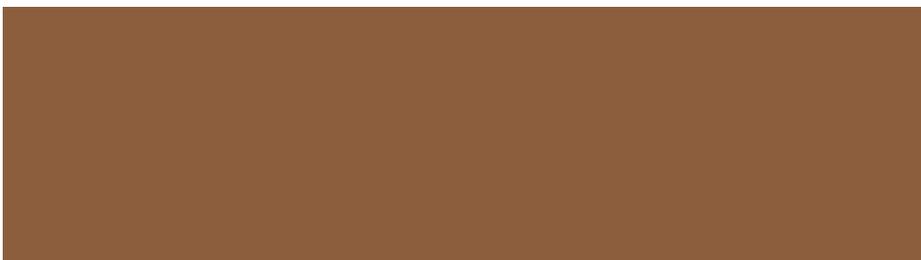


Supporting policy, legal and institutional frameworks
for the reform of forest tenure in China's collective
forests and promoting knowledge exchange

GCP/CPR/038/EC Working Paper: WP – 031 - E

Policy Assessment and Pilot Application of Participatory Forest Management in Anhui Province



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Policy Assessment and Pilot Application of Participatory Forest Management in Anhui Province

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**State Forestry Administration of China
Food and Agriculture Organization of the United Nations**

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1. Introduction

1.1 Describe of the issue

Collective forests in China account for 58 percent of forestland, and have great potential to significantly contribute to rural livelihoods. Tenure of China's collective forests has undergone many changes in the past 30 years.

However, due to the unclear secure forest rights and tangible benefit, combined with lacking of decision making access, the local populations have been maintained a low degree of motivation in forest management, which also resulted the continuous degradation of forest.

The participation of multi-stakeholders, in particular forest users and community based organizations in the policy implementation, is one of the most important challenges in the implementation of China's collective forest tenure reform. Bureaucratic forest management systems based on administrative orders do not produce optimal benefits to the farmers. Therefore, more participatory approaches to forest management, including empowering of forest farmers, are needed.

However, there is no tradition of participatory forest management in China. If the forest tenure reform is to be effective, the capacity of forest farmer cooperatives to manage forest resources, in a participatory way, needs to be strengthened. As a result, in order to ensure the increase of forest management level, approaches and tools for participatory forest management suitable for the Chinese context, as well as training for the local forestry management department, are required.

1.2 Literature Review (including experience on PFM from other projects)

Participatory Forest Management applies participatory development theory and method to forest resource management. As for the existing literatures and researches, the concept of participatory forest management is similar to "Participatory Forestry", "Social Forestry", and "Community Forestry" proposed by many theorists. These researches are focused mainly on the following aspects:

1.2.1 Theory research of Participatory Forest Management

(1) Definition of Participatory Forest Management

Indian forest scientist J. G. Westoby first proposed the concept of Social Forestry in 1968 at the Ninth Session of British Commonwealth Forestry Conference. In 1973, Indian government took the lead in implementing Social Forestry Plan, and achieved remarkable results. In 1976, the term of Social Forestry first appeared in an Indian National Agriculture committee's report, and in this report it was defined as "Social Forestry organizes the impoverished people to manage lands which cannot be grown certain crops, produce forage, fuel-wood and other products, so as to meet the needs of local communities, especially for the impoverished". The definition aimed to encourage people who live on fuel-wood and other products to carry out self-sufficient forestry

activities (focusing on the rural population's new forests which are outside the traditional forest region), to achieve the purpose of reducing the burden of timber. In order to carry out such activities, the premise was to attract farmers to participate in afforestation and benefit from it. However, this definition ignored farmers' participation in policy decision and business management, as well as farmers' benefits from forestry activities.

In the middle and latter half of 1970s, people had a more profound understanding of forestry, as well as its status and role in rural development. The concept of Social Forestry was officially confirmed in the Eighth World Forestry Congress with the theme of "Forest is for the people", held in Jakarta, Indonesia, 1978. At that time, Social Forestry was defined as "any action attracts locals closely to forestry activities. It includes a wide range of contents: forestry production activities aiming to meet the local people's needs; profitable afforestation, forestry processing, handicraft production conducted by farmers; and all relevant activities involving the whole of tribal society living in the forest." Obviously, it highlighted the main role of farmers, and the principle of serving the poverty-stricken rural residents in developing countries.

In 1978, FAO defined Social Forestry as Social Forestry and Community Forestry (for the development of the local village) are synonymous concepts. The implication of Social Forestry is afforestation for the purpose of the rural development, including the production of fuel-wood, timber, and drink. Its basic purpose included: relying on local farmers' full participation so as to achieve effective management and reasonable use of forest resources in rural areas; giving full play to the overall efficiency of forest resources in terms of protecting the environment, improving agricultural production conditions, providing rural employment and increasing rural household income etc., further improving farmers' living quality and rural ecological environment, and integrating forestry and rural development closely.

Since the Eighth World Forestry Congress, Social Forestry, as an important branch of forestry development, firstly had made initiative success in Asian developing countries, then became an important part of forestry development strategy in a number of countries (such as India and Nepal), and it also contributed to the transfer of forestry development plan. These achievements had drawn attentions and concerns from both home and abroad.

Due to different national conditions, forest conditions, public sentiments, and stages of forestry development, every country is different, to certain degree, in understanding the meaning and content of Social Forestry, so as in its measures. However, to the essential characteristics of Social Forestry, all countries are tended to be consistent. Such consensus includes:

Forests and forestry have the important significance and function in alleviating and changing poverty in rural areas, and promoting the social process and economic development.

Turn the forest-based activities into an effective force to promote rural reform. Since the focus of Social Forestry lies in reform, any guidelines, policies, management systems and business ideas not suitable for rural development should be adjusted, and set a new target of forestry development.

Forestry must be opened up and closely integrated with other industries, by effectively managing the forestland, forest resources and widely adopting agro-forestry technologies; integrating the overall effectiveness of forestry, agriculture, animal husbandry and water conservancy, and developing the overall effect.

Emphasizing on the benefit of farmers as the subject to promote farmers' participation in forestry management, let farmers to master forestry through activities, and secure farmers' reasonable profit distribution.

To promote the development of forestry, the governments ought to positively guide and support farmers in self-help organizations and self-education, allow the independent, decentralized strengths and various forms of cooperation existing simultaneously, and ultimately lead to the relatively centralized production and scaled management.

With the rise and development of Social Forestry, the international and domestic forestry researches all define forestry activities with the following features: "taking people's participation as main body, to increase people's income, promote the sustainable development of rural economy, society and to improve ecological environment" as "Social Forestry", "Community Forestry", "Rural Forestry", and "Participatory Forestry". In China these terms are translated accordingly as well.

(2) Comparison between Participatory Forest Management (PFM) and Traditional Forest Management

From the proposal of Social Forestry to the development process of country-specific practice, we can find that the focus of forestry has been shifted from traditional timber production to the comprehensive development of forestry activities in rural areas. Gradually, there are considerable differences between PFM and Traditional Forest Management in philosophy, methods and goals. The differences are mainly reflected as follows (Liang Haoran, 2007);

Firstly, participants are different. PFM does not deny the importance of government departments in the management of forest resources, but plays more emphasis on the role of community, the masses, the third party and others involved. PFM encourages and mobilizes the community masses to participate in the management and conservation of forest resources. During these activities, PFM looks out for community masses' needs, benefits the community masses and provides them opportunities for development, and exerts their strengths in forest resources management.

Secondly, participation approach is different. The decision-making Mechanism of Traditional Forest Management is in the 'top-down' form. Communities are not directly involved in the design and enactment of the management plan, their ideas and wills cannot be reflected in the management plan, and thus it is difficult to form a sense of ownership in management. PFM encourages forestry workers and community people to participate, analyze the status quo, draw up and implement development plan jointly. This 'bottom-up' decision-making way emphasizes a broad participation of the masses and the democratic management, at the same time, also emphasizes the role of non-governmental organizations.

Thirdly, organization form is different. Traditional Forest Management places too much emphasis on the effect of government regulations. On the other hand, PFM encourages participating willingly and actively, through its own efforts to establishes community organizations. It emphasizes the participation of the local people with the coordination from the third party, and helps the locals to investigate, analyze, and share the results, in order for the locals to be capable for self-analysis, plan making and execute the plan accordingly.

Fourth, mechanism of benefits distribution is different. Traditional Forest Management focuses on the government's benefit, ignoring the community and the masses. PFM emphasizes the unity of "responsibility, rights and interests" of all participation parties, and the locals own and share the responsibilities and rights, as well as results, during their participation in the management of forest resources. PFM ensures the users' rights through the enactment of formal or informal regulations to prevent outsiders taking gains from the community forestry management activities. Thus it will fulfill masses' demands and achieve forest management objectives at the same time.

Fifth, relation between government departments and the community masses is different. Traditional resources management regards the community masses as management objects of forest resources development and protection, even matches, rather than partners. PFM pays attention to establishing partnerships in government departments, community masses, funding agencies, and all strata of the community (Liu Jinlan, 2007).

Sixth, management tool and effect are different. Traditional Forest Management takes government department as the main and guiding role in forestry management, focuses on community masses' effects on depredation of forest resources, and questions community masses' willingness and capacity to manage. Thus, government shall charge fines and take compulsive legal actions on community masses.

To sum up, the core of Traditional Forest Management is centralization, which government centralizes all rights, including decision makings, assessments and implementations, controlled under its administration. The core of PFM is empowerment, which focuses on delivering the rights to community masses. It reflects community masses' dominant position in community

development instead of simple passive participants. Meantime, forestry workers play the supporting, launching and catalytic roles, convert concept from “work for the community” to “work with the community”, and stress the working partnership between forestry workers and community masses.

(3) Tools of Participatory Forest Management

Summing up all existing researches and practices, Participatory Forest Management specially focuses on using charts, tables and other tools. Community masses use visual materials to express their knowledge, concerns and plans, share and discuss with villagers and outsiders.

Ye Jingzhong regards that tool’s selection shall be according to the project’s purpose and realistic possibilities. Projects which focus on forests’ development and sustainable management shall stress on the overall development of communities, and select different tools to conduct surveys and analyze communities’ social, economic, cultural and natural causes, such as farmers’ interview, beneficiary's meeting, season calendar table, labor allocation table, participatory land use plan. The data and information collected during community surveys shall include community society, economic activities, community natural conditions as well as resources. And the sources of collectable data can be from either direct sources or indirect sources (Ye Jingzhong, 2001).

Liu Jinlong proposed that practicing PFM requires using methods like Rapid Rural Appraisal (RRA), Participatory Rural Appraisal (PRA), and Participatory Monitoring and Evaluation (PME). These methods will help outsiders to better understand the difficulties facing communities and come up solutions to problems, which helps promote communications between outsiders and Community masses (Liu Jinlong, 2004). Other than the methods, in order to determine precisely the communities’ needs and differences between communities, more tools are needed as shown in the following table 1;

Table 1 The main tools of Participatory Forest Management

Community Level	Household Level
Field Investigation	Farming Systems Diagram
Community Plan	Farmers Season Calendar
Transect Map	Livestock Feed Supply Calendar
Community Events Calendar	Division of Labor
Season Calendar	Visit
Organization Chart	
Prioritization Matrix Table	
Market Assessment	
Forum	

Visit

1.2.2 Practice and application research of Participatory Forest Management

1.2.2.1. Practice of other countries on Participatory Forest Management

As Participatory Forest Management can help achieve sustainable forest development, many countries in the world have adopted Community Forestry in their forestry management plan. India set up a formal forestry management team to manage national forestlands. This co-op forest management mode is a relatively successful case in PFM. Some communities in Mexico manage 59% of rural land. And in Thailand, community forestry management program has already been practiced by many rural community groups. Among these countries, India and Nepal are the first to practice PFM. The practice endowed the rights to community masses to manage and make decisions on their woodlands and forest resources, and it also contributed in sustainable forest resource management.

Besides developing countries, PFM is also applied in many developed countries like the United States, Canada, Japan, and Switzerland. In the practice of planning and implementing, these countries also as well maintained the traditional essence of Participatory Forest Management. Before establishing a forestry project plan, these countries will always extend the invitations or conduct surveys, to gather opinions from government officials, forestry experts, environmentalists, community people, and private enterprises, to come up multiple solutions and to choose the most appropriate proposition scientifically, and to ensure the project is implemented smoothly.

The forestry training systems is also well developed in these countries. In Germany for instance, there are mobile schools, composed by forestry officials and technicians to provide free training sections to private forest owners in different states. Sections include basic knowledge and application skills in ecological system administration, and through TV, video, wall charts, and slides watching, as well as lectures and hand-on practice in combination from theory and practice aspects. And, the forestry training approach in Austria is similar to Germany's mobile school.

Also, the developed countries often benefit private forest owners through preferential policies by lowering loan interest, relieving forestry taxes, etc., to promote and develop the formation of civil cooperative organizations, such as Forestry Cooperatives in Japan. (Liang Haoran, 2007).

1.2.2.2. Practice and application of Chinese Participatory Forest Management

In the early 1990s, the Ford Foundation, WWF and other non-governmental organizations began to promote "participatory" forestry and community co-management practice in Yunnan and Sichuan, China. Participatory management theory was widely spread through studying abroad, training from foreign experts, as well as experimenting and demonstrating. After constant practice and think over process, China gradually developed its specific form and methods, a relatively

specific theory and methodology, and widely applied in community development and management, natural resources management, watershed management and other fields.

(1) Application research of Participatory Forest Management

Liu Jinlong divided China's participatory forestry development into three phases:

The first phase is community experimenting phase. The main study includes the relationship between forest and people, as well as community's cultural, living style, behaviors, and evolution history. The study further includes the relationship between forest and community development, such as anti-poverty, food security, employment, resistance in social economy. This phase of study started in China from the late 1980s, mainly reflected in Yunnan and Sichuan's "Community Forest Management Projects", and gradually developed into the mainstream study in development of forest management.

The second phase is regional study phase, which is normally conducted in larger river basins or regions, and launched through PFM projects in China. This phase mainly studies the impact of PFM approach towards traditional forest management. It was employed to sort out the appropriate participatory methods and tools, set the working directions, and define manpower development measures. The typical examples are Sino-German Cooperative Afforestation Project assisted by KFW, and the Forest Development in Poor Area supported by Fourth World Bank Loan Project.

The third phase is the nation's policy study phase. This phase mainly emphasizes on how to establish the ownership policies, in land, forest and forestland, which are favorable towards communities. The study also includes establishments of finance and tax systems, public participation mechanisms, forest management models, administration systems reform (particularly in power decentralization), and local government's capacity building to promote community participations in forest management (Liu, Jinlong, 2004).

With the launch of Social Forestry in developing countries, participatory management model had also been widely applied in China during the implementation progress of forestry programs. The Farmer Planner System in Xixia County, Henan Province ties farmers' participations with rural development planning, which improved the communications between government and masses, also reflected farmers' capability of self-organize and self-taught. The Social Forestry in Taoyuan County, Hunan Province integrates courtyard economy, rural forest farms and rural enterprises together. Bamboo farmers in Lin'an County, Zhejiang Province established and refined a production-to-sales service system in bamboo shoots production. The Tonggu County Government is now establishing an operation mechanism for farmers' independent management. Under the macro control of forestry department, low interest loans and technical services are available for farmers to choose development forestry projects, operate and manage the project independently.

Meanwhile, within a certain range, farmers can establish direct links between the producer and the seller on timber production (Liu Jinlong, 1999). The above facts indicate clearly that there is a solid social foundation for promoting, applying and practicing PFM model in China's forestry. (Liang Haoran, 2007).

With the development of participatory forestry, many researchers have proposed issues that should be noticed in PFM practice as follows:

Liu jinlong pointed out that forest management ought to tie up with rural development. Community people ought to actively participate in the forest management activities and to be benefited from it. Reform of social systems in land ownership and benefit distribution shall be conducted to make the interest relationships between forest management and community people closer. Therefore, at this point, the market, government and community are equally important.

Li Weichang pointed out that the current participatory forestry in China mainly includes the overall planning, village development planning, applications in protection of natural resources, and sustainable forest management in villages, etc. (Liang Haoran, 2007).

Liang Haoran regards that allowing the local civilians to participate forest resources management, and incorporating forest resources management and sustainable management into the comprehensive development of local communities is necessary. Meanwhile, cross-department cooperation and multidisciplinary integration ought to be paid attention to. (Liang Haoran, 2007).

(2) Applying PFM to design and management of forestry projects

Yunnan and Sichuan first systematically adopted the community participatory theory and methods, and launched and practiced participatory forestry.

Around 1990, with the support of the Thailand-based Ford Foundation and Community Forestry Training Center for Asia-Pacific Region, combined with projects' implementations and policies adjustments of Shelterbelt Development Program in Yangtze River basin areas, and collective forest tenure reform, a shelterbelt operation model with participation of communities was launched. In this launching operation, a series of researches, tests, promotion of forest protection and development, as well as anti-poverty programs were conducted, and preliminarily formed a set of training system, planning design and implementing methods of participatory forestry, which are suitable for the local conditions. This also promotes the coordination among forestry, poverty alleviation and social science.

Applying participatory approaches to forestry development systematically in larger, cross country scale started from the Sino-German Cooperative Afforestation Projects in 1993, and institutionalized the community participatory forest management in 1998 within the projects. After that, a set of procedures, management modes, evaluation and acceptance methods, suitable for

some regions, were preliminarily summarized and developed (Ye Jingzhong, 2001).

With the successful implementation progress of these projects, participatory thinking and management were rapidly expanded in China. Through field researches and trace studies, Xiao Jun, and Liu Jinlong found that the people-oriented management philosophy and management system have significant role in promoting planning, implementation, monitoring, evaluation and management of afforestation projects. The participatory philosophy and system especially showcase its advantages in improving the effectiveness of afforestation continuously.

The people-oriented philosophy and system mainly presented in a large degree of adjustments in decision-making power, profit distribution, as well as in the operation mechanism of social relations. That grassroots' rights were gradually valued, their livelihood priorities were given, the traditional skills and folk knowledge were recognized, and the local force was taken into account as well.

The relevant decisions in the adjustments were able to reflect most opinions of related multi-stakeholders, especially in elevating awareness and status of grassroots and vulnerable groups. Also, these adjustments were able to raise the livelihoods of grassroots, to promote the sustainable development of mountain forestry, to eliminate or mitigate conflicts between grassroots and forestry departments, and to improve the afforestation systems (Xiao Jun, et al., 2008).

1.2.3 Comment and Enlightenment

(1) Since the 1960s, the international community began to study community participation in forest management, till now PFM has become one of the hottest forest management issues in the world. China has begun to experiment the community participation in forest management from the late 1980s. Through international regional forestry development projects, PFM has become the main study and practice direction in China's forestry policy adjustment.

These researches and studies mainly include the use rights of local people with regard to forest products and land, the community based forest management organizations, the multi-objective management of forest, the changes in forestry organizations, as well as new partnerships, i.e. departments' cooperation. Especially, the core study focuses on the protection of local people's benefits, which also includes issues in their traditional use rights in designing forest management policies.

(2) Due to differences in countries, regions' natural and social economic conditions, existing issues in forest resources statuses, policies and legal systems, stages as well as in observing views, there are different names and titles proposed in practicing participatory theories and methods, such as Social Forestry, Participatory Forestry, Agro-forestry and Community Forestry.

To PFM, there are two aspects commonly seen: some thinks that PFM is only a tool to improve

the effectiveness of some development projects; some think that since the traditional management is incomplete and defective, the participatory management sees more reconstructive effects. They also think that the only way to promote true development of the whole society is to let more stakeholders and related groups' opinions to be respected and adopted.

Although these statements and viewpoints are different in emphasis and aspects, the essence is all the same. They all emphasize the importance of participation and the broadness of participating subjects, and highlight the communities' position to protect profit sharing as well as forest resources. Most important of all is empowerment, which means power redistribution in participating and decision making process, giving the right to speak, the right of analysis, and the right of decision making to local communities and farmers.

(3) Viewing from all experiences home and abroad, the primary approaches to promote community participation in forest management are promoting multi-objective forest management, adjusting forestry policies, and carrying out social system reform in forest and land ownership and benefit distribution to strengthen the interest relationships between forest management and all participants.

The approaches also require respecting local people's traditional use rights in forest resources, which government departments, being more like supporters and servers, should provide quality political, legal and technical services to local communities and farmers; promote local people to participate in all procedures in projects, promote the development of local organizations, enhance the support of participation and legislation in management, and pay full attention to capacity building and training.

In this process, to incorporate forest resources management and sustainable management into the comprehensive development of local communities, attention to the cross-department cooperation and multidisciplinary integration is necessary. Meanwhile, from both research and practice perspectives, all tools and methods of PFM are nothing but emphasizing on "participation", and base on participation to design the tools and methods of use. Thus, the future study and practice of PFM needs to stress on how to effectively utilize these tools and methods to promote participation.

(4) As for the reasons that constrain communities' participation in forest management in different countries, they are common (such as lack of political wills to promote reform, lack of human resource reserves in forestry departments to address reform challenges, and the arrogance of forestry departments.), but have their own characteristics. The challenges of practicing PFM that China faces include the foreign institutions and individuals' behaviors and attitudes, participatory approaches, ownerships in forest and forestland, intervention from the government, forestry taxation, etc. In the meantime, the current forestry legal framework does not support the development of PFM, and the current forestry development strategies have not taken into

consideration rural development (Liu Jinlong et al., 2000).

(5) Compared with the traditional forestry thinking and practices, PFM reflects the current mainstream, which also aligns today's economic liberalization and social liberalization in the world.

It is noteworthy that the idea and technology of PFM are just one way to achieve sustainable development of forestry, not the master key to solving all problems. Do not oppose forests' state management to community or public forest management, and do not oppose participatory management to non-participatory management. Because after all, the form managements are not the goal, the goal is to achieve sustainable forest management and development. It is possible to unify these methods to achieve this goal; however, it depends on a country's social, economic, cultural, religious, historical, regulatory and legal conditions, and these conditions are different from country to country.

China needs to explore and find its own theories and methods, with Chinese characteristics, and unified. On the national macro level of forestry policies design, we shall pay attention to power's decentralization, property rights' clarification and departments' cooperation. At the operational level, PFM needs to be imported into projects like Natural Forest Protection Program, Cropland to Forestland Conversion Program, Sandification Control Program and other ecological programs (Liu Jinlong, 2004). During this process, all people including government officials, scientists, practitioners as well as farmers, are needed to participate in studying, practicing and capacity building.

2. Objectives and methods

2.1 Objectives

The general objective of the application is to strengthen the involvement of farmers and other stakeholders in supporting sustainable and profitable forest management and forest business development in the pilot villages.

- To build capacity of FFCs and its members on participatory forest management;
- To evaluate policies on relevant forest management topics in relation to the forest tenure reform; and
- To evaluate the adaptability of the training materials on participatory forest management and give the recommendations on the improvement of the materials.

2.2 Methods

(1) Secondary data collection

Extensively collect information at county, township and village levels, including the associated forest management regulatory documents at national, provincial, and city (county) levels about forest tenure reform (laws, regulations, rules and policies), relevant information on the cases

(including the condition of resources and farmers' incomes structure and forest management systems and methods, and the associated forestry policies of forest tenure reform).

(2) Acquisition of the firsthand data

In the research process, evaluation is made mainly with participatory evaluation in rural areas (PRA), mainly in the form of half-structure interviews, with the support of a wide range of evaluating tools such as matrix tables, marking sequences, logic trees and seasonal calendars. The research objects involve the relevant stakeholders, including forestry and other departments, the villagers committee leaders (including the management personnel of the FFCs), and the farmers who are the members of the FFCs or not the members of the FFC. From different perspectives, the implementation of the effectiveness of policy is analysed, and SWOT analysis is used to analyze and discuss the external and internal environmental factors of forestry policies.

(3) Training methods

In the training course, slides, cards, papers and other tools are used. The participants get involved in group discussion of training purposes and problems, and use slides to show the pictures of different forest stands collected through field investigation. The training adopts many ways, effectively enlivening the atmosphere, and improving class efficiency. For instance, at the start of training, fruit varieties are provided at the reception, a brainstorming method is used in the process of SWOT analysis of different stands, and the waving discussion and joint panel discussions in the whole process.

3. Basic information

3.1 Description of activities and targeted groups/ interviewees

3.1.1 Description of targeted groups

- Staff and members of the FFC members;
- Farmers who are not FFC members;
- Forestry officials and technicians at county and township level;
- Other stakeholders, such as:
 - Timber brokers
 - Owner of the forest farm
 - Manager of the wood machining

3.1.2 Description of activities

(1) Preparatory activities

- Review the literature on the application of PFM in China;
- Review all project-related documents and data collected by the project in the villages, especially the training materials on participatory forest management in China (developed by the Project).

