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RIGHTS OF ACCESS TO UPLAND FOREST RESOURCES IN SOUTHWEST CHINA

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Summary

The relationship between levels of power and decision-making in a forest resource management system is examined, with a focus on the shifting balance between coercion and incentives as a means of achieving management goals over the last forty years in six villages in southwest China. Data gathered by interviews and questionnaires in poor rural counties suggest that an emphasis on controlling access to forest resources may be less effective than providing incentives for communities to manage them. Where such incentives exist, however, there is a danger that these may be stifled by bureaucratic procedures, which amount to yet another set of controls imposed by the state.

INTRODUCTION

In principle, forest managers seek to achieve and maintain a balance between the need to conserve a resource for future generations, and the contemporary needs of society and of forest dependent communities. Many attempts have been made to regulate forest utilisation to meet these objectives. They range from the traditional strict regulation by state agencies of access and utilisation, to current interest in community-based control. These forms of management have often been found wanting in terms of their effects on the forest resource on the one hand, and on the livelihood of rural communities, on the other. In Southwest China, as in many other parts of the world, the remaining natural forest is nearly all in mountainous areas, so that questions of forest policy have a direct impact on the livelihood of mountain communities.

This paper looks at the ways in which changes in forest policy in China over the last forty years have affected six villages in Songming County, Yunnan Province. It emphasises the importance of village and household research in understanding how policies are implemented and their effects on patterns of development. Based on data gathered during an exercise in rural household surveys in Yunnan, we suggest that an emphasis on controlling access to the resource may be less effective than providing incentives for communities to manage their resources, and that where incentives do exist, there is a real danger that bureaucratic

procedures may stifle those incentives, amounting to another set of controls.

Most of the information for this study was collected during research carried out in January 1990 in Hetao administrative village, Songming County, Yunnan Province. The research was a part of a course in survey research methods to train about twenty participants in an uplands management programme being run by Winrock International and the Yunnan Provincial Bureau for the Alleviation of Rural Poverty (abbreviated to *Fu Pin Ban* in Chinese), with funding from the Ford Foundation. The course included two field visits to Hetao village, the first visit lasting three days, the second lasting four days. During the first visit, students used semi-structured interview techniques to identify key questions about poverty and poverty alleviation in the village. During the second visit, they used formal survey techniques, administering questionnaires they had developed to a random sample of the 263 households in the village, and finally spent a day in participant observation getting a first hand understanding of the agricultural and sideline activities in which villagers were involved that day.

Though the sample size and other aspects of this research make it impossible to treat the findings as "statistically significant", the villages were small enough that someone was interviewed at some point in nearly every household. In addition to supervising the researchers in the field, the authors also conducted their own team interviews in households and with village leaders in every natural village. In spite of the relatively short research time, therefore, the high respondent-researcher ratio gave us an unusually comprehensive coverage of the various social groups in the villages.

In this paper we examine the role of controls and incentives in forest management in China and at how these roles are manifested in layered tenurial institutions reaching down from the state to households or individuals. We conclude that the reallocation of rights to resources from communal and state ownership to private management has taken a unique twist in China because of the social responsibilities which are attached to usufruct rights held by households or individuals. Most importantly, we find that improved management of forest resources has not necessarily followed changes in natural resource policy, nor is there a simple relationship between the forms of tenure and the sustainability of management: rapid timber cutting and deforestation have occurred in periods of communal organisation as well as in the supposedly more individualistic period of reforms which have allocated resources to households. What has changed are the reasons for cutting, and the locus of decision-making. The reason for cutting has shifted between state or collective gain and private gain. Management decisions have been made at different times by the household, the collective, or the state itself. We suggest that although the new contract and responsibility systems are

important steps toward improving villagers' access to forest resources, the strict controls imposed by the state have had unintended effects. First, they have led many forest villagers to ignore the labyrinth of bureaucratic rules regarding rights to cut timber. Second, they have led to the development of local, informal institutions regulating forest access and disposal of timber and other forest products. Third, they have led to overcutting of the villages' timber resources in terms of the state's definition of allowable cutting quotas. In sum, the state's forest policy has not been effective because implementation of the policy emphasises villagers' responsibility to protect and manage the forest and disregards the complementary notion of rights to the forest.

RESOURCES MANAGEMENT

Land in China is legally owned by the state, which leaves the allocation of responsibility for management of most rural land to village authorities. Villages may then allocate management to the whole village, to groups within the village, or to households. Rural China offers an example of a form of common property in which there are several layers of control and incentives, and of rights of access, management, and utilisation. It is widely agreed that a common property resource is not the same as an open access resource. There is perhaps less agreement on just what are the characteristics of a common property resource. In this paper we restrict our discussion to agricultural and forest resources. We argue that a common property resource must be seen as more than a physical stock of goods or services under the control of a group of users. It includes the resource itself, the goods and services provided by the resource, and the capacity to take decisions about management of the resource. By tracing links between changes in policy and in land use in Hetao village over the last century we suggest that control over resources, and particularly over common property resources is determined by a complex of factors many of which may be external to the immediate users of the resource. The condition of the resource reflects changes in these factors.

