Journal of Philippine Development
Number Nineteen, Volume XI, No. 1, 1984

AN IMPACT ANALYSIS OF THE FOREST OCCUPANCY MANAGEMENT PROJECT DOÑA REMEDIOS TRINIDAD, BULACAN

Herbert T. Barrios

I. PROJECT DESCRIPTION

Background Information

In the modern Philippine ecosystem, kaingin-making or shifting cultivation has been viewed as a social problem with land use overtones and has been pinpointed as a major factor/problem in sound forest management. The Ministry of Natural Resources conducted a series of studies on this with the end in view of utilizing the results to achieve a workable forest management scheme. Through the Bureau of Forest Development (BFD), the ministry formulated and piloted the implementation of the Forest Occupancy (Kaingin) Management (FOM) program in 1975. In Central Luzon, the pilot project on Kaingin management is being implemented within the Angat Watershed Reservation, specifically in Barangay Kabayunan, in the newly-created municipality of Doña Remedios Trinidad, Bulacan.

The inception of the Forest Occupancy Management Program was on 19 May 1975 when President Marcos issued Presidential Decree No. 705. This decree, as amended by PD No. 1559, states that "kaingeros, squatters, cultural minorities and other occupants who entered the forest lands before May 19, 1975 without permit or authority shall not be prosecuted; Provided, that they do not increase their clearings; Provided further, that they undertake the activities imposed upon them by the BFD in accordance with a management plan calculated to conserve and protect forest resources in the area; Provided finally, that occupants shall, whenever the best land use of the area so demands as determined by the Director,

Economic Development Specialist, National Economic and Development Authority, Region III, San Fernando, Pampanga.

be ejected and relocated to the nearest accessible resettlement area." Forest occupancy management was designed as a component of the country's overall watershed management and forest protection program to regulate and control the destructive land management practices of kaingeros and other forest occupants in order to conserve water, soil and other forest resources.

Project Setting

Barangay Kabayunan is situated in the south and southeastern portions of the municipality of Doña Remedios Trinidad in Bulacan which forms a major part of the Angat Watershed Reservation area. The topography of the area ranges from rolling to moderately rough to very rough, with an average percentage slope of about 35. This is so because the site lies on the eastern highlands of Bulacan which are actually the western foothills and flanks of the Sierra Madre Mountain Ranges. The rainfall pattern at the project site falls under the first climate type (Climatic Type I) which is characterized by two distinct seasons: dry from November to April and wet during the rest of the year. Average annual precipitation is about 2,100 mm. or approximately 82 inches, with a temperature range from 10 to 36 degrees centigrade. The soil is classified as alluvial which varies from fine sandy loam to clay loam with some pockets of limestone deposits and unclassified Novaliches loam soil. The site has relatively thick second growth vegetation characterized by small to medium-sized species of bankal (*albizzia facetaria*), mahogany teak, and several noncommercial wood species. Some observable features, however, are open areas across slopes, tracks of logged-over section, and brushed areas. Kabayunan is about 55 kilometers north of Manila via Norzagaray. There is no direct link from this barangay to the municipal area proper except for some foot trails. The watershed reserve area is approximately 55,000 hectares and is within the administrative jurisdiction of the Upper Angat River Basin Multi-Use Forest Management District (R3D-7), 9,636 hectares of which are intended for FOM. Out of this declared pilot project area, 1,117 hectares are currently being managed by the forest occupants who qualified to participate in the program.

Project Objectives

While the formal signing of Presidential Decree 705 was done

in May 1975, the then Department of Natural Resources, through the Bureau of Forest Development, actually launched its Forest Occupancy Program on 8 April 1975 with the following objectives (FOM Manual, BFD 1975):

a) To stabilize and manage the occupancy of kaingeros, squatters, cultural minorities and other forest occupants in order to prevent or minimize further forest encroachment and destruction;
b) To help improve and uplift the socioeconomic conditions of these forest occupants; and
c) To transform the forest occupants from agents of forest destruction to partners in forest development and conservation.

"Managed Occupancy" means that the bonafide forest occupants could stay in the area which they actually occupied and/or developed, provided that their continued occupancy would not result in sedimentation, erosion, reduction in water yield, and destruction of other forest resources (Magno 1981).

