

Rural Household Diversity and the Implications for Small-scale Forestry Development in Leyte Province, the Philippines

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This paper reports the results from a study of the social and economic factors affecting the development of smallholder forestry in Leyte Province. More than 50% of all households in rural areas of the Philippines have cash incomes that are below the national poverty threshold and the forest resources of the nation continue to be degraded. Agricultural activity by poor rural households is blamed for causing much of the past and present damage to forest resources. Community forestry and agrarian reform programs have been developed as a means to address the links between forest degradation and poverty by granting households limited access to Government-owned forest lands. Reviews of these programs have suggested the need to better understand rural households and their diversity as a means to improve the design, implementation, and monitoring of forestry and other development programs in rural areas.

The study used a literature review, focus groups, household surveys, and workshops to assess pathways to forestry development for smallholders in the Philippines. Cluster analysis was applied to survey data on group households that have similar attitudes to forestry development. Subsequent analyses of the groups' livelihood assets and income levels revealed patterns of relationships between households' socio-economic circumstances, their attitudes to forestry, and forestry activities. Overall the study found few rural households are engaged in growing and selling timber and other forest products, with the poorest households least involved in community forestry programs and growing timber. Households reported reducing their use of public forest areas for a variety of reasons including the loss of timber resources in these areas. Many households acknowledge the need for rehabilitation of public forest areas but other development issues are rated as more urgent. The authors describe the variations in possible impacts of policy and program reforms on the different types of households. They conclude that all the households are being critically constrained in the development of forestry activities by institutional factors including uncertain or unsupportive land tenure arrangements, poorly developed timber markets, plus a general lack of land and financial capital.

Introduction

Poverty in the Philippines is a widespread problem, particularly in rural areas (Balisacan and Pernia 2002). While poverty levels are reported to have fallen slightly in urban areas since the 1990s, more than 50% of households in rural areas are still below the official poverty threshold (Balisacan and Pernia 2002; NSCB 2003). Three quarters of the poor in the Philippines make their living from agriculture and fishing activities (Balisacan 2002, cited in Llanto and Ballesteros 2003). The distribution of cash incomes and control of land resources is highly skewed. Not only are many rural households cash poor, the majority leasing or owning small parcels of land have little security of tenure. This places tremendous pressure

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on natural and rural or human resources, and limits the financial resources available to devise and implement sustainable land management programs.

Tree management is only one option available to provide a source of livelihood for rural households. Previous research has highlighted that it is important to consider how tree planting and management are used or could be used in conjunction with agricultural activities and off-farm employment opportunities if tree management programs are to be developed that are both socially acceptable and economically feasible, particularly in developing countries (Raintree 1987; 1991). Thus it is important to understand the social and economic context in which tree management activities occur to understand the potential opportunities for forestry development.

The first section provides an overview of the relationship between poverty and forest loss in the Philippines. The methods used to examine the social and economic factors affecting the development of small-scale forestry in Leyte Province are then outlined. The results of the cluster analysis and resulting typology follow. The fourth section examines rural households' attitudes towards development activities generally and the relative importance they place on forestry development. In the final section the implications for forestry development in the Philippines are discussed with an emphasis on the tenure, markets, and policy reforms that may assist pro-poor forestry development.

Poverty and Forestry in the Philippines

Agricultural land is the main asset available to secure the livelihoods of the majority of rural households as there are few opportunities for earning nonfarm income away from major urban centers. Analysis of the factors determining poverty by Balisacan (1996) found that low levels of human capital, inaccessibility of land, lack of infrastructure, and unfavorable policy environments are the main parameters of rural poverty. The quality of this land varies from terraced and irrigated plots that are suited to growing the staple crop of rice, to steeply sloping land that is suited to growing coconut palms and tree crops. Annual crops can be grown on the steep lands for short periods with rapid soil loss. Under colonial rule the landownership and control of resources were granted to a limited number of families, establishing concentrated patterns of land- and resource ownership that were reinforced through the administration of the Marcos regime and many earlier administrations (Agoncillo 1990). The average area of agricultural holdings doubled in the period from 1948 to 1980 despite the growth in the population (DENR 1990). The concentration of landownership resulted in even greater pressure on people to seek new lands for agriculture in the forested uplands that are officially managed by the Government and leased to corporations in a concession system (Ganapin 1986; Angeles-Reyes 1987; Cruz and Zosa-Feranil 1988; Pulhin 1998; Cramb 2000; de los Angeles et al. 1988).

Forest products were, until the early 1990s, largely sourced from natural forests and the Philippines was a major timber exporter. Forestry based on native forests used to be a driving force of the Philippine economy and an important source of livelihoods for rural households even though large corporations were the main beneficiaries of forest management. The native dipterocarp forests have been the most targeted of all forest types. These forests have been cleared or severely degraded through inappropriate logging practices used to extract high value dipterocarp species that have been sold on the international marketplace. It has been estimated that only 30% of the former total of 10 million hectares of dipterocarp forests was still standing in the Philippines in the early 1980s (World Bank 1989). Estimates of the deforestation rate in the Philippines range between 150,000 and 320,000 hectares/year during the 1980s (Kummer et al. 1994; World Bank 1996), and it continues to exceed 100,000 hectares per year (FAO and DENR 2003).

Forestry practices were unsustainable and severe deforestation took place in the Philippines between 1960 and 1990 (Kummer 1992). The rapid deforestation over the three decades changed the Philippines from one of the world's largest log producers and exporters to a net timber importer (Harrison and Herbohn 2001). Forest lands in mountainous areas that were opened up by corporate logging activities were colonized by poor and landless people from the overcrowded lowlands so that regeneration of the forests failed to occur. It is estimated that 60% of the area of forest cover lost resulted from "slash-and-burn" (*kaingin*) agriculture in logged-over areas, with 30% of the loss coming from the expansion of other agricultural activities (Guiang 2001a). While 53% of the Philippine land area is presently officially classified as forest land, just 18% of the land area actually has tree coverage (Cassells et al. 2002). Deforestation has been extreme and has adversely affected the state of natural resources and human infrastructure throughout the Philippines. Preventing environmental degradation and diminished crop returns due to loss of soil resources plus protecting people from catastrophic landslides is an important issue in Leyte Island where people continue to die due to mudslides and flooding.