- Study work plan
- (2) Conducting and attending planning workshop
- Carry out affairs of the workshop
 - Discuss the work plan, procedures, and methods for the workshop.
- (3) Capacity building on PFM and improvement of training materials
- Identify the attitude, behavior and views etc. of FFC members and villagers on PFM;
 - Analyze the existing problems of the involvement of FFC members and villagers on PFM;
 - Provide training to the farmers especially FFC members based on the materials developed by the project;
 - Facilitate and guide FFC(s) to formulate a draft forest management plan at the FFC (village) level. The contents of forest management plan will follow the “simplified guidelines in formulating forest management plan” developed by the Forest Resource Department of SFA;
 - Evaluate the strengths, weaknesses, opportunities, and threats to PFM at the village level and identify the gap and needs concerning the development of forest management plan.
 - Provide recommendations on the improvement of the materials.

(4) Policy evaluation and improvement of the training materials

The policy evaluation, through literature review, fieldwork, participatory test, and questionnaire research, is on FFC members’ and other villagers’ forest management behaviors, and these behaviors’ impact on achieving sustainable forest management. Moreover, emphasis is laid on FFC members and other villagers’ attitudes, responses, behaviors, policy demands and propositions for improvement on forest management policy.

- Review the policies at the levels of national, province and county and the policy impacts on the forest management at the village level;
- Collect information on forest management, including forest resource, forest products, governance, decision-making and monitoring system;
- Collect information and analyze the attitude, behavior, and views on the policies from different stakeholders including villagers, FFC members, and forestry institutions (bureaus) at township and county level:
- Identify the constraints and problems of existing forest policy;
- Provide recommendations on the improvement of the materials.

3.2 Social and economic information on pilot village/FFC

3.2.1 Taoyuan Village

Under the background of “Village-dismissal and Town-combination” policy from 2008, the former Shoukou and Taokeng villages merged into Taoyuan Administrative Village, and the former

Taoyuan's office building was bought as the new office site.

The administrative village has 19 groups of villagers in 22 natural villages with 501 farmer households (over 700 in Taokeng) with 1739 people, and about one fourth of farmers are migrant workers.

Taoyuan Village is a typical mountain village covered mainly with forests. The total land area of this village is 81.2 km², in which the forest area accounts for over 8000 *ha*, the tea plantation 198 *ha* and the cultivated land 72 *ha*. Per capita forest area of this village is about 4 *ha*. and the forest coverage is more than 90%.

Per capita net income of farmers reaches over 5,500 yuan, and according to the statistics from the sampled households, the income proportion is: 30% woods, 40% tea-leaves, 10% forestry by-products and 20% labor income. The farmers' income depends heavily on the mountain land and the larger the area of the teams is, the higher the income is.

The total financial income of the village in 2009 was 230,000 yuan, 30,000 yuan of which from the financial transfer, about 122,000 yuan from the project surplus, 60,000 yuan of the forestry income, 12,000 yuan from house-renting, 5,000 yuan from the management fee submitted by the village-owned enterprises and 1,300 yuan from the income interest.

The major expenses involved are as follows: The wages of the village cadres plus the pension of the 16 households enjoying the five guarantees (childless and infirm old people who are guaranteed food, clothing, medical care, housing and burial expenses) accounted for 70,000 yuan; the bill for meetings (mainly in terms of meals) was 40,000 yuan in 2009.

3.2.2 Wenxiang Village

In the early 1960s, Wenlou Village (production brigade) was established by means of separating the paddy fields owned by Wenlou and Xianfu. Since 1969, the immigrants from the Taiping Lake has led to an explosive growth of the population in Wenlou Village, with the total number of immigrants amounting to 1174 people in 384 households. In 1972, the village was divided into Wenxiang and Xiangfu Villages. In March 2008, based on the village-merger policy to save administrative operating cost, Xiangfu Village was merged with Wenlou Village.

The village has 17 groups of villagers, involving 522 households with 1,818 residents and 1,200 laborers (780 migrant workers to urban areas). In 2009, per capita net income of farmers reached 5,500 yuan. The former Xiangfu Villae has 5 farming teams, involving 152 households with 518 residents and 360 laborers (280 migrant workers to urban areas), and per capita net income of farmers reaching 7,500 yuan.

The total land area of the village is 26,163 *mu*, in which, arable land accounts for 2,483.25 *mu* (per capita 1.37*mu*, and per capita irrigated land 0.8*mu*); the water area occupies 1,975.95 *mu* and the forest land stands at 18,112.5 *mu* (bamboo hills 1299 *mu*).

In 2009, the gross forestry income of the whole village was 800,000 yuan, in which, 250,000 yuan

derived from the subsidy for “returning farmland to forest” , 140,000 yuan from the income of the forest farms, 50,000 yuan from the subsidy for public-welfare forest, 60,000 yuan from selling tender bamboo shoots, and 30,000 yuan from short-distance transportation relevant to forestry products.

Financial balance: Besides 30,000 yuan from transfer payment from the exchequer, the Wenlou forest farm has income from selling over 100 m³ of woods annually. Besides, every years, the sand farm hands in 6,000 yuan and Xianfu FFC makes a payment as per 50 yuan/cubic meter according to the harvesting quota. The village’s yearly rigid expenditure ranges from 70,000 to 80,000 yuan, and the insufficient part is supplemented with project surplus. Eight cadres in the village need 55,000 yuan of salary.

4. Analysis of forest management in the pilot village/FFC

4.1 Resource and changes in history

4.1.1 Taoyuan Village

In the 1970s, the highways extended to the village; in the 1990s, the roads that extended to the villagers’ groups were opened to traffic in succession. Before the roads at the village level extended to the groups, the timbers were transported mainly by water. Generally the woods were felled in winter and carried to the banks of the stream by manpower. Farmers waited for the rain season to push them in the stream together, and make timbers drift to timber purchasing station (scaling and rating, etc) , then purchasers classified and drifted them. The roads not only save the labor but also make forest resource utilization more convenient, and improve resource value.

The proportion of the natural forests and the artificial forests is 8 to 2. The main tree species are firs, pines, sweetgums, castanopsis sclerophyllas, glauca and so on. The national public-welfare forest area stands at 10177 *mu*. For a long time, the production of natural forests is dominated by selective cutting and the woods gradually evolve into mixed forests based on natural secondary forests. The artificial forests were mostly planted in the late 1980s, which have entered main cutting period. The output will be 8-9 m³ per *mu* with pleasant benefits and income expectations. However, due to a small proportion of artificial forests, per capita occupancy is relatively low, and there exists serious shortage of back-up timber forest resources.

According to the data of 1992 and 2004 forest surveys (table 2), the area of bamboo forests gained a rapid growth, and open woodland and shrub land area expanded rapidly.

Table 2 Forest survey data of Taoyuan Village, Wenxiang Village Units: hectares, cubic meters

	Taoyuan Village			Wenxiang Village		
	1992	2004	Growth %	1992	2004	Growth %
Total area	7916.6	8026	1.38	1759.8	1752	-0.44
Forestry land area	7166.07	7262.7	1.35	1044.73	1194.9	14.37

Forest land area	6946.07	6952.8	0.10	876.26	1046.4	19.42
Bamboo forest area	128	226	76.56	60.2	158.6	163.46
Open woodland area	20.07	68.2	239.81	3.4	5.9	73.53
Shrub land area	62.66	159.1	153.91	41.2	123.5	199.76
Afforest land area	137.27	58.3	-57.53	123.86	19.1	-84.58
Non-forestry land area	750.53	763.3	1.70	715.06	557.1	-22.09
Total standing forest storage	353336	353090	-0.07	38615	80230	107.77
Open-growth tree stock	49	58	18.37	533	78	-85.37
Forest coverage rate (%)	88.55	88	-0.62	52.25	60.86	16.48

Source: Forest survey reports in 1992 and 2004, Huangshan District, Huangshan, Anhui province

4.1.2 Wenxiang Village

Under the administration of Yongfeng County, Wenxiang Village was merged from the former Wenlou Village and the former Xiangfu Village. This village has 17 groups of villagers, involving 522 farmer households with 1824 people, and about 45% of its total population are migrant workers.

The total land area of this village is 1744.2 *ha*, including 165.55 *ha* of cultivated land, 1207.5 *ha* of (86.6 *ha* of bamboo mountain covered with moso bamboos and *phyllostachys praecoxes*) forest land, and 131.73 *ha* of water area (Taiping Fork Lake). Its per capita cultivated land area stands at 1.37 mu, among which, per capita paddy field area is 0.8 mu, and per capita mountain forest area is nearly 10 mu.

Of all the village forest resources, public welfare forests account for up to 75% (national key public welfare forests), and the dominant tree species are fir, pine, moso bamboo, *phyllostachys praecox*, Chinese berry, *liquidambar formosana*, chestnut, and yellow mop. Before 1949, Wenxiang Mountain Farm gave priority to natural pine forests. Till the period of the establishment of cooperatives, there were still many ancient pine trees on the mountain farms. From 1958, because of railway construction and large-scale steel-making, among others, ancient trees on the mountains were massively cut, plus the ill management and unattended mountain fires, leading to the excessive consumption of forest resources. Since the 1960s, attention has been paid attention to forest fire prevention, and over-cutting has been banned. The present natural secondary forests have gradually formed by closing hillsides to facilitate afforestation since the 1970s. Forests are not felled more after the forestry policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility. The forest survey result of Wenxiang Village is shown in table 2.

4.2 Main forest products and changes in history

4.2.1 Taoyuan Village

The main forest products of **Taoyuan Village** are firs, pine, sweetgums, china berries, glaucas, champignons, agarics and gyrophoras, bamboo, bamboo shoot, tea mushroom, edible fungus, ganoderma lucidum, etc. The estimated annual outputs in recent years are shown in table 3:

Table 3 Estimated forest products output of Taoyuan Village

表 3 桃源村林产品年产量水平估计

	Timber production (m ³)	bamboo production (10,000 pieces)	Tea (10,000 jin)	Non-timber forest products (10,000 jin)
Shoukou	1200	2	4	2.6
Taokeng	1100	3	6	2.4
Total	2300	5	10	5

Note: The data show estimated value. Non-timber forest products include bamboo shoot, mushrooms, edible fungus, and ganoderma lucidum.

4.2.2 Wenxiang Village

Wood: The timbers are mainly firs. Since 2005, there has been a sustainable growth of merchantable timbers, which could basically stay at 900 cubic meters and cooperative production at 500 cubic meters over a long period of time after (Chart 1).

Bamboo products: The products include moso bamboos and bamboo shoots. Annual output of bamboos reaches about 30,000 pieces, and that of bamboo shoots 500,000 jin. In recent years, after cutting the firs, bamboos have been replanted, contributing to a rapid growth in bamboo reserve resources.

Pine gum: Annual output is about 400,000 jin, or 2.5-2.6 jin for a tree on average. Since the second half of 2007, pine gum collection has been banned, which weighed on farmers' incomes.

Forest resource consumptive products such as mushrooms and agarics. They have been always under strict restrictions of forestry departments. After the delineation of the public welfare forests, they are forbidden.

Charcoal: Tea making consumes a large quantity of charcoal. The village's tea garden covers an area of around 200 mu with annual output of 6,000 yuan/mu. There are two production methods: charcoal made by local method and mechanical production¹. The policy prohibits charcoal business.

Firewood: Before 1987, firewood was the main source of farmers' income from natural forests, with annual firewood production capacity staying at 500 jin/mu. Since 1987, the firewood was

¹ Production methods and the consumption of wood and charcoal are basically identical with Taoyuan (see Taoyuan report).

allowed only for personal use, and deals were banned. On the premise of alternative fuels like electricity and gas, now every household's firewood consumption is about 2000 jin.

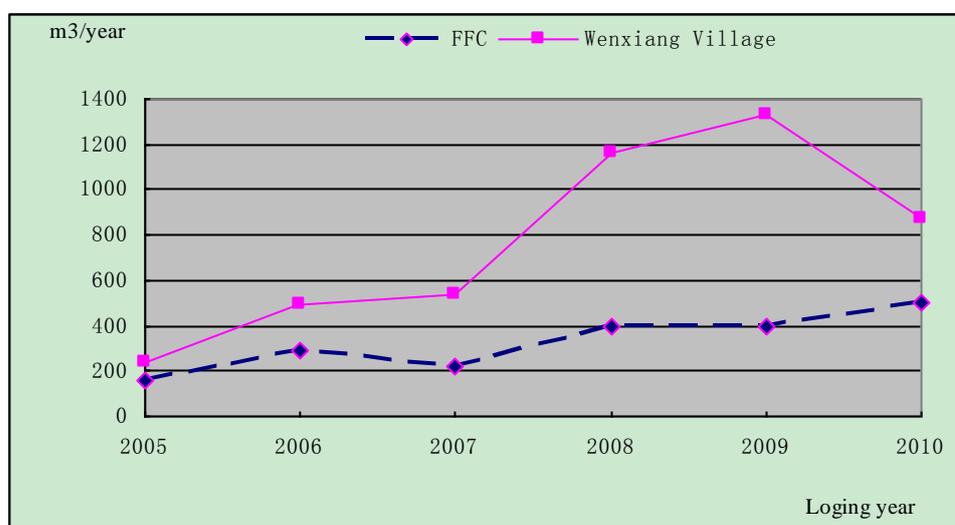


Figure 1 Output of commercial timbers of Wenxiang Village(2005-2010)

(Source: Yongfeng County Forestry Station)

4.3 Farmers income dependency on forest management

4.3.1 Taoyuan Village

In the past ten years, per capita net income has increased by 10% every year, reaching 6,000 yuan in 2009. According to table 2, of the income from the mountains, 31% came from woods, 10% from bamboos, 51% from tea and 8% from non-timber forest products. According to the interview with the farmers, the tea could account for 45% of farmers' income (7000-8000 yuan), compared with 5% for bamboos (1000-1500 yuan), 3% for timbers (including picking pine gum and other forest by-products, 5000-6000 yuan), and 15% for labor (3000 yuan). The farmers' income depends heavily on mountain resources.

Larger mountain area of the group means higher percentage of forest income. However, the groups with higher percentage of migrant workers' income generally have relatively small timber forest resources, while the percentage of public-welfare forests is comparatively high and labor force is relatively rich. In recent years, with growing wages, the proportion of migrant workers in the labor force has been on the decline and investment in forestry has been on the rise. Although this phenomenon is not very obvious, we can draw a preliminary conclusion that the supporting capacity of the mountains is increasing gradually.

The village social division of labor: people under 40 years old are mostly migrant workers , accounting for about 20% of the village's total population, or about 1/4 of its labor force; those aged 40-50 are mainly engaged in agriculture and forestry production, doing some work as casual laborers during slack season. Old people attend to housework and kids. The forestry production

activities of the farmers are concentrated mainly in the village: (i) they conduct forestry management in the forests allocated to them; (ii) they conduct forestry management in the forests of the FFCs for service income; and (iii) they participate in general forestry affairs in the forests of other farmers (the demand is small).

In agricultural and forestry activities, tea leaf collecting and processing take place mainly in three months from March till June, and the amount of labor is in great need,. Therefore, most people working in the surrounding areas will be back for tea plantation. The forestry productions are concentrated mainly in six months from October till March of next year. The two activities will last half a year and are farmer's main source of income. Maybe there are many conflicts in terms of time arrangement.

4.3.2 Wenxiang Village

In the year 2009, per capita net income was 6,620 yuan, and major sources of income were labor service, agriculture and forestry (priority was given to bamboos) and by-lines (taking advantage of the rich mountain farms to raise poultry and use Taiping Lake to raise fishes and the like). As for cash income, labor service accounts for about 70%, agriculture (including breeding and fishery) and forestry each 15%. The local practice of collection pine gum has a history of more than 20 years, and farmers depend heavily on it for incomes. Per capita income reached 100 yuan/ day in 2006, but this practice was banned in 2007.

The village social division of labor: villagers under 40 are mostly migrant workers, accounting for about 45% of its total population and about 65% of its labor force; are mainly engaged in agriculture and forestry production, doing some work as casual laborers during slack season, and some of them do business outside the village. Old people attend to housework and kids. The scarcity of labor force grows (mainly shown in substantial increase of wages), and the number of migrant workers declines.

4.4 Governance of forest management

According to the management standards, the main governances of forest management adopted by the project villages are as follows:

- Quality management (source and quality control) of seeds and seedlings designed to improve the quality of artificial afforestation;
- Design and inspection (size and standards) of artificial afforestation and reforestation;
- Technical specifications (cultivation and design focused on cutting intensity) on forest tending (including reclamation *Phyllostachys pubescens* stands);
- Technical specifications on deforestation (control of cutting way and area);
- Technical specifications on improvement of low yield forest (recognized standards and technology options);

- Management on cutting permit (location, area, accumulation);
- Prevention and control of forest diseases and insect pests (reporting, inspection, system for prevention and control);
- Forest fire management (publicity, use of firebreak, control of open fire, establishment of fire prevention and fire fighting organizations, etc.);
- Daily management and protection of forest (building systems for management and protection organizations, daily patrol, supervision, inspection, and responsible person);

4.5 Interventions on forest management

The forest type of the project villages is classified into three types: public-welfare forest, natural commercial forest and artificial commercial forest. Interventions on forest management are actually the impact of operators' business practices on forests.

(1) Public-welfare forests

Public-welfare forests are entirely the forests used to conserve water and soil of the Yangtze River, which are mixed mainly with pines, sweetgums, dryland willows, castanopsis sclerophyllas and the like. Its management focuses on protection (fire and theft prevention). This village has adopted centralized management system and appointed responsible persons based on villager groups in view of the overall coordination of the village, then selected proper people from different groups to manage the forests on a payment basis (different groups have different standards). The local forest station also organizes some people to check the mountains regularly. Some farmers' forestlands are all classified as public-welfare forests, so they can appropriately cut some firewood for their home use and some timbers for their life and production with approval.

(2) Natural commercial forests

The commercial forests of natural origin have similar stand structure and species composition to the public-welfare forests. Though they aren't brought into the scope of public-welfare forests, they are still under strict restriction and influence of natural forest protection policies. Cutting administration is relatively strict. Application of some projects (such as the reconstruction of low-yield and inefficiency forests) to acquire harvesting quota is generally subject to certain scale. Only the forest farms and institutions can meet the requirements, whereas ordinary farmer households can rely merely on the few harvesting quota allocated to the village.

The villagers didn't invest in the natural forests, thus their management is fairly extensive, and long-term unordered cutting and the practice of cutting big trees leads to declined quality of forest stands. In this region, orchids, wild kiwifruits and other non-timber products can be collected. However, excessive collection and ill management contribute to the declined product quantity and quality.

The natural commercial forests are lack of unified management at the village level. The forest fire

prevention and disease and pest control rely mainly on the villagers' organization. The farmers whose woodlands are close can help with each other, which is also called joint management and protection. The farmers can cut some firewood in the natural forests for their own home, but they can't cut natural pines and sweetgums. In the past, pine oleoresins in the natural forests could be collected, but since 2008, this practice has been banned. This ban had relatively great effect on the villages, groups and farmer households with rich pine resources. The farmers hope that the control of natural commercial forests could not be so stringent and that they can reform the forests within measure. They want to cut forests which have better site conditions and rebuild firs or bamboos in order to achieve great profits.

(3) Artificial commercial forests

Taoyuan Village: Artificial commercial forests are mainly firs and bamboos, most of which were planted in the late 1980s. Their nurturing and final cutting are both subject to harvesting quota. The application for harvesting quota is generally filed by groups together, and then shared within the groups of villagers. Individual farmer households are difficult to acquire them. Cutting area design must be conducted for cutting of more than 20 cubic meters. The cutting of bamboo doesn't need such quota, but farmers must register with the county forest station.

Farmers believe that the roads in the forest areas, the forestry policies and the market of bamboo products are the main contributors to the low-level forest management of Taoyuan Village. The main problem of cultivating artificial forests lies in the restriction on slash burning and forest nurturing. This village has a tradition of slash burning of the hills, but it is subject to relevant policies, and affects the growth of trees to some degree. The roads in the forest area are not in good conditions, and nurturing assembling woods fails to lead to profit due to high cost, resulting in the low-level nurturing. The bamboo market is not prosperous with too much government intervention, low product price, and meager income, leading to low initiative in bamboo forest management, low recultivating rate, and poor growing conditions.

For artificial forests, disease and pest control relies mainly on the guidance and help of local forest technicians, but the result is not satisfactory. Generally farmers' forest management and protection (preventing fire and theft) depended largely on mutual help, forming loose joint management and protection, while institutions and forest farms generally hire professionals for forest management and protection.

Wenxiang Village: Artificial commercial forests are mainly firs and bamboos with artificial origin, and concentrated mainly in FFC and forest farms operated by the village, while the villagers only own scattered commercial forests. Nurturing and final cutting are subject to harvesting quota. Cutting area design must be conducted for cutting of more than 20 cubic meters. The harvesting quota of the FFC has increased recently, and can meet the demand. Individual farmer households

are difficult to acquire them. The application for harvesting quotas is generally filed by groups together, and then shared within the groups of villagers. The cutting of bamboo doesn't need harvesting quota, but farmers must register with the county forest station.

For artificial forests, disease and pest control relies mainly on the guidance and help of local forest technicians. Such measures as hiring people for fire prevention communication, slogans and publicity, and improving fire protection awareness are mainly taken for forest fire prevention. Between the villages and towns, fireproofing roads (shelters) are built (approved by forest bureaus). The fire fighting organizations are established, and primary posseman emergency groups are set up. Besides, fire prevention association is established on the basis of FFC, with a fee of 10 yuan/year for every permanent resident household. The fee is used to buy fire prevention equipment, and insufficient part will be borne by the FFC. The individual farmer households generally help with each other, while the FFC and forest farms will hire professionals for forest management and protection.

4.6 The advantages and disadvantages of the existing forest management

(1) The advantages of forest management

- Planning and the implementation of planning;
- Forestry projects promoted by the government are easy to import under a relatively complete and powerful administrative system;
- Control of forest resource stock under strict control;
- Forest protection and fire prevention;
- Strong promotion of forestry technical specifications under the executive-led structure;
- Guaranteed supply of roads and other public goods..

(2) The disadvantages of forest management

- As farmers are taken as the object of management in the design of forest management system, there exist significant forest management conflicts;
- Interests of farmers are neglected, thus farmers lack of enthusiasm for forest management;
- Farmers are less involved in forestry decision-making activity, thus the implementation of the scheme is less popular among people;
- Most forestry incentive policies are aimed at operators of large-scale, while ignoring the interests of ordinary farmers;
- Management system targets mostly at protecting forest stock, while neglecting the extension of increment;
- Cost of administrative operations is very high, thus forestry sees a vicious cycle of dilemma of charges.

5. Analysis of the constraints on the participatory forest management in the pilot village/FFC

5.1 Mechanism and basic requirements for the implementation of PFM

Forestry property arrangement: Participation is a process where people continue to seek efficient use and control of resources, and then benefit from relevant activities. Only farmers who own actual usufruct and management rights of forest resources and share the benefits of resource usage will positively participate in community forest management. Therefore, rational forestry property arrangement based on the use and control of resources is a prerequisite for encouraging farmers to positively get involved in such management activities.

Villages' autonomy and capacity building: The community, especially the poor and women, should have a say in forest management, and the power should be enhanced constantly. Above all, the right to make decisions and the supervision right are the key to achieving sustainable forest management, which are important in participatory forest management. The acquisition and implementation of such rights depend on village-level democratic processes and capacity building of villagers and institutions.

Profit sharing: Participation does not mean that farmers are involved only in the development of relevant activities. People participating in the project can share interests (direct and indirect interests). If profit-sharing fails to be taken into account in the overall project design, we can not and should not expect poverty-stricken people in rural areas to take active part in any development activity.

Forestry incentive policy: In terms of forestry development process, forestry policy has a function of positive stimulus with regard to providing villagers with manuals on numerous forestry development projects and guiding farmers to actively participate in forestry activities. In the implementation process of some projects which have been carried out, such as afforestation on barren hills, conversion of cropland to forest land, and improvement of low-yield protection forest. We can find that forestry policy is essential in offering guidance. Therefore, in terms of forestry project policy design, "participation" should be counted as a priority sequence for the acquisition and implementation of projects. This move is an important path to import participatory mode into forest management.

Homegrown self-help organization construction: Promoting the establishment of various self-help groups or organizations is vital for participatory forest management, and it is also an important guarantee for the implementation of management. These organizations should be self-help organizations, established to meet the farmers' needs to achieve sustained forest management and benefit from management. Moreover, these organizations should aim to increase farmers' participation and organization, match with external forestry technology and market, and improve

utilization efficiency of forest resources.

