

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

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



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1. Introduction

1.1 Description of the issue

The implementation of collective forests tenure reform in China started in 2003. In promoting and deepening the reform, Chinese government has established numbers of supporting policies, such as “Decision of CPC Central Committee and State Council on Accelerating the Development of Forestry (2003)”, “Outline of the Eleventh Five-years Plan for National Economy and Social Development”, “Suggestions of CPC Central Committee and State Council on Promoting a Comprehensive Tenure Reform of Collective Forests”, and NO.1 central document of 2006 and 2007. Under these supporting policies, the reform has gained a series of achievements. Which, by the end of Sep. 2009, 1.514 billion mu of tenure forest land area was identified, accounting for 59.42% of the total collective forest land area; 0.996 billion mu, within the total identified tenure forest land, has been devolved tenure to rural household, accounting for 65.7% of total identified forest land, and 1.136 billion mu of forest tenure certificates has been issued, accounting for 75% of total identified forest land. Also by the end of Sep. 2009, 48.04 million forest tenure certificates were issued to 43.91 million rural household.

The collective forests in China, account for 58% of total forest land, have a great potential to significantly contribute to rural livelihoods. But for a long time, 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.

However, the collective forests tenure reform has changed the longtime top-down management mode, provided legal basis and support for communities and farmers to participate in forestry management, which stabilized forestry business ownership, and motivated farmers’ enthusiasm in afforestation. This reform is known as China’s “The Second Land Revolution”. As the forest tenure rights getting clearer gradually, farmers’ enthusiasm in afforestation, forest protection as well as production has been aroused greatly. This also resulted increasing of forest income, improving in utilization of forestry resources, better ecological environment, and reduction of forest land dispute, etc.

During policies implementation, on the other hand, one of the most important challenges the collective forest tenure reform facing is that the participation of multi-stakeholders, in particular, the forest users and community based organizations. The current bureaucratic forest management system, based on administrative orders, is not set for the best interest of farmers, which needs more participatory approaches, including empowering the forest farmers in forest management.

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. Thus, the development of the participatory approaches and tools, which are suitable for Chinese context, is on demand.

Meanwhile, the new collective forest tenure system, after many achievements have been made, still faces a series of challenges, such as problems emerged from decentralization of forest resource management after reform. Some farmer households, especially in southern China, where forest area per household is comparatively small (only 0.5 to 2 hectares per household), encountered uneven capacities and efficiencies in forest management, lacking of technology and service in forestry, difficulties in marketing forestry products, difficulties in forest fire prevention and pest control, also insufficient investment in forestry labor due to the outflow of rural labor force in some regions, etc. Therefore, it is necessary to solve the drawbacks of decentralization, for farmers to be better benefited from forest management.

The new and different models in forestry resource management, such as forest land circulation, forest farmers' cooperatives, collective management organizations of forest land, not only obtained the policy and financial support from the government, but also appears many attempts with innovative significances through practice. The collective forest tenure reform promoted diversified developments in China's forestry resource management model. And the establishment of relevant policies and measures, such as the reform of harvesting quota control, also promoted the exertion of communities and farmers' principal role in forestry management.

The initiatives and astonishing achievements in China's collective forest tenure reform were widely noticed by international communities and fully supported by international projects. With major financial support from EU, a project on "Supporting policy, legal and institutional frameworks for the reform of forest tenure in China's collective forests and promoting knowledge exchange" has being jointly conducted by FAO and SFA of China. This project has chosen 16 pilot villages, from 8 counties in 6 provinces, which include Anhui, Fujian, Guizhou, Hunan, Jiangxi and Zhejiang. The objective of this project is to support institutional construction of collective forest tenure reform in China, and sharing knowledge as well as experiences of China's forest tenure reform. Presently, this project has been carried out to the second phase. The first phase was to study the development of forest farmer's cooperatives in different forest region. Through data collecting and in-depth discussion with multi-stakeholders, the main problems and conflicts were revealed, thus discovered the key approach to solve these problems and promote sustainable development of forestry is the participation of the multi-stakeholders in forest management.

Therefore, the second phase of this project is to conduct pilot application on "participatory forest

management”, by strengthening the capacity of participatory forest management for various related parties such as forest farmers, EFC, forestry administrative; conducting a systematic assessment on forestry management policies in relates to forest tenure reform; evaluating the adaptability of the training materials in participatory forest management, and propose recommendations for improvements; thus to complete a set of guidance documents for participatory forest management, that is suitable for the condition of China.

1.2 Literature review

The essence of forest management is to explore the interactive relationship among the social environment, ecological environment and business environment. So forest management is not only economical activity, but also social activity, and should build flexible systems relevant to human nature following the rules of material reproduction, human reproduction and environment reproduction (Chen Jiancheng, 2002). Forest multifunctionality gets more and more recognition, thus the objective of forest management is not simply to pursue timber production. It becomes the consensus that people should pursue sustainable forest management and realize the various functions of forest.

How to manage and operate the forest is not only the business of the forestry department and farmers, but also now one of the hot issues in rural livelihoods and environment. Participatory forest management is maturely applied in many countries in the world. In our country, there were some participatory forest management practices, but for a long time, the main management models were dominated by nation or community. Nowadays, Chinese government is conducting the institutional reform in community forest tenure to promote the development of the forestry. The objective of the reform is to decentralize the forest management and improve the safety of the ownership by clarifying the property right. As the core subject of forest management and reform, the farmers’ participation is very important. And participatory forest management will become the most important model for the forest management in the future.

1.2.1 Participatory forest management

Participatory Forest Management is an important strategy to achieve sustainable forest management. Yet there isn’t a strict standard or mature definition. However, in recent researches, there are two different emphases in understanding about participatory forest management; one emphasizes that participatory forest management is simply a forest management model that different from the traditional single collective forest management approach, which allows the participation of community and farmers. While more scholars, who explored from a deeper level, stress that participatory forest management is a new philosophy with a series of special principles.

Just an approach of forest management?

Peng Yougui thinks that, participatory forest management is the forest resource management behavior that NGOs and individual citizens actively participate in, without coercion of administrative and legal approaches. From their points of view, participatory forest management has two basic characteristics, one is non-governmental, which indicates that in participatory forest management, the main subjects are not from governmental organization, instead they are farmers and economic organizations in the community, and their behaviors do not represent the government; the other one is non-mandatory, which means that the participations are all voluntary behaviors, not impelled by government or any other institutions. Pan Liqin and Luo Mingcan (2005) hold the similar opinion. They think participatory forest management is a new forest management model different from the traditional collective model. From the case in Yunnan Liujiang watershed, they concluded that the recent community participatory forest management include the following forms; collective forest, collective management, Segments forest management, sideline development on the leased woodland, Partnerships individual contracting afforestation, reforestation and mixed forestry. From their point of view, all the emerging community participatory forest management models, which opposite from the traditional single collective management model, are participatory forest management. These management models motivated the community and farmers' participation, vitalized the forestry development, promoted forest development in the watershed, and improved the ecological environment.

They emphasized that participatory forest management is different from the traditional single collective forest management model; the ownership and management responsibility are transformed from the centre government to the local. Farmers and community are permitted to participate, and the participants become diversified, which may include the government, organizations and individual farmers, instead of the government dominant only. But they think, participatory forest management is promoted to motivate the farmers and all social powers to participate in forest management, the pre-condition is that forest department, which represents the government, is still the main subject of forest resource management.

A series of principles?

While the above mentioned understanding that participatory forest management emphasizes more on its “non-governmental” and “not mandatory”, many other scholars emphasize and promote the participation of farmers in a more positive, more affirmative way. They think participatory forest management is not only a technique or a management approach, more importantly, also a series of ideas and principles. They highlight the utilization of the concepts

and methods of participatory development, in application of forest management.

There is an essential distinction between participatory forest management and traditional forest management. From forestry's angle, this distinction shows deepened understanding on the essence of forestry, and the applications of people-oriented, democratic governance in the forestry management. It stresses on the human-based partnership between mankind and trees, the forest management in relates to other animal and plant management, and the diversified forest tenure. The purpose of forestry production is the comprehensive interests of economical, social and biological benefits. The forest management plan is diversified and flexible, and decision will be made by public participation rather than elite decision. The roles and functions of governments also change correspondingly. The most important point is the participation of various stakeholders, which the forestry institution is not the decision-maker any more, but will be the convener of resource management community (Chen Jiancheng, 2002)

Furthermore, participatory forest management believes that farmers are the most important stakeholders, thus they shall be the subject of forest management and deserve the decision-making rights. The core of participation is empowerment, while the core of empowerment is decision-making power (He Jun, He Pikun, 2007). Participatory approach pursues justice, equality and democracy. Forest management activities usually and should be examined in the context of people's livelihood systems as a whole, since these can affect the size and nature, of any benefits derived from forest protection, and also their main reasons for deciding to protect (Czech Conroy, Abha Mishra, Ajay Rai, 2004). They were capable to solve their own problems, manage and utilize their resources well, by their own knowledge and skills. The government should give the opportunity and responsibility to relevant local residents and let them participate in the forest management as the subject. The government should also motivate the local residents to participate in the resource management planning and implementation, to diagnose their problems in natural resource management, identify their needs and objectives, and make decision. During the whole process, we shall also pay attention to participation of vulnerable groups, and the local long-term accumulated knowledge and regulations toward natural resource management. Anyhow, participatory approach emphasizes to improve local residents' awareness of self-decision-making and self-management ability, contribute to construct sustainable development mechanism of natural resource management (Wang Chunfeng, 2006). Participatory forest management itself is a learning process, and participants need to adapt to the complex uncertain ecological and social environments. To achieve sustainable ecological system management, promote policy legalization, and build relevant consensus: participatory forest management is a process of capacity building (Chen Jiancheng, 2002).

Forest management is also a social activity, not merely technical. When we learn about participatory forest management, understanding its ideas and principles will be very helpful for both practices and for the capacity building of participants and researchers.

1.2.2 The evolution of forest management mode in China

Forest management modes and mountain forest ownership system are inseparable. The evolution process of mountain forest ownership also decides the changes in forest management mode.

Before liberation, mountain forest ownership is in the form of feudal landlords' private ownership, and is mainly managed by the possessors themselves. After the founding of new China, through the land reform, agricultural production cooperatives, people's communes and the household contract responsibility system, the forest resources management also experienced different forms, such as household management, the collective management, the collective and farmers' management forms.

During the land reform period, according to the provisions of the *land reform act*, the government confiscated the mountain forests of landlords and temples, and made some of mountain forests state-owned while the others given to poor farmers; the farmers had the ownership of mountain forests, and can independently manage it. After basic socialistic transformation completed, the land state-owned ownership was established, and citizens did not have land ownership anymore. So the mountain forests also belong to state and collective. Since 1956 when the advanced agricultural production cooperatives were established, to the early 1980s when the rural economic reform implemented the forestry "policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility" policy, mountain forest ownership belonged to, also uniformly managed by the advanced cooperatives, people's communes and production brigades. The members had only sporadic trees around their houses and farmlands. Due to the farmers' needs of woods, the government allotted a small amount of mountains to farmers to manage by themselves, but the ownerships still belong to communes and battalions. This is the first time when the ownership and management are separated since new China founded. In 1982, the government conducted the forestry "policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility" work, and farmers began to have rights in forest management.

From the above evolutionary process of forest management form, we see that the changes of mountain forest management form and ownership are closely linked. Under the condition of state-owned land ownership, the key to implement participatory forest management is the separation of forest resources ownership and usage right. (Peng Yougui, Long Dewu, 2003)

Since the reform and opening up, China's forestry system experienced the management system reform with "Policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility" as the main contents in the 1980s, the management system which combines household management and collective management, the combination of scattering and unified management in the 1990s, and the forest tenure reform plan as "clarifying property right, reducing taxes, opening management, standardizing process" at the beginning of new century.

The reform of collective forestry was started from the beginning of 1980s, when the household contract management system reform had a great success. The rural and agricultural economic had a rapid development, and the farmers' income were increased substantially. Under such background, the successful experience of household contract management began to be transplanted into forestry reform. Since 1981, the forestry "Policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility" includes that: (i) allocate the small piece of trees around the farmers' houses, which area accounts for 3% ~ 5% of the total forestry; (ii) contract large area of the collective mountain forestry to farmers, which so-called individually responsible mountain forestry. These account for about 50% of the total area, and mainly are poorly grown bushes, or even barren land; and (iii) the rest high-quality forestry are still owned and managed by the collective. The forestry "policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility" work, such policy preliminary broke the unified collective management in southern forestry.

After 1984, the individually owned and household contracted mountain forestry is merged together in many regions, so called "Two mountains into one mountain" reform. This reform further expanded farmers' contracted management scope. In some regions, the individual farmers manage over 80% of mountain forestry area.

In 1985 the wood purchasing system was reformed, which cancelled the unified procurement and distribution system, and opened up the timber market completely. It solves the long-time problem of low lumber price, and increase farmer income to certain extent. But forestry household contract management and wood open markets have not activated farmers' enthusiasm in forestry as expected. In contrast, because of uncompleted law and poor oversight, the reform resulted in large-scale of overcutting. And the wood market fell into chaos and out of control after open up; as there was serious tax evasion and most profits went to business distribution segments. The unscrupulous traders made exorbitant profits, which further stimulated wood overcutting. After several years, the forestry became imbalanced between planting and depletion,

and great amount of resources were wasted, which later led to the “Two Crisis” (resource crisis and funding crisis) in nationwide forestry (including state-owned forest region). The imbalance between wood supply and demand was increasingly intensified.

Facing the increasing forestry "Two Crisis", in 1987 the central government issued the 20th file, resolutely put a stop to overcutting, closed wood free market, and explicitly stipulated unified purchase of wood by the forestry department. This policy controlled the mess of wood market, however the black market was still rampant, and thus the forestry "Two Crisis" was not fundamentally improved yet.

In the 1990s, forestry reform had experienced difficulties in exploration, which forest management form in many regions showed diversified development directions. The basic characteristic of this evolution is changing from the past single collective management form to a binary form: in combination of household contract and collective management, and combination of scattering and unified management. The management forms gradually stabilized in few different models, which are: household management, partnerships management, share conversion or cooperative management, collective management, and also forestry, industry and commerce jointly management.

The above forest management forms, although alleviated the "two crisis" and promoted the development of forestry production, but still had a fundamental defect, which was the unclear of forestry ownership. It caused farmers to be overly burdened with low income, moreover, it caused monopoly of lumber market, regional blockades, circulation blocked in collective mountains, and lack of transparency. Based on the suggestions widely collected from the relevant departments and the farmers, the basic idea and main policy framework of forestry property rights system reform have become clear, which led to the "clear property rights, reduce taxes, open management, standardize process" plan.

