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## **Development Assistance and the Construction of Government Initiated Community Institutions**

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### **Abstract:**

This paper provides new evidence on the role of official development assistance in program implementation. Governments and donors around the world are promoting participatory development and community management programs that transfer responsibilities and rights to local communities. Large-scale implementation of these schemes requires significant funding from multiple sources. I consider a uniform institutional reform in Nepal and find that the scope of program implementation and the characteristics of new institutions vary across types and sources of aid. In my analysis, I develop a geographic matching estimator that compares adjacent communities receiving different types of assistance. This heterogeneity in institutions associated with funding that I find in this paper complicates the program evaluation problem and may impact the success of the reform.

*Keywords: Foreign Aid, Program Evaluation, Community Institutions.*

*JEL Classifications: O19, F35, and H43*

## 1. Introduction

What role does official development assistance (ODA) play in program implementation in an aid recipient country? This question has received surprisingly little attention from academic economists. A large literature considers the determinants of aid flows, but these authors focus entirely on cross-country comparisons.<sup>1</sup> Similarly, many researchers consider program implementation and evaluation within countries, but these studies tend to ignore the role of ODA in program implementation. An aid recipient country receives ODA in the form of program or project assistance (Singer 1965).<sup>2</sup> An aid donor provides program aid directly to the aid recipient for the recipient to use and administer; project aid funds the operation of specific projects. A donor country exerts greater control and influence in the use of project aid. Hence a donor is more likely to provide project assistance if the donor has preferences about how a program is implemented or concerns about the use of program funds.

This paper studies the impact of development assistance on the implementation of a large-scale institutional reform. Devolution of central government programs to more localized institutions is a primary aim of contemporary development policy under the moniker “Participatory Development.” Nowhere has the push for the establishment of local institutions been more prominent than in the transfer of local environmental resources to rural communities. The famous “Tragedy of the Commons” can be formulated as the failure of existing institutional rules to manage the commons.<sup>3</sup> Given both the importance of the environment to household welfare and the high international profile of environmental issues, local common property is being transferred to local communities throughout the world. A vast case study literature argues that the success or failure of these common property management regimes depends in part on the design and characteristics of these new institutions.<sup>4</sup> The establishment of local institutions to

manage resources is time consuming and costly. Existing national institutions often lack the incentives to change themselves. Consequently, outside development assistance plays a key role in encouraging and financing the creation of local institutions to manage environmental resources. This paper considers an example from Nepal where it appears that the source and type of ODA responsible for funding the construction of these new institutions impacts both how vigorously new institutions are created and the characteristics of the newly created local institutions.

The analysis of this paper focuses on a massive institutional reform of Nepal's forestry sector. In 1993, Nepal began to transfer all of its forestland from the central government to local communities by creating local forest user groups. Project and program aid from multiple sources fund the transfer of forestland to local communities in Nepal. This study finds that some donors are more active in creating forest user groups, and these donors generate groups with different physical characteristics (number of participants, physical area) than groups created by less active donors. However, the type or source of aid in a given location has not changed since the transfer of forestland began in 1993. Potentially, omitted differences in the geographic location of different donors could plague conclusions based on comparing the implementation of the transfer of forestland across aid sources. In order to minimize the importance of unobserved differences between districts, I explore the robustness of my findings by focusing on communities that border each other on opposite sides of a district boundary. These communities are likely to have similar unobserved characteristics but differ in the type (program or project) and source of aid used to fund the creation of forest user groups. This approach to omitted differences in the cross-section is similar to that of Card and Krueger (1994) and Holmes (1998).<sup>5</sup> Card and Krueger (1994) compare fast food restaurants on opposite sides of a state border when one state increases

its minimum wage. Holmes (1998) studies the impact of right to work laws on the location of manufacturing in the U.S. by selecting a sample of counties across state boundaries with different right to work laws. In this study, I modify this methodology slightly. Both Card and Krueger and Holmes select adjacent locations and analyze program effects under the assumption that the treatment and control groups are similarly distributed in space. In this study, rather than relying on this assumption, I use nearest neighbor matching of geographic neighbors. Matching permits a weaker identification assumption. I assume that in expectation, differences in unobserved characteristics are smallest between nearest neighbors. As in Card and Krueger (1994) and Holmes (1998), this identification assumption is not testable in the available data. Nevertheless, it is consistent with the history of geographic boundaries in Nepal discussed in Koran (1960).<sup>6</sup> The results from geographic matching corroborate many of the differences associated with sources of aid that I observe in a descriptive, district level analysis.

The finding that the implementation of an institutional reform depends on the type and source of ODA has several implications. First, since ODA is largely ignored in program evaluations, this paper highlights a potential omitted variable in program evaluations when development assistance plays a role in program implementation. Second, Singer (1965) argues that if government funds are fungible, the labeling of specific funds as project aid does not impact the implementation of government programs.<sup>7</sup> In the example of this paper, the attributes of newly created institutions differ between areas with different sources of project and program aid. Third, this paper contributes to the debate about the sensitivity of official development assistance to recipient need discussed in Mosley (1985) and Jay and Michalopoulos (1987).<sup>8</sup> If the matching assumptions are correct (adjacent communities on opposite sides of district boundaries have similar community and forest characteristics), then I observe large variations in

program implementation that have nothing to do with recipient need. The involvements of different projects in different areas are historically determined. Thus, these within country findings are consistent with Alesina and Dollar's (1998) cross-country study that emphasizes the importance of historical relationships in aid flows.<sup>9</sup> Fourth, Burnside and Dollar (2000) use cross-country evidence to show that aid is more effective when it is conditioned on "good" policies and institutions.<sup>10</sup> This paper emphasizes the impact of aid on the policies and institutions that exist within a country.

The paper is organized as follows. The next section provides background on the operation of official development assistance in the institutional reform considered in this paper. Section 3 introduces the data and develops the methodology of this study. Section 4 considers the relationship between ODA and the scale of program implementation. Section 5 considers how institutional characteristics are influenced by the source of funding for the institutional improvements. Section 5 concludes.

## **2. Background**

In 1996, ninety-eight percent of rural households in the hill and mountain areas of Nepal use wood as their primary fuel in meeting their household energy needs.<sup>11</sup> Because of the dependence of its population on forests and the potential value of its forest resources, forest policy has always been a high profile issue in Nepal. Forest policy has undergone several major revisions in the last forty years that have led to its current institutional setting where forest policy is funded by several different types and sources of assistance.

In 1957, all forests over 1.25 hectares in the hill and mountain areas of Nepal were nationalized.<sup>12</sup> Four years later, the Forest Act was passed creating the administrative structure that exists today. Nepal is divided into 5 development regions, 14 administrative zones, and 75

districts. Most governmental programs are managed at the administrative zone level. However, the original Forest Act focused on forest management at the district level. Each of Nepal's districts now has a District Forest Officer (DFO) managing forests in his district. The District Forest Officer controls 7 to 9 range posts staffed by rangers and forest guards ("the field staff"). The field staff implements the directives of the DFO.

