

STUDIES ON THE DEVELOPMENT OF COMMUNITY FORESTRY, AGROFORESTRY, AND FORESTRY EXTENSION IN THAILAND

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タイにおける村落林業，アグロフォレストリー及び 林業普及事業の展開に関する研究

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INTRODUCTION

Deforestation in Thailand has been caused generally by various factors. A timber logging operation process was claimed for decades to be a major cause leading to illegal tree cutting and forest clearing. Unbalanced development policies and management of land, agriculture, and rural development have also led to an over exploitation of forest resources. In highland areas, slash and burn cultivation has also been argued as a major cause of forest destruction and degradation of mountainous watershed. In lowland areas, growing settlement, population migration, land speculation, big dam construction and commercial agricultural expansion have led people further to encroach on the forest. The problems became obvious since these frequently result in serious flood and drought. Many schemes have been tried to stop deforestation and rehabilitate degraded forests with little success. Moreover, forests have heavily deteriorated and groups of landless and unemployed laborers scattered in the forests has become increasingly prominent. The above-mentioned problems reflect an adverse effect on people and environment. The establishment of the Royal Forest Department (RFD) in 1896 and its operation for almost a century has neither protected forests effectively nor sustained the productivity of forests. Local people have had little involvement in the forestry operation.

Various measures have been used to manage forests. Conservation is one of the most important measures to keep existing forests from being destroyed. Development is another

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measure which has been used to restore forests and promote tree planting programs. However, state-controlled forest conservation and development programs alone could not be implemented effectively due to the constraints of man power, budget and bureaucracy. Moreover, forest conservation measures are strictly enforced, particularly on local people depending mainly on forests. This has resulted in separating man from forests and thus creating conflicts over rights on forest lands and forest product utilization between government officers and local people. Participation of local people in protecting and developing forests has been minimal.

The rural Thai communities traditionally have conserved land and forest for their own uses such as construction timbers, firewood, raising livestock, cemetery, watershed, and collecting minor forest products. Rapid development of the rural area together with urbanization and industrialization have created tremendous demands on land and wood from the forests. The newly established communities need land to establish forests while the old-existing communities have lost their communal land for cultivation to the younger generation and disadvantageous groups like the landless poor.

Thailand's people-oriented forestry programs such as community forestry, agroforestry, and forestry extension have been developed to encourage local people and communities to participate in the protection and rehabilitation of degraded forests and public lands. Community forestry promotes self-help management of forests and natural resources by communities while agroforestry motivates farmers to integrate multipurpose trees into their farming systems. Extension mobilizes resources to make forest activities reach the people in a participative mode. These innovative concepts/approaches have been integrated into forest development projects and/or programs to help landless poor and forest dwellers settle down and make their living permanently in harmony with the forest. Forest village and social forestry projects are deserving examples of these. The approaches have extended the limitation of the top-down approach of forest conservation and development. Moreover, the results of some pilot projects/programs using these approaches have proven to be successful. Many degraded areas have been protected and natural and artificial regeneration are being promoted. Local organizations and networks are being promoted and expanded. Forest cover in some particular areas has gradually increased. Generally speaking, the results of these projects through new innovative concepts and approaches are positive.

Nevertheless, some projects have been canceled due to untimely implementation. Some projects need more time and efforts for further development. Thus experiences learned from these projects/programs will be of great benefit in further revision and implementation.

Studies on the development of community forestry, agroforestry, and forestry extension will definitely recognize Thailand's experiences on the conservation and development of

forests through the participation of local people and what benefits people have attained from these projects.

I SITUATION OF FORESTRY DEVELOPMENT

1 FOREST AREA AND FOREST LAND USE

Land use in Thailand has been determined and classified into 5 items (see Table 1)

The RFD has declared 147.34 million rai¹ (1,225 forests) to be national reserved forests, covering 48 % of Thailand's total land area. However, based on remote sensing imagery, the forested area was, in 1991, estimated at 89.88 million rai or 28% (Table 2) with annual rate of deforestation 2,736,474.70 rai during 1961–1993 (RFD, 1995).

Table 2 also shows that in the last decade the rate of deforestation has been reduced which shows that good agricultural land is becoming increasingly scarce and that the limits of agricultural expansion may have been reached.

By 1985 the extent and magnitude of the forest crisis was more clearly recognized and a new National Forest Policy indicated that 40% of the national land area was to be retained as forest; 15% as conservation area, 25% as economic forest.

The above-mentioned percentages were revised in the Sixth National Economic and Social Development (NESD) Plan; 25% conservation forest and 15% economic forest.

Table 1 Land-use Classification

| Items | Area million rai | % |
|-----------------------------|---------------------|--------|
| 1) Forest and grazing land | 92.39 | 28.00 |
| 2) Agricultural holdings | 152.04 | 47.00 |
| Rice fields | 84.25 | 26.00 |
| Horticulture | 0.10 | 0.001 |
| Rubber | 10.54 | 3.30 |
| Field crops | 51.41 | 16.00 |
| Other tree crops | 5.35 | 1.70 |
| 3) Residential Land | 2.74 | 0.01 |
| 4) Water Bodies | 3.06 | 0.01 |
| 5) Others & unclassified | 70.46 | 21.97 |
| Total Area | 320.69 | 100.00 |

Source: Office of Agricultural Economics, 1992

Table 2 Thailand's Forest Areas, million rai

| Region | Area | Year | | | |
|-----------|------|--------|--------|--------|--------|
| | | 1961 | 1973 | 1982 | 1991 |
| North | 106 | 72.67 | 70.99 | 54.85 | 20.25 |
| Northeast | 105 | 44.32 | 31.66 | 16.19 | 14.81 |
| South | 44 | 18.52 | 11.52 | 10.29 | 9.14 |
| Central | 42 | 22.29 | 14.98 | 11.58 | 10.78 |
| East | 22 | 13.23 | 9.40 | 5.00 | 4.90 |
| Total | 320 | | 171.02 | 138.57 | 97.88 |
| % | | (53.3) | (43.2) | (30.5) | (28.0) |

Source: RFD (1992)

¹1 rai = 0.16 hectare

A recent report shows 88, 52, and 7 million rai were stipulated as conservation forest, economic forest and forest land reform, respectively. The watershed management area approach was also developed and somewhat overlaps the conservation and economic categories.

An area of about 187 million rai was determined and classified as 25 main watersheds. Community forests have been classified within the economic forest while local organizations and NGOs claimed the conservation forest, economic forests and watershed management area (see Figure 1).

