Development and Perspectives of Social Forestry Policy in the Philippines

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フィリピンにおける社会林業（Social Forestry）政策の展開と展望

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Résumé

This study focuses on how climatic and socioeconomic conditions influences farmers' receptiveness to the social forestry program in the Philippines. This research shows that the marketing factor for the wood products, as well as the specific land tenure arrangement of the households seem to adopt the practice of tree planting as an economic activity. Farmers' consciousness of demesne over the forestlands is reinforced in particular by the marketability variable.

On the other hand, spatial competition with existing cash crops, income level from cash crops, and labor input for agricultural work influenced by climatic conditions seem to constrain farmers against tree planting activities.

The social forestry program in the Philippines therefore seems to function most effectively when farmers are favored by the following conditions: (a) their lands are located within humid tropical area; (b) they occupy areas larger than 4 ha; (c) they are in the middle-income class in relation to their agricultural output; and (d) they have easy access to markets for the wood products from the trees.

要　　旨

森林荒廃国の一つであるフィリピンにおいて，森林再生の一方法として公有林内居住者の生活の向上と荒廃林地の再開発に重点を置いた社会林業（Social Forestry）政策が1982年に制度化された。本研究の目的は，フィリピンの全公有林が対象である社会林業政策が，気候的，社会経済的に異なる条件下のいかなる社会構造の中で受け入れられているかを明らかにすることである。

住民に植林を促す要因としては果実や林産物市場の存在と土地占有権の確立が考えられる。土地の収益性の向上は土地の占有意識の私有化を促すと考えられ，両者は密接に関連していると言える。一方，植林行動を抑制する要因としては，既存の商品作物との空間的競合，農業収入の多さおよび気候と密接に関連する労働投入条件が挙げられる。

フィリピンにおいて社会林業政策が最も効果的に受け入れられるのは，湿潤熱帯気候区に属し，

植栽木の市場が存在するという環境のもとで占有面積4 ha 以上，農業収入の中間所得者層に属する住民であると考えられる。

1. Introduction

In the Philippines – which until the early 1970s was a prosperous log exporting country, but where now the depletion of forest resources has set in – reforestation is a principal subject of its forest policy. "Social forestry" is a term indicating a reforestation policy based on local people's participation which emphasizes the welfare of forest communities in contrast to the "traditional" or "industrial" forms of forestry.

Deforestation seems to account for some 200,000 ha annually[1] and the LANDSAT data in 1987 shows that the remaining forest land is 6.46 million ha occupying 21.5% of the total land area[2]. *Kaingin* (shifting cultivation) has been regarded as one of the major causes of deforestation. The government had dealt with shifting cultivation through punitive measures, such as ejectment of forest occupants from the forestlands. In spite of the regulations on shifting cultivation, however, it has persisted.

To counteract the deteriorating forest situation in the early 1970s, the government worked out three forest measures for *kaingin* management; these are pioneering social forestry programs which were later institutionalized into an Integrated Social Forestry Program in 1982. These three forestry programs initiated in the 1970s are the Forest Occupancy Management Program of 1971, designed to manage forest occupants, and the Family Approach to Reforestation and the Communal Tree Farming Programs of 1979, both designed to reforest open and denuded areas by their occupants.

The intended beneficiaries of these programs – which were assumed to be under the charge of the respective divisions of the Bureau of Forest Development (now the Forest Management Bureau) – were the forest occupants; this has led to confusion in the field. As a result of rural poverty which has caused *kaingin* to spread into open forestlands, as well as because their demand for food, fuelwood, and wood can only be met in the forestlands, these three programs were integrated in 1982 to reinforce the social forestry policy[3].

This study aims to analyze how forest occupants have reacted to this nationwide social forestry program in the Philippines, under different climatic and socioeconomic conditions.