Forest policy focused on management from the national government until the mid 1970s. By then, extensive deforestation led to the consideration of alternative institutional arrangements. Donor countries such as Australia, Germany, Switzerland, the United Kingdom, and the United States created project offices to increase their involvement in forest management in districts where they had a historical relief presence. The 1976 Amendment to the Forest Act allowed the most degraded forests to be managed by local governments. For two reasons, a very small portion of eligible forest area was transferred.<sup>13</sup> First, it was difficult to persuade local governments to invest in wasteland. Second, the Department of Forests still owned the land and had the right to most returns earned from it. By 1988, the inadequacy of 1976 amendment was well established and almost all forestland was still under the Department of Forests. During the period between 1976 and 1988, project donors gradually increased the interaction between projects and district forest offices until project offices took complete responsibility for the funding and management of district forest offices in certain districts.<sup>14</sup>

Currently, there are five external aid agencies that have significant control over district forest offices. The Nepali-United Kingdom Community Forestry Project ("NUKCFP") manages district forest offices in 4 districts in eastern Nepal and 3 districts in western Nepal. The Nepali-Australia Community Forestry Project ("NACFP") operates district forest offices in 2 districts in central Nepal. The Swiss ("SDC") provide assistance for two other central Nepal districts.

USAID funds 3 districts in mid-western Nepal, and Germany's GTZ funds 2 districts in the eastern Terai region of Nepal. The Community and Private Forestry Division ("CPFD") of the Department of Forests operate the remaining districts that lack project funding. The CPFD receives more general program support from multiple sources including the World Bank and the Danish development agency, DANIDA. Many of the aid agencies running project offices also provide some additional program funding to the Department of Forests.

In 1988, the Department of Forests recommended that forests be turned over to local forest users by creating user groups. These forest user groups would be allowed to make their own management decisions and to keep all the revenue they generate.<sup>15</sup> At this point, several project offices began to experiment with user group creation on a larger scale. The actual legislation for user groups passed in 1993 and the formal rules implementing the legislation in hill and mountain areas of Nepal became effective in 1996.<sup>16</sup> The Forest Act of 1993 requires that all accessible forestland in Nepal be transferred to local communities through the creation of forest user groups. The Forest Act of 1993 does not cover the Terai, so in general, I do not analyze user groups created with funds from GTZ.

The Forest Act of 1993 describes how forest groups should be created, and one policy manual provides the minute detail of how to build forest groups.<sup>17</sup> The Forest Act and this policy manual presented uniform rules for the creation of forest groups across all of the hill and mountain areas of Nepal. The field staff, under the direction of the District Forest Officer, is responsible for following this legislation and rules in creating and monitoring user groups in each district.<sup>18</sup> The task of generating new community institutions to manage all forestland in Nepal is a tremendous task, and the Forest Act requires substantial external support. The Forest Act and operational guidelines create a "blueprint" for the creation of new forest groups that should



be the same across Nepal (Varughese 1999).<sup>19</sup> Thus, within the law, there is no scope for the source of funding in the creation of new user groups to influence the implementation of the Forest Act. Nevertheless, there are several ways that the type and source of aid may still influence the resulting institutional environment. Most obviously, the amount of resources that any project devotes to building user groups can vary. In addition, there are two ways for a project to impose its preferences on the groups it creates. First, projects can choose how to interpret the Department of Forests' guidelines in how user groups operate. Second, projects can vary in how they design user groups. In this study, I do not observe how groups operate, but I can consider how vigorously different donors have implemented the Forest Act. Also, I can observe differences in how different donors design these new institutions by considering two institutional characteristics: forest area and number of participating households.

### **3. Data and Methodology**

This paper uses data from the Department of Forests' Forest User Group (FUG) Database (1997).<sup>20</sup> This database is a complete census of all government initiated forest groups in Nepal, and it is maintained by the Community and Private Forests Division (CPFD) of the Department of Forests. It contains information on every user group formed in 59 districts of Nepal through April 1997.<sup>21</sup> These records document when the user group is formed, where it is formed, how much land is transferred to the group, and how many households participate in the group. The remaining districts for which there are not records are Terai districts where the Forest Act does not apply (though there are user groups there), some western hill districts where a Maoist insurgency limits the operation of many government programs, and the independent Kingdom of Mustang. 77% of the forestland in Nepal is in the districts included in the user group census.<sup>22</sup> Because this paper uses the census of forest groups in Nepal and not a sample, the usual

sampling with replacement statistical formula are not appropriate. When I observe differences in program implementation or group characteristics across sources of aid, these differences are the true differences in the population; they are not artifacts of sampling, because there is no sample.

Table 1 illustrates the progression of the implementation of the Forest Act through time in Nepal. Column 3 contains the number of new groups each year, and column 4 reports the running total of forest groups. The number of groups accelerates immediately before the passage of the Forest Act and increases for each year until the final year of our records. Central oversight of district forest offices is weak, so district offices have a great deal of discretion in how they operate. Consequently, many districts elected to form groups before passage of the law, and once it became clear that a law would pass, many districts closely associated with foreign project offices elected to begin implementing the act. By 1997, over 5,000 groups exist in Nepal.

The fifth and sixth columns of table 1 contain the total forest area handed over to user groups and the number of households in new groups for each year. Both increase immediately before the passage of the official law. By 1997, user groups manage approximately 10% of the forest area in the 59 districts for which I have records. Also, 24% of households in the 59 districts are engaged in user groups (71% of households in Nepal are in these 59 districts).<sup>23</sup>

In the remaining sections of this paper, I compare the implementation of the Forest Act across sources of funding for the establishment of new user groups. The type and source of official development assistance used to implement the Forest Act does not vary within a district. Thus, the analysis in the next section is based on comparing the implementation of the Forest Act across districts that are located in potentially different geographic areas. While working with a complete census eliminates any worry about sampling bias in comparing means across sources of aid, I am concerned about omitted geographical differences associated with the location of

different types and sources of ODA. Ideally, I would like to observe types and sources of aid moving in and out of operation randomly in a given location. It is unfortunate that there is no such variation, because the Forest Act in Nepal is one of the largest scale attempts at a major institutional reform, and several other countries are considering similar programs.<sup>24</sup> Thus, the role of development assistance in the implementation of an institutional reform like the Forest Act is of considerable policy interest aside from the academic questions mentioned in the introduction. Absent variation through time in the geographic location of types and sources of aid, one possibility is to look for reasonable assumptions that might permit an examination of the role of development assistance in program implementation.

Hence, after comparing sources of aid across districts, I compare the implementation of the Forest Act in communities located adjacent to policy change borders.<sup>25</sup> A policy change border is a district border with different types of official development assistance on each side of the border. My analysis is based on the idea that communities on opposite sides of a policy change border are comparable (on average). Using geographic coordinates, I calculate the distance from the population center of each community to a policy change border. I select communities with population centers within ten kilometers of a policy change border. Choosing a distance a few kilometers more or less than ten does not affect the results in this section. Next, I match communities on one side of a policy change border (a “treatment” community) to the nearest community on the other side of the policy change border (a “control” community). If the distance between nearest neighbors is greater than fifteen kilometers, the match is not analyzed (this eliminates communities without any adjacent neighbor). I refer to this procedure as “geographic matching.” One difficulty with the geographic matching procedure is that the selected subpopulation is not necessarily representative of the population as a whole. Hence, if I

observe different properties in neighboring communities than in the across district comparisons, I cannot identify the source of this difference.