Logging in remaining natural and regenerating forests was banned throughout the nation following the 1991 Ormoc City flooding disaster in Leyte Province in which approximately 6,000 people died. Logging has since been allowed by the Department of Natural Resources and Environment (DENR) in selected areas. Reforestation activities that enable communities to benefit from timber and nontimber production in relatively short time periods are widely viewed as one of the only means of reestablishing tree cover in areas where poverty is prevalent (Godilano 2004). There are approximately 16 million people living in the uplands who have a severe impact on the resources (de los Angeles 2000; Harrison and Herbohn 2001). Since the expansion of social and community forestry programs in the late 1980s, forest management in the Philippines has changed markedly. In the 1970s logging corporations controlled one third of the entire land area of the country. Today one sixth of the total land area is now under the management of community organizations in partnership with Government agencies and the great majority of corporate timber leases have been cancelled.

Rural households remain far more likely to have income levels below the poverty threshold than those in urban areas (NSCB 2003). Those households with access to higher quality agricultural land are better placed to secure their livelihood, but the concentration of landownership is particularly apparent in highly productive agricultural lands (Monte and Lim 1996, cited in Cramb 2000). The adoption rate of improved agricultural practices also has the potential to improve household welfare in rural areas. The adoption of improved agricultural practices has, like industrialization, varied greatly between and within countries in Southeast Asia. Many households that rely on farming for both subsistence and cash income have not adopted modern farming practices. Those with secure tenure have a greater ability to access credit to improve agricultural practices and thereby out-compete those using traditional practices, a factor that has served to increase the inequity of income and landownership distribution in the Philippines (Angeles-Reyes 1987; Deininger et al. 1999; Llanto and Ballesteros 2003).

An agrarian reform program has been operating in the Philippines since the 1970s in an attempt to give greater access to land to rural households and reform tenancy arrangements. The agrarian reform program was expanded in 1988 but has made slow progress so far, with considerable opposition from wealthy landowners in the Government and throughout civil society (Saulo-Adriano 1991; Llanto and Dingcong 1991; Deininger et al. 1999; Cramb 2000; Llanto and Ballesteros 2003; Stevenson et al. 2003). The programs have thus far concentrated on publicly-owned land, with the estates of privately-owned land being more difficult to redistribute. Franco and Borrás (2007: 73) argued that the agrarian reform program is failing to help the poor because they are not altering "...the pre-existing exploitative production relationships existing in these lands." In an earlier review of the progress of agrarian reform projects by the World Bank, Deininger et al. (1999) observed that while households that had

received land under the program in the past had benefited, progress had been slow and the more difficult issue of reallocating rights to farm the majority of private lands was yet to be addressed. In addition Deininger et al. (1999: 5) argued that the way the reform process has operated has in some cases actually resulted in "... severe investment disincentives that appear to have hampered development of labor intensive agro-industrial and plantation crops in the Philippines over the past years." They argued that the effect of slow development in the agriculture sector of the economy is to reduce employment opportunities for rural household members. Others including Franco and Borrás (2007: 73) challenged the rationale of relying on large-scale natural resource-based projects to improve rural poverty incidence and depth, claiming that reform programs to date have "...institutionalized the very mechanisms that cause and perpetuate exploitative relationships and poverty."

The official statistics on landlessness may be misleading if viewed in light of the reality that approximately 50% of the area that is classified officially as public forest land is in fact cleared farmland (de los Angeles 2000). An informal but nevertheless operative de facto system of landownership and trading exists on these lands (Cramb 2000). While the distribution of land tends to be more equitable in the uplands than in lowland areas, it has even happened that within the upland communities a new class of tenanted farmers is being formed and the sharp divisions in wealth evident in the lowlands is being replicated in the upland areas (Cruz and Zosa-Feranil 1988).

Farmers can gain some tenure security over land they farm within areas that are classified as "forest land" if they are growing annual crops, but the process is costly for farmers and confusing for many, including local government unit officials who are supposed to assist households throughout the process. Farmers are able to grow and harvest annual crops by paying an annual land tax, but are not able to harvest any trees from public forest land areas even if they plant them themselves, thereby restricting the reforestation of these areas (Mangaoang and Harrison 2003). On occasions areas of public forest land are classified as "Alienable and Disposable," thereby becoming available for titling. Many landholders who potentially could seek formal title to their land do not do so. These people are usually poor, and due to a corresponding lack of education, find the laws and procedures surrounding obtaining formal land tenure confusing. In order for tenure to be granted, the land must be formally surveyed by Government staff, the cost of which must be borne by the applicant.

The cost of such procedures is high relative to the earning capacity of landholders, who are often subsistence farmers with low cash resources. The cost of surveying is often increased by the remote locations of the land for which tenure is being sought. Finally, the powerful elite class in the Philippines has for many years been able to take control of land that is officially classed as publicly owned, extracting rent from poor households utilizing the land for farming and who do not know about the land classification system (Borrás 2000; Franco and Borrás 2007).

Major problems have been identified with the land administration system of the Philippines (Llanto and Ballesteros 2003; Herbohn et al. 2004a). Land tenure maps are not available for much of the country, the titling system is still paper-based with a lack of back-up copies, and the majority of land transactions are not reported to the Government. Other problems include the number of agencies (19) dealing with land titles and valuations; inconsistent land valuation methods that differ between public agencies and differ again for banks and others in the private sector; use of courts as the only means to resolve land title disputes; lack of public confidence in the land title system; lack of reform of regulations resulting in complexities and inconsistencies; lack of (38%) or outdated (52%) land-use planning by local government units (LGUs) due to lack of skills, finances, and low interest in the activity among them (Herbohn et al. 2004b).