2. Development of the Integrated Social Forestry Program

The numerical achievement table up to 1989 shows that some 150,000 families compared with an estimated 1.2 million families (12.5%) in the forestlands benefited from this program, covering 1.55 million ha of developed area out of 9.40 million ha (19.5%) open forestlands. The achievements since the inception of the program in 1982 are mainly the delineation of program sites and the issuance of certificates of stewardship contract, which permit forest occupants to cultivate the areas, which have been under their control, for twenty-five years (renewable for another twenty-five years). The reasons for delayed progress are the perennial shortage of

funds and the inadequate number of trained personnel. Recently, however, some improvement over these problems has been made through the financial infusion from the agrarian reform budget, Asian Development Bank (ADB) and Overseas Economic Cooperation Fund (OECF). The major change has been to set up model project sites in each community, which serve as training centers for adjacent project sites, as well as the introduction of soil and water conservation technologies in some project sites, in particular in model project sites.

3. Study Area

The following study sites were chosen (figure 1): Benguet, Nueva Ecija and Zambales Provinces in Luzon Island, all under a monsoon-type of climatic regime, having extreme dry and wet seasons; Bohol Province in Bohol Island, and Bukidnon Province in Mindanao Island, both having a humid tropical-type of climate, with rainfall all year-round.

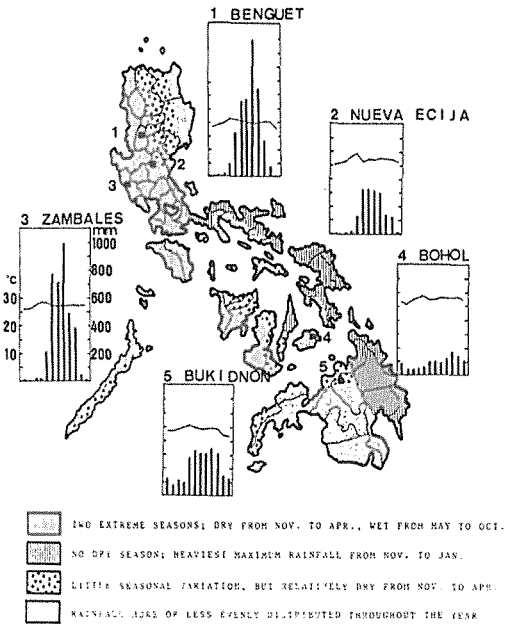

Fig. 1 Study Area

4. Soil and Water Conservation Technologies

Most of the farmers in the forestlands are cultivating areas on land overgrown with grasses of *Imperata cylindrica* and *Saccharum spontaneum*. Thus, improving soil fertility is a prime concern.

Sloping agricultural land technology developed at the Mindanao Baptist Rural Life Center is adopted at each project site according to its actual situation. The principle of this technology is to plant leguminous species along the contour lines such as *Gliricidia sepium*, *Flamengia*

macrophylla, *Leucaena leucocephala*. They serve as green manure, fuelwood, and livestock feed, as well as provide erosion control. In-between the contour lines (4-6 m) annual or perennial crops are planted (figure 2). A simple and economical device called the "A-frame" is used to locate the contour lines (figure 3)[4].