China's collective forest is a special, historical, complex property right system. In which farmers are the main stakeholders, as well as the main practitioners of forestry production activities. Such role position determines that farmers are to be the main participant of the collective forestry right system reform. The collective forest right reform is an empowerment process which, in respecting farmers' will, and gives rights as well as benefits back to farmers. The core of participatory theory is empowerment, and the reform of mountain forest ownership is the foundation in order to practice participatory forest management.

1.2.3 PFM practices and research in China and abroad

PFM practices in other countries

In recent years, the United Nations and FAO have been actively promoting the participatory forest management program around the world. This program has been applied in developing countries' forest management, mainly concentrated in the southeastern Asian, Africa and Latin America, with obvious regional characteristics of each own.

Asian participatory forestry first appeared in India, Nepal, Philippines and other countries in the 1980s, mainly exploring the forest management and protection methods in community level. Their main activities focused on degraded forest restoration and protection, often incorporated the pilot cases into nation's forestry policy system, and gradually become the mainstream forestry practice in these countries. The representative attempts in India are the Joint forest management (JFM) programs imposed by forest department, and the Community forest management (CFM) initiated by local people. While several weaknesses are identified in India's JFM programs, the CFM has made an important contribution to the regeneration and sustainable management of Orissa's forests. The balance of forest control system was shifted further towards communities. CFM involves the active protection of a forest area and regulation of its use, by a community. CFM has been documented in various other countries, such as Nepal, Philippines, Thailand, and Vietnam. In Orissa, there are several thousand self-initiated CFM groups, perhaps more than anywhere else in the world of comparable size. A large proportion of them have been in existence for more than 10 years and some for as long as 30 or 40 years. (Czech Conroy, Abha Mishra, Ajay Rai, 2004).

Participatory forest management is also spreading in Africa as an important measure to promote the sustainable forest management. Participatory forest management in Africa generally focuses on decentralization, as the governments gradually transfer forest control right to the communities or private spaces. For example, there are two kinds of participatory forest management strategies in Tanzania. One is joint forest management, which is a collaborative management approach, dividing forest management responsibility and returns between either central or local government and forest adjacent communities. Joint forest management takes place largely on "reserved land". The other strategy is community based forest management which takes place on "village land" (Tom Blomley, Hadija Ramadhani, 2006). These two kinds of participatory forest management strategies are similar to the two kinds in India mentioned above, and also the two typical participatory forest management strategies in the world now.

Besides developing countries, participatory forestry also extends to the developed countries in the west, such as the USA, Canada, Finland, Germany and some other developed countries. In

America, participatory methods were applied as the fundamental principles by the USDA Forestry Service to formulate landscape forest planning and manage ecological system. Canadian government fully adopts participatory mechanism in promoting sustainable forest management as well as demonstration forest management. It emphasizes on cross-department communication, building community public relations and partnerships, in order to solve the conflicts in forest management. In Finland, participatory planning is already an important component of national and regional forest development planning and implementation by both government and private sectors. And in Germany, participatory methods are important means for forest protection, coordinating partnership building between relevant institutions and forestry department, and as well conflict management.

The characteristics of foreign participatory forest management can be summarized as: 1), emphasizing on the subjectivity and participation of local residents in forest management, with all countries taking the locals as the subject of participatory forest management; 2), the diversity and flexibility of development forms; 3) emphasizing the application of social theory and methods in forestry researches and practices; 4) decentralization of forest management power; 5) integration of multi-disciplines and cross-departments to solve the problems in forestry development. (Liu Xinyu, 2010).

It is worth to notice that the foreign participatory forest management practices are usually initiated by social activists, NGOs, local community force, scholars and international projects. After a long-term tests and efforts, it is eventually accepted by governments, and then applied in various projects, further institutionalized and universalized through policies.

In foreign participatory forest management practices, NGOs (such as various forest protection groups) play a very important role. In addition, there are emphasis on associating forest management with poverty alleviation, gender equity, and participation of women. There are also such trends that participatory forestry can be an effective strategy to promote sustainable rural development; participatory forestry development approaches will be linked in poverty alleviation more closely; participatory forestry development objectives will be more diversified and participatory forestry development theory is becoming an important measure to promote forestry development in developed countries. (Liu Xinyu, 2010).

PFM practices in China

Since the late 1980s, participatory approach was introduced to forest management in China, initially applied in those foreign aid projects such as WB loan founded National afforestation project, Sino-German Financial Cooperation Afforestation Project, Japanese-loan afforestation project and Ford Foundation aided project. In addition, there is participatory forestry activities

emerged in southwest China, such as Yunan, Sichuan, Guizhou. All with strong non-governmental features, and focusing on introduction of participatory theories, practical methods, and case studies of participatory forest management in community level. Thus some participatory forestry research networks are formulated, characterized by extension of participatory theories, practical methods and case studies, such as the Forestry and Society network of Chinese Academy of Forestry, Yunnan Participatory Rural Appraisal (PRA) network and Guizhou PRA network.

With the forest tenure reform and diversification of forestry management forms, more and more scholars start to conduct researches on applying participatory approach into forest management planning, the measurement of ecological sustainability on community forest management, and other relevant topics in participatory forest management. (Liu Jinlong, Song Lulu, Zhou Ting ect.1999; Jiang Chunqian, Yu Shuquan, Zhang Shougong ect. 2005; Wang Chunfeng, 2006).

Participatory development theory emphasizes people-oriented development and promotes harmonious development of human, nature and society. With the new round forestry development reform, mainstreaming participatory theories and methods, incorporating them into the decision-making categories of government, and further affirm them as management system will be the direction of participatory forestry development in China. (Liu Xinyu, Li Jiyue, Li Nuyun ect. 2010).

1.2.4 Reflection

In recent years, community participation has become the basic strategy of national and regional forest economic plan implementation in the world. It has been widely recognized that local people's participation is the prerequisite of sustainable forest management, and the participation must bring real benefits based on the need of locals and the country. (Marilyn Headley, 2003). How to draw lessons and experiences from other countries to develop the participatory forestry management in China and to improve sustainable forestry management as well as farmers' livelihood is a very meaningful and practical issue.

For a long time, the collective forest management has been practicing in China. As the forest tenure reform continues, it is quite a challenge for current forestry policies and institutions, as well as for the staffs in administrative department to realize the true participatory forestry management in practice, due to the unclear forest ownership rights, and difficulties of shifting dominant roles in current forest management system. It is taking a longer process to understand, to spread and to apply the participatory theory into current forest management activities. This process is a continuation of refinement in policies and institutions, a process building path for the reform; it is also a process for the administrative department of forestry, the farmers and all other

stakeholders in forest management system to learn and work together, and to trust each other.

In addition, since participatory forest management is relatively flexible and diversified, there may be issues during the process of practicing. Thus, how to ensure and realize the true participation is also a topic. Based on extensive fieldwork among community forestry groups in India and Nepal, and existing case studies, Bina Agarwal (2001) demonstrates that today the participatory management of local natural resources by village communities is widely accepted as an institutional imperative, however, the seemingly participatory institutions can exclude significant sections, such as women. It is a kind of symbolic participation, as she called, participatory exclusion: the exclusiveness in seemingly participatory system, generates from systematic factors, and may affect equity and system efficiency negatively in return.

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2. Objectives and methods

The project activities include two parts, capacity building and policy evaluation.

2.1 Capacity building objectives and methods

The objectives of capacity building include pilot application of the training materials for participatory forest management to improve the participatory forest management capacity of different stakeholders including forest farmers, FFCs and forestry department; evaluation of the applicability of the training materials and offering of recommendations to improve the materials and further formulate guidance documents of participatory forest management plans suitable for China.

Besides distribution of training materials to each participator and PPT presentation of PFM objectives, principles, methods and procedure, we also introduced participatory training methods. Group discussions were frequently held in the entire training process. To arouse enthusiasm inside the trainees, participatory training needs appraisal and training effect appraisal were carried out. Paper cards, flipcharts and markers were used to develop the maps of community resources. SWOT analysis, objectives analysis, brains storming, field investigations, photo shows, PPT demonstration and practice of PRM planning made the training process more lively and vivid. Trainees are very interested in.

2.2 Objectives and methods

2.2.1. Objectives of the assessment

The main objectives of the policy evaluation are to conduct a systematic and comprehensive assessment of forestry policies of southern collective forests after the tenure reform of the collective forests, to understand the content and implementation status of the tenure reform of collective forests and other relevant forestry policies, to analyze how these policies affect forestry management actions of farmers and their livelihood, and to provide meaningful policy recommendations to the reform and implementation of relevant forestry policies after the tenure reform of collective forests.

2.2.2. Contents of the assessment

Policies related to the assessment include four categories, i.e. policies on the tenure reform of collective forests, policies on the development of forest farmer's cooperatives, policies on forest farmers' subsidy, and policies on forest land management. Specific contents are shown in Table 1.

Table 1 Related policies of the assessment

Category	Specific Policies
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The tenure reform of collective forests	Procedure of the tenure reform of collective forests, issuance of the certificate of forest rights, forest land circulation, forestry property rights mortgage
Forest farmer's cooperatives	Supporting policies of forest farmer's cooperatives, constitutions and services of forest farmer's cooperatives, etc.
Subsidy	Forestation in barren mountains, pinching treatment of bamboo, camellia oleifera base construction, public welfare forest, returning cultivated land to forest
Forest land management	Harvesting quota, forestry tax, forest insurance, timber transportation and management, license for forest products processing, forest product sales

The contents of assessment for each policy include:

- Basic information of the policy, such as contents and scopes
- Different groups' levels of understanding of the policy
- Benefits and damages of the policy to different groups
- Different groups' evaluation on the policy
- Impacts of the policy on local economy and environment
- The relation between forestry policy and other local policies

2.2.3. Methods of the assessment

There are several methods applied to this assessment:

1) Key informant interview

Key insiders include forestry officials at the county and township level, village cadres, etc. Main contents of the interview include current conditions about resources, forestry management and operation, the tenure reform of collective forests, forest farmer's cooperatives, forestry policies and projects, etc.

2) Key person interviews

Main interviewees are different types of forest farmers.

Table 2 Key person interviews

Interviewees	Key points for interviews
Big forest contractors	Details of the contract, contract period, owner of the contracted land use right, contracting process, rent, current operating condition, access to policy support or loss, evaluation of the current forestry policy (Support what? Do not support what? Reason)
Tenure mortgage farmers	Reasons for tenure mortgage, procedure and evaluation of tenure

	mortgage, result, and current condition
Farmers who transfer their forest land to others	Reasons for the transfer, transfer objects and conditions, the distribution of benefits from transferred forest land, the procedure of transfer, etc.
Person in charge of forest famer's cooperatives	Establishment and main services of the cooperative, requirements for membership, rights, obligations and scale of membership, characteristics of forestry economy, procedure of registration of the cooperative, management system, regulatory agency and personnel, stock capital and income distribution, impacts on the local forestry development, difficulties, conditions of access to policy support
Person in charge of forest products enterprises	Forestry management project, the acquisition of raw materials, necessary license, taxes, conditions of access to policy support or not
Timber dealers	The acquisition of timbers, sales channel, transportation license, harvesting quota, taxes, access to policy support or not
Parties of the forestry conflict	To learn about the basic information about the conflict

3) Group interviews

Group interviews are also adopted in this assessment, and farmer representatives of different genders, economical conditions, and operation types are main interviewees. Main contents include major problems facing local forestry development, comments on forestry management policies, major problems of the current forestry management policies, forestry policies in favor of and against the development of local farmers' livelihood as well as desired policy support from government, etc.

4) Questionnaire interviews

Twenty households are randomly chosen for questionnaire interviews in Shuanglong Village, with the main investigation contents including basic information about the rural households, conditions and management of forest land, comments on forestry management policies, the role of forestry policies, satisfaction with the forestry policies, and other related information.

5) Case interviews

During questionnaire interviews, in-depth interviews are held among some rural households with representative forestry management behaviors or experience.

6) Tools used in participatory rural appraisal

Some PRA tools, such as community resource mapping, problem analysis, SWOT analysis and time lines, are also chose during the assessment.

3. Basic information

There are four pilot villages in Hunan Province, respectively being Shuanglong Village and Dongping Village in Hongjiang County, and Qixingling Village and Guanyintang Village in Liuyang County.

Hongjiang is a city located in the eastern mountainous area of Yunnan-Guizhou Plateau and in the southwest of Hunan Province. It has a total area of 3,259,000 mu, 2,302,000 mu of which is forestland, including 146,000 mu state-owned and 229,000 mu collectively owned by townships and villages. A total of 100,000 households manage 1,930,000 mu of forestland. The forest coverage rate is 65.4%, and the forest stock volume is 4,850,000 cubic meters. It has 220,000 mu of citrus area, 240,000 mu of bamboo area, 100,000 mu of tea-oil trees, and 1,740,000 mu of commercial forest, and about 681,000 mu of ecological public welfare forest. It is a demonstrative city of national forest tenure project. Ever since the tenure reform was carried out in April 2007, some progress has been made. As of the end of September 2009, 2,156,000 mu forestland was verified, 2,033,000 mu was certificated, of which certificates of 1,153,000 mu forestland were issued. The first forestry property right trading center was established in Hongjiang in March 2008, which evaluates policies on relevant forest management topics and host the trading, advances the reform of forest harvesting management, formulates forest management plan on harvesting, operating and the construction of security system, carries out the work of forest tenure mortgage, and about 850,000 mu collective forest have special insurance on forest fire insured by PICC(People's Insurance Company of China). As for supporting reforms, village-level forestry councils were established one after another in 316 administrative villages, which have played an important role among government, market and forest farmers. By September 2009, 57 wood-processing factories were examined and approved by the forestry bureau, industrial and commercial department or other departments.

Liuyang is a county-level city in Changsha and a key forest county in Hunan province, governing 37 villages, townships and street offices. The total population of Liuyang is 1,350,000, of which more than 900,000 are associated with forestry. The total land area of Liuyang is about 7,510,000 mu, of which 5,170,000 mu is forestry land, which includes 5,070,000 mu collective forest. The forest coverage is 65.82%, and the forest stock volume is 11,800,000 m³. There are 88,720,000 bamboos; the annual output of timber goods is 200,000 m³ and of bamboo products is 8,000,000. The forestry sector registered a total output value of RMB1.6 billion in 2007. Liuyang County is rich in forestry resources, and a large number of people are associated with forestry, resulting in a high output value. As the pioneer of the forestry reform in Hunan province, Liuyang has improved its execution, contribution and impact of forestry, and was honored the titles including

“Advanced Counties(Cities) in National Forest Construction”, “A Hundred Best Counties in National Afforestation”, “Advanced Units in National Forest Resources Management”, “Advanced Counties(Cities) in National Forest Law Enforcement”, “Top Ten Forestry Counties(Cities) in Hunan Province” and so on, which plays a leading and exemplary role in nationwide forestry reform.