5.2 Attitude, behavior, and capacity analysis of different stakeholders

In accordance with different roles of the training personnel, they are divided into two categories: (i) members of FFC (including ordinary members and cadres) and (ii) farmers who are non-FFC members (including villagers committee cadres and ordinary households).

The leaders of the FFC: They expect to understand the methods and steps for developing the forest management plan during the training; obtain information on policies and favors of FFCs at the national and local level; acquire various preferential policies to strengthen the effectiveness of the program through the implemented forest management plan. In the training, they actively participate in various games; eagerly express their views on the current forest management conditions and future orientation of forest management. They join the whole process of forest management plan development of the FFC, and manage to incorporate their own ideas into the plan through their actions.

Ordinary members of the FFC: They hope to learn some new technologies and methods for forest management, and gain an understanding of new policies and information. They actively express their ideas, but their suggestions are often difficult to be approved. They complain about the forestry policies that affected the interests of households (such as the restrictions on harvesting quota in natural forests and the policy discrimination towards small farmers in the harvesting quota requirement), expecting to take advantage of the forest management plan to obtain concessionary policies.

Farmers who are non-FFC members: They want to learn forest management knowledge and understand the current forestry management policies and regulations. They can speak out their ideas, but are indifferent to the forests managed by the FFC. Moreover, they query the effectiveness of the forest management plan whose formulation involves farmers.

Villagers committee cadres: They sincerely hope that the FFC operates well, but they think the government support is insufficient. They hope to convey their opinions and ideas to the superior with the help of us. They are very familiar with the forest stands of the whole village, and active in class to express their ideas. As the core of the forest management plan members, they join the whole process of forest management plan development.

5.3 The constraints on the implementation of PFM in the pilot villages/FFCs (existing policies, laws and systems)

(1) Empowerment of community forest management

Most rights of forest resource management are concentrated in government departments, while rights and obligations in community are asymmetric. This situation directly affects community's

enthusiasm and development potential with regard to participation in forest management. In fact, with a good understanding of its own resources, population, economy and cultural traditions, the community is most likely to formulate forest management programs and rules which are in line with community features and can reflect its interests. Thus, empowerment at community level is very important in the arrangement of policy and legal system. Empowerment means delegating powers (such as decision-making power, management and execution power, and usufruct) from government departments to rural communities, so as to increase the autonomy of community forest management.

(2) Ability of forest management

Forest resource management must be closely linked with the development of rural community. Meantime, it is important to promote the community to actively participate in forest management activities and benefits. Participatory forest management focuses on the participation of community members, so capacity building on local community members is particularly important in the long-term management of forest resources. Capacity building refers to not only the continuous improvement of farmers' management skills (such as techniques), but also their understanding of their rights, obligations and liabilities. This will not only mobilize community members to actively participate in management of forest resources. Also, community members can give additional recommendations on forest management.

(3) Platforms and channels for communication

In the implementation process of participatory forest resource management, it is critical to ensure smooth information. Therefore, it is important to build platforms and channels for communication between local farmers, government departments and community organizations at all levels in the process of participatory forest management. In terms of building the said platforms and channels, firstly, service duties of government departments should be specified; secondly, the organization of community members should be improved, so as to set up a platform for information exchange by means of self-help organizations.

6. Capacity building

6.1 Trainees (including FFC members)

The training target groups are: the members of the forestry cooperative and the farmers who are not the members of the cooperative, and other personnel (from district forest bureau and township forest station), given age group, especially the participation of the poor and women. The trainees consist of 57 members, including 26 members of FFC, 19 non-member farmers, two people from Huangshan Forest Bureau, four people from local forest stations, and six staff of villagers committee cadres. The proportion of the participants and facilitators is 7-8 to 2. They voluntarily fall into three groups, each group having 7-8 participants and two facilitators.

Table 4 Training personnel structure

Team name	personnel structure		
	Forestry bureau	Villagers committee	Villagers
Apple Team	2	2	9+6*
Orange Team	2	2	9+6*
Banana Team	2	2	8+7*

Note: * the non-member of FFC

6.2 Training methods and contents

In the training course, slides, cards, papers and other tools are used. The participants involve in group discussion of training purposes and problems, and use slides to present the pictures of different forest stands collected through field investigation. The training adopts many ways, effectively promoting the atmosphere, and improving the class efficiency. For instance, fruit varieties are provided at the reception at the start of training; a brainstorming method used in the process of SWOT analysis of different stands; and the waving discussion and joint panel discussions in the whole process.

6.3 Drafting forest management plan

6.3.1 Taoyuan Village

6.3.1.1 Assessment and countermeasures of the present forest resources situation

First of all, through semi-structured interviews and group discussions, assessment indicators and assessment factors of the forest are set. Villagers think that the key to evaluating the forest management is how much income it can bring, and that it is the healthy forest and happy family, and secondly, it is whether the forest has good ecological benefits and can improve the environment of the village (good environment and well-being of the village).

Under the guidance of the facilitators' questions, the villagers respectively evaluate bamboo forests, artificial fir forests and natural forests managed by Huimin FFC. In this process, the useful information in the discussion is recorded on large sheets of paper, and the logic trees of all the stands are finished together. The past and recent changes of all the stands, the development and the outlook, the measures and reasons to achieve the target, among others, are discussed. The results of evaluations and countermeasures are as follows.

(1) Bamboo forest

The current management conditions and existing problems: The management conditions of bamboo forests are poor, mainly because of the wild boars' destruction and delayed nurturing. As boars cannot be killed, there are no specific solutions to the problem. The delayed nurturing is mainly due to higher wages at that time, but local bamboo price is rather low (local bamboo sales

is monopolized by two companies). Therefore, incomes fail to meet expenses, leading to low enthusiasm. But the greatest advantage of bamboos is that the cutting is not limited by harvesting quota, and gains can be obtained during the harvest period.

The future countermeasures: Efforts shall be made to reinforce bamboo forest management, strive for policies to control the number of wild boars, break the monopoly of wood and bamboo sales resulted from the township government policy and elevate market openness to increase purchase prices for bamboo, and seek for the policy support of bamboo development.

(2) The artificial fir forests

The current management conditions and key problems: The management conditions are basically satisfactory, up to the middle level and even better. The main reasons why forest stand growth potential has not yet been fully explored are as follows: 1. The government has restrictions on slash burning. However, slash burning can change the growing environment of firs, especially young firs, save labor and fertilizer, and improve the growth speed of firs. 2. The nurturing is not carried out in time due to low output of the first nurturing. At the same time, due to poor road conditions, nurturing is time-consuming and labor-consuming. Moreover, the labor force is in short. 3. Failure to plant trees in the right places. The government afforestation project has firs planted on the slope facing the sun or in the places with infertile soil. They fail to plant the right trees in the right place and do not realize sound seeding or fine breeding. 4. The diseases and pests, together with withered trees, are not disposed in time.

The future countermeasures: Right trees shall be planted in the right places. On the basis of strict management, they seek for the ease of policy on slash burning. They reinforce the nurturing and management, apply for subsidies at the FFC level to defray the labor cost, and expect forestry departments to provide technical support and guidance to solve the problem of diseases and pests.

(3) The natural commercial forests

The current management conditions and key problems: The reform of the natural forest is the key to the future management of FFC. The rating of the farmers on the natural commercial forest management is poor. They think natural commercial forest output and economic benefits are low. But its advantage lies in the diversity of tree species, fewer diseases and pests, and good effect in preventing fire.

The reasons for poor natural commercial forest management are as follows: Managing the natural forest brings no income, but there exist local natural forest protection policy restrictions. The farmers cannot conduct normal nurturing and renovating. Their location is usually relatively poor, mostly in the protruding places such as mountain tops or ridges where they are severely affected by the disasters like windstorm or snows, and damaged seriously, but development cost is high. They are mixed forests mostly with broad-leaved trees and many species. Though they have

positive significance for the prevention of fire and pests, the dominant tree species are not apparent, the output is low, and the economic benefits are not good.

The future countermeasures: Efforts shall be made to apply for the quota for reforming the natural forest and artificially reform and nurture it. The farmers also ask the government to relax control over it, and reduce the standard for low-yield and inefficient forest, and seek for the policy support for applying the natural forest to increase farmers' income.

6.3.1.2 SWOT analysis and the strategic selection

For the part of farmers, the main advantage of the current Huimin FFC lies in good natural conditions, and no conflict with the village, so it is convenient to apply for afforestation approval. The disadvantage is that cash crops like sasanqua are subjected to narrow scope and impossible to gain large-scale growth. The road conditions in the forest areas are terrible, but no capital can be used to build roads. And natural forest area is too big. As for opportunities, the state gradually increases support for FFCs and timber market sees rosy prospect. The challenges come mainly from the further intensified national natural forest protection policies and restrictions, and the application for renovation quotas becomes increasingly difficult. Consequently, the income of FFC members is not improved.

(1) SOWT analysis of bamboos

Strengths and opportunities of bamboo forest management:

- The local climate, soil and the like are fit for the growth of bamboos and the villagers have the experience and practice in managing bamboo;
- Compared with small farmer households, the FFC has scale advantage, and it is more professional with special people responsible for management and technology;
- Bamboo forest management is not subject to harvesting quota, so the management is relatively flexible with relatively strong autonomy;
- Despite local bamboo monopoly, openness is the market trend. It will elevate prices and benefits.

Weaknesses and challenges of managing bamboo forests:

- Poor road conditions in forest area;
- Lack of project support and capital to build roads in the forest area;
- The sales of bamboos are subject to township government policies and the purchase price is rather low;
- The poor growth of bamboo due to poor economic benefits, little investment in nurturing and low yield.

(2) SOWT analysis of artificial fir forests

Strengths and opportunities of fir forest management:

- The local climate, soil and the like are fit for the growth of firs;
- The villagers have the tradition of managing firs and have technical guarantee;
- The fir forest management has a foundation, and relatively loose policy environment;
- Brisk market demand, optimistic policy improvement and improved income expectation.

But there also exist some problems concerning fir management, for example, poor forest road conditions which contribute to high cost of nurturing or cutting of firs. The shortage of capital makes it impossible to improve the current situation in the short run. The fir forest faces great pressure from disease and pest control, fire prevention, and lack of technology and capital. The harvesting quota management also has a negative impact on the interests of fir forest management.

(3) SOWT analysis of natural forest

The stand structure of natural forest is relatively good with stable form, good effect of fire prevention, few occurrences of diseases and pests, and distributed with some pines and sweetgums. After appropriate reform, the significant stands of target trees can be cultivated.

The existing disadvantages and obstacles: The worse forest road conditions and high cost of reforming. The main policy obstacle is the difficulty to obtain harvesting quota. National natural forest management policy becomes increasingly strict, the harvesting quota gets smaller. In fact, the policy that does not allow artificial intervention has great impact on the natural forest management of the FFC.

6.3.2 Wenxiang Village

6.3.2.1 Assessment of the present forest resources and countermeasures

First of all, through semi-structured interviews and group discussions, assessment indicators and assessment factors of the forest are set (given the experience in Taoyuan Village, the method of handing out cards and letting farmers write has been given up). Villagers think that the key to evaluating the forest management is how much income it can bring, and that it is the healthy forest and happy family, and secondly, it is whether the forest has good ecological benefits and can improve the environment of the village (good environment and well-being of the village).

Under the guidance of the facilitators' questions, the villagers respectively evaluate bamboo forests, artificial fir forests and natural forests managed by Xiangfu FFC. In this process, the useful information in the discussion is recorded on large sheets of paper, and the logic trees of all the stands are finished together. The past and recent changes of all the stands, the development and the outlook, the measures and reasons to achieve the target, among others, are discussed. The results of evaluations and countermeasures are as follows.

(1) Fir forests

The management conditions are very unsatisfactory, the output is only 6 cubic meter per mu, and economic benefits are not high. The main reasons are as follows: due to insufficient soil fertility,

the soil is not fit for the growth of firs. They fail to plant the right trees in the right places. Management is not in place for internal management reasons. The ordinary members have sufficient influence on the decisions of the FFC, and they are not active enough to participate in the management of the FFC. Besides, the cadres of the FFC are not professional and don't have enough time and energy to manage the affairs of the cooperative and attend to forest management. The roads in the forest areas of the FFC are not in good conditions, and the cost of building and maintenance is high.

The future countermeasures: Efforts shall be made to gradually replace the fir forests with bamboo forests. Plan for the next five years shall be made with a view to finishing renovating and planting bamboos, adopting revenue and expenditure disclosure system, making the financial transactions known to the public, strengthening the democracy and transparency of decision-making, strengthening the supervision of the members and affairs of the FFC, inviting the members to participate in the management of the FFC, strengthening communication with the competent forestry authorities, striving for the project and support, and maintaining the existing roads and improving the traffic conditions.

(2) Bamboo forests

The management conditions are relatively good, though past years witnessed extensive management. After the nurturing in recent years, the bamboos have grown well. However, the standing bamboo rate is rather low, reaching 200 bamboos per *mu* at mos, due to too many wild boars, lagged nurturing, and high nurturing cost arising from growing wages.

The future countermeasures: Efforts shall be made to strengthen the management and protection of the bamboo forests, timely nurture the forest and expand bamboos sales, set up bamboo processing plants, increase the added value of bamboos, and improve the cooperative's gains.

6.3.2.2 SWOT analysis and strategic selection

Farmers think that the main advantage of the current Xiangfu FFC lies in the good climate and soil for bamboo growth, and the village support for the development of the FFC. Therefore, with the existence of the FFC, forestry production and reform of forest stands can be well organized. The disadvantage is that the continuous cultivation of the firs leads to the decline of the fertility of the soil, so that the land is no more suitable for fir forest management. In the FFC, there also exists capital restrictions, and the cost of building and maintaining the roads is high. The tea price of the FFC and the village can't increase due to the lack of reputation. The opportunity is that the harvesting quota only applies to the firs rather than bamboos, so the FFC can, as the first trier, establish a bamboo shoot processing plant to expand and improve the uses of and benefits from bamboos. The challenges come mainly from the limited number of harvesting quotas. Too slow speed of fir cutting which leads to rather slow reform and regeneration of forest stands.

Meanwhile, there are a small number of bamboo processing plants, and the bamboo market fails to develop sufficiently.

(1) SOWT analysis of artificial fir forests

Strengths and opportunities of fir forest management:

- During the final cutting period, the road conditions in the forest area are good, which will create relatively good cash flow and benefits.
- The local climate, soil and the like are fit for the growth of firs. The villagers have the tradition of managing firs and have technical guarantee;
- Brisk market demand, optimistic policy improvement and improved income expectation.

Weaknesses of managing fir forests:

- At present the harvesting quotas are few and the regeneration rate can't meet the demand;
- The fertility of the soils declines, which is unfit for continuous cultivation;
- The fir forest faces great pressure from disease and pest control, fire prevention, lack of technology and capital.

(2) SOWT analysis of bamboos

Strengths and opportunities of bamboo forest management:

- The road conditions in the forestry area are comparatively good;
- The local climate, soil and the like are fit for the growth of bamboos and the villagers have experience and practice of managing bamboo forest;
- Compared with small farmer households the FFC has the advantage in scale and is more professional, having specific people responsible for management and technology;
- Bamboo management is not subject to harvesting quota, so the management is relatively flexible with relatively strong autonomy, and there is much potential for price increase.

Weaknesses and challenges of managing bamboo forests:

- The planting and nurturing of bamboos require too high cost and many labor forces amid growing wages. At present, in Xiangfu, nurturing 1 *mu* of bamboos needs three workers, and at least 60 yuan needs to be paid for every worker.
- There are a small number of bamboo processing plants in the village, and setting up a bamboo processing plant is too expensive and risky to some degree.

6.4 The needs of villagers/FFC members in the development of forest management plan

In the process of training, survey has been done on whether participants have forest management plan. The survey shows: villagers have a relatively detailed plan (scheme) for future management of their forests, small farmer households have management plan “in” mind; while large forestry operators nearly formed their management planning program, but lack of standardization. In this sense, it is necessary to develop forest management plans.

The specific need of farmers is not a simple forest management program, but an embodiment of their own thoughts and practices in the plans, and have them recognized. The traditional way of formulating plans is too doctrinal, which witnesses a large gap with real forestry production, and lacks of the participation of local people and the guarantee of implementation. Consequently, the plans are put aside and fail to be converted into action plans.

Farmers' demand corresponds with their management goals. Take the cooperative organizations as an example, the target of forest management is divided into two parts: (i) bringing substantial revenues to FFC members; and (ii) ensuring sustainable development of the forests. There are two purposes of participating in the study of formulating participatory forest management plan--(i) how to put your ideas into the scheme, and (ii) whether the forest management policies can change corresponding with the plan and how to change upon the completion of the plan.

6.5 Assessment on the capacity building

We acquire the evaluation on the implementation of training objectives through three aspects: (i) feeling of the facilitators and the response of participants, including participants' response to questions, and understanding of the questions, which constitute the most direct feeling of the facilitators about the effect of training; (ii) feeling and ideas of the participants in discussions and the facilitators' intended and conscious talks; and (iii) use of the training assessment tables in the textbooks. The results are as follows:

Knowledge: To gain an understanding of the process and relevant knowledge of formulating the FMP. In the heart of every small farmer household, there is a "forest management plan", and according to environmental changes, they make plan for their forestry production. However, this plan is not in written form, and only the relatively large farmer households might have a complete plan or scheme. In general, the larger scale means more concrete plan and clear-cut goals. And they can, according to the policy environment, continuously seek for opportunities and adjust their goals. Most farmers think that the forest management requires planning. Despite different concepts and processes, and unfamiliarity with the concept of "participation", they understand that PFM is the management involving large and small stakeholders of the forests" after explanation is given.

Attitude: To gain an understanding of the different needs and views of the main stakeholders in participatory forest management. Generally, participants are concerned with their own interests, particularly economic benefits, while their concern for public interest is relatively low. The four indicators in the training materials are too shallow, and difficult for farmers to understand. For instance, a favorable environment and welfare for the village seem not the major concern of ordinary farmers. They tend to be more concerned about the growth of their own woods and how many benefits they can gain from them. The farmers are also concerned with the environmental

impact to a certain degree, but only limited to a small scale, for instance, whether their own farms at the foot of the hill can be washed and damaged. When it comes to management, farmers will also consider the role of the forest. So even if the policy allows farmers to reform the natural forest, they would not conduct massive cutting. They generally carry out stand improvement in the sites with good conditions, usually choosing clear-cutting by groups. For the rocky hills with relatively poor conditions and the areas easy to see soil erosion, farmers generally do not carry out stand improvement because the cost is too high and their efforts in this regard won't bring good returns.

Skills: To strengthen participants' ability to facilitate the preparation in participatory forest management and development plan with a group of forest farmers. Examination is relatively difficult. The farmers can't understand "how to do the forest management trend analysis" and "how to use proper analytical framework to evaluate the forest management system", for often they thought "It is ok as long as they know what and how they will do in the future". As they need knowledge that can directly solve their practical problems in production and operation, instead of those doctrines. The participants will be able to express their minds, plans, and experience, and they are filled with enthusiasm and expectations of the plan. The plan drafting needs some education and professional backgrounds and experience. The capacity of the planning group is superior to ordinary farmer households.

Upon conclusion of the training, after repeated explanations and exchanges, participants fill out the trainees' results shown in table 5 as follows:

Table 5 Weighted statistics for participants training results

Evaluation items	Knowledge, ability					
	Before training		After training		The difference before and after training	
	T	W	T	W	T	W
To define participatory forest management and identify the roles of farmers and foresters	1.38	1.48	2.95	3.10	1.57	1.62
To describe major duties of a facilitator	1.57	1.62	3.67	3.86	2.10	2.24
To explain how to prepare for participatory forest management plan	1.38	1.48	3.48	3.76	2.10	2.29

To demonstrate how to make a framework for assessing a forest management system	1.05	1.10	3.38	3.52	2.33	2.43
To demonstrate how to assess a forest management system using an appropriate analytical framework	1.43	1.29	3.57	3.71	2.14	2.43
To identify additional information needs and design assessment methods to meet those needs	1.48	1.38	3.33	3.38	1.86	2.00
To demonstrate how to make a trend analysis in forest management	1.52	1.48	3.67	3.81	2.14	2.33
To demonstrate how to make a SWOT analysis	1.33	1.38	3.48	3.57	2.14	2.19
To demonstrate how to identify strategic options	1.14	1.19	3.86	3.95	2.71	2.76
To explain how to use a logical framework to make a forest management development plan	1.48	1.52	3.57	3.67	2.10	2.14
To explain how to develop a PFM monitoring system	1.14	1.29	3.71	3.57	2.57	2.29
To demonstrate how to develop a PFM monitoring framework	1.57	1.71	3.62	3.48	2.05	1.76
To support farmers to prepare a draft forest management development plan	1.19	1.29	3.05	3.33	1.86	2.05
To demonstrate how to enhance the likelihood of implementing a forest management development plan	1.10	1.00	3.14	3.24	2.05	2.24

Note: T-Taoyuan, W-Wenxiang

Although we get the results of evaluations, the table could not fully reflect the facts of the training, and many above-motioed evaluation criterions are incomprehensible to the villagers. It is same case with facilitators when they do not read materials carefully. The training is “participatory”, but still treats farmers as ignorant. There exist some defects in the arrangement of training process and materials with regard to consideration of farmers’ actual situation and needs.

Through the training, the farmers gain more understanding of forest management and planning. They can come up with a more systematic analysis of and evaluation on forest management, and care about forest benefits. In particular, they become more aware of environmental benefit.

Through the training, the farmers become more capable in forest management and planning. They master broadly systematic planning methods. In the process of formulating the forest management plan, the farmers learn about analytical methods like logic tree, and know target selection procedures. Meanwhile, the farmers further sort out their knowledge about forestry management and their needs for forest management going forward.

According to the table 5, before the training, most participants lacked of understanding of the concept, connotation and implementation methods concerning participatory forest management. After the training, they established the concept framework of PFM and can participate in some basic work on formulating participatory management plan. However, generally speaking, a few days of training is not enough to enable the villagers to independently develop the Brief Forest Management Plan.

7. Review on forest management policy and institution at national, provincial and county level

7.1 Cutting quota system

Since the very beginning of the founding of the People’s Republic of China, the government has made a strict system for timber production, transportation, distribution and sales. In 1950 the *Guide to National Forestry Work* was issued, which integrated the public forest cutting and the timber supply of public and private forests into national plan. The timbers of private forests also were brought into the unified purchase and management in 1952. Since 1953, the woods cutting, distribution, regulation and transportation were strictly regulated in accordance with the timber production plan approved by the government, and then a relatively complete program management system came into being. The following changes mainly show in the division of power among all the government departments in formulation and implementation of the timber production program.

The concept “harvesting quota” appeared first in the Forest Law promulgated and implemented in 1984. Accordingly, the Provisional Forestry Regulations on Annual Harvesting quotas issued by

the former forestry department in 1985 made the provisions on forest cutting in the implementation of the scope and work units, foundations and approval methods and procedures, etc. The national forest harvesting quota system was implemented as of 1986. Afterwards, the regulations were revised once every five years. Each province can formulate its actual implementing rules according to its actual situations.

In 1986, the former forestry department issued the *Rules for the Implementation of the Forestry Law* approved by the State Council, which put forward and developed detailed provisions for the application and examination of tree crop harvesting license.

In 1998, the Forestry Law was modified, which included private forests of farmers and individuals in the private forest lands and waste lands in national annual harvesting quota system. A relatively complete forest cutting and management system was established which took “the harvesting quotas as the core and licensed cutting, licensed transportation and timber processing supervision as the keystone”.

In 2003, the State Forestry Administration regulated the cutting methods for artificial commercial forest. The forest harvesting quotas of artificial commercial forests, which established and implemented forest management plan in accordance with the law, were confirmed based on the rational annual forest felling amount in the forest management plan.

In 2009, the State Forestry Administration issued the *Opinions on Reform and Improvement of the Cutting Management of the Collective Forests*, which are shown in the following aspects:

- (1) Examine the annual forest harvesting quotas based on forest management plan;
- (2) Simplify cutting categories of the forests. The cutting categories of commercial forests can be simplified as final cutting, improvement cutting and other types of cutting. The cutting categories of public-welfare forests can be simplified as improvement cutting, renovation cutting and other types of cutting. The unconventional cutting like the regeneration of low-yield (inefficient) forests, salvage cutting and requisition of forest lands are all classified as the other types of cutting.
- (3) Change the management methods for forest harvesting. Simply design for the cutting area. The forest owner can manage independently before, during and after cutting. The forestry department can provide guidance and supervision.
- (4) Regulate the harvesting quotas control from double entry control of “storage and volume” to single control of “storage”.
- (5) Allow the harvesting quotas to carry forward during the management period. All the harvesting quotas of the commercial forests can be carried forward year by year during the five years of implementation period.
- (6) Implement the timber production plan for the record system.