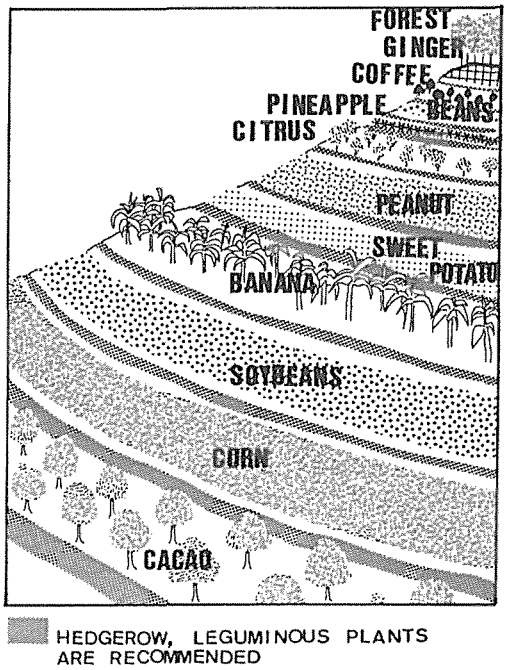

Fig. 2 Sloping Agricultural Land Technology

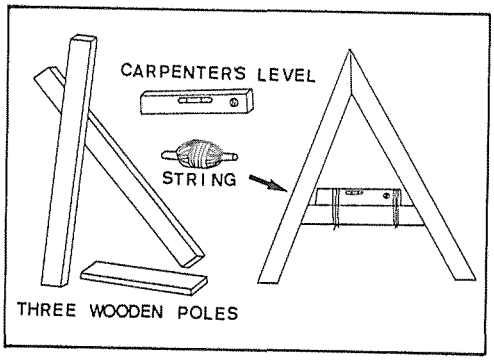

Fig. 3 A-Frame for Locating Contour Lines

5. Development in Each Study Area: Soil and water conservation technologies adopted and situations for tree-planting

(1) Benguet Province in Luzon Island

The entire province is located in the uplands. The social forestry project is being set in the big vegetable production area. People have been engaged in vegetable production by clearing forests and converting them into terraced farms. The project has tried planting a combination of *Coffea* spp. and *Alnus japonica*. The participants are reluctant to plant these trees, however, which they consider an obstruction to vegetable production. They select the site for plantation on the boundaries or around the house away from the vegetable fields as shown in the land use example in figure 4.

(2) Nueva Ecija Province in Luzon Island

The largest rice fields in the Philippines are in this province, where most of the farmers are tenants. The program participants, most of whom are tenants or landless agricultural laborers, sought land to cultivate in the forestlands, which once constituted more than 1,000 ha of pasture

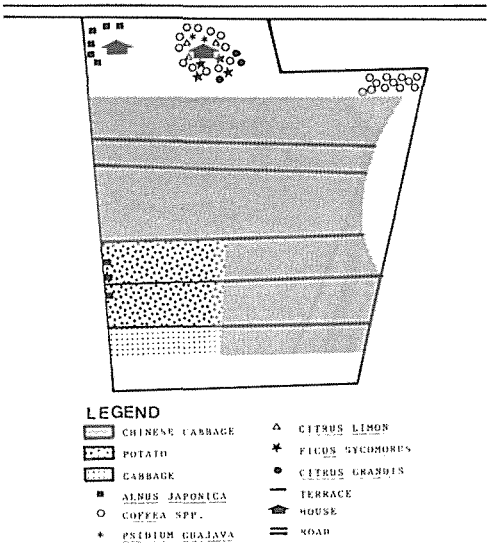

Fig. 4 Land Use Example in Benguet Province (1.2ha)

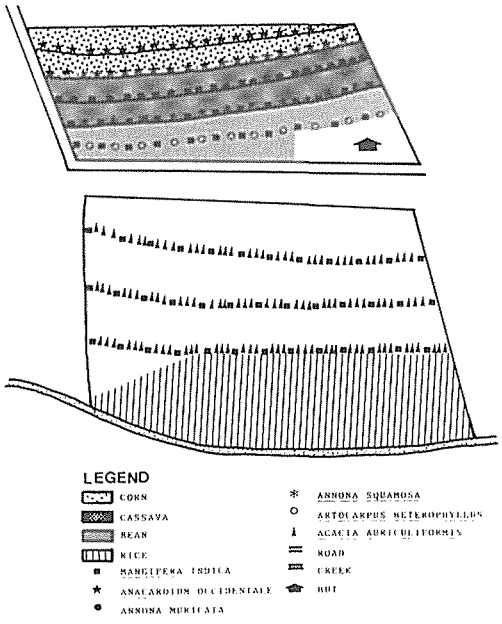

Fig. 5 Land Use Example in Nueva Ecija Province (upper 0.8ha, lower 2.4ha)

land. The project established a one-hectare model farm in an attempt to transfer the planting technologies and to demonstrate the significance of planting trees. The characteristics of the model farm are: (a) The planting of leguminous species like *G. sepium* along the contour lines; (b) the planting *Acacia auriculiformis*, *Swietenia macrophylla*, and *Mangifera indica* in-between the contours; and (c) the cultivation of annual crops until the trees planted are tall enough in-between the contours. These technologies were transferred to the participants as shown in the land use example in figure 5.

(3) Zambales Province in Luzon Island

The Aetas, the cultural minority group in the province, has been practicing *kaingin* as a way of life in this area. It is said that the commercial logging operations and slash-and-burn practices have turned the forests grasslands. The project, with the intention of settling the Aetas, distributed fruit tree seedlings such as *Artocarpus heterophyllus* and *M. indica* without introducing planting technologies. An non-governmental organization (NGO) introduced the contour making technologies by planting *L. leucocephala*, *F. macrophylla*, *G. sepium* along the contours. The participants to whom the technology was transferred stopped their *kaingin* activities and settled down.