To understand the effectiveness of a set of resource management policies, whether they emphasise controls or incentives, or a combination of both, it is important to view those policies at different hierarchical levels, and especially from the perspective of villagers whose livelihood depends to some extent on the resource. Comprehensive interdisciplinary research well grounded in both social and natural sciences is needed to predict the outcome at the village level of policies designed to improve rural living conditions. Whether the state, the collective or an individual is the legal owner of land and trees on the land, the formal and informal arrangements regulating access and their enforcement effectively determine the patterns of utilisation of the resource. Changes in regulatory systems and in the way they are enforced *in situ* affect both the

community and its forest. Policies governing forest resources are usually determined by agencies located in regional or national capitals, far from the forest resources and the people who use them. As a result, village leaders and the villagers themselves interpret and carry out policies to suit local conditions and their own needs. The way in which they do this plays itself out on the forest resource so that it is impossible to understand one without some understanding of the other (Romm, 1989).

Different organisational levels within the administration interpret and apply the same policies in different ways so that their effects on the rural population vary considerably at the village level. While uneven application of policies may be a factor in uneven patterns of development, there is also a danger in ignoring local differences and imposing one set of rules and regulations without any regard for differentiation over a large area. If the same allocation for timber harvesting, for example, is passed down to several villages regardless of uneven distribution of forest cover, some villages may experience environmental degradation (with possible negative effects on agricultural and sideline activities), while others may prosper on the income from timber sales. Thus a policy may exacerbate differentiation which it was initially expected to avoid.

Any forest management or regulation system, whether in the form of state laws and policies or informal customary laws and practise, generally includes components of both controls and incentives meant to produce a mix of goods and services from the forest distributed in a way which is considered to be in the 'public interest'. The 'public interest' is itself a construct defined by the prevailing ideology of the country or the area where the regulations are being applied. Controls regulate utilisation of the resource to achieve the desired objective. Incentives are expected to encourage forest residents or forest dependent communities to act in such a way that the same objective will be reached.

Controls and incentives, the basic components of this conceptual framework, break down further into sub-components which can be investigated in the field using different lines of questioning at various levels of analysis (Fig. 1). Policy makers should be asked about the intent of particular policies or laws. Bureaucrats operating at different levels of control can be asked about the difficulties they experience in implementing the law. Village leaders can be interviewed about the kinds of instructions they receive from their superiors about these same laws. Farmers can then be asked about the procedures they actually follow in resource utilisation. If the interviews are conducted in a positive manner, without implying fault or blame for failure, and if the interviewer is sympathetic to the often conflicting constraints facing different respondents, a complex picture should emerge. It is also important to discuss other policies and practices, seeking alternative or compounding factors which might cause particular patterns of use or policy making, although these can also appear contradictory.