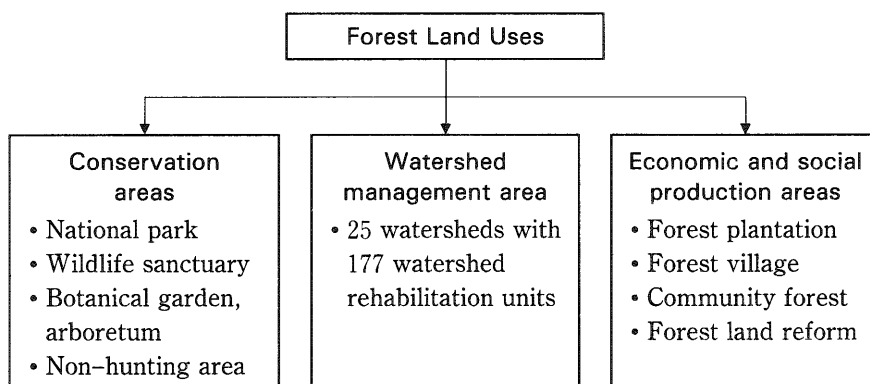


Figure 1 Diagram of Forest Land Uses

1) Conservation (Protected) Area

The conservation area has strict limitations on the use of forest resources. The highly restricted areas such as national parks and sanctuaries are in this category. Forest park, non-hunting areas, botanical gardens, arboretum are in ordinary restricted categories (see Figure 2). The RFD so far has stipulated 106 national parks with a total area of 36 million rai, 38 wildlife sanctuaries with a total area of 17 million rai (RFD, 1995).

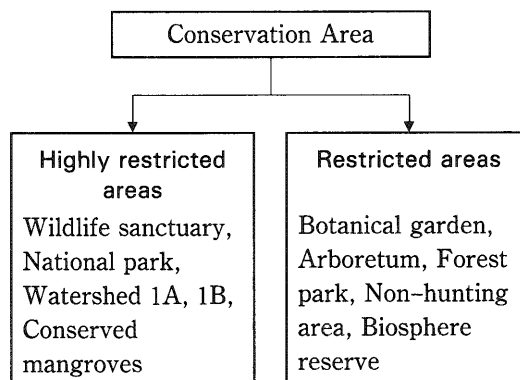


Figure 2 Diagram of Conservation Forests

2) Economic and Social Production Area

The managing of forest area to increase economic reward comes in the form of forest plantation, forest village, usufruct rights, and permitting farmers to rent forest area for agriculture. This category consists of three groups; farm-based area, community-based area,

and industry-based area. So far, the village forest project and usufruct rights project involved an area of 300,000 rai and 7.3 million rai respectively. A land area of 4.38 million rai has been leased by farmers. The RFD has to establish plantations with an approximate area of 40 million rai (RFD, 1992). The forest villages were subsequently canceled, and land was transferred to the forest land reform project since May 1993 (see Figure 3).

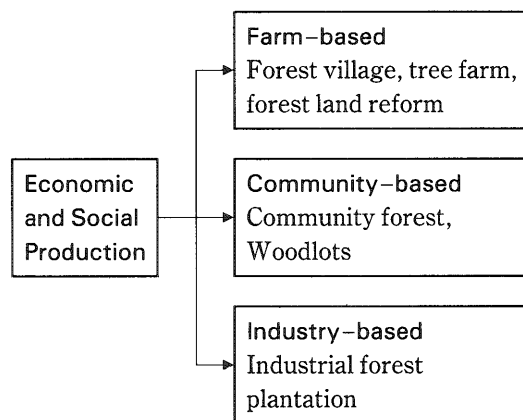


Figure 3 Diagram of Economic Forests

3) Watershed Area

This approach aims at conserving and managing watershed areas for water yield and control. Since tribal people have long been residing in the highland, conservation and cultivation are integrated. The Watershed and Permissible Land Use is classified into 5 categories (1A, 1B, 2, 3, 4, and 5) based on various factors e.g. soil, slope, vegetative cover (Table 3).

The recommended land-use for class one is for permanent forest cover. The other classes can be utilized within different conditions. Over 32 million rai in Thailand have been

Table 3 Watershed Classification Areas, million rai

| Class | Description | Suitability | Areas |
|-------|---|---|-------|
| 1A | With good forest cover as of 1982 | Forest preservation, no logging people to be moved out | 28.34 |
| 1B | Degraded or converted before 1982 | If unoccupied to be reforested; conservation measures; | 2.02 |
| 2 | Low priority water source area | Logging and mining allowed; reforestation and no agriculture | 16.87 |
| 3 | In use for logging, mining, or tree crops | Logging, mining, cultivation permitted with conservation | 13.93 |
| 4 | Field crop cultivation | Uses allowed under normal conditions; agricultural crops depending on slope | 30.32 |
| 5 | Flat/gently sloping agricultural use | Agricultural use allowed | 94.99 |

classified, and there are many watershed management pilot projects in which innovative ways of implementing the above classification have been developed. About 15% of the watershed is considered to be in the critical categories.

2 FORESTRY DEVELOPMENT PROGRAM

1) General Forest Development

At an early stage in Thailand's forestry, its operation was centralized and focused on tax collection and increased central control over the forests. The forest plantation of high-valued trees, watershed rehabilitation and long-term forest concession started later in 1906, 1950 and 1953, respectively.

Ever since the first NESD Plan was put into effect the first national park was declared. The first two NESD Plans emphasized the designation of national parks and sanctuaries and the establishment of economic plantations. The rate of deforestation was very serious after the first two national plans. The Forest Rehabilitation through Forest Village programs was subsequently developed in 1975 and was followed by the Usufruct Rights project in 1979 to accelerate a legalization land use process of some 1 million forest dwelling families. Community forestry and forestry extension were promoted to keep the existing woodlands scattered in the land allotment areas.

At the beginning of the Seventh NESD Plan, the "Land Distribution for the Poor (Kor Jor Kor)" project was launched to make a clear distinction between forest land, community and agriculture land, as well as to help the landless poor obtain land for subsistence living. The project was totally canceled in 1993 caused by the strong resistance of the people. State-operated forest plantation was canceled to give the way to a private forest plantation program. Tree farming by private enterprises, mostly pulp and paper companies, was widely promoted. Government programs to promote private forest plantation and tree planting by farmers are also initiated.