To fully implement this program, the BFD formulated the following eight mechanics of implementation to attain its objectives:

a) *Information campaign.* The FOM unit of the field office shall explain to the forest occupants what the program is all about and how it is going to be carried out and benefit them.

b) *Census.* The BFD shall conduct a district-wide census which shall be the basis of an FOM District Plan.

c) *Plan preparation.* The District Forester, with the assistance of the Forest Occupancy Management Officer (FOM), shall prepare an FOM plan based on the census conducted.

d) *Farm lot survey and delimitation.* After the preparation and approval of the plan, the FOM personnel could start with the survey and delimitation of individual kaingin farm lots.

e) *Issuance of Forest Occupancy (FO) permits.* After the census and delimitation of individual farm lots, the forest occupants could apply for 2-year Forest Occupancy permits to be processed in the BFD district and regional offices.

f) *Farm development and improvement.* The permittees are expected to fully develop their respective farm lots in accordance with an agro-forestry farm development plan jointly prepared and agreed upon by them and the BFD.

g) *Introduction of income-generating activities, infrastructure*

and organization of farmers' association and cooperatives. Income-generating activities like small scale/cottage industries shall be introduced and necessary socioeconomic infrastructure facilities (farm-to-market roads, multi-purpose hall, water system, etc.) shall be established. Moreover, marketing cooperatives, Samahang Nayon, and other farmers' associations shall be organized.

h) *Extension of welfare services.* The BFD, in coordination with other government and private agencies concerned, shall extend/deliver education, health, nutrition, family planning and other services to the permittees.

II. AREAS OF CONCERN

This study focuses on two primary areas of concern, namely: (1) the cooperator's income structure before and after joining the program; and (2) actual resource conservation/depletion as a direct offshoot of the program. Aside from these, the study will also examine some of the indirect impacts of the BFD in the project area. The relationships and indicators are summarized in Table 1.

The study has for its hypotheses the following:

1. There is an increase in the cooperators' income as a result of their participation in the FOM program of the BFD;
2. There is as an indirect result, increased productivity of the farm lots of the occupants, and
3. The project has stabilized forest occupancy in the pilot project area.

III. IMPACT RESEARCH METHODOLOGY

The evaluation model is presented by the following diagram:

	Time		
	1 2 3		4 5 6
Experimental Group	0 0 0	x	0 0 0

Where the E – Group = Forest Occupants/Kaingeros/Cooperators
x = Implementation of the program
1 . . . 6 = Period of measurements in year

Table 1
DIAGRAM OF MAJOR VARIABLES AND INDICATORS

Inputs	*Outputs*	*Direct impact*	*Indirect impact*
1. Forestry technology, research & extension, support & administrative services	Forest Occupancy Management (FOM) 1. Technical Assistance 2. Material assistance 3. Infrastructure facilities 4. Welfare services	1. Stabilized & managed forest occupancy 2. Increased productivity & maximized resource utilization 3. Employment opportunity	1. Natural resources protection & conservation 2. Income growth 3. Occupant participation
Indicatory			
1. Financial allocation 2. Personnel complement	1. Information campaigns 2. Farm lot survey & delimitation 3. Forest occupancy permits 4. Seedlings distribution 5. Constructed nurseries/ bunkhouse 6. Road kilometerage & foot trails 7. Mini-dams/check dams 8. Schoolbuilding 9. Health extension visits 10. Community organization 11. Established & maintained firebreaks	1. Erosion incidence 2. Forest fire incidence 3. Boundary conflicts 4. Dam water levels 5. Farm harvest 6. Seedling survival rate 7. No. of demonstration/ model farms	1. Reforestation figure/Afforestation 2. Income difference 3. Participation rate 4. Occupants' attitudes

The selection of the design was brought on by the researcher's difficulty in establishing a true control group of kaingeros. This problem arose because the physical factors in the project area were very different from others. The setting up of a control group within the project area could not be realized as the total number of occupants have been covered by the program. While it may be argued that other areas could qualify for a control group, the researcher found out that occupants of other areas had different farming methods and practices and ethnic origins. These, together with agro-forestry crop variability, made it difficult to set up a control group.

The results of this design could best be examined if presented graphically. Graphing will have to be done for some critical areas of concern. In this evaluation design, as in the other forms of design, there are problems which can lead to confusion. For example, did the group composition stay the same? In this case, the problem of dropouts was ruled out since there was no reported case of abandonment by cooperators, except for natural causes. Another problem is the question of other events occurring at the project area that might significantly influence areas of concern. These and some other threats were considered by the researcher prior to the analysis portion of the study.