(4) Bohol Province in Bohol Island

The widespread *I. cylindrica* and *S. spontaneum* grasslands are said to be the result of prewar commercial logging operations, as well as grazing and *kaingin* activities by people migrating from the lowlands. The project introduced water and soil conservation technologies. Under the former, a drainage canal 1 m wide and 0.5 m deep was constructed and *G. sepium* was planted 0.3

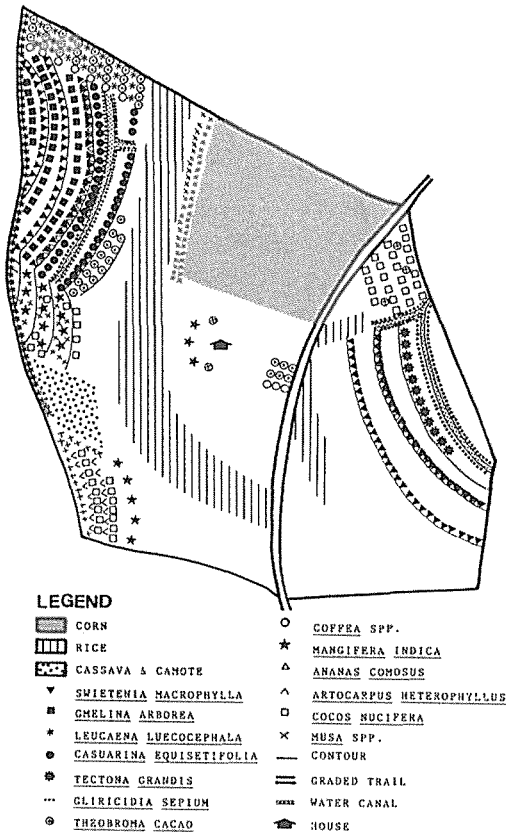

Fig. 6 Land Use Example in Bohol Province (6.0ha)

m intervals along the canal. Under the latter, *F. macrophylla*, *L. leucocephala*, *S. macrophylla*, and *Gmelina arborea* were planted along the contours as indicated in figure 6. In introducing these technologies, the project paid wages and gave livestock as incentives to the participants.

(5) Bukidnon Province in Mindanao Island

The process of grass overgrowth is said to be similar to that in the case of Bohol. People in general used to have a negative attitude towards reforestation. After the project successfully introduced the planting of fruit trees such as *M. indica* and *Anacardium occidentale*, the participants showed an interest in developing a production or / and protection forest of *Acacia mangium* and *G. arborea* at the individual farms.

6. Comparison on Planting Activities at Each Project Site

(1) Profiles of farmers

Table 1 shows a profile of farmers, recipients of the social forestry program in terms of average age of householder, family size, occupied area, and agricultural income. The average age of householder and family size tend to be similar for all project sites, but average occupied area and

agricultural income vary; i.e., farmers in Bohol and Bukidnon Provinces occupy larger areas than those in the three Luzon Island provinces. On the other hand, agricultural income is greater in Benguet and Nueva Ecija Provinces. The former has established a large vegetable area, and the latter rice fields.

Table 1 Profiles of farmers at each project site

PROJECT SITE	AVERAGE AGE OF A HOUSE (YEARS)	AVERAGE FAMILY SIZE (PERSONS)	OCCUPIED AREA PER HOUSEHOLD (HA)	AVERAGE ANNUAL AGRICULTURAL INCOME PER HOUSEHOLD (PESO)
BENGUET PROVINCE	44.2	6.8	1.5	16,500
NUEVA ECIJA PROVINCE	41.3	6.9	1.5	12,050
ZAMBALES PROVINCE	44.3	6.4	4.4	7,560
BOHOL PROVINCE	45.6	7.7	6.6	4,490
BUKIDNON PROVINCE	44.3	6.9	8.6	8,450