3.1 Description of the survey and target groups

The investigation was conducted in Hongjiang at first and then in Liuyang. When researchers arrived at each pilot county, a seminar at the county level was held. Participants include workers from county-level forestry bureaus and from forestry stations of two pilot townships, village cadres and villager representatives from two pilot villages and a research team from the CAU.

At the seminar, the team introduced project background and contents, as well as objectives, principles, procedures, and methods of formulating a participatory forest management plan. To understand the current conditions of farmers’ management on forest, the team also had a group discussion with others. In-depth interviews on forestry administrative, forestry station, village cadres and villagers were also conducted. The team also asked forestry administrative and forestry station for materials and coordination and informed them of arrangements for following days.

After that, team members were divided into the capability building group and the policy assessment group, and carried out activities simultaneously in the same villages. One group applies participatory forest management training materials, organizes planning team and trains the team members, while group two assesses the policies in the villages.

Capacity building includes the following ten activities: launch of seminars at the county level, identification and analysis of related resources and building plan team, introduction on current conditions and future evaluation of participatory forest management, field exploration, identification of strategies for forest management and development goals by SWOT analysis, discussions on development plan, drafting of draft plan, feedback and revision, assessment of training process and materials, development of the final plan for participatory forest management. A planning team was built in each village, with the team members including seven to 14 villagers from the pilot villages, one technician from the township forestry station, one technician from the county forestry administration, three facilitators from the CAU. Training activities were mainly based on team members and multiple stakeholders were included.

Policy assessment includes the following activities: key informant interviews, key person interviews, group interviews, questionnaire interviews, case interviews, and other participatory assessment activities. Targets include the persons in charge of forestry administration at the county level, persons in charge of township forestry stations, village cadres, forest farmer

representatives of different types, genders and family economic conditions, and some other representatives of forest management.

Table 3 Sample size of valid questionnaires

	Numbers of Questionnaires	Male	Female
Guanyintang	18	15	3
Qixingling	18	17	1
Shuanglong	22	14	8
Tongping	13	9	4
In all	71	55	16

3.2 Social and economic information about pilot villages/FFC

3.2.1 Shuanglong Village in Hongjiang

Shuanglong is the first pilot village in Hongjiang, and the tenure reform of collective forests was officially started in June 2004.

Ten km from the center of Jiangshi Town and 14 km from the downtown of Hongjiang County, Shuanglong Village enjoys convenient traffic conditions. There are seven villager groups, 160 households and 678 villagers, of which 352 are physically able to do a job (including 191 males and 161 females). The sources of income mainly include wage income from jobs outside the village and local forestry. There are about 156 migrant workers in Zhejiang and Guangdong Provinces, and the actual per capita net income is about 3,080 yuan, of which 50% comes from the jobs outside the village, 30% from farming (such as rice planting and pigs raising) and only 20% from forestry. On the whole, villagers have a low level of dependency on forest management at present, but this will be changed a decade later because young forest will grow into mature forest at that time.

Since the tenure reform launched in April 2007, a lot of positive researches and supporting work have been done in forestry cooperation. The village-level forestry councils were established one after another in 316 administrative villages, which played an important role in connecting governments, markets and forest farmers. In 2007, under the support of Forestry Bureau in Hongjiang, a forestry council was established by the villager representatives' assembly, which is an economic organization of forestry cooperation on village level, forest farmers in this village are eligible to join it, and mountain forest contractors outside the village may apply for membership. At present, almost all of the villagers in Shuanglong joined the forestry council, which governs the forestland uniformly.

3.2.2 Tongping Village in Hongjiang

Tongping Village is located in eastern part of Shuangxi Township, it has a humid subtropical monsoon climate, adequate sunlight, abundant rainfall. Cool in summer and warm in winter, it has a long frost-free season and has a rainy season from April to August. The total land area in Tongping Village is less than 8,835 mu, of which 6,901.5 mu is forestland, 680 mu paddy field, and about 1,200 mu economic forest. There are more hills but less flat ground in village, most farmland is along the river course. The crops in Tongping village include paddy rice, maize and rape. Paddy rice and maize grow in the first half of a year and rapes in the second half. The grain is mainly for self supply and seldom sold.

There are 236 households and 801 inhabitants and 10 villagers groups in Tongping. Villagers' sources of income mainly include wage income from jobs outside the village and local forestry which accounted for 90% of the total. There are over 200 migrant works in Guangdong, Shanghai, Zhejiang, Fujian Provinces or other economically developed regions along the coast. They leave home for one year or half a year and come back to celebrate the Spring Festival. For those who work outside all year long, they subcontracted the field to others, with the rent being 100-200 Jin rice per mu.

The Anshuang Road passing through the village hardened in 2005. It is the main road of Tongping. It takes 40 minutes to Hongjiang on this road. There are regular buses once every 30 minutes and relatively developed inter-village road networks. But the traffic is much worse among village groups and the forest roads in the mountains are in bad conditions. The largest distance between two groups is three kilometers.

A forestry council was established in 2008, with five members that include one chief. Its duty includes the guidance of forestation, application for the harvesting quota, forest fire prevention, pest control, forestry administrative management, announcement of forestry information, and so on.. This council is a non-governmental organization, and its members are villagers of household contract management in forest. It plays an important role in connecting governments, markets and forest farmers. All the villagers of contractual operation should join the council. In Hongjiang, the harvesting quota was distributed to farmers formerly; but now, farmers may apply for the harvesting quota. With the setup of forestry council, farmers can file their application to the council directly, which will be reviewed and approved by the forestry bureau before any announcement is made. The composition of the council shows that it is still operated under the guidance of government, with the functions not reaching the scope of forest management yet. Also, there is a collective tree farm of 800 mu in the village, which includes fir and pine forest, and is managed by the forestry council. Besides, there is a 100-mu citrus forest, and the funds of

council come from this citrus forest.

3.2.3 Qixingling Village in Liuyang County

Located in the Hunan-Jiangxi border area of Zhangfang Township, Qixingling Village is about 20 kilometers from Tonggu County in Jiangxi Province. It consists of Qixing Village, Shuangxi Village, Jinzhong Village and Huyang Village, and governs 12 villager groups, 680 households and more than 2,480 villagers, of which male and female labor force amounts to 700 respectively, and most of them are migrant workers in Changsha, Guangdong or other places. The sources of income mainly include wage income from jobs outside the village and local forestry management, and the per capita income in this village is about RMB4, 100 per year.

Part of the forestland in Qixing Village was contracted to tree farms, and a forestry professional cooperative was established. There is a state-owned Sengong Company and a private Jiangfeng tree farm. The bamboo production professional cooperative is a joint-stock tree farm, which has a forestland area of 3,000 mu, and the hilly area was renovated comprehensively. In 2007, about 6,800 mu of forest was contracted to tree farm, mainly including the bamboo forest that accounted for 20 % of the total bamboo area in the village. More than 100 households joined the cooperative. In 2007, about 1,200 mu of bamboo forest was transformed, 600 mu demonstration land formed and 1,200 mu reclaimed. In 2008, 1,500 mu mountain forests were transformed. The bamboo output increased to 120-170 per mu. There is a wiredrawing factory that manufactures semi-finished bamboo product, with out-of-town customers accounting for 60% and 40% locally.

3.2.4 Guanyintang Village in Liuyang County

Guanyintang Village (Guandu Town, Liuyang County) is located in the northern Luoxiao mountainous area which is at the west foot of the Daweishan branch with hilly landforms. It has a humid mid-subtropical monsoon climate, with the annual average temperature ranging from 16°C to 18°C. January is the coldest season and July is the hottest, the extreme minimum temperature is -8°C while the extreme maximum temperature is 39°C, the average annual temperature difference is 24°C or so. It has an average 1,500-1,550 hours of sunlight annually, with the maximum sunlight appearing from June to October, which accounts for 53% of the sunlight throughout the year. The sunlight in January to March accounts for 14% of the total. The annual rainfall is 1,500-1,600mm, and it has clear rainy seasons and dry seasons, with the rainy season usually between early April and late July and the dry season from September to next January. The frost-free period lasts 230-240 days. The soil in the area is the red soil which has developed from plate shale, and the soil thickness is mostly 80cm or above. The soil fertility is moderate while it could preserve water and fertilizer effectively. The forestry in Guanyintang Village belongs to the northern subtropical climate of mid-subtropical typical broad-leaved

evergreen forests. Due to the superior geographical conditions, a great variety of forest grow lushly here, mainly including the China fir, masson pine, superba, camphor, sweetgum, oak, bamboo and so on.

Guanyintang Village consists of Yuanxitou village, Shibei village and Guanyin village, which has 40 villagers' groups. There are 846 households and 3,387 inhabitants in the village. It covers an area of 27,000 mu, of which 20,000 mu (74%) is forestry, and nearly six mu forestry per capita, the volume of standing stock is 76,000 m³. Guanyintang Village has a relatively large forest area, which is the only village with a mountainous forestland of more than 20,000 mu in Guandu Township.

Now, the tree farm governs the forestland in Guanyintang Village, more than 95% of the famers joined the forest joint management, who thus become stakeholders of the tree farm. Unified management is carried out on the tree farm, 80% of the profits are for farmers and the rest are for the tree farm. Currently, there are eight employees, three of them are managers and the other five are forest rangers. The annual timber output is 1,000 m³(i.e., the harvesting quota). Mountain forest covers an area of 15,554 mu, and there is a forest tractor road which extents 10 kilometers. Besides, the farm profits are used for forest road construction.

Guanyintang Village has the widest forestland of Liuyang County, and it is a typical unified management tree farm. Farmers will sign agreements with the farm, so the farmers have the tenure of mountain and forest, and the farm has the rights of management. The managers and four forest rangers are voted by the farmers' representative assembly, responsible for administrating and preserving the tree farm. Every year, the farm makes the overall plan according to the harvesting quota arranged by the Forestry Bureau, and buys timber and bamboo at the same price of neighboring townships. The expenses for staff members come from the profits, and the rest are used for forest road construction. At present, the total investment in forest road construction is RMB220,000, and 23 kilometers of forest roads have been constructed. In 2006, the total income of the farm was RMB500, 000 yuan, and the profits were RMB40, 000 yuan; in 2007, the total income was RMB640,000, and the profits were RMB90,000; and in 2008, the total income was RMB1,080,000, and the profits were RMB150,000. Currently, with the help of the forest tenure office and Guandu Township, a "forest management project for Guanyintang village" was formulated, which devised the harvesting area and quota for the next ten years.

4. Analysis on forest management of pilot village/ forest farmer's cooperatives

4.1 Resources and changes in history

The main forest resources in the four pilot villages are dominated by bamboo and fir. Before the forest tenure reform, the forest ownership was unclear; forestland disputes were serious and large stretches of forests were cut down. After the forest tenure reform in 2007, the enthusiasm of forest farmers was improved, and the forest coverage rate increased significantly. Because Guanyintang Village and Qixingling Village consist of several villages, they have relatively large areas of forestland, mostly covering above 10,000 mu. But Shuanglong Village and Tongping Village has relatively small forestland areas, which cover less than 10,000 mu.

The total area of Shuanglong Village is about 9,000 mu, of which over 600 mu is arable land (paddy field), 100 mu is tea land and 8,000 mu is forestland. Shuanglong is a village with relatively rich forest resources. Before the 1980s, tung trees and maples were the main trees in Shuanglong. Tung trees belong to deciduous trees, which could be processed into tung oil and is a peculiar economic forest. At that time, it was purchased at a low price and marketed by the state in a unified way; as tung trees were cut down, other trees replaced them. In recent years, oil prices have raised a lot, but there is a few tung trees in the village. Currently, there are about 2,000 mu bamboo forests, 4,000 mu firs and pine forest, 400mu broad-leaved forest and 2,000 mu tea forests. The area of forestland is approximately 45 mu per household. At present, the forestland contracts are based on the “four forestry fixations” in planned economy period and forestry “policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility” in the early 1980s. Due to the differences of each villagers group and the changes of family structure and population in the past few decades, there is a great discrepancy in the actual area of forest management as farmers manage a forestland of 300 mu at most and 10 mu at least. Villagers’ afforestation enthusiasm has improved a lot after the tenure reform of collective forest; most fir and pine are newly planted. The broad-leaved forest is natural secondary forest, and the other forests are all planted forest. Currently, there is basically no barren mountains in Shuanglong Village.

The total land area in Tongping Village is less than 8,835 mu, of which 6,901.5 mu is forestland, 680 mu paddy field, and about 1,200 mu economic forest. There are more hills but less flat ground in the village, and most farmland is along the river course. The crops in Tongping Village include paddy rice, maize and rape. Bamboo has been planted for a long time, and fir was planted later and replaced camphor tree, catalpa, Chinese sweet gum and so on. Currently, fir,

pine and bamboo are mainly planted on the forestland in Tongping Village. Fir and pine forests cover an area of 6,000 mu, mostly aged 2-10 years. There is nearly 1,000 mu bamboo and about 1,200 mu economic forest, including 800 mu hickory and 200 mu citrus and grape. Camellia trees are rare.

In Qixingling Village, the total forestland area is approximately 5,100 mu, or 23 mu per capita. The village has abundant resources, fertile soil, pleasant subtropical moist monsoon climate and lush vegetation (especially China fir and bamboo). A portion of the forestland is developed for tourism purpose. Bamboo processing is the main source of income. Since the tenure reform of collective forests, forest farmers' enthusiasm has been greatly improved.

In Guanyintang Village, the mountain forest area is more than 20,000 mu, of which 15,554 mu belongs to the tree farm. The forestland area is 14,014.5 mu, shrubbery area 1,270 mu, open woodland area 221 mu, and non-standing timber forestland area 48.5 mu. According to the tree species classification, the China fir accounts for about 50% of the forestland, bamboo 20%, masson pine nearly 10% and broad-leaved tree 15%. In terms of tree ages, young forest represents about 3%, middle-aged forest 52%, near mature forest 18%, and mature forest 27%. In Guanyintang tree farm, the total volume of standing stock is 63,065 m³. In terms of the average trees distribution in the village, the volume of standing forest accounts for 94%, an average accumulation of 5.5 m³ per mu; the volume of open woodland accounts for 0.3%, an average accumulation of 1.05 m³ per mu; the volume of scattered forest accounts for 5.7%, an average accumulation of 1.1 m³ per mu. In addition, bamboo covers an area of 3,300 mu above. The forest resources in Guanyintang Village are characterized by a high forest coverage rate and a large forest coverage proportion. Arbor is the dominant tree in the forestland, especially the China fir, which comprises 70% of arbor accumulation, but young forest takes up a smaller part.