Continuing uncertainty about both the boundaries of municipalities and the official classification of land by the national agencies for agriculture (Department of Agriculture, DA), forestry (DENR), and agrarian reform (Department of Agrarian Reform, DAR) undermine community confidence in land tenure security (de los Angeles 2000). The existence of multiple systems of ownership and classifications of land types and tenures, formal and informal, serves to complicate the security of landownership and land-use rights. The seriousness of the problems facing land administration in the Philippines has been recognized by the Government and is now in the second phase of the Land Administration Management Program (LAMP). This program is, according to the official website, designed “To increase the level of tenure security in the urban and rural areas of selected provinces through an accelerated land adjudication program and establishment of an efficient and accessible land registration system.” The land tenure security part of the program is being piloted in five municipalities in Leyte Province. Whether this program will succeed in helping the poor gain secure tenure is doubted by Franco and Borrás (2007: 73), who stated:

In one pilot municipality, official LAMP records show that majority of those that have put forward claims were from the following groups: middle and upper class families; not living in the villages where the claimed lands are located but in distant town and city centers; not working the land; and who have multiple land claims. Yet, the official claimants regularly paid the municipal land tax. This is one of the formal bases for property rights claim, although in practice, seemed to be the main basis. In the same pilot sites, tenant-farmers and farm workers who have been cultivating the lands being claimed by others were not even part of the LAMP project in whatever way.

Community Forestry Programs in the Philippines

The leading forestry and development program in the Philippines is the Community-Based Forest Management (CBFM) program which was established in 1995 by the DENR, supported by a number of nongovernment organizations (NGOs) and foreign assistance schemes. The program was designed to provide 25-year tenure, renewable for another 25 years, over blocks of forest land with titles granted to communities organized into People’s Organizations (POs). This program has multiple policy objectives, including reforestation of inappropriately cleared land, prevention of further land clearing, encouraging small-scale forestry, and assistance in the provision of sustainable livelihoods for millions of households that are located in the mountainous upland regions of the country (Harrison et al. 2004; DENR 1998; FAO and DENR 2003).

Although many areas of public forest land have been officially placed under title of community organizations, there are a number of factors that challenge the ability of these organizations to use their lands to improve the livelihoods of community members. The objectives of the CBFM program are laudable, however due to the history of forestry and lack of economic development in the Philippines, there are many challenges to the program’s success on the ground (Guiang 2001b; Guiang 2002; Estoria 2004). The reasons for the failure of the CBFM program to live up to expectations include a combination of social, economic, and political factors.

According to reviews of the operations of the CBFM programs, many of the projects have not succeeded in meeting the objectives set for them (Hyde et al. 1996; Bisson et al. 1997; Tesoro 1999; Guiang 2001b; FAO and DENR 2003; Emtage et al. 2004; Harrison et al. 2004; Suh and Emtage 2005). Management of these projects is reported to be highly variable in quality and most of the community organizations in charge of them struggle once they lose support from outside agencies (Donoghue 1999; FAO and DENR 2003; Estoria 2004). There are few resources left in many of the official forest areas that communities can access and illegal

logging continues to be a problem. In addition, there appears to be very little adoption of commercial tree farming by smallholders outside the areas covered by the agreements. Where smallholders have adopted tree farming, a number of researchers have reported that poor germplasm and silvicultural management is critically affecting the financial viability of their farms (Venn et al. 2001; Santos et al. 2002; Gregorio et al. 2004; Bertomeu 2006).

The implementation of community forestry programs is one approach that has been used to provide a legal framework to regulate households' access to areas that have been officially classified as belonging to the Government. The security of tenure in these areas is complicated by the communal nature of the land management. Various types of agreements have been tested, from those where land management was determined by community organizations, to others that subdivided the communal lands into parcels and leased them to individual households (Bisson et al. 1997; Johnson 1997; Balanan et al. 1999). Some studies have recommended that households be given use rights to particular parcels within community forestry areas (Johnson 1997).

Much of the responsibility for environmental management has been devolved to local governments but they critically lack expertise and funding to carry out their duties. Previous research has reported that households' lack of financial resources is a critical constraint to the development of small-scale forestry (Belsky 1984; Aguilar 1986; Angeles-Reyes 1987; Raintree 1987, 1991; de los Angeles 2000; Stark et al. 2002). Not all households in rural areas of the Philippines are financially constrained, however, and previous research has identified that Philippine forestry policies, while improving, still act as another constraint to smallholder forestry development (Utting 2000; FAO and DENR 2003). Although POs can harvest resources from their CBFM areas once they have obtained permits from the Government, the magnitude of the environmental degradation in forest lands and prevalence of illegal logging activities has led to the banning of all harvests in CBFM areas on a number of occasions over the past 10 years (Guiang 2001c). This places an enormous strain on the community organizations that have spent time and money reforesting their CBFM areas, creating uncertainty about investing effort in forest development activities not only within CBFM areas but also on privately controlled lands. One dilemma facing people who are designing and administering development programs is that not only is there an array of factors affecting household land management decision making, but also these factors vary in their influence across the community.

Interpreting Variation in the Impacts of Forestry and Development Policies and Programs on Rural Households

The problem of interpreting the diversity of rural households in relation to forestry has been identified as particularly relevant for smallholder forestry development programs in the diverse Philippine uplands. Pulhin (1998, p. 5) quotes Cernea (1992) as stating:

Entrusting a social forestry program (and development programs in general) to the wrong social actor will lead to the failure of the program, as in fact has happened repeatedly....Some statements or articles are repeating the term community forestry from title to end hundreds of times as mantra, without once bothering to discuss what specific social groups, strata, or classes compose this mythical "community". ... (It is necessary to desegregate the broad term people and identify precisely which unit of social organisation can do afforestation, and which social units and definable groups can act as sustaining and enduring social structures for long-term production activities.