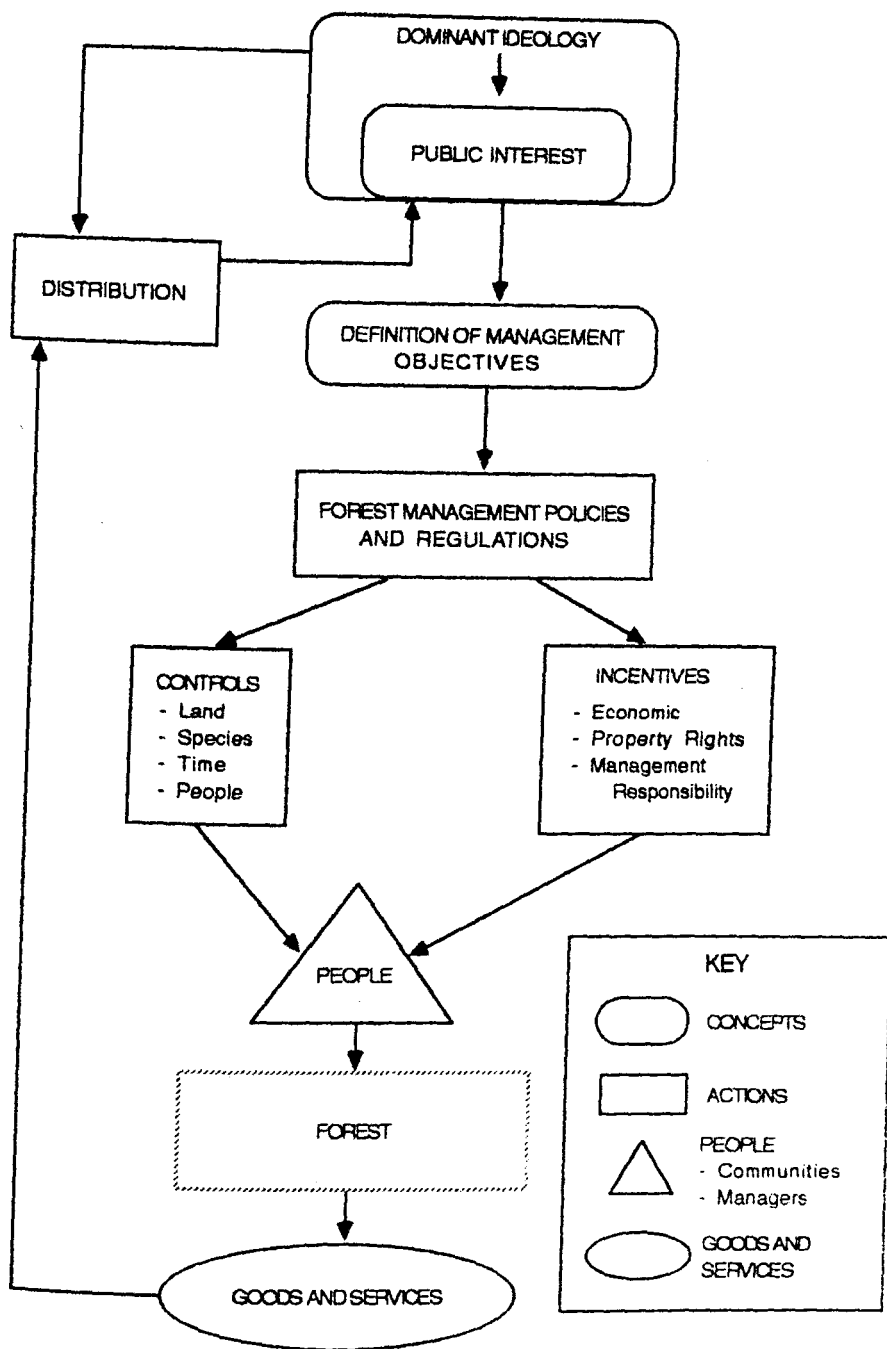


Figure 1. Conceptual framework of forest management

On a large scale, states have chosen different approaches to retain control over natural resources. In some cases, they have adopted policies of exclusion to close off access to the resources to all but their own agencies. In other cases they have encouraged settlement in the area in which the resource is located, and then tried to exert control over the settlers (Menzies, 1989). Control may be exerted over access to the land itself, over rights to utilise the products from the land (sometimes limited to restrictions on the use of certain species rather than over all forest products), and over the users of forest resources (Peluso, 1991). These controls may include regulations on marketing forest products, or on participation in management decisions concerning the forest resource. There is often an element of coercion involved in applying these controls—most obvious where agencies deploy armed forest guards to protect the forest, or where checkpoints and armed patrols watch for timber poachers.

Economic incentives may take the form of a package of tax incentives to private or non-state owners of forest land to encourage them to keep the land under forest rather than to convert to a more immediately remunerative form of land use. They are less common where most forest land is owned, or at least claimed by the state or a parastatal agency. In these cases, the agency usually treats the forest residents or forest-dependent communities as a threat to the integrity of the forest, and emphasises controls and coercion to keep people out.

There are cases, though, where a variety of other incentives are being explored as a way to deal with the often contentious relations between government agencies and nearby communities. Adjustments in property and usufruct rights are an area of incentives which are currently receiving a lot of attention, especially where pressures due to demographic changes and increasing economic scarcity of forest products cast doubt on the effectiveness of strict controls over access. By treating property as a 'bundle of rights', rights in forest land can be disaggregated into different components and reallocated to reach an outcome more desirable to all parties. Usufruct rights may be considered separately from land ownership rights, giving local people the opportunity to use land or trees without owning them. The agency and members of the community may allocate management responsibilities between themselves, or they may divide the rights to the benefits from forest land giving local people more incentive to invest in forest management (Fortmann and Bruce, 1989).

In fact, most systems of forest management and regulation today are composed of a mix of coercive controls and incentives. Whatever the mix at the level where policy is made (usually in national or regional capitals), the outcome in terms of the goods and services derived from the forest, and the effects on the condition of the forest itself cannot necessarily be predicted from the policy alone. Management policies and objectives are

filtered through different levels of administration and social organisation, as well as through the perceptions and actions of people having direct access to the resource.

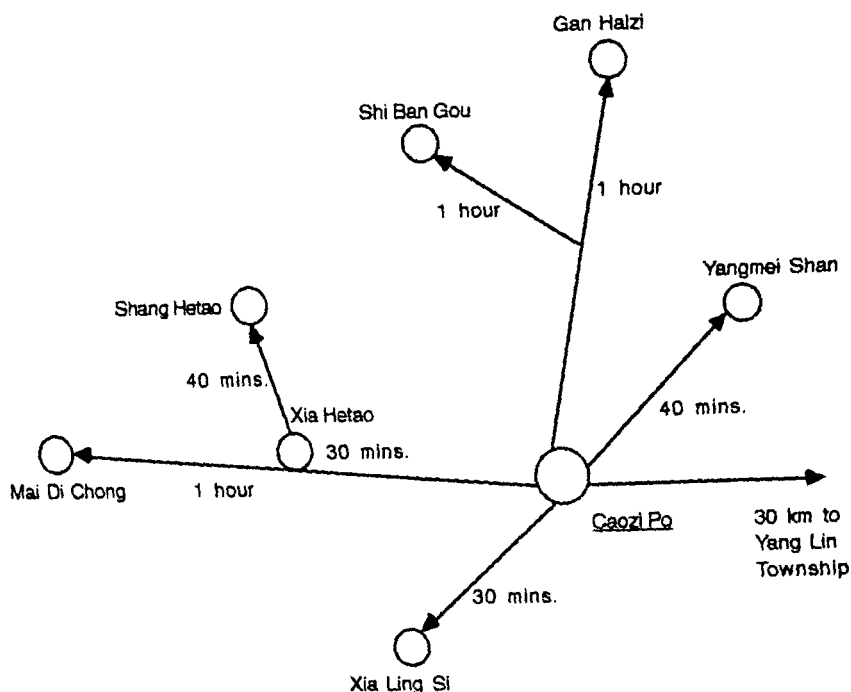
During the last fifty years, China has experienced a number of profound political and social changes. Resources policies and the ways in which they have been carried out have reflected these changes, with coercion and incentives predominating at different periods. The opportunity to conduct a fairly detailed survey of one mountainous, forested area, during January 1990 allowed us to learn how such policies had affected some of the forest dependent communities in the area, and to develop some hypotheses about what seem to be important aspects of both controls and incentives as tools for forest management.