Keeping pace with the other parts of China, Anhui Province has implemented a strict forest

harvesting quota management system since 1987. In 2009, ten counties (cities and districts) in the province were involved in the pilot program for forest harvesting management reform launched by State Forestry Administration. The contents of the reform are mainly:

(1) Establish the forest harvesting quota control management system based on the forest management plan. The annual harvesting quota during the “11th Five-Year Plan” period, distributed by the provincial government, should be a general control, and quota departments can be flexibly set within the total quotas by local government. The timber production plan for the record system should be implemented.

(2) Simplify the forest harvesting management chain. The forest owners can submit their applications to the forestry station or directly to the competent forestry authorities at the county level, and other examination and approval procedures shall be cancelled.

(3) The quota balance of the current year can be carried forward for later use.

Within the harvesting quotas approved by the state and the province, Huangshan District used the national unified software to formulate its harvesting quota plan. In 2009, Huangshan District, as the pilot place for the forest cutting management reform of the State Forestry Administration, carried out the reform as follows:

(1) Cancel the license system of bamboo cutting. In 2009, Huangshan District cancelled the license system for moso bamboo cutting. To prove legal sources, transportation certification is required.

(2) The final cutting age of the fast-growing and high-yield fir forests was shortened from 26 years to 21 years, so as to bring economic benefits to operators in advance.²

(3) The final cutting is controlled by both area and storage, dominated by area control. As long as area demand for Harvesting license (a subcompartment of 75 *mu*) is met, clear cutting can be implemented, but Harvesting license is still examined and approved according to storage.³

In 2010, Huangshan District implemented corresponding reform with regard to the forest cutting activities, including:

- The farmers’ small scale cutting needn’t cutting design or any fee;
- Cutting of more than 100 *mu* of artificial forests, 50 to 100 cubic meters of natural forests each time, and cutting of a subcompartment of more than 20 cubic meters (including improvement cutting) need cutting design;
- If public-welfare forests or natural forests cutting are in the same subcompartment, joint household cutting of more than 20 cubic meters also needs cutting design.;

² This only tried on the collective forest farms and state-owned forest farms, instead of at the farmers’ level.

³ The principal of the forestry policy department of the Huangshan district forestry bureau introduced that in the past the clear cutting area could be of only 75 *mu*, and now expanding to 150 *mu*, which broke the rules, but didn’t break the law. But the forestry institutional head Mr. Yu said it was still of 75 *mu* nowadays.

- The charging standard for cutting design is five yuan/cubic metre. Sample plot should be made for work design according to the procedures. However, due to consumption of too much labor, angle gauge is used for forest measurement. The design for final cutting areas should be undertaken by qualified county forestry planning and design institutions, while improvement cutting design can be done by town forestry station on a commission basis.

7.2 Taxes and charges

After the founding of the People's Republic of China, our country basically implemented financial management system of "unified collection and allocation of funds by the state". The main taxes were agricultural tax and industrial and commercial taxes. After the reform and opening-up, the forestry tax system experienced a series of changes broadly in three stages:

Stage 1 (1983-1987): China imposed tax on agricultural and forestry specialties, income tax and product tax.

Stage 2 (1987-1994): System of fixed quotas for revenues and expenditures were universally implemented in enterprises, the forestry industry enterprises exited from tax for profit and adopted payment for lumpsum profit. At the same time, the state began to impose value-added tax (VAT) at a rate of 14 % of the added value of the wood products processing. The state unified the rate of tax on agricultural and forestry specialties at 8%;

Stage 3 from 1994 to the present: In 1994, the state carried out significant reform of taxation system, implemented the system of tax distribution, and set up VAT-based commodity turnover tax system. The state combined the former log product tax and tax on agricultural and forestry specialties into tax on agricultural specialties. The forestry production entities should pay tax on agricultural specialties in production process at a tax rate of 8%, and withhold the said tax in purchasing segment at the same rate, making the actual tax rate for forestry production entities reaching 16%. In some places, additional 10% local tax shall be included, making actual tax rate involving two 8.8%, or 17.6% (5% for state-owned forest enterprises in Northeast and Inner Mongolia forest regions, and 10% for other state-owned forest areas). The state restarted income tax again. In the reform of rural taxes and charges beginning from 2000, various provinces cancelled the tax on agricultural specialties.

Forestry charges include the forestry cultivation funds and fees for maintaining simple reproduction approved by the Ministry of Finance and the former forestry department, as well as charges of different departments in different regions.

From the beginning of the founding of the People's Republic of China till 1964, China gradually unified measures for the administration of forestry cultivation funds; in 1964, the state formulated the measures for the administration of forestry cultivation funds for collective forest areas alone.

The predecessor of the fee for maintaining simple reproduction was renewal and reconstruction funds for timber production. Afterwards, due to the forest timber market opening in the southern

collective forest areas, and other reasons, the forest industry system changed renewal and reconstruction funds into fee for maintaining simple reproduction and experienced the corresponding change of imposing from the sales volume quota to fixed proportion as per selling price.

Charge imposing in the forestry sectors fails to meet standards. Imposition items, standards, and rate vary from place to place, and so do allocation ratios of incomes among forestry departments. In the forest areas, local government appropriates some forestry funds to balance the budget, which is very common. For departmental interests, local government and forestry department continuously imposed new charges and increased charging proportion. Therefore, non-conforming forestry charging becomes increasingly intense.

In the rural tax reform in 2000, logs and bamboos were levied in the production process of tax on agricultural specialties at a tax rate of 8%. Meanwhile, the state lowered charging base price for forestry cultivation funds and fee for maintaining simple reproduction, improved the return rate of these two funds to producers, and cancelled unreasonable charges.

2003 witnessed a thorough rectification of charging items involving timber production and operation. All the administrative fees and items set by various governments below the levels of provinces, autonomous regions and municipalities, and by departments concerned were cancelled (such as timber production and operation management fees, township management fees, joint operation fees and forest road maintenance fees). The unreasonable fee items (such as forest protection and construction fees, forest resource compensation (capital), natural conservation management fees, forest protection and fireproofing fees, and forestry industry enterprise management fee) were also cancelled. The cancelling of such charging items as forest management fees, which had been published by the state, was put into effect.

In 2009, forestry cultivation fund was levied as per up to 10% of the sales income of timber products, and specific standards were examined by various provinces (autonomous regions and municipalities) given economic bearing capacity of forestry production and business operation entities or individuals. The eligible regions may set forestry cultivation funds standard at zero.

The tax on agricultural specialties of Huangshan District basically changed with the policy changes of the state and Anhui Province. For forestry fees, in 2000, the forestry cultivation funds and fees for maintaining simple reproduction were levied at 10% and 5% of tax base respectively (previously, the fee for maintaining simple reproduction was levied as 8%). In May 2005, the adjustment of tax base of forestry fees in 2001 was realized. In October 2009, for forestry cultivation funds of wood and bamboo, 10% sales revenue in the sales link was levied. The forestry cultivation funds of woods or bamboos which were home-grown or directly used for

processing was levied in the transportation link. Forest by-products and economic forest products were no longer imposed. Charging other fees other than forestry cultivation funds was prohibited, and fee for maintaining simple reproduction of the wood and bamboo was cancelled. In addition, the further processing of the woods and bamboos was promoted and the tax base of the timber materials and semi-finished parts and bamboos rose when these products were sold outside Huangshan District. For bamboo transported outside, the tax base increased by 20%, compared with an increase by 30% for other timber processing products, and 50% for logs (sold outside Huangshan district). The tax base of forestry cultivation funds showed an uptrend.

7.3 Micro-mortgage financing policy

In June 2003, the Central Committee of the CPC and the State Council issued the Decision on Facilitating Forestry Development, pointing that they would provide long term and low interest forestry loans to assist farmers, and would, according to actual situations, offer farmers financial discount. Relevant financial institutions shall properly liberalize loan conditions for afforestation and nurturing of individual farmers, and expand the microcredit and joint-guarantee loans to farmers and forestry staff, and the forest operators may apply for bank loans with mortgage of their own forest crop according to the law.

In May 2004, the State Forestry Administration issued the Measures for Forest Resources and Assets Mortgage and Registration (tentative), stipulating the procedures from the perspective of registered mortgage in this regard, and laying a solid foundation for the forest resources and asset mortgage loans.

In June 2008, the Central Committee of the CPC and the State Council issued the Decisions on Comprehensively Boosting Collective Forest Tenure System Reform, which further clarified the requirements for improving credit guarantee methods for forestry mortgage loans and strengthened forest tenure mortgage loan system. Afterwards, various local governments unveiled appropriate administrative measures for mortgage loans to stipulate forest tenure mortgage loans in details.

As early as 2004, Anhui Province began to implement the national forestry credit and loan supporting policy, liberalized the loan conditions and extended the repayment deadline, and expanded the small loan credits and joint-guarantee loans in the cases of farmers and forestry staff and allowed the farmers and other forest operators to apply for bank loans with mortgage of their own forest resources.

In 2006, Anhui Province began the forest tenure mortgage loan operation in the provincial pilot areas like Ningguo and Huangshan. In 2007, the province implemented a comprehensive reform of the forest tenure system for collective forests and expressly required to improve forestry financial service and to operate the forestry resources and asset mortgage loans. In 2009, the

province further strengthened the financial support for forestry development, requiring financial institutions to positively operate forest tenure mortgage loans, small loan and joint-guarantee loans to forest farmers. It boosted the small credit loan based on the combination of the farmers' credit assessment and forest tenure mortgage and evaluation-free and recyclable. It expanded the coverage of agricultural and forestry loan and established the forestry loan credit system on the basis of the forestry asset value, and explored the combination of the loan management pattern of "FFCs + credit agencies" and the small credit loan of the forest farmers. In the important forest areas, joint working pattern was sought of the forestry sectors, financial institutions, and asset appraisal institutions. The priority was given to support the establishment of new rural forestry financial institutions like banks, rural mutual capital cooperatives and finance houses at the township and village levels in the main forestry counties (cities and districts) and bolster various guarantee insitutions for forestry loan guarantee businesses.

In 2006, Huangshan Forestry Bureau and Huangshan Credit Cooperative jointly stipulated the Methods for Huangshan Forest Tenure Mortgage Loan to prescribe comprehensive and detailed rules for six aspects--the nature of forest tenure mortgage loan, prospective borrowers and loan qualifications, specific scopes of forest tenure mortgage and loan application procedures, terms and interest rates, and supervision and regulation.

In 2007, Huangshan Rural Credit Cooperative (now called Rural Cooperative Bank) began to handle forest tenure mortgage loan business. In 2010, forest tenure mortgage size stood at around 30 million yuan. The state financial discount interest for forest mortgage loans directly went to farmers, which had nothing to do with the credit cooperative. The lending rate was decided by the trade and mortgage of the applicants. When the forest tenure was mortgaged, the private hills and responsibility hills should be treated differently. Moreover, it was stipulated that loans may be granted to only the borrower who is property owner. In December 2008, Huangshan District set up Forestry Guarantee Centre, and joined hands with Rural Cooperative Bank in the disitrect to offer forest tenure mortgage counter guarantee services for private forest farms (silviculture enterprises).

7.4 Public forest compensation fund management system

In 1998, the revised forestry law stipulated, "the state establishes forest ecological benefit compensation fund to provide silviculture, tending, protection and management of protection forest and forest for special purpose. The forest ecological benefit compensation fund must be earmarking, and may not be used for other purposes". In November 2001, China started forest ecological benefit subsidies for pilots with subsidy standard of 5 yuan/mu; in 2004, various provinces and cities issued specific measures, and the forest ecological benefit compensation was comprehensively implemented nationwide. From 2010 onwards, annual compensation standard

for collectively and individually owned national public welfare forest was adjusted to 10 yuan/mu, including 9.75 yuan for management and protection subsidy and 0.25 yuan for public management expenditure. For the key public welfare forests owned or managed by individuals, the farmers should undertake all the responsibilities with regard to public welfare forest management and protection. The country had strict restrictions on the systems for logging, requisitioning, and transference of public welfare forests. Final cutting and commercial cutting of national public welfare forests were forbidden, and limited cutting and prohibition of cutting were adopted, along with a three-tier protection management. The first-tier protection includes nature reserves, historic sites and revolutionary commemoration, natural virgin forests, the core forest area for water source protection forest and the forest and shrub in ecological fragile areas, and cutting of them was forbidden. The secondary-tier protection covers natural broadleaf forest and natural conifer and broadleaf mixed forest among protection forests, and border protection forest, scenic forest, environmental protection forest, nursery forest and so on among forests for special purpose, which could only execute tending or regeneration cutting. The third-tier protection includes artificial forests among the protection forests and the key protection forests and forests for special purpose other than those in the first-tier and second-tier protection, whose tending or regeneration cutting is allowed. Huangshan District implemented limited cutting and prohibition of cutting within national public welfare forest according to national and the provincial policies. The public welfare forests along the transit lines, in reservoir area and Taiping Lake scenic area are overall prohibited to cut (including firewood cutting).

The public welfare forests out of the above region can execute tending cutting and regeneration cutting according to actual needs, but reporting shall be made and application shall be submitted to the local forestry station. The forestry station designs according to the coverage, density, and other indicators, and applicants can fell after obtaining harvesting quota. The small firewood can be cut; the fir in the public welfare forests can execute thinning in the form of selective cutting. Since 2007, the collection of pine gum in the public welfare forests has been banned.

7.5 Government's role in market-based environmental services

No cases or examples were found in investigation with regard to the use of market means to provide forest environmental services compensation.

7.6 Non-timber forest products

The main non-timber forest products in Taoyuan Village are as follows:

- Pine gum. There is a tradition of pine gum collection, while the production is relevant to the amount of resources and pine forest resources are basically within the natural forests. Since 2007, the collection of pine gum has been entirely banned;
- Using wooden forest products to produce non-timber forest products, such as mushrooms

and *ganoderma lucidum* is restricted by the government due to its great damage to natural forests, and the government implemented strict examination and approval system for its development;

- Digging medicinal herbs on the mountain, such as astragalus, and picking the seeds of geranium in the stone mountains, all of which are hard to form industrial effect due to low yields.

The main non-timber forest products in Wenxiang Village are as follows:

- Pine gum. There is a tradition of pine gum collection with a history of more than 20 years, while the production is relevant to the amount of resources and pine forest resources are basically within the public welfare forests. Since 2007, the collection of pine gum has been entirely banned;
- Use wooden forest products to produce non-timber forest products, such as mushrooms and *ganoderma lucidum*s. However, due to outdated techniques, poor quality of mushrooms seeds and great damage to natural forests, the development of these products has been restricted by the government in recent years, and the government has implemented strict examination and approval system for their development, resulting in the decline in some of these products;

7.7 Traditional forest-related knowledge and customary regulations

Lianshan (Controlled burning): Controlled burning is a main part of artificial afforestation, and also the traditional forestry experience and habits of local farmers. For controlled burning, the farmers usually choose the cloudy days before it rains to “Dayaodai” (build fireproof belt), gather and burn firewood and organize people to observe the fire and control the fire head. The farmers think that the advantages of controlled burning lie in increasing soil fertility and making soil porous and reducing the probability of disease and pest occurrence, etc. Generally after controlled burning, the fir forests can grow well without fertilization, whose growth is far better than without burning. But the forestry management department restricts the burning activities strictly for the sake of fire prevention.

The closing hillsides and prohibiting herds in the afforestation area: the herding behavior of the farmers destroy the young forests seriously, so closing the hillsides and banning grazing has become the main measures and traditional customs of protecting the young forests and increase its survival rate and the existence rate.

Changes between fir sticking cottage and planting seedling: Before the 1980s, for small area fir afforestation, sticking cottage was generally adopted, and shoots grew rapidly in the early stage, didn't need cultivation and soil preparation at all, and its cost advantage won farmers' favor. In the late 1980s, with growing afforestation scale, sticking cottage was gradually replaced by planting

seedling.

Forest tending: Fir tending is generally divided into young forest tending and half-mature forest tending. The young forest tending commonly starts after planting and lasts three consecutive years, twice a year, mainly involving cutting the shrubs and weeds. The half-mature forest tending commonly is batched into twice, about 12 years and 18 years after afforestation. Because the first half-mature forest tending is beneficial to the growth of trees and profitable after deducting investment, it has become a main forestry management measure identified by the farmers; later tending is often associated with the fixed number of years for final cutting and the harvesting quota constraints. The so-called tending becomes the disguised equivalent of the selective cutting. Pine forests, which all form from flying seeds, are mostly mixed forests which need no artificial tending. The frequency of stand condition improvement and investment level of bamboos are often relevant to the farmer's resources and income percentage, etc., mainly involving cutting and weeding.

Final cutting and renovation: Historically, the cutting method of the natural forests in Taoyuan Village was selective cutting (locally called "Badamao"), and the cutting way in successive years contributed to the sustainability of forest resources. This cutting way was gradually replaced by the small-size clear cutting by groups (locally called piece cutting) and artificial regeneration pushed by the forestry projects. From the 1980s, the percentage of artificial forest rose slowly. However, due to limited projects, the forest resources mainly stayed in natural state. But the good road conditions and substantial price rise of timbers in the context of open market intensified use of natural forest, breaking the forest natural replacement balance, making obviously higher proportion of secondary forests and lower timber production capacity. Especially after 2000, with increasingly severe natural forest logging constraints, wood profit margin and livelihood need drive rational farmers to start small area clear cutting (3-4 mu). To avoid punishment, they renovate artificially on the spot in time, forming the scattered distribution of artificial forests.

Pure bamboo forest: In most parts of Huangshan mountain area, for the bamboo forest management, there has been a traditional habit of leaving some broad-leaved trees in bamboo forests, whose fallen leaves can improve soil fertility, and the big advantage of broad-leaved tree canopy can also be used to prevent bamboo fractures because of snow pressure. But in Taoyuan village, the farmers cut out broad-leaved trees in the bamboo forest, forming the pure bamboo forest.

Farmer's explanation: Broad-leaved trees and miscellaneous shrubs have well-developed roots, which will affect the bamboo root expansion; Taoyuan's mountains are steep, resulting in generally poor site conditions for bamboo growth. It is site condition difference that makes Taoyuan Village seems not to focus on scientific bamboo operation mode.

Baked tea: Tea is a main source of the local farmers' income. In individual villages, tea income accounts for about 80% of cash income of farmer households. Traditional tea processes use wood as fuel; generally making dry tea of 100 jin needs wood of 500 jin, charcoal of 200 jin. Generally the farmers select to burn charcoal in the distant natural forests without roads. Although in policy charcoal burning is strictly forbidden, actually it is hard to control. the annual tea production of the village is 80 to 90 thousand jin (Houkui tea 150 yuan/jin, Huangshan Maofeng tea 80 yuan/jin or so), correspondingly tea production leads to greater consumption of natural forest resources.

Informal Rules of Forest Utilization and Protection: In the Investigation, we didn't see more specific or written formal rules for forest utilization and protection, and the farmers said they didn't need documents. They live in the forest for a long time, so every one of them knows the importance of forest fire prevention and will consciously abide by relevant laws and rules for forest utilization and protection.

Forestry Disputes Mediation: Usually disputes will be mediated by prestigious old people, villager groups, or villagers committee cadres (coordinator or security director). If the said disputes fail to be solved in this way, they can be mediated through further efforts of the forestry station or superior competent forestry authorities.

Technical Training Needs: Whether farmers learn and use new technology in the forestry production and management is directly relevant to the types and characteristics of the forest products. Farmers think that breeding of firs and bamboos can be based on traditional knowledge and traditional experience, so they have weak demand for new technology. However, farmers highly recognized the necessity and effectiveness of tea production technology training. 90% of them participated in Huikui tea production training in 2006. However, except the only tea production training, Taoyuan Village carries out a small number of forestry production technical trainings, so imitating, watching TV and consulting professionals become their major means to get production and business operation techniques and market information.

7.8 Others

Major forestry projects implemented in Huangshan District are as follows:

(1) Forest quality improvement project

Since 2009, Huangshan District has begun to organize the implementation of the forest quality improvement project, with a view to gain substantial improvements in the following five aspects--stand growth, unit area storage, farmers' income, forestland output, and forest ecological benefit. From 2010, the district arranged one million yuan of special funds for forest quality improvement.

(2) Afforestation project

Follow-up industry after returning farmland to forest. The afforestation subsidy was 100 yuan/mu

(liquidated in 3 years), but needed to match the low-yield and inefficient natural forest reform project, and the area must reach 30 mu of benchmark area. Farmers' small area afforestation generally fail to enjoy the subsidy. After 2010, for farmers who return farmland to forest, 3 mu/year quota of natural forest afforestation was given to each household, which could enjoy the afforestation subsidy for the follow-up industry after returning farmland to forest. The standard is 350 yuan/mu for fir, and 700 yuan/mu for bamboo; subsidies are paid to farmers in three years upon acceptance.

- Generally for bamboo afforestation, 300 yuan/mu subsidy is offered;
- Afforestation on wasteland and barren hills: This mainly refers to project afforestation and reforestation of shrub forests (actually low-yield and inefficient forest reconstruction).

8. Attitude and perception towards forest management policy and institution from stakeholders

8.1 FFC Members

8.1.1 Taoyuan Vilige

Forestland management in Taoyuan Village is dominated by individual household management, with a small number of FFCs and small scale, so the cognition and opinions of the farmers who are the members or non-FFC members are not much different to relevant policies. FFC members much expect cooperatives' policy support, especially forest road subsidies and non-public welfare natural forest logging, and doubt financial supervision of the cooperatives. Their views on the policies relevant to the FFC are as follows:

(1) Forestry tax policy

There are many benefits in the government's policy design for cooperatives. For example, as long as the forestland area of cooperatives reaches more than 200 *mu*, they can obtain the license of self-production and self-sale and enjoy VAT and income tax relief. However, wood purchasing is not allowed. For the farmers who are not the members of cooperatives, although producers and buyers meet directly, timber merchants should pay 13% VAT, and will inevitably cut purchasing price. From the field investigation, wood purchasing price in this area is basically identical, and duty-free effect is not obvious.

(2) Forestry subsidies

The members of FFC are difficult to understand the difference between agriculture and forestry subsidies, holding that from the said difference, they feel the state does not treat forest farmers as farmers, but as businessmen. Agricultural subsidies include comprehensive income subsidies and productive special allowance. In the mountain area, there are limited arable lands, so the forest farmers are hard to enjoy agricultural subsidies in fact. The government subsidies for forestry are mainly for low-yield forest reconstruction, whose offering is based on projects and strict

provisions, and it is hard for farmers to obtain.

(3) Control on the natural forests that are not public welfare forests

The members of FFC don't understand the prohibition and restrictions on the secondary forest reconstruction:

- The forests are not public welfare forests, and natural forest logging is to deliver the afforestation caution money. They don't understand why logging is not allowed;
- Secondary forest reconstruction is not deforestation. Many mountain farms are covered almost with useless shrub forests. The cutting aims at afforestation, which is good and serves as wealth for future generations;
- The forests of the FFC are mostly composed of natural forests. It is easy to find forestry land of more than 20 cubic meters, but difficult to make logging design (due to widespread liquidambar and pine trees in the forest, target tree species are hard to define);
- If the FFC doesn't have harvesting quota, its founding does not make a difference.

(4) For future development

The farmers generally consider it is more important to provide reasonable and effective policy support for the forestry:

- When the FFC develops to a certain extent, the lack of funds will become a serious constraint. At present, the cost of afforestation is rather high (more than 500 yuan/mu for firs), especially human costs account for a large proportion, and the cutting wages for a worker reaches 80-100 yuan. The farmers hope the government can provide favorable policies for afforestation and loans, relax restriction on low-yield forest reconstruction requirement, further elevate afforestation subsidies standards, provide financial support for building the roads, and help the cooperatives to seek additional financing channels.
- To organize and participate in related training, including:
 - Management personnel training (management method, financial system, and cooperative-related laws and systems.)
 - Technical training: Based on measurements of the soil for determination of the tree species selection, introduction of rare tree species, but they should carry out practical training, and the best program is "time short, earnings fast" training.

8.1.2 Wenxiang

The farmers who are the members and non-FFC members of FFC share basically same cognition and opinions on relevant policies, except the policies concerning FFC operation and management. Their views on the policies relevant to the FFC are:

(1) Harvesting quota policy

- The advantage of FFC lies in the separate cutting plans and self-production and sale of

products. They hope the policies on FFC can be more favorable, such as liberalizing the cutting limits of commercial fir forests (cutting age, area and method), and the harvesting quota of fir forests can be gradually cancelled. As long as the forest meets the standard, it will not be constricted. The procedures for examination and approval of cutting should be simplified.