Figure 1 shows the results of our geographic matching procedure. Figure 1 is a map of Nepal with district boundaries drawn. Districts are shaded to indicate the type and source of aid responsible for implementing the Forest Act in a given district. The number of forest groups per district appears in bold for each district. 21 districts in Nepal do not have any organization designated to assist in the implementation of user groups in these districts. Most of these districts are in areas where the Forest Act does not apply. Despite the lack of legislative backing, there have been experiments with user groups in these areas, and they are pictured in figure 1. The dots on the map indicate communities selected with the geographic matching scheme outlined in the previous paragraph. It should be evident from figure 1 that it will not be possible to compare every source of assistance in creating forest groups. For example, in western Nepal, it is possible to compare areas funded by USAID to areas receiving project funding from the United Kingdom (NUKCFP) or program funding through the CPFDP. However, there are no areas where USAID funded areas are adjacent to Swiss (SDC) or Australia (NACFP) funded areas. Thus, one limitation of geographic matching is that it constrains the number of possible comparisons. However, geographic matching identifies the effects of different types of assistance if, in expectation, a community on one side of a policy change border differs from its nearest neighbor on the other side of a policy change border only by what type of assistance it receives in the creation of new forestry institutions.

#### **4. Aid and Program Implementation**

This section considers variation in the scope of implementation of the forest act across types and sources of official development assistance. I focus on two measures of program

implementation: the amount of forestland transferred and the number of households participating in user groups. I also look for evidence that those areas that are currently lagging behind in program implementation are likely to catch up.

Across sources of funding, there is substantial variation in the fraction of forestland that has been transferred to user groups by 1997 and in the fraction of households involved in user groups. This variation appears in figures 2 and 3. Figure 2 shows the percentage of forestland transferred to user groups per district, ranging from a low of less than one percent of forest area in a district in far western Nepal to almost forty percent of forest area in a central Nepal district. On average, districts funded by the U.K. have transferred 18% of their forestland to user groups by 1997. This is more than districts receiving any other type of assistance. The next highest fraction of land transferred is for districts funded by program aid to the CPF. On average, 8% of forestland has been transferred in those districts. Districts receiving aid from other sources of project funding have transferred a slightly lower fraction of their forestland. These district totals are based on a census of forest user groups and hence are not subject to variability from sampling; the almost 10% difference between NUKCFP project areas and CPF areas represent the actual difference between these areas.

Figure 3 looks at the fraction of households in a district participating in a forest user group by the type of aid. These numbers appear substantially more variable than the fraction of forest area transferred. In some (low population) districts, almost 90% of households are in user groups. Several other districts report 10% or less of households in forest user groups. I cannot distinguish between rural and urban households in the data, so a part of this variation undoubtedly owes to differences in urban and rural populations although most of Nepal's population outside of the Terai and Kathmandu is rural.<sup>26</sup> Nevertheless, the differences

associated with the type and source of aid are striking. 59% of households in NUKCFP areas are in user groups compared with 32% of households in areas funded by program aid to the CPFD.

These across district differences in the scope of program implementation are also evident when I consider adjacent communities. Table 2 looks differences in forestland transferred in adjacent communities and table 3 looks at the number of participating households. All geographic matching tables follow the same structure as table 2. The rows are the policy treatment and the columns are the comparison group. A given cell contains the average difference between the cell value for a community on the treatment side of the policy border and the cell value for its nearest neighbor community on the control side of the policy border. Thus, for the  $n$  communities in a district managed by  $i$  that I compare to nearest neighbors in a district managed by  $j$ , the value in cell  $(i,j)$  for a given characteristic  $C$  is:

$$\frac{1}{n} \sum_{k=1}^n (C_{ki} - C_{kj}).$$

Because I do not observe every possible set of comparisons, there are blank cells in table 2.

Also, table 2 is not constrained to be symmetric. Each community in a treatment area does not need to match to a unique community in the comparison area.

Each cell in table 2 contains mean differences in total area transferred to user groups (April 1997) between communities on policy change borders. As in figure 2, districts receiving project funding from the U.K. appear to be leaders in the transfer of forestland. Communities in NUKCFP funded districts have received substantially more forestland than adjacent communities funded by USAID or funded by program aid. Likewise, when I look at adjacent communities, the Swiss appear much more aggressive in implementing the reform (this was not apparent in figure 2). In contrast, communities where the Forest Act is funded by either the NACFP or USAID lag behind their neighbors. Table 3 compares the number of households per community

participating in forest groups. The image of implementation in table 2 also appears in Table 3. Both NUKCFP and SDC areas have involved more households than their neighbors, and USAID communities have substantially fewer households involved in forest groups.

A natural question in this discussion about differences in the scope of program implementation is whether lagging groups may catch up through time with the donors who have been more aggressive in implementing the Forest Act. By September 1997, the transfer of forestland to user groups has been ongoing for over four years, but there is no end date for the transfer of forestland in the Forest Act. Figure 4 pictures, by source of assistance, the probability a group forms in a given district in a given month. The regression lines are from local regressions of an indicator for if a group forms against a time trend for each of the projects separately.<sup>27</sup> The greater number of forest groups in NUKCFP areas is immediately evident in Figure 4. Areas funded by Australia were initially leaders in the formation of forest groups although the rate of formation in NACFP areas never accelerates as it did in NUKCFP areas. Figure 5 plots the derivative of the estimated regression function with respect to time for each of the projects. In NUKCFP districts, the change in the probability a group forms is higher until the end of the data set when it declines. There is no evidence that I might expect other project areas to catch up. The change in the probability of a new group forming is negative throughout all project areas by the most recent time period.

## **5. Aid and the Characteristics of New Institutions**

There is a vast case-study literature on the determinants of successful common property resource management.<sup>28</sup> The size of the resource being managed and the number of participants are both important attributes that influence a group's ability to manage a resource. Dahal (1994) analyzes seven case studies of forest groups in eastern Nepal.<sup>29</sup> He emphasizes that the ideal

number of households per group varies with local conditions, but in general groups with more than 100 households have difficulty protecting the land, making group decisions, and implementing group decisions. Likewise, the ideal size of forest area to be transferred varies with the local environment. The forest area transferred to a forest group needs to be small enough that the group can protect and manage it, but large enough that the forest boundaries are clearly defined and the users perceive the forest's importance to them. Dahal observes substantial operational problems in groups with small forests (less than 10ha) and one group with an extremely large forest (greater than 300ha). Chhetri and Pandey (1992) report a similar set of findings in their review of case studies from experimental forest groups in two districts in far-western Nepal.<sup>30</sup>

Table 4 summarizes the mean and standard deviations of the univariate distributions of individual group characteristics. I focus on the two group characteristics reported in the FUG census: hectares transferred to a user group and number of households per group. Groups built by funding from the U.K. are smaller than groups built with program funding. On average, a user group in an NUKCFP project area manages 61 hectares with 93 households. In contrast, groups in areas funded with program aid span 70 hectares with 105 households. Thus, user groups in NUKCFP areas on average contain 12% fewer households, spanning 14% less area. Areas funded by the SDC (91 hectares, 120 households) and USAID (84 hectares, 138 households) form the largest groups. Groups have the smallest land area on average in NACFP areas (31 hectares).