A CASE STUDY: HETAO VILLAGE, SONGMING COUNTY

Hetao administrative village¹ consists of six natural villages located in an arc around the central village of Caozi Po, the site of the village administrative offices (Fig. 2). The villages are relatively small, by the standards of villages in this part of Yunnan Province². Mai Di Chong and Shi Ban Gou, the largest villages apart from Caozi Po itself, have about 50 households each, and Yangmei Shan, the smallest, has only 9 households. The closest village to Caozi Po is Xia Hetao (Lower Walnut) which is an easy walk of about thirty minutes along the only dirt road going through the village. Mai Di Chong, Shi Ban Gou, and Gan Haizi are all about one hour's walk. The administrative village is in mountainous country at an elevation of 1,800 metres, about 25km southeast of the township of Yang Lin, itself about 60km east of the provincial capital of Kunming.

At the time of the survey 1,299 people lived in Hetao village. They were all Han (ethnic Chinese). Different natural villages were settled at different times, with the most recent arrivals being the residents of Yangmei Shan who first arrived some fifty years ago as refugees from famine in nearby Guizhou Province. Oral histories were vague about when settlers first arrived, but most informants agreed that they first came to Gan Haizi village.

The mountainous terrain and altitude meant that settlers first opened land wherever local conditions allowed cultivation. Agriculture depended on suitable micro-environments where there was enough soil, or where local conditions protected the crops from frost and other natural disasters. Rice grew in the valley bottoms. In at least one village, villagers used a rotational fallow system on the upper slopes of the mountain growing buckwheat for one year, and leaving the fields fallow for two. Forest land provided timber for construction and hardwoods were used to produce charcoal for sale in nearby market towns.



VILLAGE DATA:

Caozi Po (Administrative office) 60 households
 Xia Ling Si 20 Households
 Mai Di Chong 50 Households
 Xia Hetao (Lower Walnut) 30 households
 Shang Hetao (Upper Walnut) 20 households

Shi Ban Gou 50 households
 Gan Haizi 20 households
 Yangmei Shan 9 households

Figure 2. Sketch map of Hetao administrative village, Songming County, Yunnan, showing distances in walking time from Caozi Po (village administrative office).

Over the last twenty years, villages have gradually switched from rice to wheat. Wheat fetches a lower price than rice, but yields are so much higher than rice yields used to be that they earn enough to purchase the rice they consume and still earn more income than they had with rice. Another advantage of growing wheat is that relay cropping of maize provides further grain for household consumption with enough surplus to

raise livestock (mostly pigs). It is not clear just when villagers began to change over from rice to wheat or why, and different informants gave different accounts of the process by which it happened. These included stories of politically inspired directives being handed down to villagers during periods of mass mobilisation such as the Great Leap Forward (1958-59). At this time, the residents of Mai Di Chong, for example, were instructed to peel the whitewash off their homes to use as fertiliser on the rice fields. This had a disastrous effect on rice yields, and older women interviewed in the village felt that it was this *débaclé* which prompted villagers to look for an alternative to rice.

Since 1987, the administrative village has been the target of an effort directed by the Kunming city government to increase grain production to raise income levels in Hetao. This assistance has taken the form of supplies at subsidised prices of plastic sheeting (for use as mulch on maize), some assistance with fertiliser and improved seed varieties, and subsidised supplies of fruit trees. Grain production has increased, allowing families to raise more livestock (mostly pigs) which are one of the most important sources of cash income for households. It is not clear, though, whether the technology would be willingly used if it were not for the subsidies.

A brief chronological account of the land use history of Hetao village will help trace the way in which policies related to resources management have been applied here. Following this history, we will discuss the mix of incentives and coercion used in each period in agricultural and forest resource management.

The History of Settlement Before 1949

One informant in Gan Haizi village claimed that the small valley in which the village is located was first settled during the time of Qin Shi Huang (221 BC). This is most unlikely given the settlement history of Yunnan, but local sources do agree that it was the first part of Hetao to be settled. The village is located in a narrow flat bottomed valley with relatively deep soils (*Gan Haizi* literally means 'dry sea bed'). Being the first settlement, villagers were able to claim a large area of land as their own, and they still own significantly more agricultural and forest land than any other village in Hetao³.

Xia Ling Si and both Hetao (Walnut) villages (Upper and Lower Walnut)⁴ were settled during the mid-nineteenth century. Xia Ling Si was originally the site of a monastery and a temple. The temple owned land which it rented out to neighbouring villages. Oral history here says that the temple was destroyed during a rebellion known locally as the "Uprising of the small Swords". While nobody could say how long ago this was, it may have occurred during the mid-nineteenth century, a

period in which a number of rebellions took place in Yunnan⁵. One informant said that most of the villagers in Xia Ling Si "are relative newcomers—they came at the time the temple was destroyed and they rented land from the people who had previously rented it from the temple"⁶.

One old resident of Lower Walnut village said that two families, the Chen and the Li had migrated here from Nanjing during the Dao Guang period of the Qing Dynasty (1821–1851). One family went up the hill to found Upper Walnut and the other family stayed down below, founding Lower Walnut. At the time there were not many people so they planted crops wherever conditions were most suitable. There was no demarcation between the territory of the two villages, and the patchwork pattern of ownership which emerged still persists today for both agricultural and forest land.

Little information was available from Shi Ban Gou and Mai Di Chong except that "there were not many people in the village before Liberation". More is known, though about Yangmei Shan, the last village to be settled. The first settler came there from Guizhou in 1924. He began by working as a wage labourer making charcoal until he had enough money to rent a piece of land. Further families arrived over the next twenty years, with the last family coming in 1948. The nine households of Yangmei Shan, being late arrivals, found no available unclaimed land and they had to purchase or rent land from their neighbours, mostly from Caozi Po and Gan Haizi.