- The cutting and application of the public welfare forests directly affects farmers' income, especially the policy of prohibiting pine gum collection is a practice giving up eating for fear of choking.
- The biggest problem of cutting design lies not in expenditure, but in timeliness, which directly influences timber marketing.
- After business promotion and investment attraction, bosses directly apply for timber harvesting quota. The development of non-government system is more favorable for the farmers to obtain harvesting quota.

(2) Forestry tax policy:

- FFC has timber business license and implements self-production and self-sales, lessening intermediate fees (monopoly). The government executes VAT relief in sales.
- For tax deduction of FFC, state tax bureau requires establishment of membership account. The local tax bureau questions the income tax relief. They believe 70% of the profits shared by the FFC members belong to bonus, so they should levy 20% income tax. The reason is that the forest land is of the nature of shareholding, which is expressly shown on the business license of FFC. Meanwhile, the FFC realizes the enterprise management mode, so its members belong to shareholders in nature.
- The FFC can improve the scale efficiency due to the large cutting scale and centralized plots. Every day the amount of scaling can reach 150 cubic meters. However, the ordinary farmers only can scale about 40 cubic meters. The scaling fee in the name is 15 yuan /cubic meter, but in fact it reaches at least 21 yuan. The design for cutting area will charge 5 yuan /cubic meter, but needs to include the fees for the meals of the design personnel as 1-2 yuan /cubic meter.
- It is not reasonable to lessen the bonus of the FFC members compared with other subjects of management due to the management fee of 50 yuan/cubic meter imposed by the Wenxiang Villagers' Committee according to thinning quota and final harvesting quota.

(3) Micro-mortgage loan policy

- The FFC primarily acquires the capital through introducing projects for policy consideration, commercial projects and loans for expanding operation. But the priority should be given to projects for policy consideration, followed by commercial projects. Loans would be applied

for in case of failure to acquire the former two projects.

- The procedures for the loan in the name of FFC are difficult to deal with, needing evaluation and mortgage. In 2009, due to financial difficulty, three management staff of the FFC applied for the loan of 30,000 yuan respectively in the name of their own to address the emergency.
- Microfinance standard on forestry land is raised from 50 mu to 100 mu. In fact, 30 mu is fairly suitable.
- For forest tenure mortgage loans, counter guarantee shall be offered by the guarantee centre. Generally the forestland area should reach 40-50 mu, and the loan amount is 60% of the assessed value.

(4) The project support for FFC

- In 2010, the FFC built forest roads of 1548 meters, paid for the roads from the acquired project funds of 300,000 yuan (forest road, low-yield forest reconstruction, fire belt construction). The project funds belonged to the province's financial allocations, and were allocated as supporting funds after acceptance;
- Projects are generally applied by multiple parties and used together, so mutual misappropriation is common;
- Afforestation is generally financed by projects among projects, otherwise the woods are hard to build.

(5) Suggestions for policy improvement

Compared with ordinary farmers, it is easier for cooperatives to obtain various forestry projects, but the sustainable development of FFC still needs relevant policy support:

- Financial support. Mainly infrastructure, especially the aspects like subsidies for forest road.
- Professional technical guidance. From the economic perspective, the income of simple nurturing of fir timber forests is not high. Only when the tree species are changed can they improve the output value and benefits. After cutting firs, planting bamboo has no effect on the environment, and can form block development. The FFC plans to gradually replace fir forests with moso bamboo forests, and accordingly develop bamboo shoot processing. In the regeneration process, it is needed to invite experts to offer training for FFC members, involving such topics as hole digging, planting, management, especially the techniques for improving stand condition of bamboo and those for finding bamboo shoots in winter and the subsequent processing techniques. They hope the government can provide technical guidance and support.
- Provide market information. As economic forests' needs for information are far more

demanding than those of wood, the government should make efforts in this respect.

- Address bear disruption, and increase shotgun quantity.
- Coordinate with the tax department about the FFC tax relief.

8.2 Farmers who are not FFC members

8.2.1 Taoyuan Village

(1) Review on the past forestry policies

Farmers basically hold a positive attitude for parts of the past forestry policies:

- Obvious is the efficiency of contracting the forests to the household system which was established at the time of forestry policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility, compared with the period of production team.
- The policies of opening wood market, cancelling wood purchasing monopoly of the forest industry enterprises and reducing forestry tax play a good effect, and synergy is notable;
- Compared with the forestry policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility, the role of the new forest tenure reform is to further define the line and rights of the mountain farms. The statement of the farmers is: that basically solved 10% of unclear boundary problems left from the period of the implementation of forestry policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility (but unclear boundary problems remain).

(2) Reviews on the harvesting quota system

Harvesting quota distribution: The majority of farmers think that the harvesting quota system is needed and they are used to the traditional logging management systems. Some farmers still think that the harvesting quota management system can standardize the management of tree crop cutting and safeguard the rights of farmers. Concerning about the determination of the village's harvesting quota, farmers consider when issuing harvesting quota according to the villages, the forest resource status are ignored, and the situation of forest resources is not the criteria of issuing. The ideal way is in line with forest accumulation of groups to issue harvesting quota and execute unified calculation according to villages' actual situations.

The farmers surveyed generally think that the distribution in their groups is essentially equitable, with the reasons as follows:

- Basically distribute according to need, respect the farmers' own decision. Among each other the farmers can coordinate. When the demand is large they can cut more, especially artificial forest quota.
- On the basis of ruling out the farmers who don't need the quota (migrant workers or those

lacking of labor), according to the population of the period of forestry policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility (or the areas, resources of mountain farms), distribute equally, and the quota will not increase due to birth nor decrease due to death. The quotas of farm household are comparatively even;

- Every year sees the distribution this way, so everyone is accustomed to it and has no opinions.

From the perspective of quota classification, the harvesting quotas for artificial forests (fir forests) are relatively loose and basically meet farmers' demands, so they are fairly satisfied and accept the annual management plan of artificial forest logging. Nearly all the farmers think the control of present natural forest harvesting is too tight.

The villagers think that only the minority may hackle trees, the results are sorted as follows:

- People afraid of the change of policies;
- People with a very low income;
- Lazy farmers;
- People with low level education;
- Farmer households of no labor and many girls; or farmer households of many boys will leave the mountain farm to the children;
- Farmer households which go out together and do not live in the village (even in the spring festival they won't go back to the village).

Compared with the past management, afforestation and cutting area designs formerly need the forestry sector's planning and will be charged for technology service (at the expense of 8% of timber value). Now neither design nor fee is required. the farmers think that "it is good to cancel them and the villagers actually do not need them because people know that good soil types is suitable for bamboos and stone mountains are fit for firs."

Effect of timber harvesting quota management system on forest tending: From rational management perspective, improvement cutting should cut small trees and leave big trees, cut curved trees and leave straight trees, cut inferior trees and leave superior trees, cut the dense trees and leave the loose trees. When the harvesting quotas are tight, the farmers will have adverse selection, and retain relatively few trees. If the farmers expect the later final harvesting quota be tight, they will be increasing thinning frequency and intensity after the trees are 15 years old. If relaxing improvement harvesting quota and the time limit of final cutting, the famers express that they will manage to tend at reasonable management request.

(3) Review on Forestry Taxes Policy

The farmers said previous tax burden was heavy, but they don't remember exactly specific tax

items.

In timber transactions, the government is responsible for only the management of harvesting license, and requires farmers' felling amount shall not exceed the harvesting quota. As for the existence of government intervention and the degree of influence on their income, farmers think it is hard to say, for there exist both advantages and disadvantages.

The farmers lack the cognition of forestry taxation reform, mainly because they don't directly pay taxes, thus they think the reform has no effect on their income. The general problem indicated from the farmers is that compared with agricultural policy, forest farmers enjoy fewer preferential policies but suffer more restrictions in forestry production process. Farmers hope forestry models agriculture, enjoy the favorable national policy. Their requirements for forestry policy improvement include: canceling "two funds"-- afforestation fund and reconstruction fund, increasing species subsidies, developing forest insurance, improving low-yield forest reconstruction subsidies, and elevating forest road subsidies.

Table 6 Farmers' demand for forestry policies, Taoyuan Village

Agricultural policy	Forestry policy needs
No taxes or dues	Cancel "two funds"
Fine varieties subsidies	Tree species subsidies
Agricultural insurance	Forest insurance (voluntary participation)
Food direct subsidies	Low-yield forest reconstruction subsidies (no area restriction preferred)
Mechanical subsidies (small tractors)	Forest road subsidies (accounting for at least 20% of the road cost)

(4) Evaluation on the Micro-mortgage Financing Policy

Farmers are the subject of the loan, and they apply for the micro credit including forest tenure mortgage loan mainly due to their capital demand and fund shortage. All the farmers think micro credit is good as it can solve their fund shortage.

Reasons of borrowing: The sequencing of reasons to borrow money: building houses (including buying houses), disease treatment, marriage, children's education, significant events, agricultural and forestry investment, and doing business.

Financing channels: Most farmers follow the principle of finding credit cooperatives for a large sum of money (more than 1000 yuan) and turning to individuals for a small amount of money, and they say that they are not familiar with other banks.

- 55% of households prefer credit cooperatives as the first choice;

- 20% of households turn to individuals as a preferred;
- 15% of farmers say they should check the amount to choose whether credit cooperatives or individuals as their preferred choice;
- 10% of households say that basically they don't borrow money.

Evaluation on the loan channels:

- They have used credit loans, but are not familiar with other lending means. Credit loans can be used in the event of important events. The existing problems are: lending rate is high (more than 9%); line of credit is only 10,000-20,000 yuan, people with credit can get a loan within 10,000 yuan at any time, while those without credit can get only 1,000-2,000 yuan of loan, otherwise they need guarantee. If an applicant hasn't repaid previous loan, he can't borrow. The lending of credit cooperatives depends on personal relationship. However, for a loan of more than 10,000 yuan, anyone should provide mortgage. And the credit cooperative will lend according to farmers' repayment ability.
- For small amount of mortgage loans, farmers need mortgage their passbooks and the amount in their passbooks will be checked. The line of credit for farmers is 10,000 yuan at most. It is hard for farmers to borrow money. While large forest farms, forest institutions and the households with forestland of more than 100 *mu* can get loans.
- There is no limit to secured loan, but farmers should provide savings deposit and house mortgage, while their houses are not valuable, and they are not willing to offer guarantee each other; and secured loan needs full guarantee (if the guarantor has a deposit of 10,000 yuan, the credit cooperative will lend 10,000 yuan).

Views on forest tenure mortgage loans:

- The procedures are troublesome with restrictions on the area of the mountain farms.
- Forest tenure mortgage loan is good as it can address some emergencies.
- Banks won't grant this kind of loan, and the farmers fail to apply for loans from local credit cooperatives.
- The forestland resources are limited, so they are unwilling to use forest land as mortgage.
- It is inconvenient because they only accept commercial forest (fir forest) as mortgage, and the forest must reach a certain size and storage with economic value. They won't accept house mortgage.

(5) Evaluation on the public welfare forest compensation policy

The farmers surveyed are unclear of the time when their forestland was classified as public welfare forest. Some said it was during 2004 or 2005, while others said it was in 2007. However, as for whether their forests were voluntarily changed into public welfare forests, 75% of the respondents said they volunteered and signed to confirm, while the rest 25% still signed to

confirm even they were reluctant. At present, their greatest concern is the public welfare forest compensation and tree cutting.

Standard of public welfare forest compensation: The farmers basically know the public welfare forest compensation standard of 4.75 yuan/mu allocated to each household. But they can't remember the year and the amount of acquiring the compensation. Some farmers said they only got the compensation for 2008 and 2009. Although this is relevant to the area of the farmer's public welfare forests (the greater the size is, the deeper the farmers' relevant data memory may be), yet it also shows that public welfare forest compensation does not occupy an important position in their household income.

For compensation standards, almost all the farmers said the compensation standard was too low. Some farmers think that the compensation they got was insufficient, and wonder whether some compensation was retained. As for how to determine the compensation standard, there are several representative views as follows:

- The trees in the public welfare forest can't be cut, which has an impact on farmers' income, thus the compensation should cover the farmers' losses. Though everyone says he could not determine the specific standards for compensation, yet all of them hope the standard could be higher. But they also said they have the obligation to contribute to environmental protection. Though opinions differ from person to person, they generally hold that compensation should be at least more than 20 yuan/mu, and the standard of compensation should pick up corresponding to the changes of prices.
- With less or no public welfare forests, and with no impact on the family income basically, the farmers are not concerned with compensation criteria, show indifference towards the amount, and accept the present compensation standards.

So we can see, the farmers' attitudes towards and opinions on policy are closely related with their own resources, and when the amount of resources is large and becomes an important source of their family revenue, farmers' wishes to improve the policy and elevate their income will be strong. This also shows that according to the resource differences, making policy adjustment flexible has an important significance for promoting the forestry development and increasing farmers' income.

Public welfare forest cutting: Because the compensation standard for the public welfare forests is too low, and the thinning and final cutting in the public welfare forests are under strict control, and the collection of pine gum is banned, the source of farmers' revenue receives considerable influence. The farmers makes an accounting: public welfare forest compensation standard is 4.75 yuan/mu (in 2010, it was increased to 10 yuan/mu, but until this investigation in December, the government had not yet granted compensation to each household, so farmers' calculation remains based on the former standard), so the entire village may have less than 50,000 yuan of

compensation. However, if the low-yield forest reconstruction is implemented, the selective cutting output will reach 0.5 cubic meters per mu, then 10,000 mu of public welfare forest could produce 5000 cubic meters, and the income will be far higher than 50,000 yuan of the ecological protection compensation. Therefore, between the low-yield forest reconstruction and public welfare forest compensation, farmers are more willing to reconstruct the secondary natural forests. As for whether to implement economic development in the public welfare forests, farmers generally think it unfeasible for the following reasons:

- In the forests, due to poor sunshine, insufficient, small clearances between trees, and water and shade arising from the leaves above, even economic crops are planted, they can't grow well;
- The mountain farms are closed; and
- The labor force is not enough.

Because of strict measures for public welfare forest management, when asked "if there exists public welfare forest withdrawal mechanism, whether will they withdraw?" 75% of the farmers choose opt-out for the reasons as follows:

- They can cut and sell trees and reconstruct their own forest lands to create benefits.
- They can solve the problem of their firewood. They could easily go to their forests by the river to cut their firewood. However, after their forests were classified as public welfare forests, they have to go to the distant mountain farms to cut. It costs labor and also affects their life concerning the use of firewood.

About 25% of them said they don't know whether to quit for two main types of reasons: some think whether to quit or not has no influence on their family, but if others in the group quit, they will follow. Some believe the forestry doesn't play an important role in their family, so whether to quit doesn't matter. Obviously, these two types of representative views show that resource possession and its contribution to the family income of farmers have a direct impact on farmers' opinions and evaluation on the policies, and how to adjust the policies and appropriately increase the flexibility of policies according to difference in farmer household resource possession is their policy expectations.

Proposals to the public welfare forest management: Because of the problems concerning division, compensation and management of public welfare forest, farmers put forward some requirements about the public welfare forest management policies:

- Increase the public welfare forest compensation standard, and draw some capital from the revenue of power plant of the reservoir to return to the upstream farmers as public welfare forest compensation.
- The public welfare forest compensation will be more reasonable if it is in accordance with

the forest resources storage. Due to different positions and resource conditions of public welfare forests, public welfare forests near the agricultural area with bad resources, even covered with grass, can receive public welfare forest compensation at the same standard, while the public welfare forests in the forest area have better conditions, so the compensation should be implemented according to the forest resources storage.

- Public welfare forest management should be allowed according to local conditions. Properly planting some firs and bamboos will bring some additional economic income. Farmers wish to share some natural forest harvesting quotas and to implement some low-yield forest reconstruction every year. Proper reconstruction is beneficial to ecology, and only reserving 50% of the natural forests (about 20% of all the lands) will be enough. These forestlands are not suitable for afforestation, but their ecological location plays an extremely important role in preventing soil erosion, maintaining the diversity of tree species, protecting the ecological environment, sustaining ecological equilibrium, and exerting other important functions.
- As for the specific forest lands that can be reconstructed and that must be protected, the farmers, villagers' committees and the staff of forestry station must decide together, and the forest farmers should participate in the process of the forestland planning.
- The distant mountains can be classified as public welfare forests while nearby mountains needn't be classified as public welfare forests as farmers know how to protect forests.
- Change the public welfare forest compensation method. The existing compensation amount is paid directly to a special account. It is not convenient to query or withdraw money.

(6) Evaluation on the control over the natural forests which are not public welfare forests

From the historical perspective, the resources of mountain farms of Taoyuan Village give priority to natural forests. Before the forestry classified management and classification of public welfare forests, natural forests are an important resource to maintain the family living.

The strict management of the natural forests which are not the public welfare forests means that it is difficult to obtain the harvesting quota, and that no afforestation can be made without harvesting quotas and farmers' income chain will break. Under the condition that neither waste lands nor barren mountains are available for use and that they can't obtain the natural forest afforestation quotas, most farmers will, without permission, plant small areas of artificial forests (2-3 *mu*) in the natural forest to gain sustainable incomes. Many of them said that it is an important guarantee of future family pension, and that they have no choice. As for farmers' cutting plan, in the afforestation, they generally choose the land according to the slope and natural fertility, thus the choice of cutting area is very important. Firstly, it can compensate for cutting costs, mainly the wages for the labors for the road maintenance and logging, and they will cut when wage level

generally stands at 70-100 yuan; secondly, the trees will grow well on cutover land after reconstruction and boast great value-added potential; and thirdly, it is based on the market condition and price trend.

The government requires afforestation of a large scale and area, but farmers' explanation of small scale afforestation is that local people are familiar with the mountain conditions, and know which places are suitable for firs and consider it inappropriate to plant large area of fir forests.

As for the competent forestry authorities who define the cutting of natural forests and reconstructing artificial forests as deforestation, the farmer did not agree. They all stated that the local people are familiar with the mountain conditions, and that all of them know the importance of protecting the ecological environment, so when choosing afforestation terrains and afforestation method, they'll follow the requirement for sustainable forest management. In addition, although the policy shows that the low-yield and inefficient natural forests can be reconstructed, the standard is too high. If they calculate the storage on the standard of more than five centimeters of diameter at breast height (DBH), in fact, most natural forests are out of the scope of the low-yield and inefficient forests, and they cannot be afforested. The farmers think that "It is impossible not to plant, otherwise what can we live on?" There are two purposes of cutting trees: firewood and development of reserve resources.

We can see that regardless of afforestation or low-yield and inefficient forest reconstruction, it is impossible to realize without harvesting quota. Therefore, the harvesting quota for the natural forests that are not public welfare forests is the farmers' greatest concern. They have strong desire for liberalizing the non-public welfare natural forest management. The farmers generally think that the ultimate objective of the natural forest control policies should be forest storage increase, therefore, it should be appropriate to liberalize the management of ordinary natural forests and low-yield and inefficient forest reconstruction to plant trees. Moreover, the government should restore afforestation subsidies for the artificial afforestation. The specific requirement includes:

- They hope to update the shrubs and low-yield and inefficient forests in the natural forests into artificial forests, planting firs and bamboos.
- Strictly protect the quality natural forests with developing prospect to create economic benefits.
- In the policies the profit-making logging in average natural forests should be liberalized and the standard for low-yield forests should be lowered. The present standard is too high and the management is too strict.
- The harvesting quota for natural forests is too small, for each household has only several cubic meters.

8.2.2 Wenxiang Village

(1) Review on harvesting quota system

The existing artificial commercial forests of Wenxiang Village are mostly operated by the FFC. The FFC adopts bidding system for the forestry production organizations and the farmers who participate in the forestry production activities will get labor remuneration, and the FFC members share the bonus according to shares. The majority of the farmers' forests are delimited as public welfare forest, cutting is just reflected in clearing woods under snow pressure and perishing to death, and the timber dealings are organized by unified organization of the FFC. The dependence of household income on forestry resources is low. As a result, about the harvesting quota system, the farmers just know licensed cutting, otherwise it will be illegal. The understanding of harvesting quota system indicates some differences according to different resource situations

- They want to quit the FFC, but even successfully drop out, it does not necessarily mean they can acquire harvesting quota, or they can cut trees.
- The fir forest farms are delimited as public welfare forests, although they can apply for harvesting quota from the forestry station, basically timber can only for their own use (such as build houses). But they can buy harvesting quota from the cooperatives.
- The harvesting quota can only passively wait the village to allocate, thus lack flexibility. The farmers confirm that harvesting quota can be used in five years successively and the capital can circulate. But also show they face the risk of using up all the quotas and the price of timber increases in the next year. The farmers think they themselves need corresponding restriction.
- The timbers cut on the private hills which have been classified as public welfare forests can only be used for the farmers themselves, generally no more than 0.5 m³. The procedures are: application---approval by the village---cutting licence issued by the forestry station.
- It is too troublesome to apply for forest cutting licence, needing a lot of time. Farmers shall fill in the application form and sign in the villagers committee, and the forest tenders will check whether they really need to build a house and sign on the application. The responsible people like leaders of township, head of forestry station and leader of forestry bureau shall sign respectively and affix official stamps. Whether they can come up with a good method embodies both responsibility and fast settled
- There are no timber resources for most farmers, basically they need not cutting, also do not need the harvesting quota.

(2) Review on the forestry tax policies

For the farmers who are not the members of FFC, the FFC can be commissioned to sell timbers and bamboo. Compared with farmers' self-sale, price difference of 2 yuan exists for 100 jin

bamboo. Farmers said the previous tax burden was heavy, but they had no idea of specific tax items.

In terms of the transaction procedures, the forestry station levies forestry cultivation funds on the timber dealers according to basic price. The farmers lack the cognition of forestry tax reform, mainly because they don't direct pay taxes, thus they cannot explain the contribution of the forestry tax reduction to the increase of timber price and income. Meanwhile, farmers strongly felt that compared with agricultural policy, they enjoy fewer preferential policies in forestry production process.

The impact of returning cropland to forest on farmers: In 2002, in response to policy requirements of returning cropland to forest, Wenxiang farmers planted *phyllostachys praecoxes*, mulberries, bamboos, etc. on some cultivated lands the subsidy standard for returning cropland to forest was 230 yuan/mu from 2003 to 2007, and 125 yuan/mu from 2008 to 2012. After returning, many farmers suffer from insufficient crops, and need to purchase commodity grain, but existing subsidy is barely enough. While the existing grain cultivation is damaged by wild boars due to the forest resources boundary expansion, while the policy for protecting animals requires that no wild boars may be hunted. Therefore, grain production suffers from great impact. In addition, agricultural subsidies like comprehensive income subsidies and productive special allowance are hardly available to farmers due to limited area of cultivated land. Moreover, as forestry subsidies such as low-yield forest reconstruction subsidies granted by the government based on projects and the conditions are demanding, farmers are difficult to gain an access. Farmers hope they can enjoy equal subsidy treatment with grain farmers. Corresponding to the agriculture, there should be direct planting subsidies and seedlings subsidies, chain saw purchasing subsidies, subsidies for road construction, among others in forestry.

(3) Evaluation on the micro-financing policy

Reasons of borrowing: The sequencing of reasons to borrow money: building houses (including buying houses), disease treatment, marriage, children's education, significant events, agricultural and forestry investment and doing business.

Financing channels: Most farmers follow the principle of finding credit cooperatives for a large sum of money (more than 1000 yuan), and turning to individuals for a small amount of money, and they said that they are not familiar with other banks. Ordinary banks have no business in rural areas. In case of lacking a small amount of money, they will borrow from good friends and relatives for several reasons: no interest, depending on personal relationship, line of credit depending on personal relationship, no time limit prescribed. Sometimes, they choose credit loans (1000-2000 yuan is credit loan) for the following reasons: farmers are more familiar with relevant procedures which are convenient and simple, but there are complicated procedures for a large

amount of money, whether a guarantee is required depends on lender qualification and credit, and the loan can be used for home emergency. For a loan of more than 5000 yuan, deposit receipt is needed as a mortgage. Small family (non-local celebrities) must adopt passbook mortgage, and so do general villagers.