A main insight from the case study literature on group characteristics is that the joint distribution of characteristics matter a great deal. A small group managing a large amount of land may have difficulty as will a large group managing a small area of land. Hence, our focus



should be on the joint distribution of group characteristics rather than the univariate distributions in table 4. Figure 6 presents contours based on the joint density of hectares per group and the number of households per group by the type and source of assistance received in creating a group.<sup>31</sup> The density estimate for each contour is labeled on the graph. Forest user groups created by project funding from the U.K. have a mass more tightly compacted around fifteen households and fifty hectares of forestland. Overall the joint distributions of group characteristics look similar for groups created with program aid and with project aid from the U.K, although the center of the mass is more diffuse in groups funded by program aid suggesting greater variety in user group attributes in CPF areas. Other sources of project aid present remarkably different pictures. Groups constructed with funding from Australia look most similar to groups created with program funding or with project funding from the U.K. One obvious difference is that NACFP created groups tend to keep a relatively small number of households and have a smaller fraction of households per hectare by adding larger land areas. Swiss funded districts are immediately adjacent to Australia funded districts, but the mass of the SDC funded distribution is towards more households and more hectares of forestland. Similarly groups created by the USAID and GTZ tend to vary substantially more in their characteristics than groups created with program aid. Both USAID and GTZ areas also have substantially more mass towards larger groups in both characteristics.

In tables 5 and 6, I consider the properties of user groups in adjacent communities. I am limited to the comparison groups where there exist user groups in both (treatment and control) matched communities. Some of the comparisons in tables 2 and 3 are not possible in table 5 and 6, because some treatment and comparison areas do not have any user groups. The results in tables 5 and 6 are similar to what I observed when aggregating over all districts in table 4. On

average, user groups in areas funded by project aid from the United Kingdom span fewer hectares (table 5) and contain fewer households (table 6). In the NUKCFP – CPFDD comparison, the CPFDD control group has on average 105 households covering 63 hectares per forest group. In contrast, the NUKCFP treatment group has 12% fewer households who manage forests that are 30% smaller. User groups funded by NACFP tend to span a smaller forest area than do groups created by either their Swiss or program aid funded neighbors. However, NACFP funded groups tend to have a larger number of members. This result from comparing neighbors is the opposite of what I found in the across district comparison. Swiss funded groups tend to cover a larger area than their CPFDD neighbors, but involve a smaller number of households.

If communities on opposite sides of a policy change border are similar in their latent characteristics affecting group size and forest area, tables 5 and 6 suggest that NUKCFP area user groups manage smaller areas with fewer households than the user groups would manage if they were created by the CPFDD. The local public good management problems faced by user groups are likely to be less in the smaller institutions (Wade 1987).<sup>32</sup> Fewer households make coordination and cooperation between members easier. Smaller forests are easier to protect and maintain. The mean forest size in NUKCFP treatment areas is likely still large enough (44.1 hectares) that user group members may perceive a payoff to maintaining it (Dahal 1994).<sup>33</sup> Of course, fewer households in a group might also mean that more actual forest users are excluded from the group.<sup>34</sup>

The results from geographic matching show that the district aggregates in figures 1 and 2 as well as table 4 may hide some omitted differences between districts. However, the largest differences in the district aggregates are also evident when comparing geographic neighbors. The Forest Act of 1993 has been implemented much more aggressively in areas receiving project

aid from the United Kingdom. The Swiss have been aggressive overall, but they create groups with more land per household than the SDC's neighbors. USAID funded groups also contain more land per household than its neighbors, but in contrast to the Swiss, USAID appears less aggressive in implementing the reform overall. These differences across funding sources in the realization of the Forest Act may affect the success of this institutional reform for at least three reasons. First, group characteristics may affect the success or failure of these new local institutions. The observed variation in program implementation could still be beneficial if it allowed for experimentation and learning across forest user groups in an environment where optimal group characteristics are unknown. However, user groups established under the 1993 transfer of forestland are permanent. At the current stage of implementation, there is little prospect for adapting institutions based on learning or experimentation.<sup>35</sup> Second, the unevenness in reform implementation may impact resource management within Nepal. In the analogous case of privatization, Runge (1986) points out that uncertainty over the management regime accelerates speculative resource destruction.<sup>36</sup> Third, the observed variation in the extent of program implementation across districts may lead to the incomplete transfer of land, because the rate of user group formation is decreasing through time. Picciotto (1997) suggests that incomplete implementation is a primary cause of the failure of many institutional reforms in developing countries.<sup>37</sup> As reasons, Picciotto highlights both the difficulty of formulating policy with heterogeneous institutional environments and the failure of incomplete reforms to generate political capital for support. Thus, the apparent differences in the scope of implementation of the Forest Act and in the characteristics of the newly created institution across type and source of ODA may affect the long-term success of the reform.

## 6. Conclusion

This paper has considered how different sources and types of official development assistance affect the implementation of a large-scale institutional reform. Characteristics of newly established institutions vary with the type (program, project) and source of assistance used in creating these institutions. One donor of project aid appears substantially more aggressive in implementing the reform than anyone else, and the characteristics of the new institutions created by this aid source are more in line with the conventional wisdom about the optimal characteristics of these institutions.

The findings of this paper suggest two broad areas for future research. First, mechanisms for funding and implementing government programs and institutional reforms need to be considered in both policy formulation and evaluation. This paper began with the hypothesis that donor countries prefer to provide project aid when they have different preferences than the aid recipient government regarding the use of funding. I show that institutions created under project aid vary by project from institutions created with program aid. If I neglected the different sources and types of aid, I may draw misleading conclusions about the operation of institutions discussed in this study. Clearly, the impact of sources of implementation funding on program evaluation deserves further study. In addition, there are efficiency, optimality, and ethical questions raised by the heterogeneity in program implementation observed in this paper. These questions merit further discussion and consideration.

Second, more academic attention could be directed to aid flows within countries. The types of questions asked in cross-country studies about the objectives of aid and who benefits from aid seem equally relevant within a country. Further, there may be an advantage to studying these questions within rather than across countries. In general, cross-country studies of aid flows

encounter very difficult estimation problems (Trumbull and Wall 1994).<sup>38</sup> This paper shows the feasibility of studying the allocation of aid within countries. The advantage of within country analysis is the ability to address to the omitted variable problem with program evaluation tools such as the geographic matching used in this study. After controlling for unobserved differences in the physical location of within country aid recipients that receive different types of assistance, this paper shows that scale of program implementation and characteristics of new institutions vary with the type and source of development assistance. Thus, factors other than recipient need impact within country assistance. In their cross-country study, Burnside and Dollar (2000) suggest conditioning development assistance on the type and quality of policies and institutions in a country.<sup>39</sup> By studying the role of aid in the implementation of one institutional innovation, this paper illustrates that aid can impact the policies and institutions that exist within a country.

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<sup>1</sup> For examples, see Alesina and Dollar (1998); Frey and Schneider (1986); Maizels and Nissanke (1984); Mosley (1985); Schraeder, et al (1998); and Trumbull and Wall (1994). Alesina, A. and Dollar, D. "Who Gives Foreign Aid to Whom and Why?" *NBER Working Paper #6612*, 1998. Frey, B and F. Schneider. "Competing Models of International Lending Activities." *Journal of Development Economics*, 20 (1986), pp. 225-45. Maizels, A. and M. Nissanke. "Motivations for Aid to Developing Countries." *World Development*, 12 (1984), pp 879-900. Mosley, P. "The Political Economy of Foreign Aid: A Model of the Market for a Public Good." *Economic Development and Cultural Change*, 33 (1985), pp. 373-94. Schraeder, P., S. Hook, and B. Taylor. "Clarifying the Foreign Aid Puzzle: A Comparison of American, Japanese, French, and Swedish Aid Flows." *World Politics*, 1998, pp. 294-320. Trumbull, W. and H. Wall. "Estimating Aid-Allocation Criteria with Panel Data." *Economic Journal*, 104 (1994), pp. 876-82.