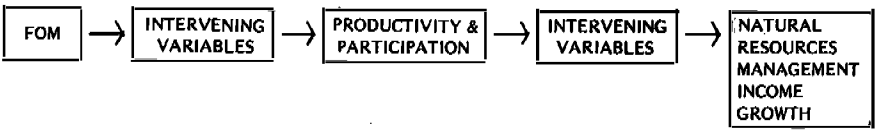
In the data gathering process, a baseline survey of actual forest occupants was undertaken and conducted on a house-to-house basis. The respondents were the household heads. The survey comprehensively covered all the occupants within the pilot barangay. A guided interview was undertaken with a prepared set of questions. Data which were obtainable from existing primary and secondary sources were not included in the survey except for a few items where the researcher felt there was a need for validation/confirmation. Of the total number of 214 farmlot occupants, however, only 70 respondents were interviewed as the physical distance hindered extensive coverage. It is worth noting at this point that the 214 farmlots were spread out within a 9,600-hectare project area.

IV. METHODS OF ANALYSIS

As previously stated, the single group time series design was utilized. This is a "before-and-after" measure without a control group composed of forest occupants or kaingeros as a class/category. Whether or not the introduction of FOM will really result in an increase in the

occupants' income due to increased productivity and employment opportunities generated by the different project components will depend in part on some intervening variables as shown in Figure 1. The unit of observation in this study is the kaingero as an agricultural working category while the unit of analysis is the occupant household head. In the statistical operations, correlation, cross-tabulation and regression analysis were utilized.

FIGURE 1
THE ANALYSIS MODEL



1. Education
2. Experience
3. Number of dependents
4. Work animal ownership
5. Attitudes

1. Infrastructure support
2. Marketing assistance

V. FINDINGS

Demographic Characteristics

The mean age of a kaingero family head/cooperator in Barangay Kabayunan, Doña Remedios Trinidad, Bulacan is 44.8 years, with a range of 54 years. Forty-three percent of the household heads have been in the area for at least 23 years. Two of them indicated that they had been there since birth. This confirmed a previous finding (Abugan 1980) in the same project site which underscored economic reasons for the kaingeros' decision to continue their calling.

Regarding the household dependents, the survey showed a mean number of dependents of 4.7 per respondent kaingero. By national standards, this dependency figure appears to be low. It is the lack of basic social welfare services for dependents, however, that makes the picture dim for them. Their choice of site is explained by the fact

that 71 percent had their previous place of origin within the Bulacan-Nueva Ecija area, particularly in the municipality of Norzagaray.

As to the reasons why they have engaged in upland farming in the area, the greater majority of the respondents were unanimous in citing the nonavailability of lands of their own to till. Compounding this situation is the exceptionally high population growth rate which resulted in the rapid increase in the land-population density in the mother municipality of Norzagaray. The municipality registered an average annual rate of change in density of 14.77 percent (Table 2). This resulted in the increase of landless tenants occupying farm lots in the public forest lands. The average annual percentage change in population at the FOM area between 1960 and 1980 was 20.32 percent. The data on residency show that 95 percent of the occupants are residing within the project site and that the mean number of years of residence is 15.8 years.

TABLE 2

COMPARATIVE DENSITY FIGURE 1960-1980
(Person per square kilometer)

Area/year	*1960*	*1970*	*1975*	*1980*	*Average annual % change (1960-80)*
Central Luzon	138.5	198.3	230.9	263.0	4.49
Bulacan	196.2	281.1	342.9	417.5	5.63
Norzagaray	37.5	58.7	72.91	148.2	14.77

Educational Background

The data show that 56 percent of the respondents had reached only primary level education. Twenty-four percent of the occupants had no formal schooling at all while 9 percent reached only the intermediate level. The rest reached secondary schooling. This was so because of the nonavailability of the required physical instructional facilities and teacher complement in the site. Only one public primary school teacher handle four grades at the same time.

As far as the respondent occupants were concerned, a plausible explanation as to why many of them have no schooling at all may

be established by backtracking from their mean age of approximately 45 years old. This brings us back to the later part of World War II. This, plus the household economic limitations, best explains the occupants' present educational status. As for the occupants' children who are of school age, the household heads are faced, among others, with a complex problem of providing necessities and provisions for decent schooling.