4.2 Main forest products and changes in history

Before the 1980s, there were lots of tung trees in the village, and the tung oil is an important forest product. But now, there are only a few tung trees left. Fir and pine, bamboo and tea tree are the main trees in Shuanglong, and farmers' forestry income comes from fir pine woods, bamboo and tea oil. For example, the output of each forest product in 2010 was as follows: 200 m³ fir pine woods in the whole village, about 100 bamboos per mu and about 10,000 Jin tea seed that could squeeze 2,500 Jin of oil. In addition, small quantities of bamboo shoots can be harvested every winter. There are no enterprises for processing bamboo or woods, and a bamboo chopstick factory was established by an investor outside the village, which would purchase bamboo sometimes.

Camphor tree, catalpa, Chinese sweet gum once were the chief species in Tongping Village, but

has been replaced by pine and bamboo. About 150 m³ of wood and 5,000 to 10,000 bamboos are cut every year. Though Tongping Village is rich in forest resources, and most fir and pine forests are still young. Thus, the annual harvesting volume is relatively small. Now, there are 10 farmers' workshops, which are engaged in knitting bamboo baskets. Hongjiang is the home to orange. As a great quantity of bamboo baskets are needed for the vigorous development of the citrus industry, the bamboo baskets produced in Tongping Village are sold in this city.

In Qixingling and Guanyintang Villages of Liuyang County, there were lots of camphor trees before. In Qixingling Village, the bamboo harvesting volume varies every year and stands about 220,000 on the average. But there is a strict timber harvesting quota. The harvesting quota was 450 m³ in 2009 and 800 m³ in 2010. Compared with the harvesting of bamboo and fir, the bamboo shoots digging is a tough task. Farmers who are not skilled at digging bamboo shoots would get no bamboo shoots, worse still, the digging would affect the output of bamboo. The period from November to the next January in the lunar calendar is the best time for digging. On the average, a skilled farmer could dig about 30 Jin per day (the price of bamboo shoots is RMB4 per Jin in 2010). In the mountain forest of Guanyintang Village, secondary forests take the dominant position, among which there are over 10,000 mu of China fir and pine and 6,000 mu of bamboo. There are more commercial forests and less economic forests. Main forest products include China fir, pine, bamboo and some other trees, and the volume of China fir accounts for about 70%, which makes it the main forest product. Pine and bamboo take the second place, and there are a few oil camellia and fruit trees.

4.3 Income dependency of farmers on forest management

Generally speaking, wages from jobs outside the village is the main source of farmers' income, but forestry income occupies an important position in the four pilot villages, which is also a source of income. As large-scale afforestation was initiated after the forest tenure reform, most trees are young. So, the forestry income is limited in short time but is expected to reach the peak in the next decade.

The area of forestland is approximately 45 mu per household. Because of the difference of each villagers group and the changes in the family structure and population over the past decades, there is a great discrepancy in the actual area of forest management as farmers manage a forestland of 300 mu at most and 10 mu at least. Villagers' afforestation enthusiasm didn't improve till the tenure reform of collective forest, and most of the newly-planted fir and pine are young. According to the statistics of the village committee, the actual per capita net income is about RMB3,080, of which 50% comes from the jobs outside the village, 30% from farming (such as rice planting and pigs raising) and only 20% from forestry. In 2009, only 80 m³ of wood

was sold in the village, generating a gross income of RMB60, 000. In 2010, 200 m³ of wood was sold, generating a gross income of RMB160, 000. There was an output of 20,000 bamboos a year in the whole village, and the income was about RMB60, 000; tea oil income was about RMB50,000, and bamboo shoots income was about RMB10,000. On the whole, villagers have low income dependency on forest management at present, but this will be changed in a decade later as young forest will grow into mature forest at that time.

Villagers' sources of income mainly include wages from jobs outside the village and local forestry, which accounted for 90% of the total. At present, 6,000 mu fir and pine forests are still young, thus, the annual harvesting volume is relatively small. The local forest area is about 20 mu per household. The poor infrastructure conditions (especially the forest roads) and the backward forestry production and processing techniques lead to the low income of farmers from forestry. The annual output value of forestry is about RMB400, 000, mostly from the sales of unprocessed fir and bamboo.

Lots of villagers in Qixingling work outside, and those who stay in the village are mostly aged over 40 years and have no sufficient working skills. is the deep terrain makes it hard to plough and sow. Despite the abundant forest resources, there is a harvesting quota every year; what is more, there exists certain natural risks, such as fire, snowstorm and drought. As a result, more and more villagers prefer to works outside to earn stable income. The data in the questionnaire partly reflect this fact. Among the interviewed 17 households, the average forestry income is RMB14, 261 per household, with the highest being RMB40,000 and lowest RMB800. When asked "what's the main source of income of your family?", 41% interviewees chose "jobs outside the village", 35% "forestry income", 18% "household enterprises" and 6% "farming". For several respondents, forestry income is the only source of living. On the whole, income dependency of farmers on the forest management is relatively high; forestry earning and wages from jobs outside the town are the two major sources of villagers' income.

The source of income of Guanyintang villagers mainly comes from local forestry and jobs outside the village, and some other villagers are engaged in individual businesses. The survey shows that the villagers who make forestry income as the main source of income accounts for only 29.4%, compared with 41.1% of the villagers who regard jobs outside the village as the major source and 23.5% of those engaged in individual businesses. The forestland in Guanyintang Village covers a large area, with nearly 6 mu per capita. Compared to other rural areas, the villagers' forestry income in Guanyintang is higher, but is not the entire source of income and supplemented by the jobs outside the village and self-employment.

4.4 Governance of forest management

The governance of forest management includes three aspects: the forestland tenure, the harvesting quota control system and forest resource management

4.4.1 Forestland tenure

In 1982, the practice of forestry “policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility” was carried out on a national scale. Based on the population, collective forest was put under farmers’ administration in the form of private and contract managed forest, and farmers had the usufruct of forest and autonomous rights of production and management. But the definition of boundaries was not clear at that time. In 2003, the tenure reform of collective forest was carried out nationwide. Shuanglong Village, Tongping Village, Qixingling Village and Guanyintang Village completed the boundary settlement of mountain forest and the issuance of forest tenure certificates, which confirmed farmers’ rights to forest management and the forest ownership. Currently, the vast majority of forestland has been put under farmers’ administration in the four pilot villages; only several hundreds of collective forestland remain in each village. As there are more rural workers after the forest tenure reform, fewer villagers would stay and take care of the forestland. Thus, small-scale forestland circulation is common among villagers.

After the forest tenure reform, a lot of positive researches and supporting work were done in forestry cooperation. Village-level forestry councils were established one after another in 316 administrative villages, which played an important role in connecting government, market and forest farmers. In 2007, under the support of the Forestry Bureau in Hongjiang, a forestry council was established by the villager representatives’ assembly, which is an economic organization of forestry cooperation at the village level. Forest farmers in this village are eligible to join it, and mountain forest contractors outside the village may apply for membership. At present, villagers in Shuanglong almost all joined the forestry council, which governs the forestland uniformly.

The forest tenure reform in Liuyang goes deeper, as it clarified property rights of over 95% forestland. At the same time, a lot of progress was made in forest insurance, forest tenure certificate mortgage loan, construction of cooperatives and some other characteristic measures such as the development of forestland management plans for large-scale tree farms or cooperatives (which should have a forestland area of 3,000 mu above), “Sunshine Project” for quota distribution and other measures on forestland circulations, which have a good effect on the improvement of farmers’ profits. Organizations for economic cooperation on forest and professional forestry associations were established in Liuyang. By September 2009, there are 126 forestry cooperative organizations, of which 92 were registered, including 48 cooperative

organizations of tree farms, six organizations of wood sales and processing, 27 cooperative organizations of forestland management, eight organizations of flowers and plants, 13 cooperative organizations of fruit trees, ten cooperative organizations of forest protection. Besides, there are eight professional forestry associations, of which five were registered. Guanyintang Village is a typical unified management tree farm. Farmers sign agreements with the farm for the tenure of mountain and forest, but the farm still has the right to management. Xinghai Bamboo Production Cooperative is a joint-stock tree farm, which has a forestland area of 3,000 mu, and the hilly area was renovated comprehensively. There is a wiredrawing factory specialized in manufacturing of semi-finished bamboo products, which is also a leading business in this village. In addition, a part of forestland in Qixingling village was subcontracted to Sengong Tree Farm (state-owned) and Jiangfeng Tree Farm (privately-owned).

4.4.2 Harvesting quota control system

The method of forest management in our country is Classified Forest Management. According to the operating characteristics; it can be divided into public welfare forest and the commodity forest. It introduces strict cutting control and management for the public welfare forest while allowing timber cutting on condition that farmers get the permission. Among the four pilot villages, there are some public welfare forests in Shuanglong Village of Liuyang and Qixingling Village of Hongjiang County.

Currently, there are certain differences in harvesting quota management among villages. In Shuanglong and Tongping Villages, it is managed by the forestry councils; in Qixingling Village, the village committee plays an important role in management; in Guanyintang, a part of harvesting quota was distributed to the tree farm, and the other part was distributed according to the original way.

In Shuanglong and Tongping Villages, the harvesting quota is managed by the forestry councils, which plays an important role in the distribution of existing harvesting quota. Its duty includes the guidance of forestation, application for the harvesting quota, forest fire prevention, pest control, forestry administrative management, announcement of forestry information, and so on.. In Hongjiang, the harvesting quota was previously distributed to farmers, but at present, farmers may apply for the harvesting quota. With the setup of the forestry council, farmers can directly file their application to the council, and the forestry bureau will examine and approve and announce it later. Every January, farmers apply for the harvesting quota by themselves, and village cadres fill in the list of surveys on wood harvesting application and submit them to the forestry bureau, and formulate a registration form of ranking on wood harvesting survey. Some advice is given by the forestry bureau at the township level, and the administrative forestry

department examines and approves it, and shows the harvesting plan to villagers. In the following year, the harvesting quota will be distributed to towns and farmers will get their harvesting quota by their forest tenure certificates. Usually, the harvesting quota will be approved in March. Forest farmers can generally get the bamboo and wood harvesting quota during September-December. Each household has a harvesting quota of 2-3 m³ for private use, which only costs RMB3 per cubic meter, but the cost of commercial wood is RMB170 per cubic meter. Farmers will pay off all the charges when they go to the forestry bureau to get the permit for wood harvesting. The wood and bamboo harvesting volumes are respectively 150 m³ and 5,000 to 10,000 every year in Tongping Village. The harvesting management excludes bamboo harvesting. Basically, there is a cost of RMB0.5 for a piece of bamboo, and is handed in to the forestry station by processing factories but not by farmers. In fact, as it is not a good way to get the charges door to door, the bamboo business licenses are subcontracted to two or three bamboo traders at a price of RMB20,000 to 30,000 per year by the forestry station, which can purchase bamboo as they want. Other people who want to buy bamboos shall pay these contracted traders RMB0.5 for a piece of bamboo.

A forestry administer station was established to handle the transaction of harvesting permits, transport card and forestland circulation, to resolve forestry dispute and provide forestry policy advices. The station governs the forestry harvesting and resources management in Qixingling. Up to now, the distribution of the harvesting quota is still the main approach of harvesting management in Qixingling Village. The village committee plays an important role in management, with the duty including the guidance of forestation, application for the harvesting quota, forest fire prevention, pest control, forestry administrate management, announcement of forestry information, and so on. Huang Chungen is a forester who administrates forestry affairs. According to the rules, every first half of a year, foresters in the whole town are called together to discuss the harvesting quota according to the forest area, trees growth conditions and the quantities of public welfare forests in each village. After the discussion, foresters talk with village cadres over harvesting quota distribution in the village, then determine the harvesting quota of certain farmers and make announcement. From June to December every year, villagers will hand in a commission fee of RMB30 per cubic meter to the forestry station at the township level and then do the harvesting. As bamboos grow fast and the growth circle lasts only 2 years, bamboo harvesting is not included in harvesting management. Forest farmer will determine the harvesting quantity according to the growth condition of their own bamboos and the time to sell the bamboo. Farmers do not need to hand in transportation costs, taxes and charges, forest raising fund or others, but bamboo traders and processing factories will bear the cost and hand it in to the forestry station at the township level.

At present, forest farmers in Guanyintang Village apply to the tree farm for the harvesting quota. But in the past, the harvesting quota was transmitted from Guandu forestry administration to Guanyintang Village, and then distributed to farmers. After the forest management plan was formulated, the Forestry Bureau in Liuyang distributes the harvesting quota to the tree farm directly. The distribution of the harvesting quota in Guanyintang Village in 2010 is as follows:

Table 4 Harvesting quota of merchantable timber in Guanyintang Village in 2010

	China fir	Pine	Other trees	Total
Harvesting quota of the tree farm in Guanyintang Village	900m ³	100m ³	60m ³	1,060m ³
Harvesting quota in Guanyintang Village	400m ³	240m ³	60m ³	700m ³

Approach used to apply and control the harvesting quota: according to the growth condition of trees and the market condition in the year, farm managers set the harvesting quota and then apply for that to superior forestry department. Tree farm will distribute the harvesting quota to farmers; farmers who do not have the harvesting quota will pay a certain amount of charges to the farm for forest management, such as the construction of forest roads. In addition, the tree farm implements unified management, which reduces forestland disputes and helps farmers save some labor costs.

As the harvesting quota is applied and managed by the tree farm, most forest farmers need to obtain the harvesting quota and sell the wood at the price set by tree farm. In 2010, the purchase price of China fir on the tree farm was RMB540 per cubic meter for 10-12cm in diameter, RMB590 per cubic meter for 14-16cm in diameter, and RMB640 per cubic meter for 18cm and above in diameter. However, the market price of China fir in 2010 was RMB830 per cubic meter for 14-16cm in diameter, of which RMB110 was for taxes and charges, RMB100 for tree farm management, RMB30 for transportation and the remaining RMB590 for forest farmers.

This way of distribution reduces farmers' burdens on application and wood sales on one hand, but on the other hand, as the purchase price on the tree farm is lower than that of the wood market (for example, there is a RMB240 discrepancy between the market price and the farm bid for China fir with a diameter of 14-16cm.), some forest farmers consider that the tree farm monopolizes the wood sales market, making them lose the opportunity to get in touch with the market and the right to independent management. This has certain effects on farmers' earning autonomy to some extent.