Evaluation on the loan methods: Most of the farmers have used credit loans, but are not familiar with other loaning means. The credit loans can be used in the face of important events, but the interest rates are high, and the line of credit is only 10,000-20,000 yuan. People who have credit can loan within 10,000 yuan at any time, while the people who have not credit can only loan 1,000–2,000 yuan, or it needs guarantee. If the applicant hasn't paid the previous loan, he can't go on loaning. If the amount of borrowing more than 10,000 yuan, both the people who have credit or not should provide the mortgage. And the credit cooperative will lend according to the farmers' repayment ability, and the line depends on the relationship. The deadline of credit loan is generally one year, if you can't pay off at that year, you can transfer the loan on the basis of pay off the interests. There are also loan withholding of interest in advance and the way we pay interest on a quarterly basis. When borrowing, farmers should explain the usage and use the money according to the usage. The farmers hope that of credit cooperatives the lower the interest, the better. And the credit cooperative will lend according to the farmers' repayment ability.

Small amount mortgage loans need to mortgage your passbook and check the amount in your passbook. The house in the rural area can't be the mortgage. The line of credit for the farmers is at most 30,000 yuan. The loans can't be granted if more than the standard and the annual interest is close to one point.

There is no limit to secured loan, but they should provide deposit and house mortgage. But the house of the farmers isn't valuable, and the farmers are not willing to secure each other, as well as the secured loan need full guarantee (if the guarantor has a deposit of 10,000 yuan, the credit cooperative will loan 10,000 yuan).

The resources condition dominated by public welfare forests determines the farmers' indifference to forest tenure mortgage loan to a certain degree and most farmers don't know the forestry guarantee centre.

(4) Evaluation on the public welfare forest compensation policy

The area of public welfare forests of the whole village is 12619 mu, all of which are state key public welfare forests, of which 10970 mu belongs to individuals, accounting for 87%, and 1649 mu belongs to the collective, accounting for 13%.

The method of application and activities before and after the division of public welfare forests: Historically, as for the mountain farm resources of Wenxiang Village, priority was given to natural forests. Before the forestry classified management and the delimitation of public welfare

forests, natural forests retained the important resources for family livelihoods. The traditional use method and activities of natural forests are as follows: cutting tree crops according to the annual harvesting quota, and cutting the firewood to use or sell (firewood income 50-60 yuan per mu), or use firewood to produce mushrooms, agarics, etc according to family use. Meanwhile, according to the labor and income, afforestation of different scales is executed. There is a tradition of pine gum collection in those village groups with rich resources of pine trees. Between 1987 and 1988, the government began to limit firewood cutting, not allowing firewood sale. But firewood has been used for making charcoal all along, and the charcoal is used mainly for baking tea.

After delimiting public welfare forests in 2000, commercial cutting and firewood sale have been banned. Some farmers collect shrubs and small miscellaneous trees in public welfare forest as firewood. In recent years, with income and labor cost rise and alternatives for firewood like electricity, rapid gas development and chopping volume decline, the consumption of firewood for every household is about 2000 jin each year. Only when the pine trees die of withering or diseases and insect pests can they be cut down. During the 2008 snow disaster, due to snow pressure, timbers of more than 200 cubic meters were cleaned; because the landings are too bigger, price of pine timber was about 400 yuan/cubic metre. Since 2007, in order to protect pine resources of the public welfare forest, the government has prohibited pine gum collection strictly and farmers have suffered from more losses in income.

For the public welfare forests, in the village a person is designated to manage all the woods. At present, the greatest concern of the farmers is the prohibited pine gum collection and compensation standard for the public welfare forests.

Farmers believe that the pines in the natural forests should be reserved, but can change the small thickets into bamboos to increase profit. Meanwhile, through low-yield forest reconstruction, the forest management level can be enhanced. Therefore, cutting control of low-yield miscellaneous and shrubs should be properly relaxed.

Standard for public welfare forest compensation: The farmers basically know about the public welfare forest compensation standard and obtain the compensation. But they can't remember the specific amount of compensation. Some farmers don't care whether they gain compensation or not at all. This is relevant to the area of the farmer's public welfare forests, the greater the size is, the deeper the farmers' relevant data memory may be. Therefore, because of difference of income dependence on the public welfare forests, various opinions are formed:

- After banning the collection of pine gum in the public welfare forests, farmers' income suffered great impact, so the compensation standards should be increased. Before 2007, the collection of pine gum was the major source of farmers' revenue. Normally, output stood at 2.5-2.6 jin/tree a year, and can maintain for more than 30 years. The average annual income

of farmers was 7000-8000 yuan, and some farmers got 20,000 yuan, constituting an important economic income source of their families. Ban on the collection of pine gum directly affects income of farmers, especially those in the three villager groups--Xiangyang, Xiakeng and Gao'an (per capita 50-60 mu). The annual volume of pine gum collected by these groups amounts to more than 400,000 jin, bringing more than 400,000 yuan of income. Now the price of pine gum goes up to more than 5 yuan, and the income can reach 2 million yuan. After the ban on the collection of pine gum, farmers can only go out working. Therefore, the farmers highly dependent on pine gum income think that when they cannot collect pine gum and the public welfare forest compensation standards are too low, the government should give subsidies and improve public welfare forest compensation standard, so as to safeguard farmers' per capita minimum life guarantee of 600 yuan per year.

- The farmers with small area of public welfare forest (such as villagers of Shushu group are mostly immigrants from Taiping Lake area) got small amount of public welfare forest compensation; the availability of the compensation has no influence on their family income, as a result, they are not too concerned about compensation standard, and they broadly accept the current compensation standard.
- The national public welfare forests really need strict examination and approval system of cutting management, but not one size fits all, the farmers should be scientifically implementing necessary forest cutting, and at the same time to obtain part income.
- We can see that the farmers' attitudes and opinions on policy are closely relevant to their own resources, when the ownership of resources is large and is an important source of income, the farmer's need for policy improvement and desire to increase income in this way are stronger.

Develop undergrowth economy in public welfare forest: Under the investigation only one farmer planted phyllostachys incarnate in 2009, after five years phyllostachys incarnate will be income. No development of undergrowth economy has the following reasons:

- Undergrowth economy can't develop well, for the upper trees will shelter the sunshine and rain.
- The area is small and covered with shrubs, development is impossible;
- The income from the mountain farm is not the major source of income, nor they live on the forestry;
- The mountain farm was closed, not allowed to plant trees and firewood not allowed to cut down;
- Don't know how to develop forest undergrowth economy;
- No space in the public welfare forest

In the survey the villagers were asked about their attitude in public welfare forest division and management (figure 2). Note the number to say voluntary and to sign for approval of natural forest being delimited into the public welfare forest was no more than half (only 44% of the farmers), 13 percent of farmers said they did not want to but passively signed, 43 percent of farmers did not make clear answers (maybe they thought it would be difficult to cut the natural forest, and the area was relatively small, so it didn't matter).

When asked “if existing public welfare forest withdrawal mechanism, will they withdraw”, 38% of the farmers chose opt-out, 32% chose they wouldn't quit and 30% showed no clear attitude. The latter are mainly the farmers with small size public welfare forests, for they thought it didn't matter whether to quit or not.

The reasons for opt-out are:

- They can collect the pine gum;
- That the woods are delimited as public welfare forests is equivalent to be taken away. It is better to manage the woods himself, then at least they can cut down trees for money;
- At least they can cut some timber for their own use or as firewood;
- Delimiting national public welfare forests should be objective, realistic to inform farmers, and to win the consent of the farmers. For the region with particularly important ecological location and must be delimited for national public welfare forest, if the owner do not agree, it should be collected by the country, and the country should give appropriate allowance.

The reasons for not withdrawal are:

- The public welfare forests make little sense to family and before the delimitation there was no income, now at least they can get some compensation.
- They are lack of labor, so it is not bad to get some compensation now;
- It is good to execute unified management. Huangshan scenic spot has particularity, so its delimitation as the public welfare forest can prevent disorderly cutting.

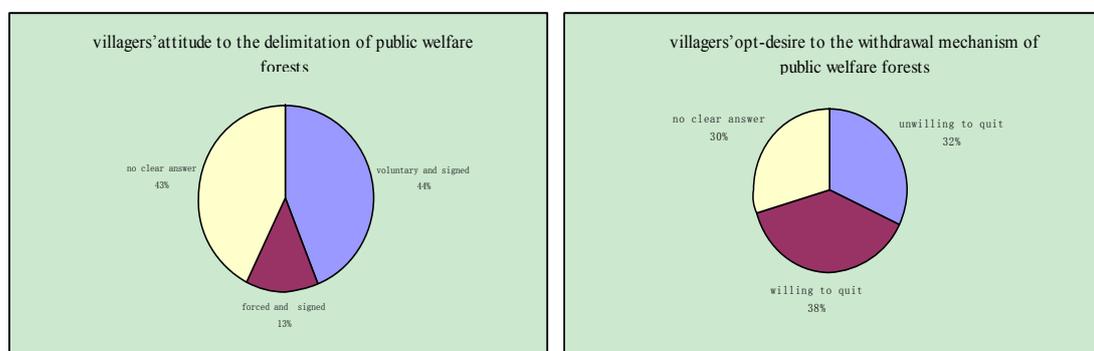


Figure 2 Villagers' attitudes towards the delimitation and management of public welfare forests

The investigation shows that the ownership of resources and its contribution to family income

directly affect the farmers' opinions and evaluation of policies and how to adjust the policies and appropriately increase the flexibility of policies according to difference in the amount of forest resources of farmer households is just the farmers' expectation to policies.

8.3 Forestry institutes (bureaus) at township and county level

Forestry management form: The causes of forestry failure at the collective period primarily are: destructive logging, responsibility and the term of office. In view of the present single-family management accounting for the majority, the forest sectors hope they can accelerate resources concentration (not refers to the concentration of collective period), because from the reality and forestry management perspective, the higher the degree of centralization of forest resources, the easier cutting management. Meanwhile, the people who buy mountain farms (non-public ownership forestry) will choose relatively scientific forest management

Non-public welfare natural forest management control: The existing fir timbers of Taoyuan Village were mostly afforested in the 1980s and 1990s of the 20th century. The existing artificial forests are fewer and fewer, already appearing the scarcity of total resources. Meanwhile, Huangshan District has no wasteland and barren hills for afforestation, therefore the breakthrough to solve the problem of forest reserve resources shortage lies in the low-yield and inefficient forest reconstruction in the natural forests, that is, it is imminent to relax the existing natural forest management limit. But the national judgment for low-yield and inefficient forests are divided into common standards, economic standard, and ecological standards, thus the actual judgment is difficult. At the same time, it is not suitable to apply the unified national standards to Huangshan county. The existing standard for low-yield and inefficient forests is excessively strict, such as the degree of closing standard less than 0.3 is not reasonable, trees (DBH 5 cm above) would be difficult to define. Accordingly, the country should be revised the present judgement criteria by the same site conditions.

For how to liberalize the restrictions on the natural forest management, the forestry bureau staff's overarching vision is: along traffic lines the non-public-welfare natural forests will be restricted strictly to avoid a "skylight" and appropriately launch complementary planting. At the same time in the name of the forest bureaus an overall planning of the natural forest afforestation of 3000 *mu* every year shall be implemented to meet the multiple demands of the farmers and increasing reserve resources and ecological protection. The biggest worry is that they will bear great risks and responsibilities, especially the political risks and liabilities, to implement the programs, so no one dares to take the initiative.

Harvesting quota control system:

(1) Harvesting quota distribution. After each township knows the real situation of the cutting requirements of the villages and forestry institutions and has every town and village report the

data. If the collecting amount is no more than the harvesting quota of the whole county, each township will issue the full harvesting quota. In fact, every year there is a balance for the control and management of harvesting quota from the “11th five-year plan” has started to be relatively loose, and the harvesting quotas are sufficient (basically about 140,000 cubic meters). But there exist restrictive factors: The volume of resources drops, and the total volume is insufficient. In the light of economic development, efforts shall be made to reduce some farmers’ dependence on forest resources. The non-public ownership forestry corporations do not treat cutting as the purpose, but see investment as the purpose, thus they won’t put short-term logging together. The workforce is in short (youths and middle-aged people go out working).

(2) Harvesting license management. At present the country issues harvesting quota according to single tree species and the classification of the tree species is too specific. Though the Harvesting license stipulates the tree species, but in actual cutting the tree species may be changed. The large scale artificial forests are easy to control, but the farmers’ small size natural forest cutting can’t be controlled and their risk lies in whether someone in the village will report; if someone reports, the forestry department should bear the responsibility. The pilot scheme of the State Forestry Administrations in 2009 was out of control in actual implementation, so the timber volume control should be cancelled and the stock volume control should be implemented. Different forest regions have different forest resources and marked distinction in output proportion. Thus it is unscientific for Anhui Province to unify the output percentage of firs as 61%.

(3) Cutting management. The government executes annual management of harvesting quota, but farmers don’t follow the system. Generally, they apply a year in advance, and then the cutting licenses will be issued in March and April. At that time it is in season to pick tea leaves, and their tea income accounts for a higher proportion than wood income, and tea price changes fast. After they obtain harvesting licenses, in accordance with the requirements, the harvesting quota should be used in the current year, and the timber must be transported from the mountains and scaled by the end of December. In fact, however, farmers have to wait until October to cut, and generally sell the timbers until next March and April. The forestry station complains that the timbers can’t go down the hill timely, and the data fail to be collected timely. Their explanation for requiring the timbers to go down the hill as soon as possible is that they can issue harvesting licenses for next time again.

Farmers’ explanation for timbers’ failing to go down the hill timely is that picking tea leaves needs a lot of labor and has conflict with timber cutting; due to shortage of labor force, the practice of “chougan” process aimed at saving labor needs a long time; and the road maintenance also takes some time.

The timber dealers’ interpretation for the forestry station forces the farmers to carry the timbers

down the hill by the end of December is as follows: They can complete the annual levy item of forestry cultivation funds as soon as possible, and then withdraw the capital to realize the year-end evaluation bonus. This statement is partly verified. As for forestry cultivation funds, 1 million yuan of task is assigned to Wushi forestry station. After 2008, the forestry station had no forestry cultivation fund accounts, and the money went straight to the financial accounts. There are two management methods of the forestry bureaus on the forestry stations: one is to use forestry cultivation funds levy as a test indicator for the administrative performance. The other is to maintain 7000 yuan as economic punishment. “The data can’t be collected timely” refers to the data gap between the forestry cultivation funds levy task.

(4) Natural commercial forest cutting. The natural forests in the commercial forests are under strict control, and they seldom undergo clear cutting by groups. Actually, the forest resources that really need protecting are those with a large slope and poor quality, while some high quality resources do not need protecting. But the national unified standard makes some forest stands that can be cut and used unavailable. For block afforestation has better results, the authority has stipulated that only the sector-related natural forests can be regenerated, and that the area demand for the farmers’ natural forests is 60 *mu*, so the farmers must jointly manage to meet the criteria. Because it is not easy for the farmers in the forest region to coordinate and trust each other, such joint-household management is difficult to implement. The forestry bureaus suppose that from 2010, they will lower the standard to 30 *mu*, and that the standard will be basically consistent with farmers’ needs, and 2-3 households can be combined, which can meet the needs of block afforestation.

(5) Harvesting quota management reform. At present, the control on tending timbers is relatively loose, but liberalizing the harvesting quotas basically has no effect on the artificial commercial forest, and will affect the natural forests. The attempts to reform are as follows:

- Improve denudation standards. The original provision was 10 cubic meters, but they hope it should be 12-15 cubic meters. Or when the farmers exceed harvesting quota by 0.5 cubic meters, and institutions exceed 5%, their behaviors are identified as denudation;
- The improvement harvesting quota is further relaxed to satisfy farmers’ needs;

Forestry subsidies: Huangshan District Forestry Bureau has worked out afforestation subsidy policy, such as for the building of block bamboo forests and economic forests, the subsidy standard is 50 yuan/*mu* between 10-49 *mu*, and 100 yuan/*mu* for more than 50 *mu*.

Forest roads: Forest road construction funds are usually linked with the projects. If superior authorities have no project support, particularly after the canceling of reconstruction fund, the investment in the forest road is very limited. Although the forestry bureaus will arrange some funds each year, the amount is limited and hard to meet the demand for forest roads of the villages and towns. If the problem of the forest roads can be solved, the value of forest resources will see

better promotion, and it will stimulate farmers' enthusiasm for afforestation and be superior to the effect of striving for all kinds of afforestation subsidies, and it is convenient for the forestry bureaus to manage.

Wenxiang and Yongfen townships: The personnel of County forestry departments involved in the project and symposium are basically fixed, and their basic views are almost the same with those of Taoyuan Village without big changes. As for the views of forestry stations at the township level, because of the consistent policy environment and management methods of the entire district, the repeated views will no longer be burdensome. Now the different points are summarized as follows:

(1) The forest resources of Yongfeng Township are comparatively scarce, mostly distributed around Taiping Lake. Top priority is given to ecological protection, and most of the forest resources are delimited as public welfare forests, whose use is strictly restricted. Higher proportion of public welfare forests means smaller task of renovation and barren hill afforestation. The number of township timber processing plants and their processing capacity are consistent with the township wood output level.

The entire township concentrated afforestation time is basically same as that of Wenxiang Village. Most of the artificial forests derive from the projects, the majority of which are managed by the forest farms with relatively high centralization. They think higher concentration of forest resources means easier cutting management, and higher forest management level.

(2) From the perspective of the development of FFC, the support from local forestry bureaus is limited. Therefore, the country and the province should directly arrange some forestry projects for the cooperatives, and budgets at all levels should arrange special funds for development. The FFC construction should follow the principle of being easy first and then difficult, and the FFC should cooperate from all aspects such as sales, processing, transportation, production management technology and information of forest products, expand services, gradually link up with industrial development and acquire more profits through market operation, improve forest farmers' enthusiasm to further invest in their mountain forests to become stakeholders of the FFC, and develop the FFC into the economic community of interests which will "share interests and risks" with farmers.

(3) It is beneficial for soil improvement to transform some natural secondary forests and low-yield fir forests into bamboo forests, especially to plant bamboos some public welfare forests with favorable land conditions. It will be the desirable strategy to alleviate contradictions between the forestry department and farmers, and to increase farmers' income.

(4) The forest road network density of Wenxiang Village, especially that of Xiangfu Village, may be the highest in the entire town, and even in the entire district. The forest roads can extend

basically to every peak. The experience of Wenxiang Village proves that the government support for forest road construction is very important to improve forest management, reduce forest product cost, elevate forest resource value, and reflect policy fairness through supplying public goods at the farmer level. It is superior to all the effect of various afforestation subsidies and has obvious function on forest protection and forest fire prevention.

(5) The forestry department undertakes too much stress in ecological protection, and runs too much political risk, so they need to untie the knots (find the solution) on their own. Larger area of public welfare forests means more restrictive measures and tighter control over forestry departments. Actually, simple administrative measures are often hard to work, and the cost is exorbitant. Meanwhile, some limits are superfluous, and all of this needs to change the thought and management methods. “One-size-fits-all” solution is not the best way to solve the problem.

8.4 Other stakeholders

We choose to interview with the units and individuals engaged in forestry production activities within the territory of Taoyuan and Wenxiang Village, from another perspective to make up for interview information missing and inquire farmers’ opinions on forestry policy.

8.4.1 Forestry institutions (Boss Yu et al)

(1) Basic conditions

Through the transfer, he now manages the forest lands of more than 6,000 *mu*, which are divided into three pieces. Their location is near, and they are operated with joint stock system, and farmers are involved in management and forest protection. The forests are gradually evolving into the final cutting period with an output of about 9 cubic meters of wood per *mu*. However, in 2010 the harvesting quota was only 2000 cubic meters, in this way they need at least 20 years to cut all the trees. The forestry tenure will be due to expire in 2035, so he is afraid the tree crop can’t be cut off.

(2) Discussion on the issues of forestry policies

The natural forest operation: When the forest farm was just set up, the policy for low-yield and inefficient forest reconstruction was relatively lenient, and annual afforestation was more than 300 *mu*, but after he operated the forest, the policy is tight and the harvesting quota of natural forest is difficult to achieve; especially after the forest tenure reform, there are more restrictions on the materials; the forest farms should have a planning, otherwise the management will be left behind.

In the natural forest operation, compared with farmers, the forest farms are at a disadvantage. The farmer households can “dadong”, while the scale of the forest farm is large and no afforestation can be made in small scale, and the implementation of projects will be restricted by the policy.

The control of natural forests is associated with Huangshan, a special scenic area. Huangshan district’s overall policy environment is tight, and the forestry department is relatively cautious and

afraid of shouldering responsibility. Natural forests need protection, but farmers should be allowed to regenerate natural forest and improve output. If we are not given the natural forest harvesting quota, after 20 years, there may be no timber available. But once the control is lifted, ordinary people may be out of control, and the present leaders at least will have to tighten in office.

Cutting management: The control over final cutting is too strict, while the control over improvement cutting is relatively lenient. Because the improvement cutting for the first time can't generate profits, the farmers often violate the cutting rules, cutting big trees and leaving small ones, cutting straight trees and reserving curved ones. Some people wait to cut when the trees are between 18 and 20 years old, increasing the intensity, and cutting the big trees and the rest once and for all next time. To standardize improvement cutting, cutting design must be stepped up and the harvesting quota must be in line with the amount of cutting design.

According to forestry department's stipulations, efforts shall be made to prevent soil erosion, and the final cutting can only be block cutting of the area no more than 75 *mu*. Generally a mountain is at least 150 *mu*. If control standard is 75 *mu*, small area cutting requires intervals and need to put up aerial ropeway twice, skidding costs will dramatically increase. In addition, block cutting needs to cut in adjacent forests after waiting for the regeneration, and often the saplings will be hurt, thus causing losses. Therefore, level shape cutting should be executed, which has no impact on soil erosion. It is suggested to break the area limits of 75 *mu*, and specific harvesting quota and methods shall be decided by owners under the supervision of forestry station.

Restricted by the forestry planning, the forest farm's cutting schedule is as follows: application in December--approval in next March and April--design in May and June--cutting in July and August—timber going down the hill in December. Such a schedule would cause too much wood available on the market at the same time, and also it is difficult to arrange for acceptance time, so it is not very scientific.

Forestry taxes: The lumber of 12 cm (DBH) will be charged forestry cultivation funds of 80 yuan for each cubic meter and the adoption of levy in advance. As a result, a great amount of capital should be prepared. This system arrangement is beneficial to timber merchants, and it is easy to form monopoly operation. Forest farms have self-production and self-sales licenses, and enjoy VAT and income tax relief, but wood acquisition is not allowed.

Forest tenure mortgage loan: They can only acquire a loan of 20% appraised value. Buying the forests generally takes idle funds. There are 40 stakeholders in the forest farm, all of whom are engaged in timber business. In general, they borrow money from credit banks. If using forest right certificates as a mortgage to loan, next year when they execute the cutting design, they need to get them back from the banks and the procedures are cumbersome.

Forest fire prevention and insurance: When the area of forest lands is less than 500 *mu*, they are

usually trusted to the local villagers to protect forests. When the forest is more than 500 *mu*, it will be equipped with full-time forest fire wardens. If the forest fire happens (locally called “zouhuo”), the insurance company claims that 50 *mu* will not be compensated, and only the area exceeding the limit can be paid and the insurance company will withdraw all the residual value. As it is not worthwhile, generally the owner will seek no compensation. Even if the firs are burned to death, the residual value is often greater than the claim amount. Therefore, as for forest fire, priority shall be given to prevention.

Forest roads: Forest roads are of great importance to improve forest management level. It is impossible for a single household to finish it, so roads need subsidies.

Function of forest tenure reform: Old cards changed into new ones, the toll was \$5, and the village also spent a lot of money, mainly the cost of entertainment and meetings.

8.4.2 Sanxin Wood (Timber Processing Plant)

Buy collective forests of 1700 *mu*, and then start a factory. The main products are high standard fir integrated boards targeting at domestic market, which belong to fine processing products with low output. The gross profit of the factory is about 10%.

(1) Harvesting quota control

The final cutting period of firs is 26 years. The artificial forest harvesting quotas are easy to apply. The clearance of withered pine trees need to apply singly and the cutting licence will be issued singly. The procedures are as follows: declaration--planning scheme issued from the district to the town--payment-- submitting forest right certification--cutting design--operation of harvesting license.

Cutting area design fees will be collected from the production unit, and when the amount is more than 20 cubic meters, the cutting area design should be done, the design of final cutting and improvement cutting will be charged the same, each cubic meter will be charged 5 yuan. The institution is easy to manage, the size is large, and it needs cutting area design, meanwhile, the cutting is relatively normal, and the administrative costs are relatively low. The single households are troublesome to manage.

Scaling of logs: buckle 2 centimetres, scale the log with its thinner end more than six centimeters, the log of thinner less than 6cm will not be calculated, which exerts the direct impact on volume. use the callipers to measure, scale at the point of 2.5 meters and the unit of length is meter, by the integer; every two centimeters in diameter to enter another rank.