Pulhin (1998, p. 5) went on to comment that:

...some CBFM projects in the Philippines would show that both the DENR field personnel and NGO's oftentimes regard the community as a homogenous grouping with similar interest. There is little if any conscious effort exerted on the identification of the different interest groups, including those whose source of livelihood are mainly dependent on the local forest resources. This has contributed to the perpetuation and reproduction of inequity in terms of access to forest benefits in favor of the local elite.

Many researchers and extension personnel who have studied development programs have argued that decision-makers and extension providers need to understand the variety of socio-economic circumstances and value systems in the community, how these differences affect their land management attitudes and behavior, and how the differences lead to variation in the impacts of policies and programs across the community (Chamala et al. 1980; Byron and Boutland 1987; Chamala 1987; Raintree 1987, 1991; Cernea 1992; Emtage 1995; Byron 1996; van den Ban and Hawkins 1996; Bisson et al. 1997; Howden et al. 1998; Landais 1998; Pulhin 1998; Emtage and Specht 1999; Guerin 1999; Fulton and Race 2000; Howden and Vanclay 2000; Emtage et al. 2001; Johnson 2002).

One means to describe and interpret the diversity of households in the Philippines is to construct a household typology. Typologies have been routinely used in social sciences to classify, analyse, and describe social phenomena. "Typology" is defined in the *Australian Concise Oxford Dictionary* as "the study and interpretation of types." A "type" is defined as "a class of things or persons having common characteristics." Central to a typology, therefore, is the design and application of a classification scheme. The methods used to develop a typology of rural households in relation to forestry development are described briefly in the following section.

Methods

The methodology employed for the study of small-scale forestry development in Leyte Province used a combination of qualitative and quantitative techniques to generate and analyze data about the livelihood practices of households, their attitudes to forestry activities, and community organizations, and their present and intended tree management behavior (Emtage 2004). During the study an extensive literature review was also carried out. This review examined:

- Previous studies of and theories about social and economic factors affecting small-scale and community forestry programs in the Philippines
- The development of typologies to assist natural resource management worldwide
- The social and political history of the Philippines

Primary data collection activities included community meetings, two series of focus group discussions, and structured interviews of 50 households from each of the four rural communities participating in the study. Data collected during the household interviews included detailed information about the demographic characteristics of the household members, their sources of livelihood, in particular their farming activities, their attitudes to various potential reasons for and constraints to tree planting and management on the land they currently manage, and their present and intended tree planting and management activities on land they manage.

The responses to the household surveys have been analyzed using univariate statistical tests to assess the relationships between social and economic factors and tree planting and management attitudes and behavior. Following these analyses, cluster analysis techniques were used to define a typology, grouping together those respondents with similar attitudes to forestry development. The typology classifies households into five types according to their ratings of importance for various tree management objectives and various potential constraints to tree management. The socio-economic characteristics of the types were compared, using uni- and multivariate statistical tests, to ascertain relationships between the variations in the attitudes, behavior, and the socio-economic circumstances of households within the communities. The resulting profiles of the socio-economic and attitudinal characteristics of the various types of households were used to predict variations in households' responses to various potential tree management incentives and community development options.

Once the data had been analyzed, a series of reports that summarized the findings from the initial focus group discussions (FGDs) and household surveys were prepared for each of the four communities involved in the research. These reports were presented orally and in written form to each of the communities during a second round of validation FGDs. Finally, a workshop was held at Visayas (formerly Leyte) State University to discuss the policy implications of the research. The workshop included participants from each of the communities involved, together with representatives from the LGUs, and the Government agencies associated with land management (including the DENR and the DAR). Detailed reporting of the study is provided by Emtage (2004).

Since completing the first phase of the Australian Centre for International Agricultural Research (ACIAR)-sponsored project in 2005, a second phase of action research has commenced in partnership with the College of Forestry and Natural Resources at Visayas State University. The second phase of the research program is examining means to improve the silvicultural and marketing practices of smallholder tree farmers and improve awareness of, knowledge about, and application of tree and land tenure policies and regulations throughout the community (Herbohn et al. 2004b). Researchers sought to identify existing tree farmers to study means to improve their management and marketing practices. In the process of locating tree farmers, it was discovered that there were large differences in the number of tree farms registered by various subregional offices of the DENR within Leyte, Southern Leyte, and Biliran provinces (Cedamon et al. 2005).

Researchers have examined differences in interpretation and promotion of the tree registration processes in the subregional offices of the DENR in Leyte (Germano et al. 2007). A series of workshops was held in Leyte involving personnel from the DENR, the DAR, LGUs, community organizations, and others to develop a common understanding of the policies and processes relating to tree registration and marketing. A primer on tree farming and marketing policies was subsequently developed and researchers are now concentrating on evaluating various methods for disseminating the information (Mangaoang et al. 2007). The Visayas State University radio school-of-the-air was used to run a program on tree farming policies on private lands and evaluations of participants' understanding of the topics before and after the program was made (Gabrillo 2007). A number of more aggressive means to promote understanding of the policies relating to tree growing and marketing are now being tested, including seminar series, the placement of DENR personnel within LGUs, the production of posters and pamphlets, the dissemination of the school-of-the-air program on CD-ROM, and other strategies.

Overview of Tree Farming Activities by Smallholders in Leyte

Commercial small-scale forestry in Leyte is currently underdeveloped, with rural households commonly growing sufficient trees to cater for their own timber needs, but not enough to sell timber commercially (Santos et al. 2002; Emtage 2004). Emtage (2004) reported that many of the 10% of households that are presently growing trees to sell timber are unaware of potential markets for their products and would like assistance in marketing forestry products. Survey responses further indicated that despite the interest of 60% of the households in commercial small-scale forestry, most of the households who are interested have not yet established commercial tree farms. Those households who are presently growing trees to produce timber for sale are differentiated from other rural households in terms of their control of greater quantities of resources and the greater security of these resources than other households, in particular their security of land tenure. It is also apparent that not all the households that are relatively well-off are active in terms of commercial tree farming. A household's confidence to undertake tree farming and faith in the financial viability of the activity are also important factors.

