom@indiana.edu](mailto:ostrom@indiana.edu)

### **Dr. Ganesh P. Shivakoti**

Faculty, Agriculture, Conservation and Rural Development Program  
School of Environment, Resource and Development  
Asian Institute of Technology, P.O. Box 4  
Klong Luang, Pathumthani 12120, Thailand  
Telephone: +66-2-524-6369  
Facsimile: +66-2-524-6132  
Email: [ganesh@ait.ac.th](mailto:ganesh@ait.ac.th)

### **Dr. Arun Agrawal**

Department of Political Science, Yale University  
124 Prospect Street, P. B. 208301  
New Haven CT 06520, U.S.A.  
Telephone: +1-203-432-5011/8139  
Facsimile: +1-203-432-6196  
Email: [arun.agrawal@yale.edu](mailto:arun.agrawal@yale.edu)

### **Dr. Keshav R. Kanel**

Joint Secretary (Forestry)  
Ministry of Forests and Soil Conservation  
His Majesty's Government of Nepal  
Singha Durbar, Kathmandu, Nepal  
Post Box: 3987  
Telephone: +977-1-221936, 223862  
Facsimile: +977-1-226099  
Email c/o: [rbbista@mos.com.np](mailto:rbbista@mos.com.np)