Occupational Background and Status

As to the occupants' background occupation prior to engaging in kaingin-making, 70 percent were previously lowland farmers, 6 percent were construction laborers, 4 percent were factory workers, 3 percent were fixed monthly earners, 14 percent were engaged in kaingin, and 3 percent reported other jobs as their previous economic undertaking. Of the 70 percent who were previously lowland farmers, 96 percent cited problems of land tenure. They were only share tenants in their previous workfarms. The rest cited better prospects for kaingeros during the initial exploratory periods. These included the relative ease and uncontrolled mobility that provided them with diverse opportunities to convert natural resource endowment to cash. These were done to the detriment of the forest ecosystem, though. In the mode of acquisition of their present farmlot, 73 percent cleared it themselves; 3 percent bought theirs; 21 percent inherited them; and the rest (3 percent) were on lease contract when the program was initiated. As for the farmlot clearing activity, the occupants said that group spirit usually pervaded their actions.

As to the occupants' intentions with their farmlots, 93 percent said they would stay permanently as long as they were allowed to do so while 5 percent hinted that they might sell/lease them later. Regarding the farm lot size, 3 percent thought that their farmlots were large for them while 66 percent said that their farmlots were just enough for their needs. The remaining 31 percent felt that their farmlots were too small for them.

Income

Available figures for 1971 show that the average annual farming household income in the area was ₱1,754. This figure rose to ₱2,635 in 1975. Income in 1980 was computed on the basis of the occupants' estimated farm harvest in kind together with income from

other sources. It has been computed at about ₱4,114. Household income growth rate in the project area between 1975 and 1980 showed an annual average increase of 11.22 percent over the 5-year stretch as compared to only 8.82 percent for the municipality of Norzagaray and 10.43 percent for the province of Bulacan. The regional and national averages were, however, higher in that same period (Table 3).

TABLE 3

COMPARATIVE AVERAGE HOUSEHOLD INCOME
(In Pesos)

Year	*1971*	*1975*	*1980*	*Average annual percent change (1975-80)*
Philippines	3,736	5,840	9,893	13.88
Central Luzon	2,390	5,773	9,226	11.96
Bulacan	4,017	6,262	9,530	10.43
Norzagaray	3,186	5,298	7,635	8.82
FOM Area-DRT	1,754	2,635	4,114	11.22

As for the occupants' 1981 income, the figure hit the ₱5,401.00 mark. Annual income figures of 1971 and 1981 give an average annual increase of 20.79 percent in nominal terms.

The 1981 gross household income distribution by economic activity sources showed that 43 percent of the occupant's income was derived from fruit tree growing within his farmlot. This is followed by upland rice farming (the kaingin method itself) at 23 percent. Ranking next as a major source of income for the occupants is daily labor wage in the different BFD project components (15.87 percent). Fishing in the Angat Water Shed area registered an 8 percent share in income while vegetable growing took a 5 percent share. The remaining income is derived from backyard livestock/poultry/piggery and other sources of livelihood.

Attitudes

The attitudes of respondents to land resources, usage, conserva-

tion and management were reported by Abugan in 1980. The responses, together with several items found in the survey conducted for this report, provide a picture of the attitudinal perspectives of the forest occupants within the project site toward land resources; despoilation, exploitation of natural resources; and environmental conservation.

Fifty-eight percent of the occupants studied by Abugan said they were aware of the problems affecting land resources. They expressed a willingness to be involved in activities having to do with the proper utilization of land resources. Sixteen percent were non-committal and the remaining 26 percent gave negative responses. On attitudes toward forest resources, 46 percent indicated positive responses and 11 percent strongly positive answers. The high overall level of positive attitudes indicated that the occupants were conscious of the need for favorable action as regards forest resources. However, one-fourth of the respondents revealed a negative attitude. Abugan pointed out that kaingeros have always been and are caught between their awareness of forest resource destruction and the compelling necessity of resource despoilation as a means of survival.

Sixty-nine percent of those surveyed were in favor of immediate action to save the natural resources, especially forest trees which are fast disappearing. Response was also positive to an item in the survey which questioned the willingness to participate in the conduct of forest conservation while at the same time participating in the varied aspects of agro-forestry. It should be noted, however, that only 43 percent demonstrated an awareness of pertinent forest rules and regulation, and the rest were not too well-informed about vital forestry laws and operational guidelines.