<sup>2</sup> Singer, H.W. "External Aid: For Plans or Projects." *Economic Journal*, 75( 299), 1965, pp. 539-45.

<sup>3</sup> Runge, C. "Common Property Externalities: Isolation, Assurance, and Resource Depletion in a Traditional Grazing Context." *American Journal of Agricultural Economics*, November 1981, pp. 595 - 606.

<sup>4</sup> Wade 1987, Ostrom 1990, and Baland and Platteau 1996 are surveys. Wade, R. "The Management of Common Property Resources: Finding a Cooperative Solution." *The World Bank Research Observer*, 2 (2), 1987, pp. 219-33. Ostrom, E. *Governing the Commons*, Cambridge University Press: Cambridge, 1990. Baland, J. M. and Platteau, J. P. *Halting Degradation of Natural Resources: Is there a Role for Rural Communities*. Clarendon Press: Oxford, 1996.

<sup>5</sup> Card, D. and A. Krueger. "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania." *American Economic Review*, 84( 4), 1994, pp. 772-793. Holmes, T. "The Effect of State Policies on the Location of Manufacturing: Evidence from State Borders." *Journal of Political Economy*, 106( 4), 1998, pp. 667-705.

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<sup>6</sup> Karan, P. *Nepal: A Cultural and Physical Geography*. University of Kentucky Press: Lexington, 1960.

<sup>7</sup> Singer (n. 2 above).

<sup>8</sup> Mosley *ibid.* Jay, K. and Michalopoulos, C. "Donor Policies, Donor Interests, and Aid Effectiveness." in *Aid and Development*, Anne O. Krueger, Constantine Michalopoulos, and Vernon W. Ruttan, eds. Johns Hopkins Press: Baltimore, 1989.

<sup>9</sup> Alesina and Dollar (n. 1 above).

<sup>10</sup> Burnside, C. and D. Dollar. "Aid, Policies, and Growth." *American Economic Review*, 90( 4), 2000, pp 847-868.

<sup>11</sup> Author's calculation from the Nepal Living Standards Survey. Central Bureau of Statistics *Nepal Living Standards Survey*, Kathmandu, Nepal: 1996.

<sup>12</sup> In informal use, Nepal is usually divided into three distinct geographic regions. The Terai is the largely flat area in the southern part of Nepal. The Hills occupy a majority of the country's land area and vary in elevation from near sea level in some valleys to 4,000 meters. The Mountain areas run along the country's northern border and extend up to 8,848 meters. All forest areas over 3.25 hectares in the Terai were also nationalized in 1957.

<sup>13</sup> For a discussion, see Bartlett, A. G. "A Review of Community Forestry Advances in Nepal." *Commonwealth Forestry Review*, 71(2), 1992, pp. 95-100.

<sup>14</sup> Agrawal and Ostrom (2000) discuss the political economy of forestry legislation in Nepal. Agrawal, A and E. Ostrom. (2000). "Collective Action, Property Rights, and Decentralization in Resource Use in India and Nepal." *Workshop in Political Theory and Policy Analysis Working Paper W99-11*.

<sup>15</sup> The official title for forestland still rests with the Department of Forests. In theory, it may take back any forestland not managed properly by a user group. Through September 1997, the Department of Forests has attempted to revoke land from only one group, and its attempt was overturned in court.

<sup>16</sup> The exact status of forests and forestry reform in the Terai was still unclear as of Summer 1997. Because forests in the Terai are both more accessible to roads and composed of species that are commercially valuable, legislation for Terai forests has been much more controversial. Shrestha 1996 describes all forest legislation from 1990 to 1996 in greater detail. Shrestha, K.B. "Present Policy and Legislation in Community Forestry." *International Training Course on Community Forestry*, Lecture Note 2, 1996.

<sup>17</sup> Community and Private Forest Division, His Majesty's Government of Nepal. *Operational Guideline for Community Forestry Development Program* (2051), 1995. Additional clarifications are available in Community and Private Forest Division, His Majesty's Government of Nepal. *Community Forestry Manual*. ICIMOD: Kathmandu, 1995.

<sup>18</sup> Edmonds (2001) describes how the field staff creates user groups. Edmonds, E. "Government Initiated Community Resource Management and Local Resource Extraction from Nepal's Forests." forthcoming in *Journal of Development Economics*, 2001

<sup>19</sup> Varughese, G. *Villagers, Bureaucrats, and Forests in Nepal: Designing Governance for a Complex Resource*. Workshop in Political Theory and Policy Analysis: Bloomington, Indiana, 1999.

<sup>20</sup> Community and Private Forest Division, His Majesty's Government of Nepal. *FUG Database*, Kathmandu, Nepal, 1997.

<sup>21</sup> The database is organized by the Nepali calendar. A Nepali calendar year ends in mid-April of the corresponding Gregorian year. For example, the end of Nepali year 2053 corresponds to April of 1997. Since most of the readers of this paper will be more comfortable with the Gregorian calendar, I use Gregorian years instead of Nepali years while retaining the underlying Nepali calendar structure of the data. Thus, when I refer to the year-end total for 1997, I am referring to the year-end total for the underlying Nepali calendar year (2053) that corresponds to April of 1997.

<sup>22</sup> Data on of the forest cover of individual user groups is from the FUG Database (1997). Data on district level forest cover is from the MENRIS database (1996). The source of forest cover data in the MENRIS database is a land-resource mapping project (LRMP) that ran from the late 1970s to the early 80s. As of 1997, the LRMP is the most recent attempt to map forest resource across all of Nepal (Central Bureau of Statistics 1999). In other research projects, one frequently sees reproductions of the LRMP data cited with a more recent date, but this is the same data used in this paper. If there has been substantial deforestation since the LRMP, a greater percentage of forest area has been transferred. International Center for Integrated Mountain Development (ICIMOD), Mountain Environment and Natural Resources' Information Service (MENRIS). *GIS Database of Key Indicators of Sustainable Mountain Development in Nepal*. ICIMOD: Kathmandu, 1996.

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<sup>23</sup> The household count is from the 1991 census. It is difficult to gauge the accuracy of the 24% estimate both because the number of households may have changed between 1991 and 1997 and because it is possible that a given household may be involved in more than one user group.

<sup>24</sup> In addition to Nepal, India, Thailand, Indonesia, the Philippines, South Korea, Kenya, Nigeria, Ethiopia, Peru, and Brazil are all experimenting with some form of "community forestry." Heinen and Kattel (1992) discuss the international importance of Nepal's forestry legislation. Heinen, J. T. and B. Kattel (1992). "A Review of Conservation Legislation in Nepal: Past Progress and Future Needs." *Environmental Management*, 16, 723-33.

<sup>25</sup> The definition of community for this "geographical matching" analysis is the Village Development Committee (VDC) at a district boundary. Nepal is divided into 75 districts. The basis for current district boundaries is a map composed by members of the Survey of India in 1924-27. District boundaries generally follow water partings and drainage basins although "the whims, conveniences, and strategic ideas" of political leadership have also played a role (Karan 1960). Each district is divided into several VDCs (there are a total of 3,840 VDCs across the 75 districts).

<sup>26</sup> The Kathmandu district is entirely urban and excluded from all of the tables and graphs in this paper.

<sup>27</sup> Fan, J. "Design-adaptive Nonparametric Regression." *Journal of the American Statistical Association*, 87(420), 1992, pp. 998-1004.

<sup>28</sup> See the surveys of the common property literature mentioned in n. 4 above.