4.4.3 Governance of forest management

In Shuanglong and Tongping Villages of Hongjiang, forestland is uniformly managed by the forestry councils, which link the government, market and forest farmers. The councils are non-governmental organizations, consisting of villagers of household contract management in the forest and playing an important role in connecting governments, markets and forest farmers. Its duty includes the guidance of forestation, application for the harvesting quota, forest fire prevention, pest control, forestry administrative management, announcement of forestry information, and so on. There are village rules and regulations on forest resources management, which strictly prohibit haggling and illicit sales of landscape trees and ancient trees. Illegal loggers will be fined RMB50 for one bamboo, and RMB200 for a fir or pine, and serious violators will be punished by the judicial office. Also, there are prohibitions against wood cutting, hunting and unproductive fire using in public welfare forests, and bamboo shoots diggers will be fined RMB100-200. There are rules and regulations on the punishment for illegal harvesting and stealing of forest and forest products: 1) for illegal loggers, they need to return the stolen goods and will be fined RMB100-500, and serious violators will be punished by the judicial office. 2) Illegal bamboo shoots diggers will be fined RMB50-100 for one bamboo shoot, and serious violators will be fined RMB500-1,000. 3) In the picking season, without the permission of farmers, picking of nuts, camellia or tung oil seeds is not allowed. Violators must return the stolen goods and will be fined RMB50-500 yuan. What's more, people may go into the walnut mountain ten days after Bailu, and violators need to return the stolen goods and will be fined RMB10 for per nut. These village rules and regulations guarantee the sustainable development of forest resources to some extent.

After the tenure reform, families take charge of forest resources. Villagers who join the cooperative shall have their forestland governed by the cooperative. The unified management includes fertilization, pest control, forestland reclamation, application of sprinkler irrigation, straw covering and so on. According to the plan, every five years shall see one reclamation and two fertilizations, with the annual input being about RMB60 per mu. There is no specific rules regarding the behavior of furtively cutting. To control this behavior, forestry department issues "harvesting permits" and "leave mountain certificates", and according to the rules, only villagers who get the harvesting permits can cut down trees. In addition, if the villagers want to sell the timber, they also need to get the permission to leave the mountain. Staff of the forestry police station at the town level have the right to inspect timber loading vehicles on the road. If the timber amounts showed on the certificate are far larger than the actual timber amounts on the vehicle, the staff has the right to confiscate the timber. Regarding the potential fire hazard that may pose a great threat to forests, Qixingling Village also set up an "emergent forest firefighting

team”, which includes 18 members, all of whom are young villagers. This firefighting team is dispatched by the forest fire prevention headquarter in Zhangfang Town, whose duty is to prevent forest fire, and give assistance to investigate and punish illegal timber transportation on the border of Hunan and Jiangxi Provinces.

Now, the forestland in Guanyintang Village is mainly governed by the tree farm, which was formed in 1985. Formerly named Xiaoniang Tree Farm in Xitou Village, it covers an area of about 3,000 mu. After the reform and the issuance of forest tenure certificates, a decision on enlarging the original tree farm was made by the villagers assembly in 2005, and a series of farm regulations were developed, which include a contract on wood purchasing, a protocol about forest rangers’ responsibilities, a protocol on the harvesting quota of commodity fir, a protocol on mountain management, regulations of the farm and farmers, obligations of the farm committee, the duty of a farm leader, forest administration mediation duties, the conference system for forest farmers, the conference system for forest farmers’ representative, the public system of farm affairs, the farm committee working system, the democratic financial management working system, the financial management system, the audit system for farm cadres’ tenure and departure, the financial audit system, a plan on autonomous regulations of joint farms and so on. All of the above lay a foundation for the institutional management of the tree farm. To further meet the national preferential policy and gain preferential taxes and charges, Guanyintang Tree Farm was registered as a cooperative in 2007, which is a joint-stock company that holds representatives’ assemblies annually to announce financial status. With the deepening of the forest tenure reform, the “Plan on Forest Management for Guanyintang Village” was formulated in 2008 with the help of Liuyang County and Guandu Township, which develops ways to manage forestland in the next eight years. Forest farmers sign agreements with the tree farm to define rights and obligations. The tree farm governs forestland and forest products, infrastructure construction, application for the harvesting quota and related forestry development projects, harvesting and wood sales, arrangement of forestry activities, mediation of forestland disputes and benefit distribution.

4.5 Interventions on forest management

Currently, external interventions on forest management are mainly from some projects and enterprises of forestry authorities, and the participants of forest management are diversified.

In Shuanglong and Tongping of Hongjiang, forests are jointly managed by the county forestry bureau and villages. The forestry bureau invests in management, and profits are shared among the forestry bureau, village committees and forest farmers, which solved the problem of farmers’ lack of investment funds. In Hongjiang, villagers plant trees for industrial purpose, providing raw

materials to Taigelin Paper Mill in Huaihua. The afforestation subsidy was RMB50 per mu in 2006-2007 and rose to RMB100 later, which saves the cost of afforestation for farmers and arouses their enthusiasm for afforestation.

In Qixingling Village of Liuyang County, two business entities are allowed to exploit the forest resources in the long term: one is Sengong Company, which is a state-owned enterprise established in 1979, and has a 50-year- contract with Qixingling Village, according to which it purchases timber from 1,000 mu of forestland in the village, and 30% of the bonus belongs to farmers every year. The other is Jiangfeng Tree Farm, which is a private enterprise founded by the traders from Yifeng County in Jinagxi Province in 2004, which rents 3,000 mu of forestland in Qixingling Village to plant and purchase China fir.

4.6 The advantages and disadvantages of the current forest management

These pilot villages are typical forestry villages, which have advantages in forest management and natural resources. For example, the thick soil, sufficient rainfall and heat and rich soil are suitable for afforestation; the woods foundation is good, and the trees grow well; the hills are good for drainage. In recent years, both the enthusiasm of cooperatives and farmers and the transportation conditions have improved significantly.

Lots of opportunities in forest management have been offered since the forest tenure reform. Forest farmers' cooperatives and forestry councils undertake part functions of forestry management, such as road construction, forest protection and fire prevention. As pilot villages, they could get more resources. Recent years have seen huge market demand for forest products, resulting in high and stable wood prices. Moreover, forestry policies are getting increasingly favorable to forest farmers, which is good for forest management.

Nevertheless, there are some general disadvantages in forest management at present. First of all, the infrastructures in forest areas is in poor conditions, as some forest roads are still unpaved, making such areas inaccessible when it rains. This is very common in the collective forests in South China. The amount of investment in infrastructures is huge for farmers, and tree farms or cooperatives have limited abilities even if they invest in road construction every year. Second, in terms of planting, there is a lack of good species and management technologies despite the superior natural conditions, so there is still huge room for the improvement in forest quality. Third, in terms of industrialized management, farmers and cooperatives lack market and technical information, resources and funds, thus, it's hard to enlarge intensive processing.

Some threats on forest management cannot be ignored as well. The foremost point is that young laborers in the countryside generally go outside rather than stay for forest production and management, which hampers afforestation. Second, although the prices have risen steadily in

recent years, there are uncertainties in the future. Third, forest disasters like snowstorm, fire and plague of insects could possibly bring heavy losses to farmers. Fourth, the behaviors of illegal harvesting and digging have bad influence on sustainable forest management.

Table 5 SWOT analysis on forest management

<p>Advantages:</p> <ul style="list-style-type: none"> ● The thick soil, sufficient rainfall and heat, rich soil, sound woods foundations ● Improved traffic conditions ● Fruitful fire prevention ● Effective drainage 	<p>Disadvantages:</p> <ul style="list-style-type: none"> ● The infrastructures in forest area are in poor conditions, some forest roads are still unpaved, making such areas inaccessible when it rains. ● No good species. ● No effective management technologies. ● Lack of market and technical information. ● It's hard to enlarge intensive processing. ● Limited funds ● No economic forests ● There are damages caused by digging bamboo shoots.
<p>Opportunities:</p> <ul style="list-style-type: none"> ● Forest farmers' cooperatives and forestry councils undertake part of forestry management, such as road construction, forest protection and fire prevention. ● More projects in pilot villages, for instance, the demonstration areas ● Unified forest insurance ● Good market price. ● Big demand and convenient selling. ● Farmers get benefits from public forest policies and compensation fund. 	<p>Threats:</p> <ul style="list-style-type: none"> ● Shortage of labor forces. ● There is price fluctuation in the market. ● Disasters of snowstorm and pests. ● Forest fire. ● Illegal woods harvesting. ● Illegal bamboo shoots digging.

5. Analysis on the constraints on participatory forest management in the pilot villages/PPC

5.1 Mechanism and basic requirements on the implementation of PFM

5.1.1 Deepening management and property rights of forest council and FFCs

Forestry councils are the main forestry organizations in Hongjiang County now, but they are different from FFCs, as they are a kind of non-profit self-help and self-governing organizations consisting of different contractor households. Forestry councils are still guided by governments and their functions haven't reached forest business. According to applicable laws, forest management plans should be made by forest resource owners or managers engaged in forest resources management activities, with a clear and fixed management scope. There are also requirements on the forest areas, with clear ownership, management rights, the disposition and usufruct. There are obstacles for Forestry Council to participate in making forest management plan. Thus, they need to go deeper in forestry management and property rights.

The FFCs in Liuyang have contracted forest land, however, the management rights are still in farmers' hands. The FFCs participate in forest management and forest products marketing. To carry out participatory forest management, participation by both the farmers and FFCs is needed.

5.1.2 Forestry knowledge and skills need to be improved

Formulating forest management plans require professional forestry knowledge and techniques as well as the awareness of forestry policies. However, farmers presently have no clear knowledge of the forestry policies and also encounter some technical and knowledge difficulties in forest management planning, which makes necessary the trainings on publicizing policies, laws and forestry knowledge and skills.

5.1.3 External support in forestry infrastructures is needed

In some villages, the poor forestry infrastructures such as forest roads have become the biggest constraint to forest management and the biggest concerns of forest famers and forest councils. They focus more on forest roads than forest management planning, with a strong expectation that the governments can help them to improve forest roads. Forest planning and management is a comprehensive job, involving not only the participation and efforts from forest farmers and FFCs, but also the support from governments.

5.1.4 Awareness of sustainable forest management needs to be increased

The purposes of participatory forest management are the same with other forest management types, i.e. the sustainable and healthy development of forestry. Although farmers have

accumulated precious local experience, their sustainable management awareness is still weak. In Shuanglong Village, for example, after the planning group conducted the objective analysis, the core objective was set by the farmers as "improving economical benefits" though the forestry workers put forward the "economical and ecological win-win benefits" goal. Farmers neglected the ecological sustainability and this was reflected in the planning. To conduct participatory forest management, the sustainable management awareness also needs to be built and improved, or it will go against participatory forest management planning.

5.2 Attitude, behavior, capacity analysis of different stakeholders

5.2.1 Farmers: rich forest management experience, indigenous knowledge and customs

The practices show that forest farmers have rich forestry management experience, indigenous knowledge and effective management customs, which will help them participate in the formulation of forest working plans.

The forest farmers have lived here for generations. They have lived on forestry for a long time and have rich experience and indigenous knowledge on local natural conditions, forest resource conditions, suitable tree species, forest vegetative cycles and characteristics, fireproofing and disinfection, and so on. Forest farmers are the most important stakeholders of forest management. The forest tenure reform maintains their right to use and autonomous management, which makes them pay more attention to forest management. Thus, they try to make their own informal plans which are always connected with their family production cycles, local social economy conditions and natural conditions. Their plans usually are kind of overall arrangement of their family livelihoods.

The forest farmers not only have rich forest experience, but also have formed very important customs and regulations to manage forests during the use of local resources. Since new China was founded, the village committee has drawn up the local rules and devised slogan propaganda to regulate forestry activities. For example, Shuanglong Village's 6th and 7th teams mainly lived on bamboo forests, but digging winter bamboo shoots is very disadvantageous. So the local people follow a traditional custom, named "huokuanjiu(boarding liquor)". The "huokuanjiu" is passed down from the old society to prevent villagers nearby to dig the bamboo shoots. Usually, these rules are effective. In Shuanglong, they still kept this "huokuanjiu" several years ago.

5.2.2 Elites of FFCs: open mind and rich resources

During the training process, we found that cooperative members are more knowledgeable and informed than ordinary farmers. They have chances to visit other cooperatives and the world outside, and they put forward suggestions of the development of bamboo industry such as tourism products, bamboo charcoal, bamboo wine and so on. They have strong industrialized

management consciousness. Besides visits outside, they also study actively by themselves and get more forestry knowledge and information through the Internet and their interpersonal relationships, especially on forestry industrialization. This will contribute to the formulation of participatory forest management plans.

What else, the FFCs usually have large areas of forests. It is easier for them to seek more resources and funds so they have resources to guarantee the implementation of forest management plans. They can apply for some projects with rich resource and funds, and they also have some funds for operation. They have done a lot of work, such as forest roads repair, fire and theft prevention, marketing of forest products, playing an important role in current forest management.

5.2.3 FFCs/FCs: organizational foundation

Forest farmer cooperatives and forest councils play important roles in afforestation, harvest quota application and management, forest fire prevention, pest control, forest administration, and information release. As important players, they have made a organizational foundation for participatory forest planning.

5.2.4 Forestry institutes/bureaus at the township and county levels

The staffs in the forestry bureaus and forestry stations have abundant knowledge and experience in forestry policies, forestry related technologies, market information and forest management, and they have more strong sustainable management consciousness compared with forest farmers and FFCs. This will guarantee the successful implementation of forest management.

5.3 The constraints on the implementation of PFM in the pilot villages/FFCs

5.3.1 Interest conflicts are easily occur during the process of harvesting quota distribution

Currently, distribution of harvesting quota is more transparent than before. But it is comparatively difficult for forest farmers who haven't joined the FFCs to apply for quota, since the boards of forestry, forest centers, and FFCs have more dominant power in quota distribution. Any interest conflict may influence the implementation of participatory forest management.

5.3.2 The lack of publicity has resulted in forest farmer's poor understanding towards forestry policies.

The tenure reform has been regarded as "China's third land revolution" to carry out. So, government publicity on forest tenure reform at all levels ie comprehensive and farmers have better understanding on the forest land ownership, payment of warrants. But for other forestry policies, the governments did not take specific measures to carry out. Most of the forestry

policies are informed by way of meetings among village cadres. After that, village cadres have meetings with village representatives, which further convey the information to villagers. In the old style of traditional Chinese acquaintances society, that was a very effective mode of transmission. However, with the increasing number of migrant workers and longer migrant time, farmers in rural communities are hard to meet regularly. So an oral tradition of information transmission has been challenged and new ways of transmission haven't been established, which leads to limited understanding among farmers towards relevant policies.