From Liberation (1949) to the Collective Period (1956)

This survey did not reveal the extent of landlord control in these villages. The village head of Mai Di Chong suggested that every household controlled some forest land, at least, although he did not talk about agricultural land. Landlords did exist since some villages had one or two larger houses, now abandoned, which were said to have been the landlords' houses before the land reform which took place in 1952⁷. On the other hand, one informant in Shi Ban Gou—where there was a former landlord's house—said "everyone was so poor here that land reform did not make much difference". The impression that land reform may not have had much impact on land use patterns is reinforced by a report from Xia Ling Si that people were simply allocated the land they had been renting.

Land reform must have relieved some of the hardships of day to day survival, but overall, villagers gave the impression that there was little noticeable change in their lives during the early years of the People's Republic. Few people referred to this period in particular and even when they did it was with reference to the "collective period" which represented a far more profound upheaval in the way they organised their lives and

managed their land. There were a few examples of activities involving the combined efforts of several households, but they were very limited in scope. One person in Gan Haizi said that there had been a collective effort to plant a patch of bamboo before the commune was established, but that most bamboo had been planted in 1966. The main institutionalised form of collective action during this period was the mutual help group (*Hu zhu zu*), which seems to have been limited to a small number of sideline activities. People in Xia Ling Si said that they were formed in 1956, while one participant during a group interview with old men in Mai Di Chong mentioned that “we formed mutual help groups soon after land reform which happened in 1952... they mostly organised charcoal production”. At this stage, the emphasis seems to have been on giving land to the tiller without any real attempts at social engineering by enforcing equality.

The Collective Period (1956-1981)

This quiet picture changed between 1956 and 1958. The mutual help groups were on a small scale and directed towards specific tasks—such as charcoal production. As the People’s Republic deepened its ideological commitment to a planned, collective society, strong political pressures led to the formation of cooperatives which were very quickly transformed into communes. In Gan Haizi a ‘preliminary Commune’ was set up in 1958, and in 1960, the village formally became a production brigade under the Luo Shui Dong brigade, Yang Lin commune⁸. The commune period is usually referred to as the “collective period” and has left few fond memories behind it other than, perhaps, among those who were able to benefit from their positions as commune officials and administrators. One of the rare positive things anyone remembered from this period was that the collective organised assistance for those in need: “During the collective period there was one disabled person in the village. We arranged for people to look after him, getting water and so on. Now nobody ever does anything like that.”

The principal building block of political and administrative organisation was the commune composed of several brigades, below which were the production brigades. The production brigade seems to have been the level at which decisions were made which affected the daily lives of villagers, while decisions and actions taken by the brigade had a lasting effect on the landscape in which they live. The production brigade decided which crops were to be planted. It decided on the food allocations to commune members who also worked for workpoints for which members received monthly or annual cash payments⁹. Decision-making was taken out of the hands of farmers and placed in the hands of a rural administration of appointed officials. As one farmer in Mai Di Chong remarked cynically “the advantage of the collective period was that you didn’t have to think much, you just did what you were told...”.

The establishment of the communes in 1958 coincided with the mass mobilisation known as the Great Leap Forward. A burst of infrastructure construction in rural areas showed the power of the new planned and collectivised social order to organise people to carry out tasks such as reservoir and road building on a large scale. In the years which followed, the evidence of resources wasted on poorly planned construction projects, and the disastrous scale of the famine which followed the Great Leap Forward partly due to the inflated reports of increases in agricultural production have also revealed the dangers of such a system in which there were no mechanisms to temper the decisions of leaders at all levels of the hierarchy. One of the best known of the Great Leap Forward plans was the nationwide movement to set up backyard steel furnaces in the effort to produce enough steel for China to advance rapidly to the ranks of the advanced nations. In most parts of Yunnan the inevitable answer to the question "when was the worst period of deforestation?" is 1958. Mountains were stripped of their forests to feed inefficient steel furnaces which were small and rarely produced steel of any industrial value. In Hetao, people had little to say about backyard steel furnaces suggesting they were not introduced here. The Great Leap Forward affected them because of a decision to build a reservoir near the village. Several villages reported that the men had to work on the project so that women made up almost the whole of the agricultural labour force at the time. Much wooden scaffolding was needed to build the reservoir, and the brigade organised extensive cutting of timber in certain hamlets—even cutting down forest that an informant in Shi Ban Gou described as 'officially designated village protection forest'¹⁰.

The brigade organised sideline brigades which carried out activities such as large livestock production and timber cutting. Every production brigade sent workers to these sideline brigades. The workers received work points for their labour. Income from timber sales went to the collective and some was redistributed in the form of reimbursements for work points. During the Great Leap Forward, the sideline brigades supplied construction timber for the reservoir. Later on, they cut hardwood for pit props (for the mines). To simplify management, cutting was organised in blocks, starting with the forest in Mai Di Chong which is the village closest to a coal mine in Yiliang county. In addition, during 1971 and 1972, some of the forest around Gan Haizi was cleared as part of a plan to build a road into the village. The result of these twenty-three years of collective management might be described as localised planned deforestation leading to an even more uneven distribution of mature timber trees and forest than had previously been the case.

The Period of Reform (1981 to the Present).

By the late 1970s it was clear that agricultural production had reached a plateau or was actually falling. Experiments with new forms of ownership in a small number of provinces (not including Yunnan) had successfully demonstrated the role of private or group tenure in stimulating the enthusiasm of farmers to reach levels of production unheard of in the communes. In 1981 other provinces were encouraged to try the new system, known as the responsibility system, and it was widely implemented by the next year.