The survey found that few households (2%) had registered their trees with the DENR, while only 16% said they knew how to undertake this process. Registration of all trees owned by a landholder is a DENR requirement for harvesting permits to be issued. However, most growers leave tree registration until the trees are ready for harvesting. Particularly for small growers, who wish to harvest only a small number of trees, these registration requirements are both costly and time-consuming. In addition to *Lagay* ("under the table") payments, DENR personnel also expect that landholders pay a "travel allowance" during the plantation inventory. Assistance and direct action from DENR personnel is also variable, often very slow, and unreliable. In addition, land title or land tax declarations as proof of ownership are some of the requirements for tree registration. This means that the tenure status of the land has implications for tree registration, which in turn affects the willingness of landholders to plant trees, especially for those with no land titles.

In some communities, people expressed disappointment about some community forestry programs that had failed to achieve the outcomes that had been specified for the projects. One of the upland communities involved in the survey reported that only a small part of the total area granted under the CBFM program for their community was ever planted, and then the trees were burnt later and the area was not replanted. One of the lowland communities had reasonable success with their CBFM project, but the other had difficulties due to competition between two community organizations in the same community who both wanted control of the project. People in the other upland community involved in the survey are eager to gain access to land that had been designated as part of the CBFM program in their area. A large proportion of this area was not planted following cessation of funding by the Asian Development Bank due to delays in meeting program targets nationally. Community members have argued that the delays were a result of drought that affected the country during the time when planting was supposed to occur, and if they had continued planting trees at that time the trees would have died. Researchers have argued that often the needs of the donor organization to commit funds and satisfy their own criteria have placed unrealistic expectations on the capacity of the local institutions to undertake large-scale revegetation programs quickly (Arnold 2001; FAO and DENR 2003). The result of cancelling programs is continued uncertainty and frustration for the community members.

A Typology of Rural Households in Leyte Province According to Their Attitudes to Forestry

The ratings for scales measuring the importance of reasons for and constraints to tree management were used as the criteria for the classification of households in the typology. The ratings of importance for various constraints show the greatest variation between the groups defined by the cluster analyses, as presented in Table 1. The ratings range from those of Cluster Group 1, who place the lowest importance on all scales relating to constraints and high importance on scales of various reasons for tree planting and management, to those of Cluster Group 4 who have the highest ratings for every scale.

Table 1: Final Mean Scores for Scales of Reasons for and Constraints to Tree Management of Groups Defined by K-means Cluster Analysis

Scale of Attitude to Tree Management	Cluster Group				
	1	2	3	4	5
Constraint to Managing—Tree Protection	1.18	2.37	1.76	3.95	1.69
Constraint to Managing—Planting Support	1.63	3.65	1.86	4.02	2.83
Constraint to Managing—Commercial Viability	1.35	2.35	2.01	3.88	3.21
Constraint to Managing—Tenure and Space	1.40	2.11	3.97	4.49	2.26
Reason for Managing—Immediate	4.17	4.39	4.14	4.46	2.70
Reason for Managing—Long Term	4.65	4.67	4.49	4.69	3.62

Note: scores indicate average ratings of importance for the items included in each scale. Scores for each item range from 1 = not important, 5 = very important.

Following analysis of the cluster analyses and subsequent tests for differences in the socio-economic characteristics of the groups, they were named to reflect their predominant character in relation to tree farming as follows:

- Group 1—“confident farmers”
- Group 2—“doubtful farmers”
- Group 3—“well-off households”
- Group 4—“disadvantaged households”
- Group 5—“experienced farmers”

The defining characteristics of the household groups are presented in Tables 2 to 4. Details about the characteristics of the various groups identified in the study are provided in Emtage (2004). The following section provides an overview of their characteristics and differences with an emphasis on how they are likely to react to changes in forest policies.

Groups That Do Intend to Develop Their Forestry Activities

Groups 1, 2, and 5 have high levels of interest in commercial tree farming. Group 1 rated the importance of all constraints to tree planting and management lower than the other four groups. Nearly 75% of the households in Group 1 have cash incomes that are below the poverty threshold, the same proportion as in Group 4. It is also true that more than 50% of houses belonging to members of this cluster group are constructed with light materials, and yet group members’ greater levels of landownership, capacity to produce a greater proportion of their own food requirements, and lack of concern about the constraints to tree planting and management contribute to this group having the greatest interest in commercial tree farming. Unlike members of Group 3, members of Group 1 appear to see the development of their farming activities as a means to improving their livelihood. They also tend to manage land that is further away from their dwellings, and may see tree farming as a way of using these

farming plots productively, thereby marking their ownership of the land, while at the same time reducing the labor requirements for their annual crop production. It is likely that the members of this group would be the most responsive to the provision of basic forestry development assistance such as the supply of seedlings.

Group 2 has been so named because their main concern with developing tree management activities is the lack of support by Government and nongovernment development agencies for these activities, and in particular the need for knowledge about silvicultural practices. They are less experienced in forestry, with the lowest proportion of households of all the cluster groups who used materials from public land in the past or do so at present. Group 2's lack of confidence in land management activities is highlighted by the fact that households in this group produce the lowest proportion of their own food requirements of any of the groups, and have the highest percentage of members that have attended agricultural training programs in the past. Members of this group have the greatest knowledge about how to register trees and they would be likely to respond to the development of robust silvicultural systems and the provision of training about tree planting and management by increasing forestry activity on the land they manage.

The final group with a high level of interest in developing commercial tree farming is Group 5. Members of this group have the greatest amount of experience with using resources (i.e. timber) from public land and many continue to do so now. They also have the highest proportion of members who have participated in community forestry programs. It appears that most households in this group are accustomed to using forestry activities to support their livelihoods and would undertake forestry development on their own land if they viewed such activities as commercially viable. They are the only group that rated the items in the scale "commercial viability issues" higher than other potential constraints to tree management. The time taken for trees to reach harvest age, difficulties in marketing timber, problems with policies relating to forestry, and lack of labor to manage tree plantations, are the most important constraints to commercial tree farming for households in this group. The households in this group grow the highest proportion of their own food requirements, and have relatively high cash incomes plus low reliance on farming for their income. With their experience in both farming and forestry, high interest in forestry activities, and relatively high incomes, they would be likely to respond most strongly to the development of accessible markets for timber products.