Although most of them have recognized the advantages of a clear tenure brought by the tenure reform, most forest farmers need to improve their knowledge on forestry policies. Currently, forest farmers are not clear about the ways and amounts of various kinds of forestry subsidy policies. Some subsidy policies, such as the subsidy for forestation in barren mountains, are even unknown to some farmers. Farmers' understanding of forestry management policies, such as forestry taxes policy, timber transportation and management policy, and policy of license for forestry products processing, is poor too, but publicity of harvesting quota and harvesting license is better. Farmers know little about forest farmer's cooperatives, especially on how the forest centers determine purchase prices, how they allocate harvesting quota and how they spend funds.

5.3.3 The amount of forestry subsidy needs to be increased and forestry infrastructures need to be enhanced

Funds for afforestation are almost unavailable and the amounts are low too. Farmers' motivation for planting trees is dampened by the costs, long durations and payoff cycles. It takes farmers 15 years to obtain economic returns from fir trees, while flowers and fruit trees' net payoff periods last one or two years. Forest farmers who have received ecological efficiency compensation for public welfare forests think the amount of this subsidy is too low. So they are not willing to change their forests into public welfare forests. Some forest farmers think the government should provide subsidy for nurturing. Farmers presently have to pay nurturing fees to the forestry authorities every year, but they are not satisfied with the forest land resource support they have been given. In order to promote forest nurturing, forest farmers need subsidies for forest nurturing from governments and reduction on nurturing fees.

After the establishment of the household contract responsibility system, village collective infrastructures became very poor in many villages with weak collective economy. After the rural tax reform, villagers hoped to use democratic decision-making approach to solve the infrastructure and other collective services. But owing to lack of funds, appropriate incentives, the village collective transaction management was hard to implement, and many village roads, irrigation and other public infrastructures were difficult to put in place. After the tenure reform,

forest management became an independent scattered farmer behavior, which also resulted in the same difficulties. In the research, whether the leaders or ordinary villagers generally reflected that the poor forest road infrastructure had seriously affected the production and management behavior and led to costs increasing. It is found in the survey that the present forest management cost is very high. Forest farmers think that there are no subsidies given to individual forest farmers while there are subsidies and taxes reduction for agriculture and stockbreeding. Forestry subsidies are minimal compared to the cost, and much more inadequate compared to agricultural production subsidies. Thus in the survey, many farmers have expressed the hope that the State increases subsidy intensity provided to farmers for "better forestation, better forest-management".

5.3.4 The implementation of institutions about FFCs is not enough

There are clear definitions about institutions of forestry resource management, meeting and working, the procedures of cutting and sales, obligations of managers, obligations and rights of forest farmers, etc. But there are some problems in the implementation of such institutions and the transparency of forest management information is poor too. Therefore, forest farmers have doubts on the management and operation of the forest centers.

5.3.5 The level of forest farmer's participation in FFC (or forest center) needs to be improved

Farmers benefit from the reduction of production cost and labor investment produced by services provided by the forest centers, such as improved infrastructure, forest protection, transportation, mediation of disputes. However, these benefits are on the cost of transferring sales right of timbers to the forest centers. Now, the participation level of farmers in forest center management is very low, and their rights to know information, to operate and to participate in management are not well respected. The concern raised by farmers is one reflection of the legitimate rights which ensure them to obtain greater benefits, and it is also a sign of asking for a healthier functioning of the forest centers.

5.3.6 Forest Council has no financial support, affecting its operation and development.

Although Hongjiang County gives certain policy supports to the forestry council, such as special arrangements on application for logging Indicator, there is no financial support for the council's own operation. Therefore, the forestry council is highly dependent on the committee in the village and has no identification with forest farmers. There are two primary reasons: members of forestry council and the committee in the village are almost the same and the forestry council has no funds for independent forestry activities.

5.3.7 Migration of rural labor affects investment in forest management.

Forestation, forest protection, forest felling and other forest management behaviors are labor-intensive activities, requiring young labor input. At present, labor shortage is a factor limiting sound family forestry management. Although migrant workers usually hire labor for afforestation, the rural households who have neither labor nor money can only transfer their forestland to others. Labor migration gives space for the development of forestry cooperatives, but the current forestry councils do not assume the responsibility for forestry management and protection. Therefore, afforestation and forest management show difficulties.

6. Capacity building

6.1 Trainees

Participatory training is a process of learning from each other. We formed one planning group in each pilot village, and each training group involve seven to 14 forest farmers, one technician from the forestry station at the township level and one official from the county, as well as three facilitators from China Agricultural University. The training groups involve as many stakeholders as possible that include ordinary farmers, FFCs leaders, village leaders, forest big holders, both males and females. There are more people involved at the final meeting for reporting and sharing.

Table 6 The components of each planning group

Villages	Villagers		Technicians from Township	Officials from County Forestry Bureau	Research team from the CAU	Total
	Male	Female				
Shuang Long	10	4	1	1	3	19
Tongping	7	4	1	1	3	16
Qixingling	6	1	1	1	3	12
Guanyintang	8	1	1	1	3	14

Some farmers learn how to make participatory forest management planning in the training. This offers them an opportunity to discuss and communicate with officials and forest technicians. It is also good for forestry technicians to exchange deeply with forest farmers and learn the present problems in local forest management. As facilitators and researchers, we learn forestry technical knowledge form forest technicians and indigenous knowledge from local farmers.

6.2 Training methods and contents

Besides distribution of training materials to each participator and PPT presentation of PFM objectives, principles, methods and procedure, we also introduced the participatory training

methods. Group discussions went through the entire training process. To stimulate trainees' participation enthusiasm, participatory training needs appraisal and training effect appraisal were carried out. Paper cards, flipcharts and markers made the training more interactive, visible and flexible. Collective wisdom was fully use for community resources mapping, SWOT analysis, problems analysis and objectives analysis and brains storming. Transect walk, photo show, PPT demonstration and practice of PRM planning made the training process more lively and vivid. Trainees showed keen interest.

The training contents include the objectives, principles and methods of participatory forest management, following the “learning by doing” principles. There are ten sessions, including county workshops, identification and analysis of related resources, setup of the forest farmers planning group, participatory appraisal for forest management both at present and in the past, transect walk, SWOT analysis to identify strategic options and development objective analysis, discussions on working plan, draft plan, feedback and revision, evaluation of training processes and training materials, and preparation of final plans. We have practice through the whole process of participatory forest planning.

6.3 Practice to draft forest management plans

Participation means including local people in the development of plans and activities designed to change their lives. In its most developed form, participation is a continuous process of negotiation and decision making that occurs at various levels and with all stakeholders. Forest management refers to all the activities carried out to create or take care of a healthy forest that produces the products and services that meet the objectives of the owners of the forest. Making forest management plans is one of the key approached in forestry to regulate management activities so as to achieve sustained yield of forest products. Forest management plans are made for participatory forest management.

To ensure the interactive learning and capacity building in accordance with the first function of the PFM process in which learning is highlighted, the PFM process has been designed based on the regular planning cycle:

- Prepare: analyze existing information and make arrangements for the process;
- Analyze: existing situation and future trends;
- Plan: identify problems and options, objectives and activities;
- Monitor the implementation of the plan;
- Assess and share results with other stakeholders.

PFM is a long-term repeated process. The preparation of forest management plans should occur in a stepwise manner with the capacity of forest owners being built gradually. It is not sufficient

to prepare a plan by simply following a checklist or through a series of participatory exercises lasting only a few days. If this is done, conflicts will not be resolved (and may in fact be initiated) and disadvantaged groups will be further disempowered. A sufficient period for internal learning, debated and negotiation is crucial for establishing a strong collective forest management institution (FAO, 2004).

A PFM plan consists of the background, current conditions about forest management and trends, SWOT and strategic option, long-term plans, annual work plans, monitoring plans and appendices.

Table 5 Practice to draft a forest management plan

Sessions	Activities	Participants	Venue
Session 1	<p>Participatory forest management workshop in Hongjiang and Liuyang City;</p> <p>Introduction of the background and contents of the project;</p> <p>Brief Lecture on the objective, principles, procedure and methods of PFM planning ;</p> <p>Group discussion to develop facilitators' knowledge and understanding of the current forestry conditions</p>	<p>Officials of Hongjiang Forestry Bureau ;</p> <p>Technicians from forestry station;</p> <p>Villagers and forest farmers;</p> <p>Research team from CAU</p>	Forestry Bureau meeting room
Session 2	<p>Interview the participants;</p> <p>Ask for useful Written references and documents;</p> <p>Participants are informed the schedule and activities in the following days.</p> <p>Research team conferred with village leaders and cooperative leaders on the identifying criteria for PFM planning group participants, and asked them to advise the appropriate villagers and informed villagers to hold a meeting to form an effective PFM planning group.</p>	<p>Officials of Forestry Bureau ;</p> <p>Technicians from forestry station ;</p> <p>Villagers and forest farmers;</p> <p>Research team from CAU</p>	Forestry Bureau meeting room

	Form a PFM planning group.		
Session 3	Community resource mapping; Basic information and forestry resource condition; Analysis Assess the present state of forest management conditions and identify possible futures; Select 2-4 alternative parcels	The Planning group	Village committee office
Session 4	Transect walk on the mountain	The Planning group	The forest mountains
Session 5	Choose one parcel as an example, to do SWOT Analysis and objective analysis, and to identify development strategies and objectives	The Planning group	Village committee office
Session 6	Discussion on the specific development plan	The Planning group	Village committee office
Session 7	Discuss and draft the PRM Plan	The Planning group	Village committee office

Session 8	present to other villagers about the planning process and drafts to ask for recommendations for improvement	The Planning group and other villagers	Village committee office
Session 9	Evaluation of planning process and training materials	The Planning group	Village committee office
Session 10	Forming the final PFM Plan	The Planning group	Village committee office

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

6.4.1 Improvement of forestry knowledge and techniques

Formulating a forest management plan needs some professional forestry knowledge and techniques as well as the awareness of forestry policies. However, farmers presently don't know the forestry policies very well and also have some technical and knowledge difficulties in forest management planning, which needs trainings on publicizing policies, laws and forestry knowledge and skills. They also expect some market information and training from experts in forestry industrialization and marketing. The forestry department can build forestry information networks to provide information.

6.4.2 External support for forestry infrastructures

The poor forestry infrastructures such as forest roads have become the biggest constraint to forest management in some villages and the biggest concerns of forest farmers and forest councils. They focus more on forest road than on forest management planning, with a strong expectation that the government can help them to improve forest roads. Forest planning and management is an integrative work, involving not only the participation and efforts of forest farmers and FFCs, but also the support from governments.

6.4.3 Cultivation of sustainable management awareness

The purposes of participatory forest management are the same with other forest management types, i.e. the sustainable and healthy development of forestry. Although farmers have accumulated precious local experience, their awareness of sustainable management remains weak. For example, in Shuanglong Village, after the planning group did the objective analysis, the core objective was established as "improved economical benefit" by the farmers though the forestry workers put forward the "economical and ecological win-win benefits" goal. Farmers neglected ecological sustainability and this was reflected in the planning. To conduct participatory forest management, the sustainable management awareness also needs to be built and improved, or it will go against participatory forest management planning.

6.5 Assessment on capacity building

Capacity building activities are carried out smoothly except in Guanyintang, where farmers are not interested in it. All the stakeholders enjoy improved capabilities through the trainings.

6.5.1 Active participation of different stakeholders

In the training groups, there are as many stakeholders as possible including ordinary farmers, FFCs leaders, village leaders and forest big holders, both males and females. There are more

people involved in at the final meeting of report and sharing. All the stakeholders in the training are encouraged to participate as much as possible. Various participatory tools are used to make the training process lively and relaxed and the communication more interactive and transparent. Participators are largely inspired. Teamwork goes through the whole training process, involving each participator.

6.5.2 All the stakeholders benefit from the training

Generally speaking, the forest farmers and forestry staff consider the training is important and meaningful, and really good for farmers. The forestry officials and technicians consider the training has a good guiding effect on farmers' forest management and is very helpful. The training also provides a channel for farmers to report their problems in forest management to the upper level, and offers advice for governments' decision-making. In the farmers' opinions, this training reflects that the governments and the society are concerned about their benefits and forestry development. The training is carried out to promote their forest management and improve their livelihoods. The final objective of the program is to help them to manage their forests really autonomously. The training demonstrates a series of systematic methods of participatory forest management planning and helps chart the course for future development. They master the procedures of participatory planning.

As facilitators and researchers, we learn forestry technical knowledge from forest technicians and indigenous knowledge from local farmers.

6.5.3 Guidance on the forest management practice in the future

The detailed and comprehensive training content has presented a complete participatory forest management planning. Farmers have rich experience and knowledge, and through this training, they learn how to utilize a set of systematical and logical methods. It will guide their forest management practice in the future.

6.5.4 Promoting exchange of knowledge

Such training has also provided an equal and diverse platform at which they can have direct dialogue with the experts and technicians, consult forestry management knowledge and report forestry management problems. Farmers are more informed on forestry policy. Technicians or officials learn the practical problems in forest management, and give valuable advice to farmers.

6.5.5 Transmission of participatory approaches and empowerment

The training helps convey the ideas of participation and empowerment to farmers, village leaders, forestry council and officials, inspiring all the stakeholders to contribute their own knowledge and ideas in the formulation of forest management plans and listen attentively to other person's

viewpoints. Each person has the rights to express his/her own ideas, and improves their abilities in expression and speeches.. In particular, the voice of ordinary villagers and woman has been heard. In the former forest management planning, farmers were just implementers without policy-making and participation rights, while in this training they are regarded as the subjects and have both participation right and decision-making power.

6.5.6 Some difficulties

Farmers think that there must be some difficulties in their own practice of participatory forest management. Some of them think that they have rich experience and usually have their own informal plans conferred with their friends or neighbors. This planning approach in this training is too complicated and difficult to organize for them.

7. Overview of forest management policies and institutions at the central, provincial and county levels

In China, the essential basis of forest management is the *Forest Law* passed in 1984, which was revised in 1998. In accordance with the *Forest Law*, the government issued Regulations for the Implementation of Forestry Law to be the forest management legal basis and guidelines in 2000.

7.1 Harvesting quota control system

7.1.1 At the central level

Based on the *Forest Law* revised in 1998, the basic institution of China forest management is classified management, i.e. according to the different purposes and uses, forests are classified and implemented with different management measures. For ecological forests, governments adopt strict management measures. For non-ecological forests, governments adopt different management measures. Generally, it is targeted at forests for commercial purposes.