Resource management should be strict with the behaviors on the mountain, but in fact the farmers can't be managed well, so the resource management moves down to plant management. During the timber acquisition seasons, the forestry stations need to organize the full station, the key amount of work is embodied in the scaling of logs, the scaling personnel of the whole station are

divided into three groups, the former standard was the timber of 5 centimeters (DHB) out of the volume statistics, now reduced to three centimeters (DHB) and as long as the timber is scaled the volume will be included into the quota. At the same time, the harvesting license will be taken back, but in fact the scale isn't exact, then only part of the volume will be logged off. If the woods are concentrated, the amount of work will be greatly reduced, such as Yongfeng County. Compared with the surrounding areas, the policies are different, such as Qingyang and Jing County, the output is controlled by the cutting area design, the woods would not be scaled, and the quantity will be calculated according to the weight.

Due to long distance, the scaling of logs is a heavy workload, so the charge is too high (6 yuan for each cubic meter, bambao of 100 jin will be converted into 2.5 trees, 0.16 yuan per piece), and it increases the business costs of the timber dealers and will eventually require farmers to bear by means of lowering purchase price.

(2) Forestry taxes and timber acquisition

Annual consumption of wood is 8000 cubic meters, mainly purchased from farmers. The general process is to get in contact with wood sellers, notify the forestry station to scale, and pay the wood/bamboo scaling service fees. The annual tea season is two to three months, generally from Tomb-sweeping Day to June, including picking tea leaves, tea plantation nurturing and managing. The period goes by without wood. Usually the cutting of timber is concentrated in September and October, and farmers observe the price trend and transport timbers from hills in batches. Wood transporting from the mountain will generally meet the urge from the forestry station, mainly for the forestry cultivation funds levy. In order to draw back the forestry cultivation funds as soon as possible, the station stipulates that if the timbers don't transport from the hills, farmers won't get the cutting quota next year, but in fact they dare not, because they are afraid of the petition.

Forestry cultivation fund is levied at a rate of 10% and plant sanitary fee is levied 0.2% according to the base price fixed by the joint dispatch from the forestry bureaus and price bureaus. The base price is generally unchangeable, lower than the acquisition price of timber. The average forestry cultivation fund for the timber of one cubic meter is 97-99 yuan. For the thinning stick of each cubic meter, forestry cultivation fund of 50 yuan shall be paid. The price difference between dimension stock and non-dimension stock lies in different base prices, which affects the forestry cultivation fund levy. The policy stipulated that the sum of VAT should be 17% of the added value, while the actual imposition is 5% of sales income. The reason for not imposing in the form of added value is that the acquisition of timber is from farmers, and it is very difficult to correctly account the purchasing price and sales income, whereas, it is simple and feasible to impose the tax in the form of sales income.

Timber markets belong to the sellers' market, shortage of timber sources causes the timber to sell

well, and the bosses beg the farmers, and the price goes with the market. In spite of the control of supply, order purchase in timber transactions, has been realized, but the price is hard to fix and it is difficult to keep the contract. Generally when the average market price is low the farmers will act on the contract, while when the market price is higher the farmers would take back. At the early stage of the factory in 1998 the price of fir was 500 yuan and pine 300 yuan /cubic meter, the gradeless and uniformly-priced of firs (more than 8 centimetres) in 2008 could be sold for 750 yuan, 800-850 yuan in 2009, about 1, 000 yuan in 2010. Timber sales income is in the form of prepaid way, there are risks because the Harvesting license is in the farmer's hands and the Harvesting license is usually issued with the terrains. So cutting in different subcompartments are often appeared. The mentality of timber acquisition is that when the price drops I dare not purchase, when the price rises I am hoard for speculation.

(3) Forestry loan

Mostly the acquisition of timber needs occupy the circulating funds. Generally the cutting is concentrated at the end of the year, correspondingly the acquisition also needs to centralize at that time, so the amount of funds is too large.

The loan depends on the Bonding Company of District Economic Commission for Small and Medium Enterprises, with lending rate of about 8 percent. Forest right mortgage formalities (procedures) are cumbersome and evaluated prices are generally low, the evaluation fee is charged according to the appraised value, and the actual amount is relatively low. Generally the loan can reach 50% of the appraised value.

(4)Others

Six timber processing enterprises in the whole town consume timbers of 14,000 cubic meters. It is more difficult to operate enterprises in the forest region as there are many management restrictions. The companies are walking around the policy, otherwise it is hard to earn money. The difficulties are as follows:

- There are excessive links of woods leaving factory, such as scaling, delivery, and inspection; the processing has great disparity with non-local enterprises.
- Only single varieties can be sent without further processing (it is difficult to fill out factory yards sheet, and the expense is excessive).
- The delivery requires filling the lorry before departure. The head of the forestry station will check the goods in person before delivery. Usually the products will be delivered through logistics services that generally set off at night. On the transport certificate, information such as the type of transport vehicle, tonnage and driver's name should be marked.
- For the small material processing, it is hard to make out an invoice and deliver the goods, which directly affects the development of farmers' processing industry;

- Various restrictions confine the forest region development. The more resources, the more difficult to develop processing industry. The management method directly impacts on farmers' income. Where there is profit relationship, there is no management.

8.4.3 Wood acquisition intermediary (Fang Lierong, Hutian villager group, Taoyuan Village)

(1) Background

Fang Lierong once worked in the township wood processing enterprise. In 1996, he registered the township wood processing enterprise and handed in the rent. In 2002, the factory was closed due to loss and arrearage. In 2008, he claimed a separate license, specializing in timber and tea acquisition. As for wood acquisition, he established partnership with Sanxin Wood Enterprise, and timber price was fixed by the latter. He gained a commission. In 2002, in his contracted mountain farm, he afforested fir forest of 115 *mu* and bamboo forest of 15 *mu*. In 2009, after being approved, he afforested fir forest of 42 *mu*, which was ordinary afforestation. He afforested fir forest of 2 *mu* with the purpose of cutting firewood and making charcoals.

(2) Views on forestry policy and management system

- Private management vs. collective management: During the period of collective management, nurturing was generally for the wages and farmers didn't use their hoes, instead, they used knives to chop. Because the people responsible for acceptance were associates, they would not blame. Now the nurturing is for individual benefit, and done carefully by farmers with their hoes, and the nurturing will take effect after 15 years.
- The practice from the second nurturing to the nurturing before the final cutting, practically called selective cutting practice, will be embraced into the harvesting quota management and needs nurturing design. Actually the "choukan" (selective cutting) is not worthwhile because after selective cutting, they shall regenerate under sprout method which needs after replacement. New forests can't grow well, while the clear cutting by groups with design is relatively better.
- Now the price of oak is low, standing at 450 yuan/cubic meter, no better than selling the firewood. Liquidambar formosana is 500 yuan/cubic meter, but it is too heavy and hard to carry, and labor cost is high. Fir is the best, and the price will be the same if its DBH is more than eight centimeters.
- They used to sell hills mainly because the policy was too tight (high taxes, harvesting quota, monopoly of acquisition, and so on). Now the hills are valuable and they would not sell. The people who can buy hills all enjoy good relationship and hope the policy could be changed, which will be beneficial to the development of the mountain area and farmers' income.

8.4.4 Huangda Wood Co., Ltd. (Su Huiqing)

(1) Development history

In 1995, taking advantage of the sales channel of logging station, Su Huiqing sold the woods to Liyang of Jiangsu Province for building. In 2003 with the forest right transfer he bought fir forests of more than 1000 *mu*. At that time the price of wood was lower, he bought the forest at the lowest price of 700 yuan per *mu*, and the average price was about 2,000 yuan/*mu*. The major goal was cutting and selling wood. The forests are mainly made up of the forests of the groups.

Since 2005, he has begun to fell the purchased forests, cutting the trees under the age of 15 year for improvement purpose, whose unit output was within 2 cubic meters/*mu*. He has chosen to selectively fell more than 15 years old trees, whose average output ranges between 4 and 5 cubic meters, and annual stable output is about 200 cubic meters.

The capital construction of the processing enterprises started in April 2009. In August 2009, the enterprise tried to produce. With three shareholders and a total investment of 6 million yuan, its fixed assets stand at 4 million yuan, and circulating fund 2 million yuan. It mainly produces blockboard, finger-joint panels, finger-joint plywood (for decoration and export). Its annual consumption of timber is 2,000 cubic meters with raw materials self-produced and imported half to half.

(2) Views on forestry policies

Harvesting quota control: The harvesting quota can be directly applied from the forestry station. It is convenient, as long as it is reasonable to obtain the approval in most cases. After 26 years, the forests can be clearly cut. At present, they choose selective cutting as the final cutting way. Generally the wages will be determined according to the situation of the mountain farm. The wages for one cubic meter of wood range from 150 to 250 yuan covering the whole process from cutting to carrying the woods down the hills, and average wage is 200 yuan.

There are two ways to regenerate in the cutting area: one is regeneration under sprout method after selective cutting, and the other is artificial afforestation after clear cutting (locally called “Yidaoguang”). The specific afforestation pattern will be determined in the cutting area design, and usually they will choose mixed pattern of firs, liquidambar and yellow mop (in the surrounding area of Huangshan, the planting of pines is banned). The plots with relatively good conditions will be replanted with bamboos. When the cutting is designed, the former forest right owner should be informed, afforestation acceptance will be executed in the following year after the cutting, and the cutting area design and afforestation design need to be finished by one institution.

Forestry taxes: The private farms produce and sell on their own, with each cubic meter wood bearing forestry cultivation fund of 70 yuan, and the scaling fee is more than ten yuan. The cutting

area design fee is 5 yuan, and they are exempted from VAT and income tax. The forestry taxes are basically within the acceptable level. From the present market, the prices have reached their peak and the margins have not been too large and evaluation criterion is based on the currency value of RMB.

To start up wood processing plant, it is important to deal with the staff of the forestry department and tax department. The advantage is obvious, because there are deals under the table. The VAT rate is generally 5% of the sales income. If you want to pay the tax well below the level, it is important to have good relationship.

Logging business brings quick profits. The maximum net profit can reach 150 yuan/m³, and the worst level could be 30 yuan/m³, indicating poor stability. And wood processing with orders can bring a revenue of 200 yuan/m³, and there exist significant fluctuations in case of no orders.

8.4.5 Boss Yu of Jiulong Wood Enterprise

(1) Background

Boss Yu of Jiulong Wood Enterprise, at the age of 21 started doing business in lumber (the right time of market opening in 1985), then operated the wood processing plant, currently he is using pine to make dinner chairs (taking advantage of the brand Di YA and dinner chairs belong to labor-intensive products, which is good for employment, so the local government supports, also he gets preferential policy support), and using fir to process solid boards.

(2) Discussion on relevant policies

Wood takeover of the processing plant: Now wood is the business of many enterprises. For saving cost and making good use of social resources, generally he will have acquisitions done locally, and give brokers 20-30 yuan as commission. The wood acquisition from large forest institutions (farmers) accounts for a large proportion. Lumber needs factory delivery, but depends on road conditions, he can conduct peak receiving. He has his own forests, so he can sell his products⁴.

Wood monopoly management problem: Boss Yu doesn't think there exists monopoly because of a single enterprise's purchase of timber, with reasons as follows:

- As information is unimpeded, farmers are clear about prices. Even if they have no idea about timber prices, they can make a survey in other places.
- Price difference lies mainly in different delivery places. The FFC prices 920 yuan usually on the ground of mountain delivery⁵. Jiulong Wood Enterprise needs spending additional

⁴ The conditions of managing the self-production and self sales license are owning artificial forests of 200 mu and the forest farm of 500 mu. The township encourages the management of the self production and sales license, and the purpose is to pay the salary of the carders.

⁵ The reason of delivery on mountains is for the sake of safety. When transport woods from the hill to the main road, generally use cars, because steep slope, overload, relatively high risks, In spite of contract, but people's life is valuable, and it will be very trouble when an accident occurred, as a result, try best to transfer risk rather than earn

50 yuan to carry the timbers down the hills, including truck loading fee of 20 yuan/cubic meter.

- Now there is vicious competition in wood acquisition. “Lumber price rises in the local market rather than non-local market”, and they outbid each other. Although acquisition scale is large, prices remain high.

Log exit problem: Before 2008, logs were not allowed to carry out of Huangshan District, but after the big snowstorm, wood supply increased, and the policy began to be relaxed gradually. The enterprise hopes logs won't be carried out of the district, because fewer exports can protect local log enterprises. The benefit from operating a factory is bringing about more social benefits, and local factories can accept field workers, so the government should issue some policies to encourage on-site wood processing.

Boss Yu thinks: superficially log direct export brings no money, so it is better to send timbers to local factories. Taking sending timber to Xuancheng County for example, 920 (bid) + 20 (loading fee) + 50 (short freight fee) + 100 (taxes) + 60 (freight to Xuancheng County, including the labor cost to carry the timbers to the freight train of about 16 yuan/cubic meter, and checkpoints customs clearance fee of about 5 yuan/cubic meter), the total amount is 1150 yuan. If the fees added for exiting district charged by the forestry department, according to the account book, wood price is hard to be equal to 1230-1250 yuan in Xuancheng County. But why do people still conduct the export delivery? Certainly there exist unspoken rules, such as making a profit through overload for tax avoidance.

Now the harvesting quota of artificial forests is relatively unrestrictive, but publicity is not so sufficient that many farmers don't know, causing a direct impact on wood supply. In short, to operate a factory needs raw materials. This requires solving the problem of wood acquisitions according to the market economic operation from system.

Views on the improvement of harvesting quota control system:

- Cutting management reform--plan and design. Now there are a small number of people in design institute, causing lagged design and influencing transporting wood down the mountain. From March to May each year, they should make designs and issue harvesting license timely. They should strengthen design efforts, use the power of the forestry station and urge farmers to cut wood during June–July period. 2-3 months can reduce moisture by 50%; the trees “Chougan” can save about 50 yuan of downhill delivery cost, and the factories can also greatly reduce dry cost.
- Cutting management reform--content of harvesting license: Now harvesting license covers tree species and plots, and the scaling is based on the harvesting license. If the license is

money.

different from actual situations of mountain farms, the procuratorate will make troubles. The implementation of the provisions is too rigid. The total quantity should be controlled, instead of the specific tree species, that is, in the scope of design, the total volume should be controlled rather than subdivide the species.

- Increased efforts shall be made concerning the afforestation and cutting management. Now the improvement cutting is designed by the forestry station, while the final cutting is designed by the design institute. Difference between personnel quality is rather big, and the mastery of the policy is not the same.

Forestry taxes:

- VAT program;
- To levy forestry tax in advance is good for enterprises.

The problems of forestland transfer:

- In 2003, the government issued the policy to stipulate forest land transfer. The original files of forest tenure transfer are not normal, which are being improved gradually. The present procedures are: report—approval--villager congress--a township document--auction house. For the forests of small area, the procedures are generally: design by the design institute—approval--issue of forest tenure certificate.
- Jiulong Wood Enterprise transferred four pieces of forestlands by auction, involving more than 2000 mu, and the biggest piece is of 1000 mu. The forests transferred are mainly the forests of the collective forest farms⁶. There are a small number of private forests, so the private forests are not transferred.
- Evaluation was based on the price at that time. The protective price of the government was about 450 yuan for /cubic meter of timber. At the early stage, the actual price for the woods was around 400 yuan/cubic meter. Now the price is up to 2000 yuan/mu or even higher. The price is determined according to the storage on the mountains, especially timber accumulation.
- The enterprise doesn't want to cut its own timbers, mainly purchasing timbers from others, so its resource reserves will increase slowly.

Afforestation cost estimation:

⁶ According to Boss Yu, between 2003 and 2005 there was a large scale auction of forestlands in the local place. From 2004 to 2006 the trend was in bloom. The time of large scale transfer of forest lands is surprisingly identical with the time of the new round of forest tenure reform. Subsequently, the forests controlled by the collectives also transferred. The explanation of Mr. Yu to the transfer of forests of collective forest farms is: for the collectives the management cost was large, and the capital in need was large. It was hard to acquire the harvesting quota. There was no profit from the timbers. The price of wages, forestry taxes and forestry charges were high.

- Estimation of afforestation proportion: 70% to 80% of firs and 20% to 30% of bamboos. Select the tree species according to the soil quality, and generally consult the forestry station.
- Fir afforestation is estimated to cost: 60-70 yuan per mu for cutting shrubs; 20 yuan/mu for controlled burning; the forest fire prevention is under strict control and it is easy because of the large scale; 200 yuan for three man-days for hole shape ploughing and setting the lines; 100 yuan for transporting seedlings and planting; tending, twice every year, 80 yuan each time, seven times in four years required. Total cost is 700 to 800 yuan. Additional 900 yuan or so is needed if they buy seedlings themselves.
- Cutting control. Generally two types of workers respectively for carrying and cutting will be separated, which has the advantage. If the selective cutting activities combine the two activities together, they will clearly cut the nearby trees, then the cutting intensity increases. Originally, the trees were numbered before the cutting, but the cost increased. If the two types of workers are separated, mutual benefit relationship is not obvious.

Opinions on farmers' afforestation: Now the mountain resources are scarce, and it is expected to see the embarrassing situation of no more resources for cutting in five years. If a farmer has a forest of 50 to 100 mu, his life will be worry-free. Afforestation-cutting-regeneration is a system. Keeping the green mountains means firewood is available. Afforestation takes 10 years. The price of timbers increases, and farmers can make a little profit. At present, farmers' enthusiasm for afforestation is not high for the following reasons:

- Labor shortage, too many people working outside the village;
- Harvesting quota problem. After allocating the forests to households, the harvesting quota for private hilly forests is not implemented. The application for the harvesting quota is rather difficult and very troublesome. Now the situation improves a little, but previous policy influence remains;
- Now the sales of wood is based on market economy, but forestry management remains planned economic model;
- Farmers thoroughly understand overall policies for forest protection, mainly thanks to publicity in place, and the forestry department's tight control of forest protection. But the farmers are not clear of the afforestation policy and cannot make out the afforestation subsidies. There are personal factors in obtaining the preferential policy. If cadres strengthen policy publicity, the situation may be better.

Suggestions on policy improvement:

- They should intensify efforts to announce the policy, and should announce afforestation policies and standards of subsidies at the forest protection and fire prevention meetings to

increase the transparency. Operating rules must be transparent, and business under the table should be avoided. They should enhance publicity to prompt farmers' enthusiasm for afforestation;

- The policy publicity should move down to farmers. Now, there are too few people in the forestry station, so they can just distribute the publicity materials to villages, and there is insufficient attention to publicity in the village;
- Project publicity system should be implemented and farmers' afforestation should be encouraged.

8.4.6 Yongfeng branch of Xinhua Rural Cooperative Bank

Yongfeng Town has four villages with 57 villager groups, involving more than 1,000 households with more than 8,000 people. 40 percent of farmer households are involved in loans, and the size of the loan is 75% of their deposits. The deposit is more than 40 million yuan. At the end of 2010, loan balance stood at more than 14 million yuan, credit loans at more than 10 million yuan, and non-performing loans (NPL) at over 300,000 yuan, accounting for 22 %. NPL has negative impact on new loans.

The reasons for farmers' loans are as follows:

- Illness, credit guarantee by others;
- Building the house, accounting for about 30%;
- Doing small business, representing about 40-50 %;
- Education loans, financial discount, tens of thousands of yuan;
- Since 2009, the specialized production households engaged in pig-raising fulfilled procedures for discount with Agriculture and Animal Husbandry Bureau with the receipt for a loan (IOU) of the bank. And the time limit of the loan is one year.

Loan programs and requirement: Borrowers should be no more than 60 years old, and the procedures for application are as follows: application--data collection--approval from sub-branch. Credit and audit are separated. Based on income and credit records, credit is rated as excellent, good and ordinary, totally three levels (originally 5 levels), corresponding with loans of three, two, and one million yuan respectively.

(1) For loans, investigation and signature are required, and customer evaluation is comparatively important.

(2) Track the borrowers' situation such as the use of loans and customer's transfer through customer connection network (informers).

(3) Farmer's deposit is an indicator taken into consideration for loans, and their savings accounts should be clear. The subsidies of returning farmland to forest and public welfare forests directly enter their accounts. Lending rate is 8.85-9.1%; deposit receipt pledge loan can amount to 10,000

yuan when the deposit is 12,000 yuan;

(4) Loan on house mortgage, with a deadline for 2-3 years, whose credit line is 65% of the appraised value, and mortgage shall be commodity houses in Taiping County (meaning Huangshan District). The borrower should have two suites to ensure the place to live in after the mortgaged property is repossessed by the bank. In 2011, the housing property certificates will be issued in rural area, so it is estimated that house mortgage will increase.

Forest tenure mortgage loan: Guarantee center offers counter guarantee. Generally it requires at least 40-50 mu of forestland, and the loan amount is 60 percent of the appraised value of the forestland, which is controlled by its head office. Currently, there are few cases of forest tenure mortgage loans mainly due to the fact that people owning more than 50 mu of forestland generally don't need loans.

Case: Sister of Cheng Siwen took advantage of the forestry guarantee company for counter guarantee, obtaining loan more than 200,000 yuan. Three households of Lingshang Village fulfilled credit counter guarantee loans, 40,000-50,000 yuan for every household, totaling more than 100,000 yuan mainly used to buy mountain farms.

Problems: NPL is increasing while credit line is reducing. The original line of credit was 50,000 yuan, which was reduced to 30,000 yuan, and now to 20,000 yuan. Banks are under a lot of pressure, as tax department levies business tax, and their superiors make increasingly demanding investigation into NPL.

9. SWOT Analysis of forest management policies and systems from farmers'

Table 7 SWOT analysis of forest management policies and systems

Harvesting quota control system	S	Control forest resources' consumption, and prevent overcutting; forest protection and use with concrete legal measure's safeguard; guarantee forestry taxes and charges collection;
	W	Neglect the cutting's function in the forest management; many examination and approval links and the more tedious procedure; the high administrative operation cost caused by compulsion; limit the forestry investors' usufruct;
Taxes and	O	The ecological environmental protection call surges upward; the income growth causes farmers' dependence on forest income to drop; legal awareness enhancement;
	T	Reform's call; farmer's pressure of increasing receiving; timber production forest's resources are insufficient; the administrative operation cost rises; the process of forest ownership reform;
	S	Tax revenue's general function and effectiveness; realize the forestry stipulated fees system design's original intention;

charges policy	W	The collection cost and the proxy cost are high; form the related interest group;
	O	The enhancement of tax payment consciousness; good law and system environment; relatively perfect administrative system;
	T	The call of lightening farmers' burden and the policy environment; the process of forestry reform;
	S	Aim at the poor people, and solve the fund's demand of the small farmer households;
Micro-mortgage financing policy	W	The difficulty of the pawn choice; the operation cost; the contradiction of public welfare and commercial operation;
	O	Farmers' exuberant demand for fund; credit promotion; forestry marketability advancement;
	T	The tedious procedure formed by risk avoiding; the project risk; the financial organization's profit pattern.
	S	Limit producers' behavior; make up producers' income loss caused by the cutting ban of public welfare forest; public finance payment superiority;
Public forest compensation fund management	W	The policy goal is not explicit; people paid subsidy lack pledge; the difficult supervision; the high operation cost;
	O	The enhancement of ecological protection consciousness; the good legal environment; the perfect forestry law enforcement personnel;
	T	The great difficulty of management and protection; the soaring proxy cost; farmers' high dependence on forest resources;
	S	Solve the forest's problems of low productivity and low efficiency; financial support;
Policy to forest quality improvement	W	The problems of investment validity and project fairness; the fiscal subsidy malpractice;
	O	Exuberant investment demand; forestry professional contingent; perfect forestry technology and administrative system;
	T	The project's administration operation accusation;

Note: Policy itself: Strengths(S) Weaknesses(W); External environment: Opportunities(O) Threats(T)

10. Problems analysis of the policies and systems

10.1 Afforestation costs continuing to rise and forestry subsidies aimed at large institutions directly, which affects small farmers reforestation enthusiasm

With the economic development and labor cost increase (chart 1), afforestation cost continues to rise, so it is of great significance for the government to offer subsidies for afforestation activities such as production subsidies. However, because of the huge gap between the demand for subsidies and supply of funds and the forest large-scale business policy orientation, the forestry subsidy policy is designed to orient scale control and tend to set the minimum area requirement, thus

making subsidies granted for policy consideration flow to large forest institutions, while causing the majority of farmers who occupy the most areas of forestland but live on the edge of poverty to lose the opportunity to get subsidies. The forestland fragmentation forming in Taoyuan Village makes individual farmers unable to meet the minimum area demand for afforestation subsidies. The resources characterized by dominant natural forests increase the difficulty in large-scale afforestation. The difference of project application cost between the small farmer households, large forest institutions and forest farms further hinders small farmer household to obtain forestry subsidies and consequently affects farmers' initiative to afforest and further affects cultivation of reserve resources. Therefore, the design of policies should take both justice and efficiency into account and expand sources of afforestation project subsidies, and appropriately lower threshold for project application and subsidies, and provide more development opportunities for common farmer households.