<sup>29</sup> Dahal, D. R. *A Review of Forest User Groups: Case Studies from Eastern Nepal*. ICIMOD Press: Kathmandu, 1994. Morrow and Hull (1996) analyze a donor-initiated community forestry program in Peru by using Ostrom's (1990 – n. 1 above) framework. Their findings are similar to those for Nepal discussed in the text. Morrow, C. E. and Watts Hull, R. "Donor Initiated Common Pool Resource Institutions: The Case of the Yanasha Forestry Cooperative." *World Development*, 24(10), 1996, pp. 1641-1657.

<sup>30</sup> Chhetri, R. B. and T. R. Pandey. *User-Group Forestry in the Far-Western Region of Nepal*. ICIMOD: Kathmandu, 1992.

<sup>31</sup> Joint densities are kernel estimates using a Gaussian Kernel and bandwidths selected by Silverman's rule of thumb. Silverman, B. *Density Estimation for Statistics and Data Analysis*. Chapman and Hall: London, 1986.

<sup>32</sup> Wade (n. 4 above).

<sup>33</sup> Dahal (n. 29 above).

<sup>34</sup> For a discussion, see Gibbon, H. "Some Thoughts on NUKCFP's CF Support Strategy." *NUKCFP Memo*, July 1996.

<sup>35</sup> In Nepal, a cross-learning program allows members of user groups to visit user groups in other districts. This program focuses on forest management and dispute resolution approaches. This program cannot change the permanent characteristics of user groups discussed in this paper.

<sup>36</sup> Runge, C. "Common Property and Collective Action in Economics Development." *World Development*, 14(5), 1986, pp. 623-35.

<sup>37</sup> Picciotto, R. "Putting Institutional Economics to Work: From Participation to Governance." in *Institutions and Economic Development*, Christopher Clague, ed. Johns Hopkins University Press: Baltimore, 1997.

<sup>38</sup> Trumbull and Wall (n. 1 above).

<sup>39</sup> Burnside and Dollar (n. 10 above).

**Table 1: New Forest User Groups Per Year**

Year		# of New Groups	Total # of Groups	New Area Handed Over	Households in New Groups
(Gregorian)	(Nepali)				
1984	2040	5	5	423	669
1989	2045	6	11	288	478
1990	2046	36	47	576	3,201
1991	2047	44	91	2,160	6,250
1992	2048	104	195	5,227	10,668
1993	2049	565	760	30,477	62,247
1994	2050	1014	1774	63,791	103,307
1995	2051	1281	3055	81,832	136,083
1996	2052	1417	4472	99,755	144,584
1997	2053	838	5310	70,894	97,174

source: Department of Forest's Forest User Group Database, Sept. 1997. Year totals are through the end of the Nepali calendar which corresponds to mid April of the Gregorian Year.

**Table 2: Differences Between Neighbors in Total Area Transferred to User Groups**

<u>Treatment</u>	<u>Control</u>					
	CPFD	NUKCFP	NACFP	SDC	USAID	GTZ
<b>CPFD</b>		-71.4	139.3	-143.2	97.4	927.2
<b>NUKCFP</b>	94.5				65.9	
<b>NACFP</b>	-47.6			-66.2		
<b>SDC</b>	122.9		120.2			
<b>USAID</b>	-234.4	-127.3				
<b>GTZ</b>	-1571.0					

Each cell contains the average of the difference in total forest area transferred per community in April 1997 between each selected community in the treatment group and its nearest neighbor in the control group. Only 1 USAID treatment community matches to a NUKCFP Control community.

**Table 3: Differences Between Neighbors in Number of Households in User Groups**

<u>Treatment</u>	<u>Control</u>					
	CPFD	NUKCFP	NACFP	SDC	USAID	GTZ
<b>CPFD</b>		-130.9	91.2	-93.2	145.7	766.8
<b>NUKCFP</b>	123.9				200.7	
<b>NACFP</b>	41.7			-90.4		
<b>SDC</b>	144.4		201			
<b>USAID</b>	-277.7	-315				
<b>GTZ</b>	-1336.5					

Each cell contains the average of the difference in total households in forest groups per community in April 1997 between each selected community in the treatment group and its nearest neighbor in the control group.



**Table 4: Individual User Group Characteristics by Project, April 1997**

Project	Number of Groups	Hectares Per Group	Households Per Group
CPFD	3481	70.2 (124.8)	105.3 (92.3)
NUKCFP	1192	60.7 (92.4)	93.0 (72.8)
NACFP	185	30.8 (41.4)	110.0 (103.1)
SDC	147	91.4 (103.3)	119.5 (94.2)
USAID	336	83.8 (134.3)	137.5 (147.9)
GTZ	49	73.3 (137.1)	116.8 (106.1)

Project office and user group characteristics are from the Forest User Group Database (1997). Columns two and three contain the Average of each characteristic computed by project office. Standard deviations are in parenthesis.

**Table 5: Differences Between Area Transferred Per Group**

<u>Treatment</u>	<u>Control</u>					
	CPFD	NUKCFP	NACFP	SDC	USAID	GTZ
<b>CPFD</b>		11.9	19.8	22.3	53.6	
<b>NUKCFP</b>	-18.9					
<b>NACFP</b>	-11.8			-8.8		
<b>SDC</b>	17.0					
<b>USAID</b>	3.1					
<b>GTZ</b>						

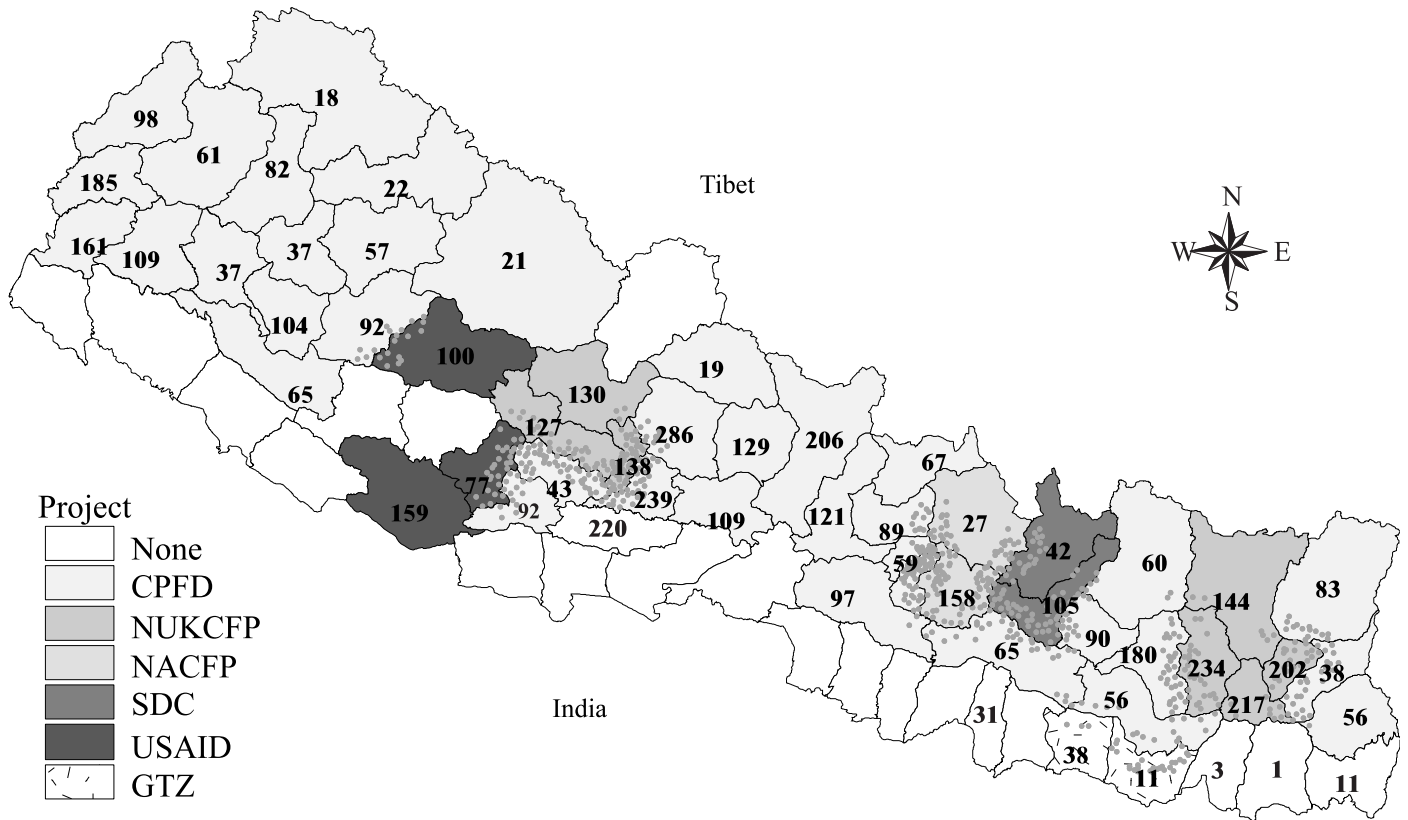
Each cell contains the average area transferred per user group in a treatment community minus average area transferred per user group in the treatment communities nearest neighbor across a policy change border, averaged over all the communities in the cell (April 1997).