Under the responsibility system, the state owns all land. Farmers sign contracts with the local authorities (representatives of the state) by which they guarantee to supply a specified amount of grain after which they are free to sell whatever they produce on the open market. Exemptions to the contract terms are allowed in cases of drought, pest, or other natural disasters. In principle, contracts should be for staple grains, but there is flexibility within the system to contract for other crops, allowing adaptation to local conditions and markets. Households also continue to own the same small plots of freehold land (*ziliu di*) near their homes which they have owned and used as they wished since the Land Reform of 1952. Similar arrangements based on some form of contract between the collective and households have been devised for forest land and even, in some places for aquatic and mineral resources.

In the case of forests, land is divided into two major categories: state and collective land¹¹. State land is owned and managed by the state. Collective land is under the jurisdiction of the collective (the natural village or other administrative unit). Some land may remain under collective management and is referred to as collective mountain or forest (*Jiti shan/Jiti lin*). Some land, generally referred to as 'contract (or responsibility) mountain' (*Chengbao shan*) may be allocated to households under a management contract specifying distribution of responsibilities and benefits between the contractor and the collective. Other land is usually referred to as 'freehold mountain' (*Ziliu shan*) and is supposed to be managed by the household with a minimum of interference from the collective.

In each village, reallocation was carried out by a working group composed of officials from the county, the administrative village, and the natural village¹². The working group classified all agricultural land into three categories on the basis of soil types, slope, and soil depth. The stock of land was then divided up between the number of people in the village at the time, with each individual receiving some of each quality. Individual trees which had been planted on agricultural land before collectivisation were returned to the planter—even if the land itself had been allocated to another household. Collectives decided on the time contracts would run before a new round of allocations is made, and fifteen years now appears

to be the norm for agricultural land throughout China. Yang mei Shan was the first village to have land reallocated according to the new responsibility system, in 1981. Other villages in what had been Yang Lin commune followed in 1982.

The present pattern of land ownership at the village level shows the influence of the historical pattern of settlement. Gan Haizi still has the most land, and Yangmei Shan still has the least. Informants all noted that at the time of reallocation, the first stage of the process had been to redefine the boundaries of natural villages as they had existed before collectivisation. Legally, land may not be bought or sold or rented. A change in status is only allowed in the course of an official readjustment (*tiaozheng*) when contract terms have expired. Land now is so unevenly distributed, though, that villagers in Yangmei Shan are obliged to rent land from neighbouring villages—especially from Gan Haizi—for both agriculture and house building. It is unsettling to find patterns of inequality being deliberately recreated after a hiatus of some thirty years, but it says much about the persistence of relationships of power and interdependence between villages in the face of attempts at social engineering imposed from above.

Forest land was reallocated at the same time. Collectives defined contract and freehold land according to the type of vegetation cover. Land with mature timber sized trees was classified as contract land, and scrubland became freehold land. The rationale for allocating scrubland as freehold land was to give farmers an incentive to rehabilitate it. The farmer's harvest and utilisation of freehold land were less restricted than on contract land. The authorities treated the contract as a means to ensure good management for timber belonging to the whole collective. For the Central Government, the main motive behind the move to a responsibility system in forestry was the need to provide incentives for farmers to manage forest while retaining government control over access (Xue Jiru, Personal communication, 1990).

Both Walnut villages had some remaining areas of unallocated land. Most of this is classified as collective mountain (*Jiti shan*). The villages had reportedly set aside some collective mountain as a stock of forest land for future generations and collective needs. The rest had not been reallocated in 1982 because it protected graves or water supplies, or it was very far away and very rocky. Some respondents said that these lands are managed by consensus with decisions taken by the village head in a public meeting. Others said that the land is treated as an unregulated commons with no controls on access or utilisation: "It's very badly managed. It has just about all been cut out now".

Lower Walnut Village also has an area of Common Mountain (*Gong shan*) which is managed as common property for the benefit of the whole village. It is under the authority of the village committee but is not available for allocation to individuals unlike collective forest which is

unallocated land available for allocation as required. Villagers said that the Common Mountain was well managed, but unfortunately, the survey team did not find out how or why it had been set aside, nor did they have information about how it was managed, or why it was better managed than the other Collective Forest.

Village officials said that there are different forms of control over contract and freehold land, and that the benefits of harvest are distributed differently¹³. The survey indicated that villagers see no difference between them nor were they very clear on just what rights they had to forest land. While respondents could always tell which piece of forest land was theirs, they rarely knew whether it was freehold or contract, answering that "it is all the same anyway". After reallocation, there was a rash of timber harvesting since farmers had little confidence that the new policies would last and preferred to liquidate their stock of trees while they could. The authorities responded, predictably, by tightening controls over harvesting. The bureaucratic procedures to harvest a tree are now essentially the same as they were during the collective period during which the controls were designed to prevent individual utilisation of forest resources. To obtain all the necessary permits requires visits to administrative offices as far away as the county town (about 30 km from Caozi Po), with a variety of different fees to be paid at each level. The procedures seem to apply to both freehold and contract forest, and most villagers admitted that they are widely ignored, with a noticeable increase in tree theft, and many transactions going on between individuals, bypassing official channels. Overall, the reforms have given households increased access to resources, but there was little enthusiasm for the way the contract system operates now, with more than one farmer expressing the common sentiment as: "It's all responsibility and no benefits".