The latest reorganization in 1992, has

Table 4 Selected Historical Events

| | |
|--|----------------------------|
| Before 1961: 'before the NESD Plan' | |
| • Forestry focused: tax collection; increased central control over the forests; teak plantation using 'Taungya' system; intensified and refined forest reservation; economic forest plantation | |
| 1961-1991: 'the NESD Plan no. 1-6' | |
| • 1961-66: | ↑ Parks & wildlife reserve |
| • 1967-71: | State forest plantation |
| • 1972-76: | ↓ Forest village |
| • 1977-81: | ↓ Usufruct rights |
| • 1982-86: | ↓ ↑ Community forestry |
| • 1987-91: | ↓ Forestry extension |
| 1992-1995: 'the NESD Plan no. 7' | |
| • Land distribution for the poor | |
| • Stopped state forest plantation | |
| • Forest land reform | |
| • Community forestry | |
| • Agroforestry | |
| • Forestry extension (tree farm) | |
| • Reorganization of the RFD | |

made big changes to the RFD. The forest management units were included into the Office of Forest Academic. Their duties were changed from logging control to forest resource inventory and research. Most of the forest protection units shifted from the Divisional Forestry Office to Provincial Forestry Office. The rest were restructured to cope with an emerging assignment regarding promotion of forest plantation. The forestry units concerned with community forestry, agroforestry, forestry extension, and forest plantation promotion were unified into the Office of Re-forestation. The development of a people-oriented forestry program is being developed within this office (see Table 4).

2) Community Forestry

(1) Traditional Forest Management

Traditionally, the rural Thai communities conserved land and forest for their own uses. The management of forests was based on the beliefs, traditions, and culture of local communities. Many of them have existed without state's intervention. The objectives of community-based forest management varies from place to place due to differences in their needs such as "a place for spirits", "a place for rituals", headwater of paddy fields, "wildlife reserve", "forest product collection", and "recreational area". Moreover, Buddhist monks also played a significant role in leadership to encourage the villagers to protect and manage forests within or nearby the temples for religious and social activities (Pragtong and Akaha, 1991). Monks have included forest protection as part of their temple development schemes because they realized that the forests had decreased notably (Lakanavichien, 1995).

(2) Community Forestry Evolution

Early attempts to develop community forestry were initiated in the government's land resettlement projects in order to solve the shortage of wood and the degradation of land and forest resources. The Government departments implementing this program were those of the Land Department, the Public Welfare Department, the Department for Cooperatives Promotion, and the Royal Forest Department. In 1956, the national land policy declared 20% of the total land resettlement area must be kept as community forests for village members and public uses. This scheme was enforced inactively, thus the forest for communities in the resettlement areas were few. In the late 1970s, RFD initiated "a multiple-use forest for communities" project to allow local villagers and local industries to access woods and small timber. By 1980 the RFD in collaboration with the National Energy Authority of Thailand and the United States Agency for International Development (USAID), implemented the "village woodlot" project in 7 provinces of wood shortage areas in the Northeast. This project affected a great deal on the new woodlot project both the government and the NGOs. In

1987 the "Land Reclassification" project stipulated 868 forests (105,388 rai) as community forests. These forests have been protected by the Land Act. Village forests were also integrated into the forest reserved rehabilitation and the highland watershed rehabilitation programs through forest village projects. Approximately, 200 villages were given support to establish and maintain forests for their own uses. During 1974–1992, some 17 pilot projects regarding community forest were implemented. Some projects are still being carried on.

(3) Non-Governmental Organization (NGOs) Initiatives

Apart from government initiatives, many community forests have also initiated and expanded by the NGOs. Prominent NGOs such as the Northern Development Workers Association, the Huck Muang Nan Association in the North, the Project for Ecological Development, many local organizations in the Northeast, the Wildlife Fund Thailand in Thailand Central, and the Yard Foon Foundation in the South, have played an instrumental role in building up local organization's capacity to protect and manage forests. The famous case of mangrove community forest at Tung-Tong village in Trang Province has been recognized. The results of this village have encouraged 6 other villages nearby to establish community forests. Furthermore, it has encouraged small-scale fisherman networks to conserve mangrove forests along the western coast of Thailand.

(4) Integration of Community Forestry into the National Plan

The community forestry project has been included into the Fifth NESD Plan since 1982. During that period, many communities have been encouraged to establish forests in their public lands. Community forests were integrated into several government development programs such as the "Project for the Development of Land Security" administered by the Royal Thai Army, the Project for Rainfed Agricultural Development managed by the Ministry of Agriculture and Cooperatives, the "Project for Women Development in Forestry" administered by RFD/ESCAP¹, etc.

Since the "Thailand Upland Social Forestry" project was launched in 1987, tools and techniques for working with people, i.e., rapid rural appraisal emphasizing community forestry, participatory monitoring and evaluation, participatory land use planning, and situation specific analysis were developed in cooperation with concerned agencies particularly universities and the Royal Forest Department. These tools and techniques are being used within the RFD's administration. Inter-departmental cooperation has also developed together with the Ministry of Interior's implementation of the "Community Approach to Natural

¹ Economic and Social Commission for Asia Pacific

Resources Management project” in the north and with the Office of National Primary Education, Department of Education’s implementation of the “Educational Curriculum Development through Case Study of Community Forestry” project in eight primary schools of 2 provinces, Chiang Rai and Lum Poon, in the North.

During the current Seventh NESD Plan, community forestry is highly concerned as an appropriate concept to create people’s participation in forest protection and management. Issues such as community rights and community-managed forests in the protected areas are also discussed. The role of the NGOs in supporting local organizations is being promoted and expanded. The Community Forestry Act which was drafted in 1992 is being refined and expected to be finished within the Seventh NESD Plan.

3) Agroforestry

(1) Establishment of Taungya Plantation

Since the establishment of the Taungya plantation in 1906, various crops were integrated into forest plantations. Crop species early introduced were annual food crops, e.g., upland rice, bean, maize, and kitchen garden crops, for household consumption. However, the implementation of forest plantation program has faced with many problems due to dwellers in the planned forest plantation areas. In 1959 the government implemented the policy to stop shifting cultivation through tribal people resettlement program and the policy to rehabilitate degraded mountainous watershed. Taungya system¹ (short term intercropping) was subsequently modified to an agrisilvicultural system (long term intercropping) to cope with permanent cultivation scheme of hilltribe resettlement and watershed rehabilitation programs. Permanent residential areas and infrastructures such as roads, schools, health care centers, were provided. Crop and tree species such as *Carica papaya*, *Anona Squamosa*, *Artocarpus heterophyllus*, *Anacardium occidentale*, and rubber trees were incorporated in taungya plantations as a measure for sustaining cultivation and conservation of soil and water. Temperate fruit trees, i.e., *Prunus persida* (peach), *Japanese apricot* (peach), *Lichi chinensis* (litchi) were also promoted.