**Table 6: Differences Between Households Per Group**

<u>Treatment</u>	<u>Control</u>					
	CPFD	NUKCFP	NACFP	SDC	USAID	GTZ
<b>CPFD</b>		25.7	-8.5	63.9	1.5	
<b>NUKCFP</b>	-12.1					
<b>NACFP</b>	30.8			51.3		
<b>SDC</b>	-10.0					
<b>USAID</b>	-12.5					
<b>GTZ</b>						

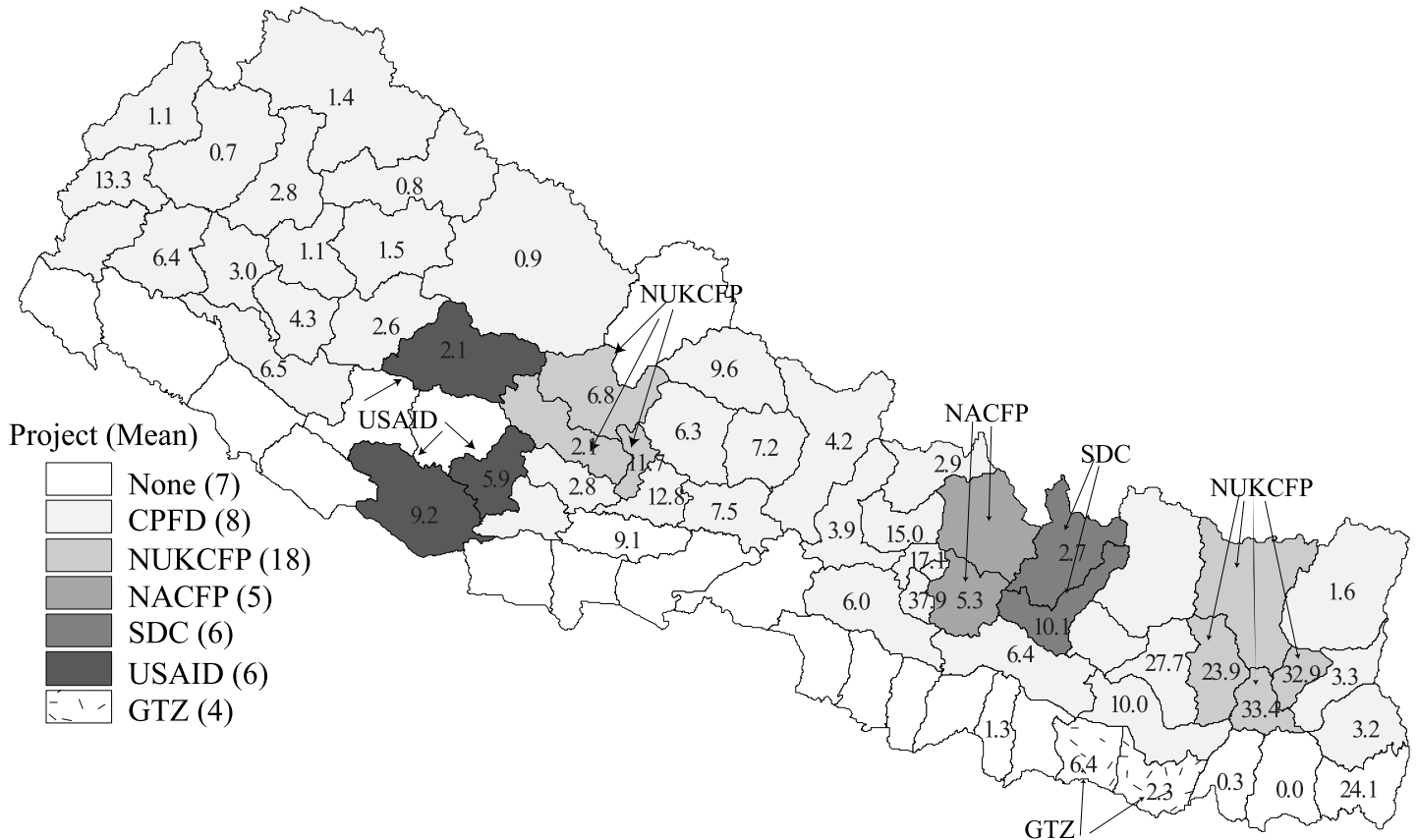
Each cell contains the average number of households per user group in a treatment community minus average number of households per user group in the treatment communities nearest neighbor across a policy change border averaged over all the communities in the cell (April 1997).