Table 2: Profile of Cluster Groups' Socio-economic Characteristics and Tree Planting and Management Behavior

Variable	Percent of Households in Each Cluster Group				
	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)
Households Below the Poverty Line	74	64	53	75	51
Own Some of the Land They Farm	72	60	53	40	60
Have a Lease Contract	24	22	40	16	67
Proportion of Total Food Needed for Household Produced by the Household					
0–50%	63	88	71	85	60
51–100%	37	12	29	15	40
House Construction Materials					
Light Materials	54	32	27	51	34
Mixed Materials	37	36	29	34	46
Concrete	9	32	44	15	20
Intend to Plant Trees in the Future	79	88	69	63	88
Interested in Commercial Tree Farming	77	72	44	46	74

Participated in Community Forestry Project	42	42	35	27	57
Know How to Register Trees	19	29	17	5	21
Have Belonged to a Community Organization	61	56	52	32	66
Attended Agricultural Training	12	36	20	32	29
Use Resources From Public Lands	19	8	23	18	74
Use Resources From Public Lands in the Past	40	16	30	27	80

Groups Not Intending to Develop Their Forestry Activities

More than half the members of Group 4 and Group 3 expressed no interest in commercial tree farming. While the groups share a lower than average interest in tree farming, they differ from each other in respect to their cash income levels and their reliance on farming for income. Whereas Group 4 has the lowest cash income and highest reliance on farming to produce cash income of any of the groups, Group 3 has relatively high cash income and low reliance on farming for income.

Members of Group 4 are concerned about all the potential constraints to tree planting and management and would appear to require the highest levels of assistance in terms of greater access to land, tenure security, livelihood support, and management advice, if they are to be able to engage in forestry activities.

In the case of Group 3, members appear to be in a stronger financial position to cover the initial investment required to develop forestry, but the majority are not eager to do so. Their primary concerns are “tenure and space” issues, with other constraints to tree planting and management given low importance ratings. With these “well-off” households primarily relying on nonfarm income for their livelihood, and having landownership levels below those of other groups (with the exception of Group 4), it is possible that they want to concentrate their resources on developing their off-farm livelihood activities, and that they are unwilling to reduce their current food production. These households have partly overcome the financial limitations of relying on farm production to support their livelihoods, but appreciate the need for a diversity of livelihood sources in risk management. In other words they may view the maintenance of their food production as a way of reducing the risks they face in sustaining their livelihood from off-farm sources.

Table 3: Mean Values of Various Socio-economic Characteristics of the Cluster Groups

Variable	Group Number	N	Mean	Standard Deviation	Coefficient of Variance
Household Gross Yearly Cash Income (Pesos) [†]	1	43	45,495	42,330.0	93
	2	25	62,582	65,193.7	104
	3	45	69,171	80,612.6	117
	4	47	33,199	24,503.3	74
	5	35	54,803	43,644.5	80
	All Respondents		195	51,856	55,163.6
Proportion of Income from Farming (%)	1	42	44	0.34	77
	2	25	46	0.36	78
	3	45	34	0.33	97
	4	47	54	0.36	67
	5	35	34	0.29	85
	All Respondents		194	43	0.34
Remittance Amount	1	43	2,223	5,034.9	226

		2	25	4,020	10,504.4	261
		3	44	6,707	16,049.8	239
		4	46	2,068	4,680.1	226
		5	34	12,971	25,334.7	195
		All Respondents	192	5,351	14,466.4	270
Area of Land Managed by the Household (ha)		1	43	3.23	3.777	113
		2	25	3.53	6.009	173
		3	45	2.27	2.417	106
		4	47	2.00	1.946	97
		5	35	2.40	2.130	89
		All Respondents	195	2.60	3.300	127
Average Distance to Farm Plots (km)		1	43	2.50	4.37	175
		2	25	1.42	1.27	89
		3	43	1.37	1.52	111
		4	44	0.92	1.00	109
		5	33	2.27	3.04	134
		All Respondents	188	1.69	2.68	159

†US\$1 = 45 pesos (approx.)

Table 4: Percentage of Each Cluster Group in the Various Communities

Cluster Group	Community				Total (%)
	C (%)	P (%)	R (%)	T (%)	
1	33	12	21	35	100
2	16	12	44	28	100
3	31	31	13	24	100
4	19	51	19	11	100
5	29	14	31	26	100
Total (%)	26.2	26.2	23.6	24.1	100

Development Needs of the Communities Participating in the Survey

To help place forestry development in context with the other development needs of the community, the survey included a number of questions relating to the households' perceptions of the ecological and other development needs of their community. Respondents were asked to state in their own words the primary ecological problems confronting their community. They were then asked to state in their own words the primary development needs of the community. The responses to these open-ended questions were examined and were classified for descriptive and analytical purposes. Reforestation was viewed as the most urgent ecological problem in the two upland communities involved in the survey, followed by soil loss. Flooding was viewed as the greatest ecological problem in one of the lowland communities, while illegal logging was viewed as the greatest problem in the other.

Participants in the survey were asked in an open format what they viewed as the most important development need in their community. Forest protection was ranked very low in most households' lists of development priorities. Households in one community were most concerned about the supply of potable water, two other communities were most concerned with transportation difficulties, and households from the fourth community rated the problems of community cooperation, roads, and the need for livelihood approximately equally.