(2) From Taungya to Forest Village (Agroforestry village)

In the late 1970s the Taungya system was incorporated and/or modified into the forest village system by the RFD and the Forest Industry Organization (FIO). The RFD’s forest village scheme aimed at helping resettlement of the landless poor and rehabilitating watershed.

¹ Taungya, a Myanma word; means hill cultivation. Taungya system is a type of forest rehabilitation system in which short term crops are incorporated during the early stage of the forest plantation.

ed forest while the FIO's forest village scheme focused on the establishment of an economic forest plantation. The outstanding agroforestry plantations such as Klang Dong Teak Plantation in Nakorn Ratchasima Province, Somdej Forest Plantation in Kalasin Province, Tong Pa Pum Forest Plantation in Kanchanaburi Province, Klong Tom Forest Plantation in Krabi Province were recognized. This resulted in the extension of agroforestry techniques into the annual plantation areas of the granted logging concession areas as implemented by the provincial logging companies (Makarabhirom, 1994).

(3) Agroforestry Technology Development

Agroforestry technologies have gradually been developed since the early 1970s through several integrated land management pilot projects such as the "Mae Sa Watershed Management" project in Chiang Mai. Many agroforestry techniques were developed and tested. The techniques were subsequently adopted by highland and upland forest development projects such as "Mae Chaem Watershed Development" project in 1981 supported by the USAID, "The Development and Extension of Coffee in Northern Thailand" project supported by the USAID; the "Thai/United Nations Highland Agriculture Marketing and Production" project (1973-1977) and the "Thai-German High Land Development" project (1983).

The study of agroforestry systems initiated by farmers has been carried out in 1967 with the RFD in cooperation with the FAO. Consequently, traditional agroforestry systems have been widely documented and further investigated. Edible plant and medicinal-valued species specifically trees and indigenous agroforestry management have been also studied.

(4) Agroforestry as an Alternative to Monoculture of Problem Crops

Agroforestry has been recognized and is considered the main alternative for national forestry and agricultural development during the Sixth NESD Plan (1982). Preliminary studies for agroforestry development at provincial level in the North (Lam Pang) and Northeast (Ubon Ratchatani) were conducted. Some pilot projects were started. Agroforestry is currently being implemented as a part of the "Adjustment of Agricultural Production and Structure" project of the Ministry of Agriculture and Cooperatives in line with the Seventh NESD Plan. In the NGOs initiatives, agroforestry is also promoted as a part of alternatives agriculture to small farmers. Networks of individuals and farmer groups are being strengthened and expanded for further promotion of agroforestry.

4) Forestry Extension

(1) Initiation of Forestry Extension

It was not until 1930 that the RFD started public relation and extension on all aspects of

forestry, particularly in research and extension. In 1964 a forest-tree planting experiments station was established and conducted a series of experiment under the Pulp and Paper Material Survey Project. Forestry extension, at an early stage, in the late 1960s, involved the promotion of voluntarily tree planting in public lands and along the road sides. Many tree planting programs were initiated on various special occasions such as national day, Buddhist lent day, and tree arbor day.

(2) Forestry Extension Campaigns

In 1975 the first RFD's forestry extension unit was established. The first large scale forestry extension campaign was started in 1978 when Tak provincial authority launched the project of Tak Rom Ruen to promote eucalyptus plantation extensively throughout the province. The extension to small farmers was highlighted during 1980–1987 when the “Development of Diversified forest Rehabilitation in Northeast Thailand” project started. Many reforestations by small farmers were promoted. In 1982, Tree Farmer's Association (a private company) was registered as an agency in charge of re-afforestation projects. The association played an instrumental role in encouraging the government agencies and financial banks to invest in re-afforestation programs for producing wood chip for export under a contracted farmer or grouped farmers basis. By 1984, the second big campaign was made at Udon Thani Province. The provincial authorities launched the project entitled “The Substitution of Eucalyptus Tree Planting for Sugarcane Field” in 14 districts of reserved forests in Udon Thani. Three million tree seedlings were prepared and distributed free of charge to farmers.

During 1987–1991, two big extension campaigns namely the “promotion of reforestation to celebrate his Majesty the King's 60th birthday” and the “promotion of tree planting to celebrate Her Majesty the King's Mother's 90th birthday” were carried out. A number of 25,750 rai reforestations a year for five consecutive years were targeted and implemented in the first program and 90 million trees were targeted to be planted nationwide in the second program.

(3) Forestry Development through Extension

By the highest deforestation rate in the last decade, in 1985 the RFD reported that the natural forest covered 29.05% with an annual decrease of 3.5 million rai which led to the declaration of the Forest National Year during 1985–1988. By 1986, with strong support of the ministry and the private sector, the Office of Private Reforestation and Extension was established in the RFD.

During 1987–1991 the “Participatory Forestry Development Through Extension” project

and the "Integrated Development of the Phu Wiang Watershed" project, both supported by United Nations Development Program (UNDP) and the Food and Agriculture Organization of the United Nations (FAO), were implemented. Seven Forestry Extension Demonstration Centers, 10 Forestry Extension Mobile Units, and 100 District Forestry Extension Units were set up and operated. In 1988, "The Project of Regreen the Northeast" was launched and the forestry extension mobile units started their first extension campaign throughout the Northeast. The mobile units have been recognized nationwide since then. Later in 1989 the RFD established the "Office for Participatory Forestry Development through Extension" to manage the forestry extension projects.

During the implementation of forestry extension project, most of forestry extension was assigned to the district forest officers. However, their main duty was usually to enforce forest laws and regulations. Thus, the district forest officers work both as law controller and extension agents. This confusion of roles makes it more difficult for villagers to trust and cooperate with them. Therefore, many forestry extension systems and techniques have been developed to help forest officers work with villagers. Contacted farmer was developed at the village level. Various kinds of coordinating officers were tested. Village contact volunteers or village-based forestry extension officers were placed in the villages to help forestry officers deal with villagers.