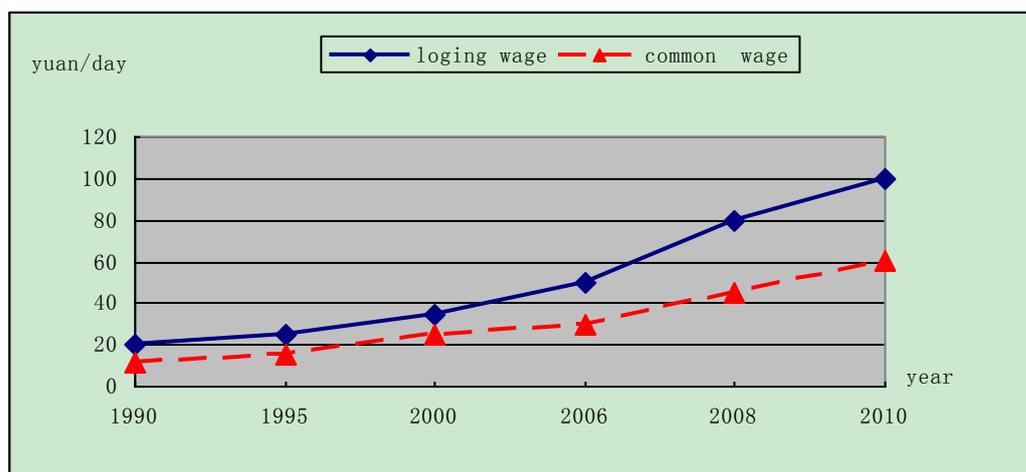


Figure 3 Taoyuan Village forestry wage change (according to survey data)

10.2 Low public welfare forest compensation standard and difficult management and protection

The farmers could cut trees in the natural forests according to the quota acquired annually before the forests were classified as public welfare forests. Meanwhile, farmers could obtain some firewood income, some of whom could increase income by picking pine gum. The stable unit contribution of the forests to the farmer households is about 300 yuan/mu (including labor services). If calculated by the firewood cut in the secondary forests, the minimum annual stable output is estimated to stand at around 500 jin of firewood per mu, or about 60-75 yuan per mu in terms of income. After the forests were classified as public welfare forests, the nature of resources changed, resulting in great impact on farmers' income, and they usually can get subsidies of only 4.75 yuan/mu (10 yuan/mu in 2010). Farmers are not much enthusiastic for managing and protecting the public welfare forests.

With a series of forestry policies favorable to farmers, especially the forestry tax reduction, and increased forestry benefit brought by growing prices for wooden products such as timbers guided by demand and supply conflicts, there is a growing tendency for the farmers to demand more for forest resource interests, and public welfare management becomes increasingly difficult.

10.3 Difficulty in obtaining reconstruction quota for natural commercial forests weighs on farmers' income

Compared with the public welfare forests, the natural forests that are not public welfare forests also undertake the task of ecological protection, but there are no subsidies for them. To the farmers of Taoyuan Village, the area of artificial forests is small, so they need to cut natural forests and cultivate reserve resources to sustain the living. But in reality, it is difficult for the natural forests to meet the state standard of low-yield and inefficient forest reconstruction, so the farmers can't carry out cutting and afforestation (fir planting). Even if the forest meets the demand for low-yield and inefficient forest reconstruction, the farmers can't obtain the harvesting quota because a single-household afforestation area can't reach the basic standard stipulated by the policies (more than 30 mu), or the loss of trust and difficulty of coordination happen in the joint-household operation that meets the minimum standard of scale, etc. Therefore, the commercial natural forests are called commercial forests, but in fact implemented a strict public welfare forest policy, seriously affecting forest farmers' present and future incomes. In recent years, at the expense of natural forest resource consumption in Taoyuan Village, farmers have expanded the scale of tea, mushrooms and ganoderma lucidum production, and the behaviors characterized by the "dadong" are clever farmers' attempt to seek alternative means of living under the restriction of natural forest policies, and also a positive response to the policy. And the effect of these behaviors on the development of natural forests and forestry should be examined carefully.

10.4 Insufficient development of forest tenure mortgage loan and its lagging behind the designed policy target

The findings suggest that the fund requirements of the farmers concentrate primarily on the traditional livelihoods like housing, wedding, disease treatment and children's education input, while the frequency of investment in agriculture and forestry is lower. The financing channels are determined according to borrowing line. Because loans are primarily used for major events, or unexpected incidents, the ordinary farmers show preference to the credit loans, rather than forest tenure mortgage loans, Micro-mortgage loans and secured loans, and they know little about these methods. They generally say they don't hear about much about the new forestry bonding centers, let alone get service from the forestry bonding centre.

From another perspective, for the sake of risk control, financial institutions grant loans mainly to powerful institutions, private forest farms and collective forest farms. At the same time, forest

tenure mortgage loans need assessment and counter guarantee, and loans are granted as per a certain proportion of appraised value, causing relatively high appraisal cost. After the forest right certificate is mortgaged, if the farmer wants to conduct cutting design in the following year of the loan, he should submit an application to the bank, and he can apply for harvesting quota only after the bank approves and signs the agreement. As the forest resources in Taoyuan are characterized mainly by natural forests, they are difficult to achieve the required artificial forest conditions for forest tenure mortgage loans, let alone the area demand. Therefore, forest tenure mortgage loans don't bring convenience for most farmers to raise funds. Such problems as troublesome procedures and high cost for obtaining the funds have become the fundamental causes of lower demand for the forest tenure mortgage loans.

10.5 Outdated forest road construction

Forest roads have great impact on forestry production and farmers' income, and have a great significance and function for the promotion of resources value. Since 2009, Huangshan District has stepped up forest road construction, but 80% of the funds for forest road construction was used for the construction and maintenance of forest roads for forest quality improvement project in special planning areas, and also focused on provincial bamboo science and technology demonstration parks, townships and villages. Farmers generally believe that it is hard for a single household to realize logging activities, mainly because the road requires joint-household maintenance. If the forest roads can keep pace with the development, the value of forest resources will greatly improve, and stimulate farmers' enthusiasm for afforestation. With the roads, there are conditions to achieve the implementation requirement of the project, which is better than all kinds of afforestation subsidies, and better facilitate forestry department management.

10.6 Strong technical training demand of the farmers, but seriously insufficient supply of training

Farmers' demand for training is strong, but there are a small number of trainings, and the trainings are often a show and irrelevant to actual needs. Some trainings target only at cadres, far away from farmers' need. Of course, the supervisors of the FFC once attended financial supervision training, a director of the FFC participated in Bamboo Growing Training organized by Zhejiang Institute of Forestry (now Zhejiang A&F University). These trainings play a positive role. Farmers hope that in the process of village forest management transformation, they can accept all kinds of practical technical trainings, especially those on the bamboo cultivation and improvement of stand condition, bamboo shoot digging technology, and the generalizing of new tree species etc. Of course, the management method of FFC may be required.

11. Recommendations to policies

Since the 1980s the forestry policy improvements can be divided into three categories: the first is

the forestry policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility and the new forest tenure reform, the second is the policy to break the monopoly of forest enterprise management and the reduction in taxes, and the third is the harvesting quota system and classified operation system. They embrace the property system of original property right, right for earning and right for disposal.

Forestry policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility has a qualitative reformative significance on forestry and forest farmers, for it changed the messed situation of property borderlines at the time of “Four Fixed Policy”, realized the distinction between the borderlines of mountain forests among villages and groups, and on this premise the new forest tenure reform solved the mountain forest disputes left behind by the forestry policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility. The new forest tenure reform was the supplement and perfection of the forestry policy, especially the issue of forest right certificate legally confirms the farmers’ property security and grants them the right for earning and the right for disposal. The most significant change in the policy for the farmers’ usufruct is to cancel the policy of the forestry enterprise’s exclusive management, which broke timber market monopoly, substantially increased price, promoted farmers’ income and stimulated their enthusiasm for forestry production. Besides, the gradually reducing forest taxes have a significant influence on increasing farmers’ income and of forestry management efficiency.

But the content of the policies to give farmers the right for earning and disposal is still very limited, the present policy of harvesting quota, especially the strict control on the cutting of natural commercial forests, does not conform to the managing requirement of classified business policy, that means free operation of the commercial forests, even more violate the forest operation law. In the forest area, the available cutting resources are closely relevant to the forestry income, but its infrastructure and the policy restraint the income too much. Therefore, policies should be improved from the following aspects:

11.1 Relax the harvesting quota control of the natural commercial forests

With the collapse of monopoly acquisition system of the forestry department and forestry tax relief in 2003, the comparative advantages of the forest resources appear, and the farmers’ wish to improve forest output efficiency is intense and the demand for artificial forests to replace natural forests is vigorous, but the harvesting quota (farmers call afforestation indexes) become scarce resources; Exclusively protected natural forest policy makes the natural secondary forests with low quality and value in Taoyuan Village not allowed to cut, nor can they really enjoy

afforestation. The farmers can hardly enjoy the benefits brought about by wood loosening management and forestry tax cuts. The results of investigation show that the harvesting quota management in the natural forests is the biggest problem in practice. There are greater conflicts between the farmers' economic needs and the government's ecological demand. How to successfully handle the conflicts between the economic and ecological benefits is currently the biggest problem of Taoyuan Village concerning forest management policy and institutional adjustment, but also the common expectation of the forestry administrative departments and the farmers. Meanwhile, we should also see that the policy for natural forest logging control has different influence on different farmers. In fact, under the national unified policy requirements, how to appropriately adjust the policies and increase the flexibility of policies according to local actual situation and resources of farmer households is the question that the policy-makers must take into account. Anyway, what farmers expect most lies in relaxing natural forest logging control and cancelling the strict requirement on tree species for cutting, which is also the emphasis of the future reform.

11.2 To further improve the public welfare forest compensation standard, broaden compensation channels and relax logging policy

For public welfare forests, at present the greatest concern of the farmers is the public welfare forest compensation and business problems. Farmers think highly of the ecological value of the public welfare forest protection, but complain about excessive restrictions of the policy and the serious deviation of income and contribution or loss. They resent the fact that the nearby hydropower station enjoys free of charge the soil and water conservation function of the public welfare forest and the natural commercial forests. Therefore, to further improve compensation standard, according to forest management rules to moderately relax restrictions on public welfare forest management, they are full of expectations. In addition, they hope to learn the methods for Zhejiang province (the downstream industries of Xin'an River compensate the upstream for water resources), to extract certain proportion of hydropower gains to assist Taoyuan Village farmers who provide ecological services, and then further expand public welfare forest compensation channels.

11.3 Change harvesting quota management mode

The harvesting quota management system of commercial forests is based on forestry multi-function use, and the goal of this policy is that forestry production operators in the process of pursuing economic benefits (private target) give consideration to ecological benefits (attainment of social goals). From social perspective, it is understandable. Whether in the form of village-level forums or individual farmer interviews, sufficient understanding was given, basically holding that completely cancelling cutting restrictions may cause some farmers' excessive utilization of forest

resources. However, they can't understand the policies concerning cutting control over artificial commercial forests and the policies which sometimes are tight and sometimes relaxed concerning non-public welfare natural forests. They think it will seriously affect farmers' income and low-yield forest reconstruction process. The forest policy should shift from quota system to approval system as soon as possible on the premise of liberalizing the control.

Whether the village level forums or farmers' interviews all show that the harvesting quota control remains necessary. Many farmers say they have been used to applying for Harvesting license when cutting trees, but they are worried that canceling harvesting quota control will inevitably cause farmers to cut trees for immediate interests and lead to forest resource destruction. Therefore, executing harvesting quota management can constrain logging, and the current harvesting quota management mode needs to be changed:

First, working out harvesting quota shall be cancelled, the provincial authority will not issue harvesting quota, forestry departments of various counties (cities) should investigate forest volume, forest form, etc, and develop 5-10 years cutting plan for this area according to the forest resource profile and sustainable management principle.

Second, the forest property owner should determine the cutting plan according to forest resources and forecasts of market, policy and other comprehensive factors, and then file application to forestry department. After the forestry department explores in this area, harvesting quota will be issued in combination with the cutting plan for this area.

11.4 Increase policy support for the forest road construction investment

With rising wages, forestry infrastructure, especially forest road construction, has witnessed obvious effect on cutting forest resource exploitation costs and improving forest intensive management level, and serves as public goods or quasi-public products with obvious externality. Its supply involves a large number of farmers, covering a wide range of benefits, and targeting at groups instead of individuals.

Individual farmers often are subjected to limited investment ability, unable to engage in single-household forestry infrastructure construction. Even if they have the ability to make investment, because of externality of forestry infrastructure construction, other farmers will "hitch-hike" to gain a benefit. Its quasi public property decides the dilemma of individual farmer households in this aspect, thereby affecting the forestland management efficiency. Therefore, increasing fiscal and financial support at national and local levels for forest road construction plays an important role in translating forest resources advantages into economic advantages, and increasing farmers' income.

11.5 Increase the forestry production subsidies, and reduce project access standard

Under the existing policy framework, afforestation, nurturing, and low-yield forest reconstruction

project suffer from some constraints (minimum), while farmers' forestland is small and highly fragmented, presenting diversified management patterns on the plots, which shows significant difference, and lags far behind the demand to apply separately for the forestry production program, and gains no access to project subsidy. Farmers' income will be affected due to their heavy dependence upon forest lands. Therefore, efforts shall be made to change the situation that the farmers have too limited subsidies, increase investment in forestry production, reduce the requirement of forestry production projects on area, simplify project examination and approval procedures, and expand the coverage of forestry production subsidies. These should be significant for small-scale farmers to improve forestry production enthusiasm and increase forestry income after the forest tenure reform.

11.6 Relax restrictions on forest tenure mortgage loan, and increase financial subsidies

In the forest region, forest resources are an important property of farmer households, but the current procedures for forest tenure mortgage loans are trivial, appraisal price is low, and appraisal fee is collected based on appraisal amount. Besides, banks won't provide farmers with small area mortgage loans. These problems, among others, cause farmers to be reluctant to apply for bank loans, so the property characteristics of forest resources fail to be embodied. Therefore, efforts shall be made to loosen restrictions on the forest tenure mortgage loans, strengthen the publicity of the policies concerning forest tenure mortgage loans, match the corresponding loan modes and different financial subsidies according to different borrowers and loan purposes, and make mountain forest resources become farmer's "green bank", which are the inevitable problems to further improve the policy for forest tenure mortgage loan.

For ordinary farmers, they can gain loans only with a forest right certificate. The loans used for forest management projects will be given financial discount, and those for non-forest management projects will be provided with low or no financial discount. For the possible risks to financial institutions, government will bear in whole or in part, so as to promote the enthusiasm of financial institutions and farmers for forest tenure mortgage loans.

11.7 Respect the farmer's rational choice, respect traditional knowledge

During the field investigation, we could obviously feel farmers have extremely high recognition of forest resources value (it is the sustainable source of income and endowment), as rational agents with long mountain forest management experience, farmers know the sustainable management of forests. Some traditional knowledge is scientific, while some may not be scientific and with objectives of cost reduction gradually the farmers achieve experiences through continuous trials and errors, traditional practices which are not scientific will be replaced with more scientific methods. Take controlled burning for instance, despite policy banning, this method remains in use, and fire incidence does not increase. If the policy is relaxed, joint-household guarding pattern will

be underway in the process of controlled burning. Therefore, policy formulation should not merely aim at facilitating management (“giving up eating for fear of choking”). Instead, it should also focus on increasing forestry production efficiency and farmers’ income. As long as the real right is for people, local villagers will find suitable patterns for their own economic development and the best mode for forestry production.

12. Experiences and lessons-learnt from the application of the materials (capacity building, forest management, and policy evaluation)

(1) Before the training, you must start out a thorough check on the detailed information on the forests, and make documents of forest stands. These materials are very useful for forest assessment and planning. When villagers find you have a good understanding of their village, this will shorten the distance between you and them.

(2) Try to begin with an ice-breaking game. Use either the fruit varieties at the reception or other methods to shorten the distance between you and them. And learn about their basic situation and social structure.

(3) Explain the handouts in detail. Participants generally have low education background, and there exists great difference between mandarin Chinese and local language. It is very important to be familiar with the language of the farmers and understand local production and living habits. Through careful explanation, you can guide farmers to understand relevant concepts and meanings of material contents.

(4) Cards and the large sheets of paper should be used flexibly. We cannot copy the approaches in textbook. Stick the paper to the blackboard. Trainers ask questions and let villagers answer freely, and record their answers on the paper for better effect. To avoid some farmers’ “thumbing a lift”, you can divide them into different groups properly to show the difference among farmer households.

The knowledge the farmers has learned can be divided mainly into techniques and regulations. Techniques chiefly involves the content and procedures for developing forest management plan, participatory forest management mode, evaluation on forest management conditions, and plan for the future. The laws and regulations or classes will be described in detail in section 4.2.

13. Recommendations to implementation of participatory forest management at village/FFC level

(1) Respecting the wishes of farmers and achieving coordination of multi-objective forest management is the basic premise for the implementation of participatory forest management.

In order to let people involved in forest management all benefit, the pilot villages need to seek new forest use and management systems, and technology path which is conducive to sustainable development and forest multi-objective management. It should be said, forest multi-objective

management is a challenge for the forestry sector, increasing difficulty and complexity of management. Meantime, meeting the interest appeals of various interest groups on forest management is the key to achieving sustainable forest management. This requires active participation of various interest groups, especially the participation of local farmers, during the establishment of forest management objectives and management methods, so as to improve the effect of forest management plans and forest management methods.

(2) Forest property arrangement and community forestry organization construction are the important basis for the implementation of participatory forest management.

Tenure and ownership systems of forest and forest land are relatively complex, including a wide range of property and rights arrangements. Moreover, between users who depend on the forest, imbalance of usufruct and decision making power makes community power problems become more complex. Property arrangements must be combined with local conditions, and must reflect public opinions. For participatory forest management, focus shall be placed on the improvement of farmers' economic status. In particular, vulnerable groups' rights within the community (including women) shall be respected. In the meantime, exclusive rights and usufruct should be highly valued.

An important way to achieve participatory forest management is to develop local forest management organizations, especially community organizations. In so doing, to a greater extent, we can organize local farmers to participate in forest management activities. Existing experience has proved that unless relevant rights are transferred effectively to the community-based organizations and local organizations, any new or enhanced local public resource management system is unlikely to become successful. Likewise, it is impossible to achieve forestry development project sustainability.

(3) Incorporating forest management into the comprehensive development of local village is an important part for the Implementation of participatory forest management.

The basic purpose of participatory forest management includes: relying on local farmers' full participation so as to achieve effective management and reasonable use of forest resources in rural areas; giving full play to the overall efficiency of forest resources in terms of protecting the environment, improving agricultural production conditions, providing rural employment and increasing rural household income; improving and enhancing the quality of farmers' life and rural ecological environment; and integrating forestry with rural development closely. This basic purpose determines forest management must be closely integrated with rural development, forest resource management is an important part of rural development, and forest management must be closely associated with the interests of farmers and overall rural development.

The formulation and implementation of forestry development plans are the main content to

achieve participatory forest management. Therefore, we should make plans that accord with development interests and meet the demands of farmers, and give full play to farmers' potential to achieve development goals; we should encourage farmers to regard forestry development as a part of activities aimed to improve their own life, and take reasonable monitoring and assessment methods, especially covering the local people.

(4) Forestry policy, legal regulation and capacity building are the important protection for the implementation of participatory forest management.

Forestry policy and forest-related laws and regulations should provide guidance and incentives to individuals engaged in forestry development. In particular, they should encourage farmers to participate in forestry development projects to a great extent. Therefore, farmers' participation in forestry development activities needs to be established pursuant to law. The powers, duties, responsibilities, and interests of farmers involved in forestry development activities should be clearly defined, so as to ensure farmers' confidence in the long-term forestry development, to reduce uncertainty in forestry decision-making activities, especially to avoid the policy risk.

Participatory forest management emphasizes the participation of community members, so capacity building on local community members is particularly important in the long-term management of forest resources. For farmers, in addition to the existing skills and indigenous knowledge on forestry management, they also need: knowledge and skills of sustainable forest management; experience and knowledge for forest products to enter the market; knowledge of laws and regulations to safeguard farmers' rights and interests; and experience and knowledge in how to carry out self-organization and management to get the power and advantages of the group.

14. Recommendations to the training materials

(1) Languages need further simplifying and the facilitators before the training should make a field investigation and can explain the materials straightaway. For instance, "health forests" and "happy families" are so abstract that villagers do not know specifically what they refer to. If the facilitators replace them with the quantitative indicators "the forest grows well" and "the contribution of the forest to the farmer family", it will be intuitive and easy to understand.

(2) Provide a minimum number of question and answer pattern of questionnaires. Multiple choices and true or false patterns are more acceptable to the farmers, and the questions should be to the point so the facilitators must be familiar with the situation in the countryside and their customs.

(3) The participants' assessment form can evaluate their training efforts in an intuitive way (very good, good, generally, poor, very poor).

(4) Use some simple examples as the content of training, and take advantage of these examples to introduce some forest management techniques and methods to forest farmers. A typical example of the forest assessment and management plan will further enhance training results.

(5) Qualitative evaluation criteria are more readily accepted than quantitative assessment standards for participants.

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List of the Project Publications
GCP/CPR/038/EC Working Paper

编号	标题
WP001C	安徽省林农合作组织研究报告
WP002C	福建省林农合作组织研究报告
WP003C	贵州省林农合作组织研究报告
WP004C	湖南省林农合作组织研究报告
WP005C	江西省林农合作组织研究报告
WP006C	浙江省林农合作组织研究报告
WP007E	Assessment of Forest Farmer Cooperatives in Anhui Province
WP008E	Assessment of Forest Farmer Cooperatives in Fujian Province
WP009E	Assessment of Forest Farmer Cooperatives in Guizhou Province
WP010E	Assessment of Forest Farmer Cooperatives in Hunan Province
WP011E	Assessment of Forest Farmer Cooperatives in Jiangxi Province
WP012E	Assessment of Forest Farmer Cooperatives in Zhejiang Province
WP013C	安徽省林权交易中心研究报告
WP014C	福建省林权交易中心研究报告
WP015C	贵州省林权交易中心研究报告
WP016C	湖南省林权交易中心研究报告
WP017C	江西省林权交易中心研究报告
WP018C	浙江省林权交易中心研究报告
WP019E	Assessment of Forest Tenure Trade Centers in Anhui Province
WP020E	Assessment of Forest Tenure Trade Centers in Fujian Province
WP021E	Assessment of Forest Tenure Trade Centers in Guizhou Province
WP022E	Assessment of Forest Tenure Trade Centers in Hunan Province
WP023E	Assessment of Forest Tenure Trade Centers in Jiangxi Province
WP024E	Assessment of Forest Tenure Trade Centers in Zhejiang Province
WP025C	安徽省参与式森林经营指南应用及政策评估报告
WP026C	福建省参与式森林经营指南应用及政策评估报告
WP027C	贵州省参与式森林经营指南应用及政策评估报告
WP028C	湖南省参与式森林经营指南应用及政策评估报告
WP029C	江西省参与式森林经营指南应用及政策评估报告
WP030C	浙江省参与式森林经营指南应用及政策评估报告
WP031E	Policy Assessment and Pilot Application of Participatory Forest Management in Anhui Province
WP032E	Policy Assessment and Pilot Application of Participatory Forest Management in Fujian Province
WP033E	Policy Assessment and Pilot Application of Participatory Forest Management in Guizhou Province
WP034E	Policy Assessment and Pilot Application of Participatory Forest Management in Hunan Province
WP035E	Policy Assessment and Pilot Application of Participatory Forest Management in Jiangxi Province

WP036E	Policy Assessment and Pilot Application of Participatory Forest Management in Zhejiang Province
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The project “Supporting policy, legal and institutional frameworks for the reform of forest tenure in China’s collective forests and promoting knowledge exchange” supports the reform of forest tenure in China’s collective forests through strengthening policies, laws and institutions responsible for the management of collective forests in six pilot provinces. Funded by the European Union (EU) and implemented by the State Forestry Administration of China (SFA) and the United Nations Food and Agriculture Organization (FAO), the project will also promote the exchange of knowledge and experiences on forest tenure reform both within China and with other countries.

Website: <http://www.fao.org/forestry/tenure/china-reform/en/>