Table 5: Proportion of Classified Responses to Open Questions about Community Development Needs in the Participating Communities

	C (%)	P (%)	R (%)	T (%)	Average (%)
Road Development	33	22	4	55	29
Livelihood Programs	21	22	20	10	18
Potable Water Supply	2	11	35	12	15
Education/Training	10	11	15	2	10
Community Cooperation	0	17	2	8	7
Irrigation/Drainage	17	0	9	0	6
Forest Protection	4	7	2	8	5
Health Services	4	2	11	2	5
Other	8	9	2	2	5
Total	100	100	100	100	100

Finally, respondents were asked to choose their five most preferred development projects from a closed list of nine possible projects. The assignment of ratings of various potential development projects to the selections by the respondents resulted in the highest scores for health services and transport infrastructure development across all respondents. Community forestry projects were rated second lowest in priority.

Findings from a Forest Policy Workshop

Discussions between participants at the policy workshop held in Leyte in 2003 following analysis of the survey responses generated a number of suggestions of possible ways to address what the community and LGU representatives see as a deficiency in information about tree management and land tenure issues (Emtage 2004). Suggestions to improve communication on tree management policies by workshop participants have two main thrusts. The first includes calls to formalize the Information, Education, and Communication (IEC) program of the DENR, to provide it with the personnel, budget, and other resources to undertake the required extension activities. These suggestions mirror those of the Revised Master Plan for Forestry in the Philippines, which also stresses the need to formalize, strengthen, and integrate the disparate IEC program (FAO and DENR 2003). The second approach to improving the IEC program concerns strengthening the relationships between the DENR, LGUs, the DAR, and the DA. Suggestions from the participants to improve communication between agencies included recommendations to place DENR liaison officers in the LGUs, the use of training seminars to educate LGU staff and to keep them up to date with changes in regulations, plus suggestions that the responsibility for maintaining tree registration records should be given to LGUs, together with increased funding to support this activity.

Improving Understanding of Tree Registration/Marketing Policies

After examining tree farm registrations and interviewing officers in subregional (Community Environment and Natural Resources Office, CENRO) offices of the DENR in Leyte and Biliran provinces, Germano et al. (2007) reported that there were large differences with respect to tree registration activities. One CENRO office (located in Maasin, southern Leyte) had registered approximately 2,800 tree farms covering an area of 2,807 hectares and more than 1.2 million individual trees between 1997 and 2006. The remaining five CENRO offices had all registered less than 300 tree farms each. These statistics do not match those compiled for the province at the national level, which list just one agroforestry farm registered in Leyte Province (Forest Management Bureau 2007). Germano et al. (2007) reported that factors leading to a low tree registration rate in other CENROs include: long distance between farms and CENR offices; weak tenure (farms under timber land status); inefficient processing of the

registration documents; absence of an officer-in-charge of tree registration during farmer visits to DENR offices; land under common ownership; and farmers are unaware about the tree registration process. Suggestions by respondents to improve the situation were similar to those made at the policy workshop.

According to the latest (2005) statistics for the registration of regular and minisawmills, there are no sawmills in Leyte Province (Forest Management Bureau 2007). In addition there are officially no recognized tree plantations on public forest land, only one registered agroforestry farm (3,300 hectares), and just six private forestry development agreements over a total of 55 hectares in the province (Forest Management Bureau 2007). Apparently 5,000 m³ of sawlogs are produced in the region including Leyte each year from planted forests, but with no sawmills most of this production is exported to other regions, mainly Cebu (Forest Management Bureau 2007). It is not yet known why the national statistics do not match the records kept at the CENRO level revealed by Germano et al. (2007).

Discussion

Getting households to the stage where they have access to land and tenure security is crucial in promoting the development of forestry activities. In a national study of the status of natural resources in the Philippines, de los Angeles (2000) concluded that the more than 50% of the area classified as public forest land is in fact cleared farm land and effectively open access area. She concluded that the lack of land-use planning seriously constrains the effectiveness of the management of these resources. Findings from the study confirm the relationship between property rights security and forestry activity, with increased levels of forestry activity undertaken and proposed by those households that perceive they have secure tenure over the land they use for farming.

The separation of public forest land into various tenure types is confusing for rural households and LGUs that are not informed of the regulations. Some areas are legally allowed to be farmed and may become available for purchase while others are fully protected as conservation zones but are not delineated on the ground. In addition, while households are able to grow agricultural crops on classified forest lands and legitimize the activity through paying taxes to the LGUs, the growing and harvesting of trees in the same area is illegal. Many areas of Leyte Province are not covered by land management plans and urgently require such plans to be developed. Watershed management could be greatly improved by regional and watershed-scale planning. Watershed-scale planning is a priority activity identified in the Revised Forestry Master Plan of the DENR (FAO and DENR 2003). Presently, insufficient resources, record keeping, and planning are devoted to natural resources by LGUs (Bisson et al. 1997). Land tenure maps are difficult or impossible to obtain, as are statistics about the areas of land managed by LGUs under various classifications of the Government agencies. The LGUs are supposed to monitor and promote forestry activities but in all the areas that were surveyed they do not know which areas in their jurisdiction may be developed legally according to national laws and regulations.

Several reviews of forestry policy in the Philippines have concluded that an ad hoc approach to environmental management and the blocking of key legislation by elements within the Government have resulted in the overuse of administrative orders to regulate forestry (Utting 2000; Guiang 2001c; FAO and DENR 2003). The proliferation of administrative orders, delays in their application, and the general lack of information for rural households about changes in regulations diminish these households' sense of security of property rights for land and trees.

Commitment to the resolution of the contradictions and complexities of forestry policy at a national scale is required, as argued in the Revised Master Plan for Forestry (FAO and DENR 2003, pp. 128–129):

The situation of fragmented promulgation of policies related to forestry makes it difficult to pin down what the current forestry policy is. In addition to being not readily available and tedious to consolidate, the current practice results in varying versions, leading to inconsistencies of policies. This situation gives rise to a felt and real need for a comprehensive forest sector policy to guide new legislation, new initiatives, new plans and programs, and day-to-day decisions to address current and expected concerns, problems and challenges in sustainable forest resources conservation, development, management and utilization. The passage of a bill on sustainable management of forest resources (House Bill No. 1713 known as New Forestry Code) was submitted to the Congress in 1990. The Bill has not yet been passed. Reason for the delay is not clear. It is understood that the draft of the bill on sustainable management of forest resources is being recast into an EO (Executive Order); and that it is likely to be approved in that form.