(4) Extension Program for Tree Farming by Farmers

Forestry extension has actively been implemented in the Seventh NESD Plan as an alternative to the problematic crops caused by poor marketing and problematic soil (salty soils) in the Northeast. The private forest plantation program through four-party cooperation (farmer, forest-based private company, credit institute, and government agencies) has also been emphasized in the government policy. This plantation scheme aims mostly at producing woody materials for domestic wood consumption and for export. The industrial forest plantation has also been implemented extensively. Some degraded forest reserves were leased out for forest plantation. The policy on land rental for forest plantation was subsequently canceled due to controversial concept of the "degraded forest". Nevertheless, the policy of reforestation for industrial use is still unclear and companies have already occupied many plots of land. By 1992, the government enacted the Forest Plantation Act to facilitate the forest plantation promotion programs of farmers and the private sector.

II EXPERIENCES IN COMMUNITY FORESTRY, AGROFORESTRY, AND FORESTRY EXTENSION PROJECTS

1 FOREST VILLAGE PROJECT

The RFD established forest villages as part of a people-oriented forestry program. The forest village aims at: 1) maintaining national forest reserve area for timber production and protection of environment of the country in the long term, 2) rehabilitation of the degraded watershed and unsuitable agriculture areas within the forest reserve with artificial regeneration for a timely result, 3) resettlement of landless farmers and squatters scattered over the forest reserve to facilitate government assistance and services, 4) stemming the expansion of forest reserve destruction.

The basic guidelines of forest village projects are as follows: 1) resettlement of squatters in the non-watershed area in groups with elected leaders and committees for village self-government; 2) setting aside 2.5 ha of land per family for housing and for farming. Title and selling rights are not given but each family is allowed free tenure for as long as they choose; and 3) providing assistance for the villagers in the development of their possessions, water supply, roads, schools, sales of agricultural products, etc. The forest villagers are employed as laborers and forest plantations are established using the Taungya system.

Apart from resettlement and forest rehabilitation programs, forestry extension is also promoted. Extension in forest villages has emphasized intensive land use for production and income-generated occupation to complement income for their sustainable living and farming system. Agroforestry and tree planting have been introduced into the allocated land in order to get full utilization for more production and diversification of products and income on their own land. Approximately 15,000 families of 164 villages, excluding hilltribe forest villages, benefited from the RFD's project (see Table 5). The 42 forest villages of the FIO's project are also engaged in cultivating 387,514 rai of forest plantation through Taungya system pro-

Table 5 Results of Extension Activities in RFD-operated Forest Villages in 1988

| Location | No. of Project | No. of Village | Windbreak Family/rai | Intercropped Family/rai | Woodlots Family/rai | Bee Keeping Hive |
|-----------|----------------|----------------|----------------------|-------------------------|---------------------|------------------|
| North | 35 | 49 | 8,184/2,544 | 1,044/522 | 149/598 | 165 |
| Northeast | 32 | 79 | 14,189/4,812 | 1,978/989 | 250/1,001 | 210 |
| Central | 25 | 25 | 7,152/2,311 | 892/446 | 119/477 | 88 |
| South | 9 | 11 | 1,201/435 | 182/91 | 22/91 | 35 |
| Total | 101 | 164 | 30,726/10,102 | 4,096/2,048 | 541/2,167 | 498 |

motion.

2 COMMUNITY WOODLOT PROJECTS

It was not until 1957 that the land for community woodlot was stipulated as a part of the land allotment project. Consequently, community woodland criteria was also affected by the Land Reform Project of 1975. The RFD also initiated the Project of Multiple Use Forest for the People in the National Reserved Forest in 1970 aiming at supplying wood to local communities.

The "Village Woodlot" project was implemented during 1981 to 1984 in collaboration with the National Authority of Thailand and was financially supported by the USAID. An area of 6,000 rai was targeted for village woodlots in 7 provinces in the wood shortage areas in the Northeast. The following examples present some benefits of the project.

Benefits of Woodlot Project of Mahasarakam Province

The first study was made at Kok-Pee-Ba village¹. The study revealed that between 1987-1991 the village committee had sold eucalyptus wood from community forest for several times with a total revenue of Baht 1,120,000. Money had spent as follows; 15% for planting, 9% donate to Sub-district council, and 76% to a village fund (Subbhakun, 1991).

Another in-depth study was carried out at Poon Ngam village². The village has 470 households with 600 rai of public land which villagers used for cattle grazing. In 1984 the district forest officer encouraged people to implement a woodlot project for village use within an area of 150 rai on the public land. In implementing the project, the officer hired members of various village groups, e.g. forest protection group, youth group, house-wife group, to prepare 30,000 tree seedlings. Technical advice and planting materials were given to the participants. Land was cleared then divided into small plots ranging from 0.25 to 0.5 rai and was allotted to villagers for cultivating of crops between tree planted spaces. The district forest office subsequently handed over a village woodlot to the village. In 1987 the village committee extended woodlot area for 150 rai more. In 1988 the first harvesting of woodlot was made and wood was sold. Villagers gained benefits and subsequently gave more participation to the project by planting more woodlots. By 1989 planted woodlot covered the whole area of the public land.

In the first harvesting of woodlot in 1988, village committee received 90,000 Baht from

¹ The Kok-Pee-Ba village is accepted as a success pilot village woodlot project and has been modified into many areas in the Northeastern Thailand.

² The Poon Ngam village has been recognized as a good example of active participation of various village groups.

selling wood. Money was spent to repair roads in the village. The second harvesting was done in 1992 with 400,000 Baht revenue. Money was spent for maintaining woodlot, repairing road, building bridge, supporting activities of school, health care center, and sub-district office, and the rest of the money was given to nearby villages, district office, and village fund (Hanchanlert, 1992).

The two pilot villages in Kosumpisai District of Mahasarakham Provinces have made an effort with the RFD in building up cooperation with communities to implement community forestry projects. Also the capability of local communities to forests for their own benefits has increased. Despite many arguments on various aspects of woodlot project such as issues on woodlot occupied public land areas on which various village groups depend and a single tree species (mostly eucalyptus) plantation, the results of the pilot project are widely discussed. Some positive results have been adopted while negative results are subject to further discussion.

Community forest projects have been included into the rural development program of the Fifth NESD Plan (1982–1986) aiming at using public land to produce wood for local communities. A number of woodlots (each of which is 5 rai) were established in 47 provinces. The size of the woodlots was increased to 50 rai in the Sixth NESD Plan (1987–1991) and the Seventh NESD Plan (1992–1997).