(2) Number of trees planted per hectare per household

Figure 7 compares the number of trees planted spontaneously per hectare per household before the project started, distributed and planted through the project, and planted spontaneously after the project started. This shows the differences in the distributing ability of seedling by the projects. Farmers in Bohol and Bukidnon Provinces planted trees spontaneously before the project started for the purpose of selling forest products and fruits; this indicates the existence of

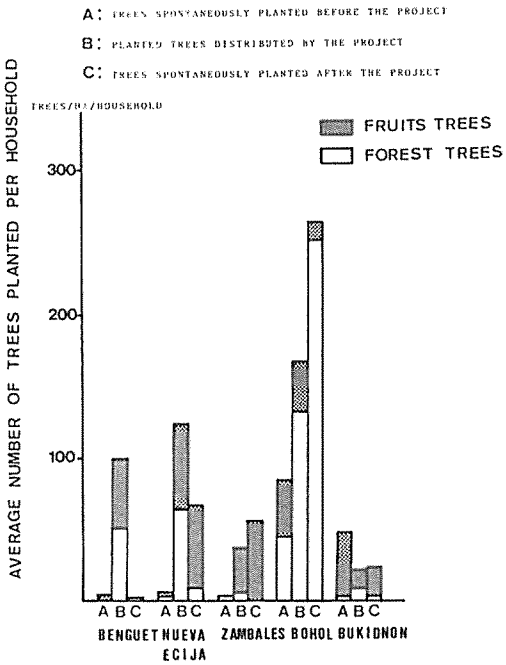

Fig. 7 Comparison of number of Trees Planted at Each Project Site

these markets. The number of forest tree species planted spontaneously after the project started in Bohol Province is large because participants were paid when they planted them along the contour lines and the water canals.

(3) Relationship between number of trees planted and occupied area

Area occupied by farmers in the forestlands, regardless of the project site setting, is regarded as "occupied area." The relationship between number of forest trees planted and occupied area indicates that farmers having an occupied area of less than 4 ha have fewer number of trees planted (figure 8a). On the other hand, in Bohol and Bukidnon Provinces where the average occupied area per household was bigger than in Luzon Island, a larger number of trees is planted. Some farmers with smaller occupied areas in Luzon Island, however, planted a greater number of fruit trees (figure 8b).

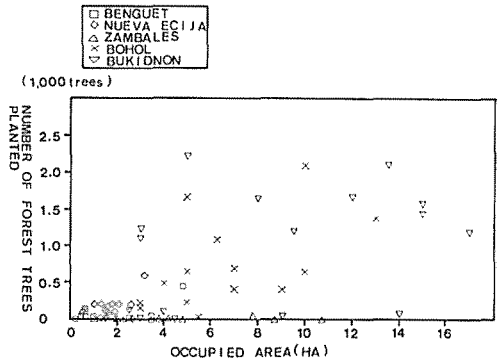

Fig. 8 (a) Relationship between number of forest trees planted and occupied area

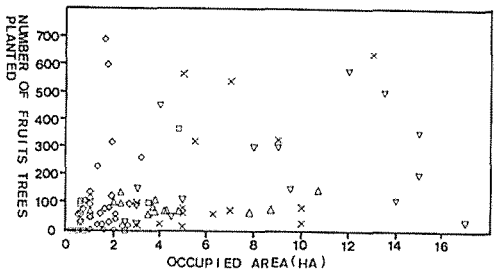

Fig. 8 (b) Relationship between number of fruits trees planted and occupied area

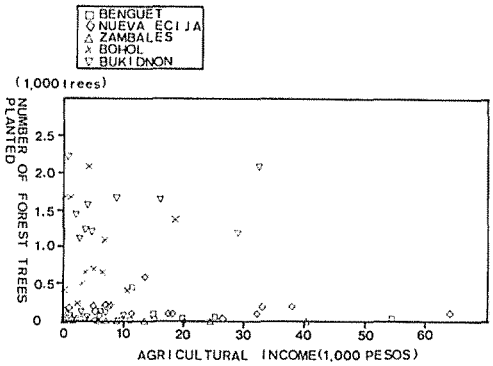

Fig. 9 (a) Relationship between number of forest trees planted and agricultural income