An Executive Order (EO 318) was issued in 2004 to “promote sustainable forest management in the Philippines” as foreseen by the FAO/DENR report. Among the provisions of EO 318 were a number of directives that aimed to directly address the policy deficiencies identified above. These include statements of the need for improved governance practices; the requirement to identify and delineate forest areas; intensification of extension services; and the development of forest plans to be incorporated into the plans of LGUs. Other laws directly affect the land resource security of rural households and titling issues, including the Public Land Act (1936) which, according to FAO and DENR (2003), also urgently requires redrafting to reflect the current situation in the Philippines.

On a number of occasions during the study at community meetings and at the policy workshop, community members raised the possibility of planting trees on land that is classified as public forest land but is actually degraded grassland. It is one role of community forestry programs to provide communities with access to public lands that have potential for forestry activities.

Apart from resolution of the tenure status of public forest land, it is likely that agrarian reform in private lands will be needed before any improvements in household circumstances, let alone increased tree planting, will occur. This is particularly true in one community that participated in the survey where almost half of the “disadvantaged households” identified in the community surveys are located. The need for support can remain even if there is agrarian reform, with anecdotal evidence suggesting that many of the recipients of land through agrarian reform simply sell the land back to the original owner because they lack the capital needed to plant and manage crops. Increasing the number of households that legally own at least some land that they manage, together with provision of credit facilities, may encourage households to concentrate on developing their own enterprises rather than relying on the erratic availability of off-farm employment.

In defining land management plans the process of negotiating boundaries for forest areas and physically marking these boundaries needs resources. It is critical to develop trust between all the stakeholders involved in land management, and the time needed to do this is difficult to estimate (Bagadion 2000). Communication between the communities, LGUs, and Government agencies has been poor. The empowerment of LGUs is crucial given their responsibilities in relation to land management. The Land Administration Management Program (LAMP 2) began to pilot its land tenure security program in Leyte Province as of June 2007. As a part of this program public meetings are held in *barangays* (villages) where

community members with land adjudicators and administrators are available to process land title claims.

The lack of formal markets for timber is a fundamental obstacle to small-scale forestry development for rural households in Leyte Province. Reports from the nearby island of Mindanao indicate that smallholders are involved in growing and selling trees on their own land (Bertomeu 2006). The long-term presence of the Paper Industries Corporation of the Philippines (PICOP) has provided a stable market for farm-grown timber in the area, something missing in Leyte. In fact Bertomeu (2006) reports a recent collapse in prices received for farm-grown timber due to oversupply that threatens the financial viability of farm plantings. Those households that are presently growing trees and planning to sell timber in Leyte are unsure about where they will sell their timber and the price they may receive. These households frequently asked the enumerators during interviews where they might find a market for their trees. The problem is circular, with the lack of trees to sell preventing the establishment of markets, and the lack of markets preventing the development of tree farming. Emtage (2004) concluded that the many regulations about land management, tree harvesting, and transport have not been effective in controlling the clearing of remaining native forests, and have constrained tree farming on private land by preventing the development of markets for smallholder-grown timber.

The lack of market development for small-scale forestry is partly due to the drastic restructuring of the timber industry following the banning of logging in native forests in 1992. The current effect of the regulations introduced to control logging in native forests is that there is virtually no formal market for timber. Few “legal” sources of timber exist in Leyte according to the plantation registration records of the DENR, yet timber is still brought and sold. The markets for timber are currently satisfied through imports to the province, through households growing their own timber, and through timber from “illegal” sources (Guiang 2001c). The extent of regulations is such that households must obtain permission to cut trees they have planted on their own land for their own use. The regulations create confusion and fear for farmers, who hear stories of people being jailed for (apparently illegally) harvesting trees that they planted themselves and used for their own housing.

The regulations also provide opportunities for rent-seeking officials to impose additional fees and thus extract any profits that may be generated from forestry activities. The effect is that people mostly avoid the legal and financial complications of tree registration and simply act outside the law in growing and harvesting their own trees. They avoid the potential for prosecution by not trying to sell timber formally, or sometimes by converting the timber to finished products (including charcoal) before selling it. It is hoped that improved awareness about tree registration processes will assist smallholders to obtain the required papers to enable them to sell their timber in markets that provide the optimal returns for their products rather than being constrained to sell within their local area at depressed prices because they fear the confiscation of their timber and other products.

The development of the tree policy primer and the radio school-of-the-air program have been useful means to provide an accessible document for rural communities and those that support them in the subregional offices of DENR and the LGUs (Gabrillo et al. 2007; Gravoso et al. 2007; Mangaoang et al. 2007). An important benefit of working closely with DENR officers to develop the primer was the clarification of the policies among these officers and development of consistent approaches to implementation of the policies by subregional offices of the DENR across the region (Harrison et al. 2005; Germano et al. 2007; Mangaoang et al. 2007).

Conclusions

Households that are on or below the poverty threshold cannot be expected to devote time and resources to an enterprise that has highly uncertain returns. Because tree farming is a long-term investment, it will not occur until people can be certain they will be allowed to sell their timber in a fair and open market. In Leyte there is active participation in timber and lumber production by farmers for their own use but formal timber markets are undeveloped. The operation of open, fair markets is one prerequisite for the development of smallholder forestry, but can potentially adversely affect the position of weaker households in communities as forest resources become more valuable and the stronger households in communities move to control the resource (Arnold 2001). Demystifying the regulations surrounding tree registration on private land is an important step towards empowering smallholders to participate in tree farming. Clarifying the tenure arrangements of trees grown by households farming on public forest lands and ensuring they understand how to claim tenure on the land they have been farming are also critical steps required to improve the financial position of poor households in Leyte and the health and stability of provincial and national natural resources.

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