In 1991, the first year of the Seventh NESD Plan, the forestry extension project was merged with the community woodlot project and activities of the two projects were integrated. The operational area was expanded to cover the area in the protected forest, degraded national reserved forest, and public land throughout the country. The planning authority (site selection, activities, and financial decision) was given to the provincial committee. The research and development activities to support community forest projects have been designed by the RFD Headquarters and jointly implemented by the Divisional Forest Offices and the Provincial Forest Offices.

Apart from its own community woodlot programs, the government has also encouraged and supported the NGOs in helping rural communities to formulate villager groups and organized community forests. The Community Forest Act is being drafted with an intention to secure the rights of the community and sustainability of the forest, and to facilitate collaborative efforts of concerned agencies. Moreover, the government, currently, follows-up the Pilot Community Woodlot Project to promote community forests as shown in Table 6.

We can concluded from experiences in community forestry development that 1) priority was given to the wood-shortage areas outside forest reserves, 2) woodlots were mainly established on public land, and 3) extension strategy focused a community to community extension approach.

Table 6 Follow-up Implementation of the Pilot Community Woodlot Project

| Project title | Objectives | Activities |
|--|--|--|
| Community Forestry Development Project | To Promote community to develop woodlots for their own uses and to encourage people's awareness in forest and natural resource conservation Target Area: in wood-shortage villages of 49 provinces Duration: 5 years (1992-1996) | Public relations (2,500 villages; Training 4,000 officials; 25,000 villagers; Demonstration (12 villages); Community Survey (500 villages); Research (21 topics) |

3 SOCIAL FORESTRY PROJECT

The Social Forestry project was collaboratively established by the RFD, Kasetsart University (KU), Khon Kaen University (KKU), and Chiang Mai University (CMU) in 1987. It has been financially supported by the Ford Foundation. Its aims are to meet the needs of a systematic approach to the problem of natural resource deterioration, and to increase solutions to conflicts between resource utilization and environmental protection. The objectives of this project are to 1) develop practical field diagnostic tools, guidelines, and procedures to assist the RFD field staff in collaborating with local communities to develop land management plans for their area, 2) provide training for RFD staff and assistance for villages in the establishment of village-based agroforestry plant propagation units, and 3) strengthen the capabilities of the RFD staff in the social forestry system. The project sites being implemented are in Chiang Mai, Chiang Rai in the North and Khon Kaen, Kalasin and Nakorn Ratchasima in the Northeast.

The project, now, is as shown in Table 7.

Despite the social forestry pilot project becoming highly recognized and its follow-up activities gaining ground, the policy on man and forest dwellers of the mountainous degraded watershed forests remains unclear. It results in creating conflicts between forest officials and villagers. The views of concerned forest officials are also different. One group follows up the social forestry approach by helping forest dwellers residing in harmony with the forest while the other has planned to evacuate a huge number of forest dwellers. Therefore, conflicts in forest resource utilization are still going-on.

4 AGROFORESTRY EXTENSION

Agroforestry is currently being merged into the community forestry and tree farming extension operations. In community forestry programs, agroforestry focuses the diversification

Table 7 Follow-up Implementation of the Pilot Social Forestry Project

| Project title | Objectives | Activities |
|---|---|--|
| Thailand Upland Social Forestry Project | To develop practical field diagnostic tools, guidelines and procedures for forestry officials to work with local people. | Prepare Community Organizers; Formulate implementing plan; Site assessment, planning, and implementation; Organize meetings/workshops; Train COs and villagers. |
| Sam Muen Highland Development Project | To rehabilitate forest resources and improve hill-tribes' livelihood to live in harmony with the forest. Target Area: Chiang Mai (Districts of Sameang, Chiang Dao, Vieang Hang, Mae Tang) and Mae Hong Son Province (District of Pai) Duration: 8 years (1987-1994) | Agroforestry Demonstration (105 rai); Forest fire control (1,909 km.); Watershed Research and study (20 stations); Road improvement (170 km); Watershed reforestation (20,000 rai); Training (500 people/year) |
| Highland Social Forestry Project | To raise hill-tribe's awareness in conserving forest and increase knowledge of sustainable forest resource management. Target area: highland of 6 provinces (100 villages) in Chiang Mai, Chiang Rai, Nan, Mae Hong Sorn Duration: 5 years (1992-1996) | Survey of socioeconomic conditions of villagers (100 communities); Promotion of village organization (200 groups); Establish village nursery (100 nurseries); Training (500 batches) |

of forest products through integrated forest management. Agroforestry in the forestry extension program, mostly tree farm, emphasizes the integration of crops, fruit trees and animals in a tree farming system. The two examples given below deal with agroforestry extension in the forests and private farms.

1) Klang-Dong Teak-Based Agroforestry at Nakorn Ratchasima

The Klang-Dong Teak Plantation is a government plantation located at Pak-Chong District, Nakorn Ratchasima Province. The plantation was established in 1947 with an objective to rehabilitate degraded watershed areas in Lum-Ta-Kong watershed. In early 1954, forest plantations were established with *Tectona grandis* (teak). Non-teak like *Pterocarpus macrocarpus*, *Azadirachta indica* (neem), *Acacia catechu*, *Melia azedarach*, *Leucaena leucocephala*, and *Ailanthus triphysa* have been planted since 1964. The RFD adopted

“Taungya” methods to establish this plantation. Farmers have been encouraged to grow crops in-between rows of trees. Within the Klang-Dong plantation, 994 farmers have participated in the agroforestry extension scheme.

2) Agroforestry Farm at Nakorn Pathom

The agroforestry farm belongs to Ms Samruam Kingsavard, a farmer of Bangtuer village, Sampran District, Nakhon Pathom Province. She bought this farm from her neighbor. In 1987, she planted *Erythrina dadap* (coral tree) at the beginning of the year which is in the dry period and two months later she planted *Piper betel* (betel-wines) under the shade of coral trees. Coral tree stems are used as supporting poles for *Piper betel*. The trees are always pruned to limit the growth of leaves which can be expose to *Piper betel*. Ms Samruam collects betel leaves once a month and gets about Baht 350 from it. After harvesting, she puts fertilizer and ploughs the land. She planted *Areca catechu* (areca palm) for additional income two years ago. She has obtained extra income from areca nut regularly since then. Ms Samruam's case has often been used to educate both Thai and overseas participants in learning how trees can be integrated in a farming system.