Table 8 Features of forest management classification

Ecological function	Trees uses	Management mode
Ecological forests	Protection forests	<p>Stated-owned: national projects or programs, such as Natural Forest Protection Program and nature reserve management regulations; or set-up of special management organizations.</p> <p>Collective-owned: the central fiscal compensation or the local fiscal subsidy on condition.</p> <p>Farmer- owned: cannot undertake forest management activities; only tending and updated cutting.</p>
	Special-use forests	
Non-ecological forests (commercial forests)	Timber forests	Forest management according to relevant regulations
	Economic forests	
	Firewood forests	

As for timber forests, China has implemented fell management since the 1950s. Forest production has a distinctive feature of planned economy because of its particularity. The *Forest Law* was revised several times and other relevant forest laws and regulations strengthened the administrative intervention with forest management. Eventually, China formed an overall

management system of forest management with Chinese characteristics, of which the core is quota management of felling and the emphasis is supervise felling, transporting of trees with certificates and wood processing (Wang Qingjun, 2010).

At present, the legal rules of China forest felling management include the *Forest Law*, the *Implementation Regulations of Forest Law* and the *Regulations of Forest Felling and Updating*. The policies of China forest management mainly contain the following aspects¹:

First, the forest cutting quota system. According to the basic principles of forest laws, “rational management, sustainable use”, “timber consumption below growth”, on the basis of clear forest cutting maximum control index, all the forests are separately measured categories to form the quota cutting system by the central government. The quota cutting system was started in 1950s, but cutting management was out of control during the Cultural Revolution. The *Forest Law* (on trial) in 1979 clearly put forward the quota cutting system. The *Forest Law* (official) in 1984 specified again the quota cutting system. In June 1985, the state forestry administration issued the *Provisional Regulations of Formulating Forest Cutting Quota*. In April 1987, the State Council issued the *Circular of the State Council Concerning the Prevail and Transmission of the State Forestry Administration on Audit Opinions on the Forest Cutting Quota of all Provinces, Autonomous Regions and Municipalities*, which specified the forest cutting quota of all provinces, autonomous regions and municipalities during the Seventh Five-year Plan (Shen Wenxing, 2004). After that, the forest cutting quota system has become the core of China forest management. The base of setting cutting quotas is timber consumption below growth and specifically reasonable cutting quotas based on forest management plans. The national forest cutting quota system was executed in 1986 which was revised every five years, and the quota was progressively allocated to provinces, cities and counties.

Second, the annual timber production plan system. The State formulates a unified annual timber production plan. Except felling firewood forests in farmers’ private hilly land, all felling behaviors must be in the national annual production plan including national, collective and personal forests. The national timber production plan has the legal effectiveness, and the competent departments of forestry at all levels only allocate the quotas depending on the issued timber production indicators from the superiors.

Third, the forest cutting license system. Competent forestry authorities grant cutting licenses to applicants who conform to the legal conditions, and empower the forest cutting rights to the

¹ The former four terms are based on the Wang Qingjun (2010), the fifth is summed up by the author

applicants. The forest cutting license contains the cutting place, area, accumulation (plant number), species of trees, cutting mode, deadline and reforestation time etc. When applying the forest cutting license, the applicants generally need to pay raising fund fees, afforestation deposits, revegetation fees, transport license fees, etc.

Forth, the post-cutting updating system. The cutting units or persons must complete the reforestation task according to the required areas, plant numbers, species and deadlines of cutting licenses. In order to effectively promote reforestation by units or person, the Chinese government formulates the *Regulations of Forest Update after Cutting*. The forestry authority will return the forestation deposits to the units or persons who have completed the required reforestation task. In some places, the units and persons can get some forestation allowances.

Fifth, the timber sales management system. The Chinese government has always practiced strict timber sales management. For instance, timber can be only operated and managed by forestry departments. With the Reform and Opening policy, forest farmers can sell timber independently and have more ways to access markets, which boosts the development of forest industry.

Table 9 Legal basis of forest operation and management systems

	The <i>Forest Law</i> (revised in 1998)
The forest cutting quota system	The state strictly controls the annul forest cutting quota based on the principle of timber consumption below growth.
The annual timber production plan system	The State formulates a unified annual timber production plan which can not exceed the approved annul cutting quota. The State Council administers the scope of planning management.
The forest cutting license system	Those who want to fell forests should get the forest cutting license, and fell forests according to the license; except farmers' private hilly land and individual forests around house.
The post-cutting updating system	The cutting units or persons must complete the reforestation task according to the required areas, plant numbers, species and deadlines of cutting licenses. The areas and plant numbers of updated forest should not be smaller than those of the forests cut.
timber sales management system	Units or persons must have transport licenses issued by forest authorities to transport timber.

As China is short of forest resources but has huge demand, the rigid forest management

institutions play an important role in protecting the sustainable use of forest resources, ensuring the growth of forest resource and controlling effectively excessive consumption of forest resources. The consumption of national forest resource has declined (Shen Wenxing, 2004). However, there are plenty of problems about the cutting quota system, such as the questioned accuracy of the cutting quota basis, seriously excessive logging and difficult execution of vouchers logging which obstructs social capital from investing in the forest industry (Li Kai, Zhang Ming, 2004). In pilot counties, some local forestry officials said that forestry was still in the planned economy. The Forestry Development Report 2002 also pointed out that there was a lot of deficits about the cutting quota system for promoting forestry marketing process, clarifying and implementing forest rights, motivating reform of forest classified management and forest felling management in plain areas. After the tenure reform of collective forests, the central government clearly proposed clear property rights and vivid management rights. The up-to-down forest management system doesn't meet the basic requirements of tenure reform of collective forests. Therefore, in the reform of corresponding policies, the central government proposed to adjust the cutting quota system, make approvals of forest cutting public and apply logging indicators based on own needs of forest famers or other forest owners. The forest cutting quota system has changed from up-to-down delivering to farmers' applying to the forestry authorities. At the same time, the government advocates to work out a forest management plan. If the plan is approved, the operators can management the forest based on the plan. The core of this adjustment is that forest owners can arrange the cutting plan according to own needs. If the area is large enough to formulate a forest management plan, forest farmers can arrange the cutting plan in advance, which can promote farmers' initiative and enthusiasm of forest management.

Since the adjustment of the forest cutting quota system, the timber production plan system has changed. After 2010, before implementing the annual logging plan, the forestry sectors of provinces, autonomous regions and municipalities should report the timber production planning to the state forestry administration according to the annual forest cutting quota ratified by the State Council. Meanwhile, timber sales management gradually becomes relaxed. The latest policy provides that farmers can independently determine management modes and sale woods with needed licenses by law.

7.1.2 At the provincial level

The forest management policy and institution of China are strictly implemented up-to-down. The local governments can only make minute adjustment based on the characters of local forestry development, but cannot violate the principles of the central policy. The policies of Hunan Province can be traced to the central policies. After the collective forest tenure reform, as the

important pilot area of the reform, Hunan Province has made some beneficial exploration. 1) Improving felling management of commercial forests. 2) As for the forestation in the non-forest land, ensuring the cutting indicators and approving in time. 3) Persons or units that operate over five thousand mu can independently make forest management plans, and cut forests based on the plans. 4) Ensuring the cutting indicators of bamboo forests which operators apply to the administrative departments of forestry based on the production technical requirements. 5) The young forests with a diameter below 10 cm don't contain the timber production plan. 6) Simplifying the procedures of issuing forest cutting license. 7) Making the allocation of forest cutting indicators public, which has been included in the village arrangement public system. 8) Relaxing timber sale management. Person or units with timber processing licenses can purchase woods.

7.1.3 at the county level

Under the guidance of the provincial policy, both Liuyang and Hongjiang have begun the practice of cutting indicator allocation.

Hongjiang has cancelled the up-to-down allocation mode. Instead, farmers apply cutting indicators based on their own needs. After the indicators have been reviewed and approved, the towns get the indicators and then allocate them to villagers. Before cutting forests, farmers should have forest cutting licenses based on indicators. If the indicator is not finished, farmers can use it in the next year. At the beginning of every year, the Forestry Bureau of Hongjiang issues an annual timber production plan according to applicable cutting indicators and approval conditions. In the past, only the purchasing stations of forestry administrations can purchase woods. Farmers with cutting licenses can independently choose to sell the woods to anyone.

Hongjiang has some innovative measures of forest management. 1) Farmers levy raising funds when transacting cutting license, then transact transport license. It makes forestry management convenient and eases pressure of fund raising. 2) Making new forestation plans. After three years of forestation, the operating units (over 30 mu), after approved, can get new forestation plans by the Forestry Bureau according to the growth rules. The new plan specifies cutting amounts and cutting ages and issues resource management cards, which can show farmers predicted management efficiency. 3) Building updated contract management systems. When forestry operators apply cutting plans, they should submit updated forestation plans. When transacting cutting license, operators need to sign contracts of updated forestation and pay RMB30 per cubic meter of security deposits. If operators finish the forestation task in time, they will get the deposits back. Otherwise, the forestry administration will not return the deposits and will entrust a specialized forest organization to afforest. The forest right ownership doesn't change (Xiao

Shiming, 2010).

Under the guidance of the provincial policy, Liuyang began to reform the allocation of forest cutting indicators and ways of issuing timber production plans. 1) 50% of the annual timber production indicators are issued to the forestry farms and famers directly for the development of forestry, 30% to the towns for satisfying the production and living demands of forest farmers, 20% to the projects of requisition of forestlands, power repair, rescue and relief work and confiscated material, etc. The government insists on applying forest cutting licenses by certificates of forest ownership and simplifying the procedure of issuing the cutting license. 2) The forest farms or cooperatives which have forestlands over three thousand mu can independently make forest management plans. In 2008, the government finished making the forest management plans of forest farms with a forestland of over ten thousand mu. In 2009, it finished preparing the forest management plans of forest farms with a forestland of over three thousand mu. The operators have practiced the plans by law. 3) Sunshine Project—public cutting plan allocation. 4) Forestation deposits. If the farmers or forestry felling units finish the forestation task successfully, they will get back the deposits. Otherwise, the forestry administrations will confiscate the deposits and hire labors to implement forestation.

7.2 Taxes and charges

The reform of the forestry tax system plays an important role in shifting the strategic for forestry development. The forestry tax is one of the national fiscal revenue levied by law to satisfy the common demands of social members. It is a particular relationship of distribution in the national income and redistribution. With the development of forestry, wood products have been replaced by ecologically-friendly products in domination, in which tax system plays a crucial role.

Recently, the forestry tax system has been reformed continuously. The State has successively cancelled forest resource compensation and protection fee of forestry construction. Meanwhile, the government has issued a series of forestry preferential taxation policies, which eases the burden of the entire forestry tax. For example, in 2006, the agricultural tax was cancelled nationwide, and the tax on agricultural specialty products of wood and bamboo became part of the history. At the same time, the basic prices of raising funds and inspection fee were reduced, and the return rates were increased. In 2009, the central government has provided that the raising funds can be lowered by half. Current forestry taxes and fees are not dominated by the state tax revenue but nine items of forestry fees, which forms the pattern of mainly fees drafting outside the fiscal distribution. The present forestry fees contain value-added tax, business income tax, tax on agricultural specialty products, and tax policy of natural forest resource protection. Forestry charges and the government fund system contain forestry fees and forestry governmental funds.

The governmental funds contain raising funds and renewal funds in southern collective forest areas.

In Hongjiang City, farmers need to pay RMB182 per cubic meter, including RMB60 of raising funds, RMB30 of forestation deposit, RMB10 of forest fire insurance, and RMB82 of vegetation recovery fees. Expect that raising fund will be returned to farmers, other fees are totally RMB152 per cubic meter. Besides, farmers need to pay RMB10 testing fees. All in all, the forestry fees are RMB162 per cubic meter. In Liuyang City, the forestry fees are almost RMB90 per cubic meter, including RMB60 of raising funds, RMB1 of sanitary fees, RMB5 of planning fees, RMB5 of forest protection fees, RMB18 of forest fire insurance, RMB5 of examining fees, and RMB300 of forestation deposits. Farmers have to pay these fees when applying cutting license and transporting timber, and the forestation deposits will be returned to the farmers.

7.3 Micro-mortgage financing policy

7.3.1 At the central level

In order to better promote the collective forest tenure reform, the Chinese government specified details of the reform in 2008, such as the *Opinions on Comprehensively Advancing of the Collective Forest Tenure Reform*. The core contents of the collective forest tenure reform include two sides: 1) clarifying property right, issuing certificate of forest ownership. On the premise of unchanged collective forestland ownership, farmers will have the right to contracted management and forest ownership according to law by way of family contracting, so that farmers are to be subjects of forestland contracted management. In the case of unfavorable forestland for family contracting, it can implement property in other ways including all shares, all benefits, if members of the collective economic organization agree on the laws. Village collective economic organizations can keep a small number of collective forestland and have the management right by law. The term of the forestland contract is 70 years. After clarifying contract relations, the government should conduct the field demarcation and registration and issue the certificate of forest ownership. This work should be meticulous: specific forest right registration; accurate data; figures, tables and books shall be the same, and the people, place and certificate shall be matched. 2) Forestland circulation and mortgage. On condition that it will not change the forestland usage, the right to contracted management of forestland and forest ownership can be subcontracted, leased, transferred, brought into and by the right holders. In order to standardize the collective forest right circulation, the state forestry administration issued the *Opinions on Strengthening the Collective Forest Right Circulation Management* in December 2009 that specified requirements in five aspects: 1) stabilizing family contracting management relationship of collective forestland, 2) establishing the collective forest right circulation mechanism, 3) enhancing the guidelines for collective forest right circulation, 4) maintaining collective forest right orders, And 5) banning

behaviors of forcing or obstructing farmers to circulate forest right. In May 2009, the People's Bank of China, the State Forestry Administration joined hands with other three departments and issued the Guiding Opinions on the Collective Forest Tenure Reform and Forestry Financial Service, which provide detailed systems for forest right mortgage.

During 2007-2009, the central government cumulatively invested RMB2, 548,000,000 in the forest reform. Recently, the Ministry of Finance has prepared to invest more working funds in the additional 191 billion mu of collective forestland in the seventh forest resources inventory and the 1,443 billion mu of collective forestland in 12 western provinces and three autonomous prefectures enjoying western policy. Local governments at different levels have spent RMB84.6 billion in total for the forest reform work. The funds increased by more RMB3,270 billion, or 63%, from 2009, including RMB4,720 billion of working funds and RMB3,390,000,000 of transfer payment. During the past seven years, there has been a remarkable progress in the collective forest tenure reform. By the end of 2009, rights of 1.77 billion mu of forestland have been affirmed, the area of which is 64.7% of national collective forestland. 1.4 million of forestlands have been issued, the area of which is 64.7% of 2.73 billion mu of national collective forestland. A total of 59.54 billion certificates of forest ownership have been issued, and 55.42 billion farmers have received the certificates. In 25 provinces (autonomous regions, municipalities), farmers have enjoyed forest right mortgage service. A total of 24.5 million mu of forestland has been mortgaged, and the loan amount sums up to RMB22.14 billion (state forestry administration, 2010). The new forest right protection management system gradually takes shape. One fourth of nationwide counties have set up forest right registration protection and trading service management organizations. One third of nationwide provinces have issued regulations of forest right mortgage management. One fifth of nationwide counties have established forest right trading platforms and set up forest resource asset appraisal organizations. In total, there are 28.71 million deals of forestland mortgage. The mortgaged forestland is 84.58 million mu, and the fund amount is RMB31.6 billion. It promotes the flow of production elements (Zhang Jianlong, 2010²).