**Figure 1: Populations Centers of Selected Communities by Source of ODA**



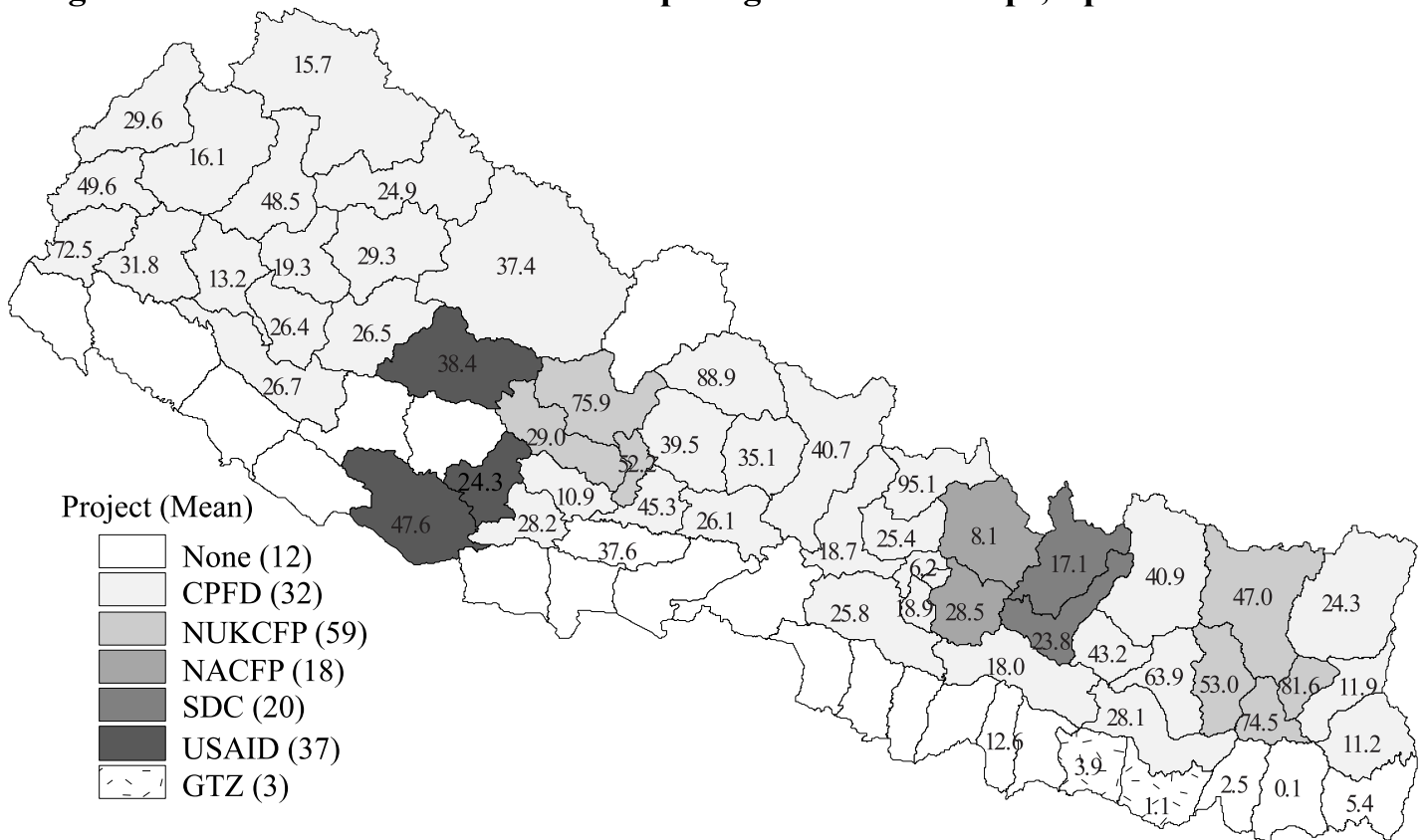
A VDC is selected if its population center is within 10km of a policy change border and its nearest neighbor across the policy change border is less than 15km away. The number of forest groups in a district (April 1997) is pictured (FUG Database 1997).

**Figure 2: Percent of Forest Area Transferred to Forest Groups, April 1997**



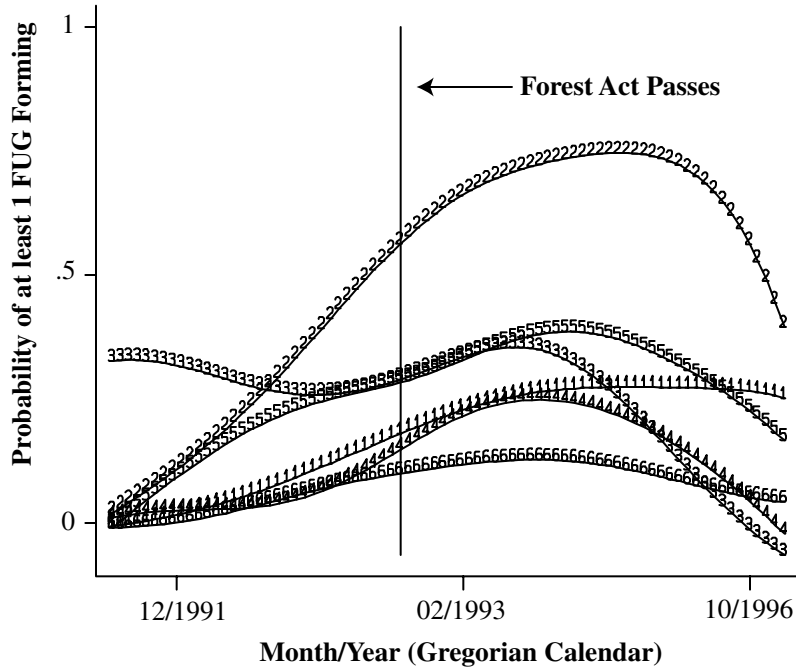
Forest area transferred to user groups from Department of Forests' Forest User Group Database (September 1997). District forest areas from MENRIS database (1996). Some districts are missing total forest area data.

**Figure 3: Percent of Households Participating in Forest Groups, April 1997**



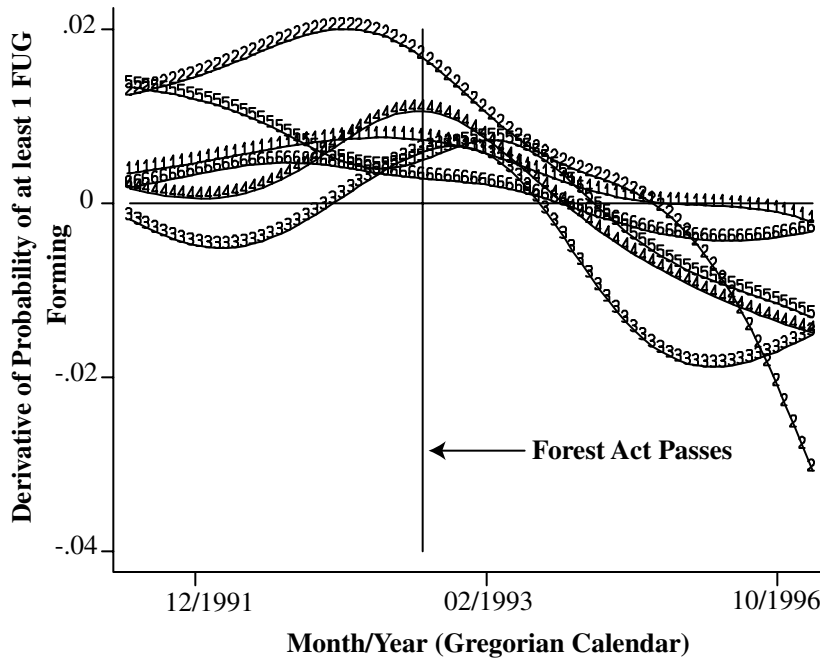
Households participating in forest user groups from Department of Forests' Forest User Group Database (September 1997).  
 District household totals from MENRIS database (1996).

**Figure 4: Probability of New FUG Forming on Time by IGO (local regression)**



note: The Forest Act of 1993 was passed in the Nepali calendar year ending in April 1993. The Forest Act of 1993 was actually passed during Gregorian calendar year 1992.

**Figure 5: Change in Probability of New FUG Forming by IGO (derivative of local regression)**



Key: 1-CPFD; 2-NUKCFP; 3-NACFP; 4-SDC; 5-USAID; 6-GTZ