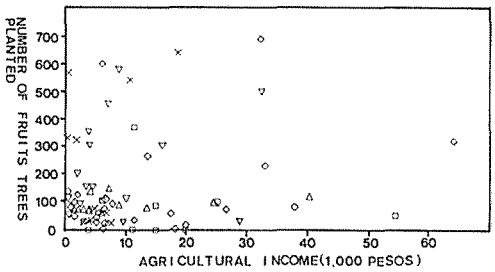

Fig. 9 (b) Relationship between number of fruits trees planted and agricultural income

(4) Relationship between number of trees planted and agricultural income

Agricultural income is defined as income from sale of agricultural output produced from both occupied areas and areas where farmers work as tenants in private lands. There is a tendency for farmers with a high level of agricultural income to plant fewer number of trees. Those with a low level of agricultural income in Bohol and Bukidnon Provinces, and those with middle-level

income in Benguet and Nueva Ecija Provinces seem to be leading groups in planting trees (figure 9a, 9b).

7. Encouraging and Discouraging Factors in Farmers' Planting Activities

It seems that marketability and land tenure are factors that encourage people to plant trees, as illustrated by the example from Bohol and Bukidnon Provinces. Increase of land productivity gives people a demesne consciousness over the forestlands through the marketability of the output from the use of such lands. On the contrary, in Benguet province, people have been cultivating their so-called ancestral lands based on their demesne consciousness or sense of vested right. However, the number of trees spontaneously planted by people, before and after the projects started, is small, which could be explained as a result of the lack of marketability in timbers and fruits. Therefore, the lack of marketability seems to lead to a negative reaction on part of people to plant trees even in places with a long history of land use. Eventually, marketability is the prime incentive in planting trees, and the selection of tree species depend on the current market.

In addition to marketability, land tenure, i.e., the issuance of certificates of stewardship contract, is also an important factor in tree planting, as examples in Nueva Ecija and Zambales Provinces indicate, where the number of spontaneous trees planted increased after the issuance of certificates of stewardship contract. Hence, the possibility of endogenous forestation by people exists in the marketability mechanism, in which forests herein consist of fruit trees and/or trees for forest products from which people can expect an income.

On the contrary, three factors are pointed out as constraints to tree planting. One constraint is spatial competition given the space taken up with existing cash crops. In Benguet and Nueva Ecija Provinces, people show the negative aspects of planting trees, in particular forest species, in crop cultivation areas. Another factor is the amount of agricultural income from existing cash crops; i.e., those with high agricultural incomes do not feel the need to plant trees for additional income, whereas those with low incomes do not have time to plant trees. Finally, another factor is the necessary labor input, which is closely related to the cropping cycle and climate. Particularly in the Luzon Island provinces which have both wet and dry seasons, available labor during the wet season is amenable to the tree planting activities.

Thus, in the Philippines, the most effective recipients of the social forestry program are those who live in the humid tropic areas, those having access to markets for the products from the trees, those occupying areas over 4 ha, those having a middle-income from agricultural work, and those given effective incentives by the projects.

8. Concluding Remarks

The problems on part of the implementor are: (a) The inadequate distribution of seedlings due to lack of funds; and (b) an insufficient number of technicians who can convey the idea to farmers about appropriate soil and water conservation technologies needed for effectively cultivating the sloping areas. In the Philippines, however, acute reforestation is needed. Therefore, the

program should offer attractive incentives to participants, as the study findings show that the prime incentive is marketability.

Without markets, it seems difficult to encourage people to plant trees. Hence, it is significant to establish the circumstances in which people can plant trees; this entails the following procedures: (a) introduction of appropriate soil and water conservation technologies to increase agricultural production; (b) improvements in the standard of living commensurate with the increase in earnings; and (c) introduction of reforestation for the purpose of earning income and/or for environmental conservation. Improvement in the standard of living increases marketability and thus allows people to grow a wide variety of crops, including perennials. Endogenous tree-planting activities in the forestlands could be observed under this circumstance.

Acknowledgment

The authors wish to express their appreciation to Dr. Virgilio A. Fernandez of the University of the Philippines, to Messrs. Bernardo C. Agaloos, and Remilio C. Atabay, and Dr. Emilio A. Rosario of the Department of Environment and Natural Resources for their advice, assistance and guidance.

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