DISCUSSION

The history of land use and control over resources in Hetao village shows a shifting balance between coercion and incentives in which major changes correspond to significant political and ideological shifts in recent Chinese history.

Before the 1949 revolution, resources were privately held. Where landlords were a significant social class, they had direct control over people, over access, and over utilisation. Where landlords were less powerful, social controls within the village were strong enough that "nobody would have tried to cut a tree on somebody else's land". Both cases involved coercive control rather than incentives, and both forms of coercion represented a response to local interests rather than to outside interests. By contrast, during the six years between land reform and

collectivisation, controls were relaxed with the redistribution of land from landlords and with the allocation of land to families. Unfortunately there is so little information about this brief period that it is difficult to analyse just how the change affected land use in the village.

The collective period was marked by external coercion by a central state power, channelled through a powerful party structure. The objective was to transcend individual preferences and to work for the public good. The rationale for this structure was drawn from Marxist-Leninist theory which considers that leaders, who are deemed to be representatives of the proletariat, should be better able to define the public interest than farmers whose individualistic peasant mode of production limits their capacity to comprehend the needs of the whole of society. Authority to take decisions about management of resources and production was taken out of the hands of the farmers and vested in the collective. In agricultural production, the collective was defined to mean the production brigade which generally corresponded to existing communities and villages. In the management of natural resources, the collective was the brigade, where officials were several degrees removed from the resources they controlled.

Collective management meant that brigades and production brigades had direct control over all the components of production—land, labour, and access to the resource. They exerted control over people by taking on responsibility for labour allocation. They restricted rights over land and over the products from the land since individuals and families were not allowed to sell large livestock or forest products in the small village markets which still existed¹⁴. Decisions about utilisation responded to targets and quotas determined without reference to the state of the resource at any one location. Incentives to management, such as they existed, were to the collective which received payment for timber supplied to large scale projects such as the reservoir or to consumers of national importance such as the coal mine at Yiliang. However, these incentives were for production, not for conservation or for long term sustained utilisation. With decision-makers far from the resources they controlled, intensive over-exploitation of blocks of land such as at Mai Di Chong was a common phenomenon. When the public interest was defined as the national interest during the Great Leap Forward, then the deforestation was national in scope.

At the village level, coercion was effective enough that people did not dare to disobey the regulations. In Hetao, people agreed that the village had lost a lot of forest due to planned cutting during the collective period but that there had not been much tree theft. In China as a whole, the Cultural Revolution (1966–76) challenged official structures and for some years (from 1966 to 1971) broke the authority of the bureaucracy. In the near anarchy of these years, the source of coercion lost its legitimacy and foresters remember those years as a time of uncontrolled tree felling.

It is interesting to note that nobody in Hetao talked of these years as being a period of deforestation, but several interviews suggested that the Cultural Revolution barely reached the village. With no attack on the administration, there was no change in the controls over the forest.

Nearly a decade after the breakup of the communes and the reallocation of land to households, agricultural yields in Hetao have developed rapidly, but opinions differed about the status of the forest resource. Everybody agreed that there are less trees now than there were at the time of reallocation, but there was little agreement as to why this had happened. The objective of the reforms was to loosen the controls over people and land and to encourage higher productivity by strengthening incentives. Reforms in land tenure were coupled with economic reforms opening up rural markets including markets for timber and forest products, adding further incentives to management. The unexpected burst of tree felling which initially took place alarmed the authorities. Rather than look for incentives to manage forests for long term sustainable harvest, though, they fell back on coercion and controls. In practise, controls have simply shifted from direct control over land and people to controls over marketing and species, and over decisions about when to harvest. These indirect controls are at least as restrictive as the direct controls of the collective period. Coercion still outweighs incentives, so people evade the controls and cut illegally on other villages' land.

The history of land use in Hetao not only shows the effects of shifts between policies of control and incentive, it also shows how different social groups may make different claims on a resource. When land or resources are held in common, management depends on which community of decision-makers is able to enforce its claims, as well as on the mix of controls or incentives they choose to use. Theorists of common property propose that there are three characteristics which differentiate a common property resource from an open access resource. It is held by a group of people ('jointness'), outsiders can be excluded from enjoying the benefits of the resource ('exclusivity'), and the resource is indivisible. Furthermore, management is subject to specified rules of decision-making, mediated by identifiable patterns of interaction, leading to a set of commonly desired outcomes (Oakerson, 1986; Ostrum, 1986). In China today, administrative boundaries define the spatial limits of the resources. The same administrative boundaries identify user groups, but hierarchical levels of administration define another set of interest groups. Powers of decision-making have shifted over the years between the different levels, and there has not always been direct congruence between decision-makers and beneficiaries of the products from the resource. The problem is further complicated when the concept of public interest and its ideological frame of reference are added, since it could be argued that the public interest determines who might be considered the beneficiaries of resource management.

During the collective period, the "public" in public interest was defined as society at large. Management consisted of decisions to produce a certain volume of the products required in the public interest. In the long run we may question whether the planned deforestation which followed was really in the public interest, however it might be defined, but in terms of the goods and services demanded by those who acted as representatives of society the system was effective. There was a congruence between the ideological definition of public interest and those who determined how to achieve it.

Since the breakup of the collective system, the systems of tenure have been designed to give incentives to farmers to manage trees in the public interest. However, officials many degrees removed from the village still define the public interest, which is currently an uncomfortable combination of earning revenue for the county and preventing tree cutting to protect the environment. Farmers are expected to manage trees for a public good from which they receive little or no benefit, and the power of decision making has effectively been denied them. The lack of articulation between decision-makers, managers, and beneficiaries makes the system disfunctional even within its own terms of reference. The farmers of Hetao have management and usufruct rights, but these rights are regulated and restricted by outside forces. State, county, or administrative control over most aspects of decision-making have undermined individual property rights, and holders of these rights have had no say in the formulation of the restrictions.