VI. ANALYSIS

Inputs

Since the inception and implementation of the project in April 1975, about ₱2.5 million have been allocated for the operation and implementation of the project. The project funding level experienced a sharp decline from 1975 to 1980, from an estimated ₱1,000,000 per year in 1975-1976 to ₱56,548 in 1980. The year 1981 saw an increase in the funding level to ₱125,000. The hiring of personnel likewise experienced a diminishing trend from 1977 up to the present.

Outputs

In the output phase of the project, the implementing district office completed the census of all the forest occupants. Project information and forestry extension activities were done through regular monthly mass meetings and individual house/farm visits conducted by the Kaingin Management Officer and his staff. Activities related to forest occupancy stabilization include the survey and delineation of individual farmlots. The BFD has issued 36 occupancy permits and is processing 45 more. The farmlot delineation scheme has considerably checked the problems of encroachment and area overlapping since each boundary neighbor occupant has been made to conform first to a common accepted boundary. Encroachment by new settlers has been controlled in this manner. And occupants have been prevented from expanding their present area or from working on other prospective areas. They are to avail themselves only of the maximum 7 hectares of farmlot. This physical limitation, coupled with the natural restrictions of rolling and rugged terrain, has confronted the occupants with the question of what to plant, how much to plant, and where to plant to attain optimum production. This could only be achieved after a series of trials which obviously take time.

In the agro-forestation component of FOM, BFD has put up and maintained two agro-forestry nurseries and 10 demonstration kaingin farms within the project area. They have likewise distributed 5,000 seedlings of fruit trees and about 300 packets of vegetable seeds, and have grown about 323,000 seedlings.

Infrastructure support activities that have been undertaken include the construction of a 2.43 kilometer farm-to-market road and 2 project quarters. This small road network is supplemented by about 10 kilometers of foot trails which are cleared manually by hired laborers, who come from the ranks of the occupants. A total of 17,296 sq. meters of firebreaks in pinpointed critical areas have likewise been established. Two mini-dams/checked dams were also constructed.

Health, nutrition and family planning services/visits are conducted by extension workers from concerned agencies, but these are irregular. Immediate medical assistance is almost impossible in the area. The nearest service point is at Barangay Hilltop in Norzagaray which is accessible only after a 30-minute horseback ride, at the very least.

None of the six community organizations in the area seems to be active. Even the Barangay Council itself is in the doldrums. Members of those associations say that they have not had any regular meetings and that attendance would deprive them of precious time in their farmlots or at household chores. This is an indication and manifestation of weak community-based leadership. Aside from this, nonattendance of members indicates a high level of farm labor input to their kaingins. A community-organized activity conducted with relative success has yet to occur in the project site.

Direct Impact

On the analysis of the first order effect or the direct impact of the project, there are three areas of concern, namely: (1) stabilized and managed forest occupancy; (2) increased productivity and optimized resource utilization; and (3) generated employment opportunity. Regarding the first concern, actual area inventory and periodic survey have so far detected no new forest intruder. There have also been no problems arising out of boundary disputes. There were some reported expansion activities of a few forest occupants, but they are isolated cases. Soil erosion incidences are being checked by rehabilitating and initiating erosion control measures already done in some 11,000 sq. meters of eroded and potentially erodable areas. On the forest management aspect, the agency has not yet undertaken steps to attain full occupant cooperation in its various undertakings. Furthermore, as a basic component of a managed occupancy, a demonstration farm was established as a vehicle for the transfer of technology where intercropping is done, i.e., forest trees for protection, fruit trees for income purposes and crops on bench terraces for subsistence. A strong observation was noted by forestry personnel on the gradual acceptance of the idea by occupants. This is a slow and painstaking job but it is gaining ground.

The notion of "managed occupancy" has a far-reaching implication for productivity and resource utilization. It could be noted that income rose by 32 percent in nominal terms for the period 1980 and 1981. Fruit-tree growing has a lot to do with this increase. Fruit trees were distributed by BFD in 1975. This includes seedling stocks of mango, coffee, citrus, jackfruit, etc. The fruit bearing age of these fruit tree seedlings is no less than 2 years. Hence, fruit

tree harvests are starting to pick up only after several years after the date of distribution.

On employment opportunity, income derived from daily labor of occupants on BFD project components was computed to be about 16 percent of their gross income on the average in 1981. This is significant enough as far as employment generation is concerned. Activities where occupants undertake jobs include seedling potting in nurseries, manual labor in road building, nursery quarters, plantation operations, maintenance and the like.