5 PARTICIPATORY FORESTRY EXTENSION PROJECT

The “Participatory Forestry Development Through Extension” project has four objectives as follows: 1) to establish effective forestry extension capabilities and services at the central, territorial offices and institutions of the RFD, 2) to integrate community forestry methodologies into the RFD extension system, 3) to accelerate reforestation by small farmers, school children and through production of seedlings and technical advice, and 4) to generate information and capabilities within the RFD to promote investments by small scale wood based enterprises as demand incentives for tree growing.

The forestry extension system has three main elements: 1) the forestry extension office, 2) the forestry extension plans and methods; 3) the territorial forestry offices with three special groups, namely, Forestry Extension Officer (FEO), Mobile Unit Team (MUT), and Forestry Extension Demonstration Center (FEDC). The MUT teams are 2-men teams equipped with 4-wheel drive vehicles and audio-visual tools used to disseminate public information and forestry awareness campaign through group or community meetings in 47 provinces.

FEO is one man performer equipped with motorcycle to interact with farmers on a person to person basis for tree planting promotion. FEDCs were established at strategic locations to provide further support for extension. They undertake surveys document agroforestry systems in progressive farmers' fields and illustrate selected agroforestry systems in central demonstration plots. The center aims at imparting training to farmers, be-

ing a source of information, and conducting agroforestry study tours for targeted farmers (RFD, 1989).

Promotion of strategies in forestry extension has three major roles: 1) as a learning process to understand people and their working environment, 2) as a tool to build up some kinds of cooperation with the people concerned, and 3) as a catalyst to promote the establishment of a community forestry and agroforestry system for accomplishing widely accepted aims which, in time, will become better defined and secure. Therefore, extension is a collective means of achieving increasing forest protection and production through mass participation and also to raise the social and economic well-being of the rural community.

Forestry extension has been targeted for various groups of people. Various extension approaches such as commodity specialized approach, training and visit approach, participatory extension approach, project approach, and cost sharing approach are being implemented. According to the site specific problems, no single approach can work effectively. Extension aspects of conservation and community forestry which emphasize sustainable environment

Table 8 Tools for Forestry Extension

| Tools | Objectives | Strategies | Mass media |
|------------------------------|--|------------------------------|---|
| 1. Advertising | Create public understanding | Visit successful projects | Documents, newspaper, signboard, leaflet |
| | Relay messages | Demonstration | |
| 2. Direct approaching | Deliver new information | Provide free seedlings | Close relationship |
| | Monitoring | Special bonus (train, trips) | Related persons |
| 3. Tree (Planting promotion) | Facilitate implementation | Extra seedlings | Circulated local letter, newspaper leaflets |
| | Motivate the needs | Give special rights | |
| | Increase advertising | Give awards | |
| | Insist on decision making | | |
| 4. Public relation | Orientation of project to clientele | Interview the manager | TV, Radio, Newspaper, Leaflet |
| | Publicize successful work and create target's confidence | Grand opening of the project | |
| | Create good image | Distribute progress reports | |

and social benefits of the people usually implement the "Bottom-up approach" while the strong promotion of commercial farm forestry extension uses commodity development and production system in order to get a faster return.

Forestry extension techniques cannot claim to deal with all these obstacles, but they can promote an interest in the close examination of local problems and a spirit of self-reliance in tackling them. Extension has been viewed as the whole process by which the public and appropriate agencies concerned combine their skills and resources to achieve certain forestry development objectives with the intention of assisting people to bring about improvements in their economic, social conditions and environment. Table 8 shows the tools of extension.

6 PHU-WIANG INTEGRATED WATERSHED MANAGEMENT PROJECT

The Phu-wiang integrated watershed management project namely the "Rural Development through Watershed Management in the Nam Phong Basin" was initiated by the RFD/UNDP/FAO in the Northeastern part of Thailand in 1982 with the active involvement of the local people. The project originated when the RFD perceived problems of deforestation and degradation of the uplands in the Northeastern region of the country. The project's objectives were threefold: 1) to stabilize the forest boundary and prevent deterioration of the upland catchments, 2) to promote rural development by diversifying the economy and creating new sources of income based on sound use of forest land and water resources, and 3) to strengthen the capacity of the RFD to replicate its experience in the planning and management of integrated watershed development (FAO, 1989).

The project was implemented from early 1987 till the end of 1989. The watershed rehabilitation was done through reforestation and agroforestry. Their activities can be grouped as follows: awareness campaign, establishment of Village Contact Volunteers (VCVs), village workshops, involvement with village leaders, religious leaders and local schools, training on income generating activities and leadership skills; intensification of productive activities on private and community land; introduction of credit schemes or a revolving fund to support the villagers to diversify their income; and strengthening of the coordination among organizations and agencies for the benefit of the villagers.

The project recommended that to be successful in the long-term ecological and socioeconomic aspects needed to be emphasized in watershed management. It was concluded that in participatory extension, especially where the aim is to involve the disadvantaged group like the poor and women, it takes a long time to reach an appreciable level of impact. The project also concluded that the time required for accomplishment of extension activities such as group formation, fruit tree improvement, integrated farming, and effective use of

land is different and ranges from 2–6 years.

7 PROMOTION OF THE PRIVATE FOREST PLANTATION PROGRAM

Forest plantation was kept as a government mandate for a long time. It was not until the Fifth NESD Plan, that the privatization policy was highlighted. Incentives for investment in forest plantation such as forest land, taxes, etc. were given to the private sector. However, due to the uncertainty of the political situation, the land-leas program for big private forest plantation (mostly industrial plantation) was suspended.

However, the declination of sugar cane and cassava plantations due to poor market and labor shortage, increases the opportunity for commercial tree plantation. Some big private companies simultaneously started establishing their own forest plantations. Various extension techniques and strategies were employed. Incentives such as free or low-price seedlings and planting materials as well as fixed-price timber products were also given to farmers to replace their crops with trees (mostly eucalyptus). It should be noted that the above-said contract tree planting by the private sector was very progressive. The complement of the forest plantation program was accomplished when the government enacted the Forest Plantation Act in 1992. Land for forest plantation was clarified so that the degraded forest land could be leased to farmers and the private sector. The existing occupants were encouraged to lease the land in accordance with Article 16 and 20 of the Forest Act. Moreover, all government fees in connection with the planting, harvesting, and transporting of wood products were exempted. Presently, the problems in reforestation for wood production in degraded forest land, to some extent, have been partially solved. The success of the forest plantation project/program will now depend on the land ownership and the compromise of the local community.