CONCLUSION

Policies affecting forest management are a mix of controls and incentives. The ideological environment shapes the mix and the nature of controls and incentives, and social structures, processes, and environmental realities affect the potential for realising that mix in any particular location. Since 1949, China has been committed to an ideology which advocates centralised planning as an approach to resolving problems of scarcity. Plans are disaggregated to lower levels of the hierarchy, but the original level of planning is too remote from the resource and the community to be able to consider the role of local social processes in the potential outcome.

One preliminary conclusion of research in Hetao village is that management responsibilities are not, in themselves an incentive to management. Property rights are not just the right to enjoy income from the product, but also the right to make decisions about management at all stages of the process. The level of decision making affects the outcome on the forest. During the communes period, the collective decided how to manage the resource and deforested Mai Di Chong to get timber for mine

props. During the Great Leap Forward, decisions followed national priorities and every village lost some forest cover to provide construction timber for the reservoir. Today, while national and provincial policies seek to strengthen incentives, current policies at the county and village levels aim to reconcile present and future needs through the application of controls. It is still the case that the farmer's responsibility to manage does not include responsibility for decision making, which has created a situation in which farmers in Song Ming county say "It's all responsibility and no benefit".

FOOTNOTES

1. Chinese terms for administrative units are: Administrative village—*Xingzheng Cun* often referred to as *Banshichu* (Office). Natural village—*Ziran Cun*.
2. An average sized administrative village in Yunnan might have about ten natural villages of some fifty to sixty households each.
3. Gan Haizi owns over six thousand mu of forest land (15 mu = 1 hectare). Yangmei Shan, which owns the smallest area of forest land, has about 20 mu.
4. The administrative village is called Hetao (Walnut), although the village office is located in Caozi Po. Two natural villages are known as Hetao: Shang Hetao (Upper Walnut) and Xia Hetao (Lower Walnut). In this paper, Hetao will refer to the administrative village, and the two natural villages will be referred to by the English translation of their name.
5. Rebels known as the "Small Sword Society" (*Xiao Dao Hui*) were active in the coastal area of South China in 1853, but there is no evidence that they reached Yunnan. At the same time, a Muslim rebellion affected mining areas in Yunnan. An informant in Xia Ling Si said that there had been copper mines in the region in the past because the statues of the Buddha in the temple had been made of copper or bronze. There is no direct evidence that the "Small Swords" at Xia Ling Si were connected to either the coastal rebels or to the Muslims, but the mid nineteenth century was a violent time in this part of China (on peasant rebellions in China during the Late Imperial period, see Kuhn, 1970).
6. Remarks inside full quotation marks are direct translations of the words of respondents as recorded in our field notes.
7. Mao Zedong declared the founding of the People's Republic of China in Beijing in 1949. In more remote provinces such as Yunnan it took some time for the Communist troops to establish control. Villagers said that there were many bandits in the mountains around Hetao so it is not surprising that land reform did not take place until 1952.
8. The other villages in what is now Hetao administrative village were part of the Caozi Po Brigade. Xia Ling Si was reassigned to Cao Zi Po in 1960.
9. In one interview in Xia Ling Si, the respondent said that allocations had originally been made at the commune level, but that this proved to be impossible, and it was then changed to the production brigade.
10. The term 'officially designated village protection forest' was used by the informant to indicate the extent of tree cutting during the Great Leap Forward. There is no further information to explain just what kind of forest land this would have been during the collective period.
11. The tenure policies for forest land are collectively known as the "Two mountains Policy" (*Liang shan zhengce*). The critical documents explaining this policy appeared in 1982, but being internal Party documents, they are not yet available to non Chinese researchers.
12. There were no specific guidelines for the composition of the working groups. Provincial officials appear to have been involved in the process in that they spent time in each county explaining the procedures for reallocation to county and administrative village (still called Brigades at the time) officials.

13. Officials say that the profits from timber harvest are split between the collective and the farmer. In the case of contract land, the farmer receives 40% and the collective 60%. In the case of freehold land, the farmer receives 70% and the collective receives 30%. None of the villagers interviewed during this survey had ever received the official percentage, and most of them did not even seem to know of the official division of profits.
14. According to one informant, timber cutting was organised and controlled by the Brigade, but pine nut collection was organised by the Production Brigade. A distinction seems to have been made between control over an annual crop and a perennial. This is a common distinction noticed in studies of land and tree tenure (Fortmann & Bruce, 1989).

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Résumé

On examine la relation entre les niveaux d'autorité et la prise des décisions dans un système d'aménagement des ressources forestières, se concentrant sur l'équilibre changeant entre la contrainte et l'encouragement en tant que moyens d'atteindre des buts gestionnaires au cours des quarante dernières années dans six villages dans le sud-ouest de la Chine. Des données recueillies au moyen d'entrevues et de questionnaires dans des comtés pauvres ruraux suggèrent que mettre l'accent sur le contrôle de l'accès aux ressources forestières pourrait être moins efficace que de fournir aux communautés de bonnes raisons d'aménager ces ressources. Là où de telles raisons existent, cependant, il y a un risque qu'elles soient étouffées par des procédures bureaucratiques, qui équivalent à encore une série de contrôles imposées par l'état.