Indirect Impact

As a result of program implementation, there have been positive results in the area of forest resource protection and conservation. Not only had the program reduced/prevented forest despoilation but had at the same time conserved and enhanced the remaining standing growth and also provided nominal income to the occupants. A comprehensive reforestation of one hectare of denuded forest would now cost around ₱8,000. Comparing this to the average income per hectare of only ₱261.77 gives a lot of food for thought.

In the analysis of income growth, the percentage contribution of income due to daily labor wage has been shown to be about 16 percent. What other factors have led to increased income, particularly in the last two years under consideration? A cross tabulation between income as the dependent variable and farmlot size as the independent variable (Table 4) reveals an expected association: the proportion of high income households goes up as farmlot size increases. Another cross-tabulation (Table 5) reveals that the proportion of high income households rises as the length of occupancy rises. This suggests that while some of the increased incomes can be attributed to the project, the location of a household in low or high income groups is strongly related to factors that are external to the project, such as farmlot size and length of occupancy.

Regarding occupants' participation, two-thirds said that they have regular consultation/referrals with forestry personnel on matters related to agro-forestry; one-fifth said that they consult only once in a while and the rest answered in the negative. On the participation of respondents in project planning and implementation processes, 43 percent answered in the affirmative; 33 percent said sometimes and the rest or 23 percent said they did not participate at all.

TABLE 4
CROSS TABULATION BETWEEN HOUSEHOLD INCOME AND FARM LOT SIZE

		Household income		
		Low	*High*	*Total*
Size of Farmlots	Large 6 & over	8 (50%)	8 (50%)	16
	Medium 3.5-6.0	8 (67%)	4 (33%)	7
	Small 3.5 & below	5 (71%)	2 (29%)	7

TABLE 5
CROSS TABULATION BETWEEN HOUSEHOLD INCOME AND LENGTH OF OCCUPANCY

		Household income		
		Low	*High*	*Total*
Length of occupancy	Short 12 years & below	8 (80%)	2 (20%)	10
	Medium 13-22	3 (33%)	6 (67%)	9
	Long 23 and above	3 (27%)	8 (73%)	11

In summary, this first attempt at evaluating the programs' objectives shows positive results. Since the program's implementation, forest occupancy has been stabilized to a high degree. What contributed most to this is the occupant's fear of losing hold on

his currently occupied farmlot if he violates any policy/rules/guidelines of the FOM. Corollary to this is their intention of staying and improving their present farmlots.

In the forest resource management aspect, results have not been as encouraging as expected. While the occupant realizes the social and economic consequences of offensive agro-forestry practices, he is influenced by the sheer necessity to produce at whatever cost for survival. The nonavailability of stable sources of income in the area is definitely a compelling factor pushing occupants back to shifting cultivation. The program is offering employment opportunities, but only on a limited scale. Funding allocation has a direct hand in this regard. The rest who are not being benefited by the project as far as employment is concerned are the potential participants in offensive agro-forestation. The length of time for the other project components to yield results likewise imposes on the occupant no choice but to stay put. Fishing and backyard animal growing offers some promise as other sources of income.

VII. CONCLUSION

While the occupants are moving towards the direction of optimum resource utilization, their efforts are being hampered by the lack of support facilities to convert their farm products to money. According to the occupants, their farm produce is left open to decay or perish because of the very deficient existing mode of transportation, not to mention prohibitive transport costs. A kaing of mango when taken to the buying station will cost an occupant ₱10-12 for transport while its market value is about ₱30. Table 6 clearly illustrates the desire of a greater majority of the occupants to have a better farm-to-market road, among all other things.

TABLE 6
PRIORITY CONCERNS OF OCCUPANTS

Rank	*Development activities*
1	Farm-to-market road
2	Education
3	Health and nutrition
4	Vocational training
5	Housing
6	Technical/Extension services
7	Water supply
8	Family planning
9	Electrification

REFERENCES

Abugan, E. D. "Study of the Attitudes, Knowledge, and Experience of the Kaingeros in Doña Remedios Trinidad, Bulacan." Master's thesis, G. Araneta University Foundation, 1980.

Bureau of Forest Development, *Forest Occupancy Manual*, 1975.

Magno, V. P. "The Social Forestry Program of the Bureau of Forest Development." Paper presented at the 71st Anniversary UPLB College of Forestry, 1981.