CONCLUSION

① In Thailand, the rural population and their lives are closely related with forests, and since the First National Economic and Social Development Plan was implemented, the utilization of forest resources has greatly contributed to the national economic development.

② However, since then, the deforestation and degradation of her forest has become serious. The deforestation and degradation of forests was due to the economic development of Thailand which was so rapid and imbalanced. In other words, it was caused by the various kinds of defferentiations, such as the defferentiations of the urban and rural, or that of the industrial and the agricultural, and also by regional imbalance in socioeconomic development.

③ For instance, large scale logging driven by commercial interest was carried out in the mountain regions, as well as non-traditional slash and burn cultivation. In hills and lowland, the clearing of forests for commercial agriculture increased. All these resulted in the shrinkage of forests.

④ Then, people who were pushed out from their native places because of high population pressure came into the forests and cleared the land for cultivation, made up small communities and grew crops for the market. This meant that illicit logging and illegal cultivation in the forests was carried out by these squatters who eventually started to insist their usufruct rights in the forests.

⑤ Thus, the rapid deforestation and degradation of Thailand's forest became an obstacle for socio-economic development. The environmental issues became worse, and consequently this brought the government to put up a National Project to conserve, cultivate and re-establish the forests.

⑥ Several remedial programs have been tried but these encountered many difficulties, and in fact, they were not always successful. The failure can be ascribed to the nature of these programs which were designed to sweep out the people, as many as one million, living in the forests by compulsory measures, and not taking the indigenous knowledge of the communities or the spontaneousness of the farmers in account.

⑦ After this lesson, the programs to conserve and re-establish forests were changed into those which would include the people living in and around the forests. For example, projects with people-oriented forest use and forest resource management, and Community Forestry Projects were implemented. To be concrete, Forest Village Projects and Communal Forest Projects were implemented. In some cases, forest usufruct rights were issued. Community forestry were established which were combined with agroforestry.

⑧ Agroforestry is based on traditional practices of forest resource management performed by not only the farmers but also the forest encroachers and dwellers, and is strongly supported by international development agencies.

⑨ At the time when these people were involved with the management of forest and natural forest resources, it became necessary for them to have a certain technical skill. Thus, from the latter half of the 1970's, Forest Extension Projects have been carried out.

⑩ This means that the forest policy of Thailand has changed to one that intends to include the people, and based on their traditional forest use and indigenous forest management knowledge. Therefore, in the present the Sixth National Economic and Social Development Plan, Community forestry project, and agroforestry are becoming more important, and interests on private reforestation and private forestry is growing. In this case, the importance of forest extension projects is inevitable.

⑪ This occurred after the top-down system which was conducted by national rights being accompanied with compulsory measures were at a dead lock, and a bringing people round system which expects the people to participate in the forest management, reforestation and conservation have to be put policies into practice.

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要 旨

1960年代以降のタイは、森林の減少と劣化がもっとも激しく進んだ国の一つである。これは、60年代におけるタイの経済社会の目覚ましい発展及びベトナム戦争に代表される政治状況に巻き込まれたことに起因する。こうした森林の減少、劣化は、それ自体社会問題化し、タイの社会経済の在り方とその発展を阻害するに至ったことはいうまでもない。このこともあって70年代後半に入ると、森林の維持と保全、回復・造林推進のための本格的プロジェクトが、国家的課題として実施された。本論文では、タイにおける森林の保全、回復・造林推進のための諸施策の特徴を把握するとともに、それを通じて現段階の問題点を明らかにしたい。

本論文は最初に、タイにおける森林の激減過程、森林利用の変化過程とそれに対応して投入された林業発展計画の概要を明らかにする。次いで、7つの林業発展計画、すなわち林業村事業 (Forest Village)、村落林事業 (Community Woodlot)、社会林業事業 (Social Forestry)、アグロフォレストリー普及事業 (Agroforestry Extension)、住民参加林業普及事業 (Participatory Forestry Extension)、プー・ウィアン統合水源林事業 (Phu-Wiang Integrated Watershed Management)、私有林造林推進事業 (Promotion of the Private Forest Plantation) を取り上げ、その実態を分析する。そしてこの分析によって、タイにおける森林の維持と保全、回復・造林の推進と住民参加の関係について明らかにする。

森林は、農業と住民の生活にとってなくてはならないものである。森林資源は、国家経済社会発展計画が開始されて以来、その展開のために多大な貢献をしてきた。最初の2次にわたる国家経済社会発展計画の下では、林地転用等の土地需要と林産物需要が高まった。それに伴って、各種の政策、特に土地政策、農業政策、地域発展政策がバランスを欠いた形で展開したことによって森林破壊が結果された。この間約100万人が森林に侵入し、そこに居住するに至った。各種の森林の保全、保護政策そして森林回復のためのプロジェクトが投入された。しかしそれはいろいろな要因が加わったことによって成功したとはいえないのが実情である。その要因の主要なものとして挙げられるのは、林地と森林資源管理に係わる誤った認識があった反面、適切な対処方を欠いていたことである。ここからは、全体的として、森林の保全、回復について住民の参加と

伝来的知識の必要性が強調されなくてはならないことが明らかになってきている。

村落林業、アグロフォレストリー、林業普及事業の発展は、1970年代後半から開始されていた。アグロフォレストリーが木材と食料生産を目的として農地と森林を一体とする土地経営として推進される一方、村落林業は森林資源管理に対する村落の役割を重視している。林業普及事業は、林業発展への住民参加を強化している。村落林業とアグロフォレストリーの実施は、第5次国家経済社会発展計画以降国家計画に取り入れられている。一方林業普及事業は、私有林造林の強化とともに、第7次国家経済社会発展計画に取り入れられた。膨大な数の森林内居住者とその居住者がいることによって起こる森林破壊問題を適正に解決するために、林業村事業、国有林への住民の用益権の設定、村落林業、アグロフォレストリー及び林業普及事業が、森林破壊を防止し、森林の回復、造林を改善していく革新的プログラムとして発足しているのである。

以上の林業発展プロジェクトの分析によって、タイの森林の維持と保全、回復・造林の推進に成果を収めているのは、住民参加方式を貫いた場合であることも明らかになっている。森林内の居住者や森林周辺に住む者は、その森林から一定の利益が保障されるならば、林業発展のためのこうした事業に、積極的に参加することも明らかになっている。