7.3.2 At the provincial level

In terms of forestland circulation and mortgage, Hunan Province has issued policies to regulate forestland circulation and mortgage program, including the *Methods of Forest Resource Circulation*, the *Rules of Forest Resource Mortgage Management and Registration* and the

² Preliminary Establishment of the Modern Forest Policy System and Five Big Breakthroughs in China. China Internet Information Center. 2010-6-22.

Regulations of Forest Resource Mortgage. Part of the pilot counties have set up forest property rights trading centers and forest resources & assets assessment institutions. The province has established 29 forest property rights trading centers, circulated 812,000 hm² of forests and realized a turnover of RMB3.56 billion. In terms of circulation of individual forestland, Hunan Province has developed very detailed procedures for operation. First, forest rights holders apply to county administrative departments of forestry or township forestry stations for certificates of forest ownership. Then, the county-level administrative departments of forestry review the qualifications, and both sides of the circulation sign forest resource circulation contracts. At last, both sides register the change of forest ownership at the county administrative departments of forestry with referred contacts and other materials. The circulation can apply resource assessment which is not a must however. As for the forest mortgage, Hunan Province stipulates that the forest resources of mortgage mainly include commercial forests, economic forests and firewood forests. The mortgage of forest resources is 30%-50% of the assessment. The following materials are needed in mortgage application: mortgage registration application forms, identifications of mortgagor and pledge, contracts of the highest sum of mortgage, reports of forest resource assessment, certificates of forest ownership and other needed files. Credit cooperatives and other financial institutions are responsible for investigating before loans, examining during loans, offering loans, supervising and inspecting mortgage forest resources assets. The administrative departments of forestry take charge of registration, examination and filing of forest assets mortgage, certificates issuance and supervision over mortgaged forest resource assets. The biggest problem is forest resources evaluation. In some cities and counties, forestry resources teams do the assessment work due to the lack of perfect and qualified forest resource assessment institutions.

7.3.3 At the county level

In terms of forestland circulation and mortgage, the municipal government has made some policy exploration. Hongjiang established the first county-level trading center of forestry property in Hunan Province, which plans forestry property trading, reviews trading qualifications and legitimacy of traded items, releases market information, handles and organizes forestry property businesses - bidding, auction, hang, and forestry property registration, etc. Besides, in order to keep the trading open and justice, the government also issued the *Opinions on Forest Right Circulation* and the *Detailed Regulations of Forest Right Circulation*, which clearly define the trade units, scope, modes, procedures, etc. The trading center and clients should select trading ways according the *Detailed Regulations of Forest Right Circulation*. The trading of national and collective forests should be in the way of public bidding. Famers that contract forests can trade woods by way of agreement. The rights to forest resources use for the forest cultivating purpose

can be transferred by way of bidding, tendering, listing or agreement. Up to now, Hongjiang has seen 97 deals of forest resources circulation, which involved 143,436 cubic meters of woods and RMB39.15 million of amounts.

To facilitate implementation of forestland circulation and forest right mortgage, the government of Hongjiang has formulated the *Interim Procedures of Forest Resource Mortgage of Hongjiang City*, and set up a forest resource assessment center to evaluate forest assets. At present, the financial institutions responsible for forestland circulation and mortgage mainly include the Rural Credit Cooperatives (RCC) and the Agricultural Development Bank of China (ADBC). Banks and the municipal forestry administration jointly review the qualifications of applicants, line of credit, and management of forest resources. The applicants should prepare assessment report on forest resources, certificates of forest ownership, mortgage registration certificates, certificates of the other rights, copies of the ID cards of mortgage lenders and mortgage commitment letters, etc. Loan interests are based on the standards for commercial loans, and the term of a loan lasts one year. There is no fiscal subsidies and supporting policies for the forest mortgage. As for the current implementation, the loan scale is not large, involving RMB30 million by 2010.

In terms of forestland circulation, the forestry administration of Liuyang City has set up a leading group for Liuyang Trading Service Center for Forests and Forestland. The forestry survey team and relevant assessment institutions assess the assets involved in the circulation of forest rights. The government issues the *Opinions on Forest Right Circulation* and the *Guidelines of Forest Rights Circulation* to regulate the procedures and ways of forest rights circulation. Forest rights can be circulated by auction, bidding and treaty. The process is as follows: application, announcement, assessment, auction, treaty, transfer agreement and ownership registration. To encourage forest rights circulation, Liuyang rolled out some measures, such as separate arrangement of cutting indicators of forest rights circulation. Besides, in case that farmers regret to circulate all the forestlands, the government regulates that before a farmer circulates the forestland, he/she should retain 10 mu per person if the paddy field area is less than 0.5 mu.

As for the forest mortgage, the government of Liuyang City has issued the *Measures of Forest Resource Mortgage Registration (on Trial)* and relevant measures regarding loan management, which specify the application qualifications, procedures, terms and interest rates of all kinds of forestry loans. At present, there are six modes of forestry mortgages in Liuyang.

1) Straight mortgage of certificate of forest ownership. The borrower pledges the assessment report issued by the forestry assets assessment center and the certificate of the other rights of forest rights to obtain loans. Up to now, the financial institutions have granted 12 loans, which involve RMB6.1 million.

2) Loan commitment by leading forestry enterprises. The leading forestry enterprises establish credit relations with forestry enterprises by pledging property right of forest farms, right of exercise control, land and house property etc. Banks have lent RMB18.65 million by far.

3) Industrial guarantee companies. Guarantee companies provide guarantee to farmers and minor forestry enterprises, and require counter-guarantee by forest farmers and minor forestry enterprises with forest right certificates and other forest assets.

4) The micro-credit for forest farmers. Like the microcredit and group lending, rural cooperative banks simplify the loan procedures, and offer loans by group lending of farmers.

5) The mode of “companies + bases + rural households. Companies and farmers financially contribute to the establishment of guarantee funds. Leading enterprises sign credit guarantee agreements respectively with rural households and banks. Banks grant farmers loans one to three times of the fund.

6) Construction of credit platforms and implementation of policy-oriented financial cooperation. The local government signs loan cooperation agreements with agricultural development banks and development banks. Then, the government delegates other financial institutions to grant loans to the minor enterprises and farmers which have been reviewed by the loan assessment committee. In order to practice forestry microcredit successfully, the forestry administration of Liuyang has simplified the loan-granting procedure: 1) The mortgagor files application; 2) The mortgagor fills the mortgage registration form And provides personal identity certificates 3) The town forestry station gives opinions. 4) The municipal forestry administration makes registration based on the contract between the mortgagor and the bank on loans and issues the mortgage registration license. 6) The mortgagor goes through the loan procedures.

7.4 The management system for public forest compensation funds

Based on the *Forest Law* revised in 1998, China's basic system for forest management is classified management, i.e. according to the different purposes and uses, forests are classified and administered based on different management measures. For ecological forests, governments adopt strict management measures. For non-ecological forests, governments adopt different management measures. Public forests can be divided into protection forests and special-use forests. National projects such as the Natural Forest Protection Programs and nature reserves can be managed according to nature reserve management regulations or by setting up particular administrations. Collective-owned forests can get fiscal compensation from the central government or local fiscal subsidies. Farmers cannot undertake forest management activities on the farmer-owned forests, only tending and updated cutting.

Since 2002, China has offered fiscal subsidies to State-level public welfare forests, with the standard being RMB5 per mu. This public forest subsidy policy has covered 11 province (regions), 685 counties (units) and 24 National Nature Reserves, involving 200 million mu of key shelter forests and special-use forests. The public forest subsidy is aimed to promote ecological restoration and protect the environment. Forestry subsidies are highly targeted and directive. In 2010, the standard fiscal subsidy for State-level public-welfare forests rose from RMB5 to RMB10 per mu annually.

In Hunan Province, about 49.38 million mu of ecological forests enjoy the fiscal compensation, and the provincial fiscal compensation covers 7 million mu of provincial ecological forests. In 2010, the standard subsidy increased from RMB3.5 to RMB8.5.

7.5 Governments' role in the environmental service compensation market

The central policies of fiscal forestry subsidies date from subsidies for the Grain for Green Project in 1999 and Public-Welfare Forest Project in 2002. In 1998, the central government paid attention to environment issues because of the serious floods of the Yangtze River and Songhua River, and began to implement a series of key forestry projects. In 1999, Shanxi, Gansu and Sichuan Provinces took the lead to launch pilot grain for green projects. In 2002, China initiated the Grain for Green Project nationwide, which spread from 20 provinces (regions) mainly in the western areas to 1,897 counties in 25 provinces (regions and municipalities) nationwide. In 2002, China began to give fiscal subsidies to State-level public-welfare forests, and the standard subsidy was RMB5 per mu. This public-welfare forest subsidy policy has covered 200 million mu of key shelter forests and special-use forests in 685 counties (units) in 11 province (regions) and 24 State-level Nature Reserves. Either the Grain for Green Project or the Public-Welfare Forest Project, the core objective of the forestry subsidies is to promote ecological restoration and protect environment. Forestry subsidies are very targeted and directive.

The central government has issued forestry subsidies mainly including tree thoroughbred allowance, forestation subsidy, public forest compensation, forest insurance subsidy, forest soft loan subsidy, grain for green subsidy and raising fund reducing policy. Except the tree thoroughbred allowance mainly related to national tree thoroughbred bases, forest farmers can benefit from these policies. However, as for the scope of subsidies, these policies are still limited and mostly intended for forestation rather than forest management which has a long cycle of forest production and needs more labor input. Besides, apart from the Grain for Green Project, the overall fiscal input of other forestry subsidies is very limited, so that a limited number of farmers can obtain subsidies and the threshold of the subsidies is quite high. Further tax relief is obviously needed. Presently, forestry taxes mainly contain raising funds, forest protection fees,

fire facility fees and examining fees. Although the central government provided in 2009 that the raising fund can be reduced by half, other taxes haven't been relieved. Compared with forestry subsidies, farmers can obtain much more benefits from grain subsidies. The forestry management takes more investment especially at the early stage than in grain cultivation. The forest management cycle is longer, and it takes farmers more time to get benefit. Forest management faces a higher risk and produces higher environmental externality. In view of these factors, forest farmers need more subsidies.

Table 4 Forestry subsidies from the central government

Subsidies	Start time	Subsidy target	Subsidy scope	Subsidy standard
Tree thoroughbred allowance	2010	131 State-level tree thoroughbred bases, except for forest farmers	29 provinces (autonomous regions and municipalities), Inner Mongolia, Heilongjiang, Greater Hinggan Mountains forestry companies and The Xinjiang Production and Construction Corps	RMB600 per mu for seed orchards and germplasm resources centers; RMB300 per mu for cutting orchard; RMB100 per mu for mother forests and experimental forests.
Afforestation subsidy	2010	Including forest farmers	20 provinces (regions): Hubei, Shanxi, Inner Mongolia, Liaoning, Heilongjiang, Zhejiang and Fujian, Jiangxi, Henan, Hubei, Hunan, Guangdong, Guangxi, Sichuan, Yunnan, Shanxi, Gansu, Qinghai, Ningxia and Sinkiang.	RMB200 per mu for high forest; RMB120 per mu for shrub wood; RMB160 per mu for woody grain forest; RMB100 per mu for fruits, woody herbs and other economic forests; RMB100 per mu for new bamboo forest; RMB100 per mu for artificial regeneration slash
Forest tending subsidy	2009	Mainly state-owned forest farms; including forest farmers in some provinces	140 million mu of Tianbao project area, 60 million mu of non Tianbao project area (50 million mu of state-owned forest farms;	RMB100 per mu

			10 million mu of counties of collective forest tenure reform)	
Public forest compensation	2002	Including forest farmers	28 provinces (autonomous regions and municipalities)	Since 2010, the subsidy standard rose from RMB5 per mu to RMB10 per mu annually for State-level ecological forests.
Forest insurance subsidy	2009	Including forest farmers	Jiangxi, Hunan, Fujian, Zhejiang, Liaoning, Yunnan	The central fiscal subsidy of public forest insurance increased from 30% to 50% and it is required that provincial fiscal subsidies should be at least 40% and local fiscal should be at least 40%.
Forest soft loan subsidy		Including forest farmers		The forest soft loan interest rose from 2% to 3%. The microcredit term for forest farmers and workers extends to five years.
Grain for green subsidy	1999	Mainly forest farmers	25 provinces (autonomous regions and municipalities)	RMB105 per mu annually in the Yangtze River basin and South China; RMB70 per mu annually in the Yellow River Basin and North China.
Reducing raising fund	2009	Including forest farmers	Nationwide	Decline from 20% of the forest income to 10%

7.6 Non-timber forest products

In Hongjiang City and Liuyang City, non-forest products are rare. Except bamboo shoots, other non-forest products are rarely used for sales because there are few relevant policies.

7.7 Traditional forest-related knowledge and customary regulations etc.

Forest farmers live in the forests for generations, and they are very familiar with forestry. Farmers have very rich experience, knowledge and regulations of natural conditions, forest situations, proper trees and forest growing cycles and features.

In Hongjiang and Liuyang, winter bamboo shoots are important forest products, which can bring income and serve as delicious food. But disorderly digging of winter bamboo shoots has bad effects on the growth of *phyllostachys pubescens*, which has become an obstacle to forestry management. Digging winter bamboo shoots requires skills, which seems easy however. The winter bamboo shoots are buried in the ground, and have different forms in different seasons. It requires skills and experience to dig the winter bamboo shoots. Someone digs several shoots all day without skills, while experts can dig several kilograms all day. It is skillful to dig shoots without harming the new bamboos. Farmers agree that digging winter bamboo shoots disorderly will harm *phyllostachys pubescens*, because the rhizome is the mother part of the new bamboo. Digging shoots not only harms the rhizome, but also hampers nutrition conveying of bamboos. Farmers conclude that there are rules for digging bamboo shoots. One mu of bamboo can generate 100 bamboo shoots. Neither the second layer of rhizome nor winter bamboo shoots can be dug. Spring bamboo shoots can be dug. This can prevent digging bamboo shoots from reducing the output.

Forestry is what forest farmers live on. For generations, farmers have important customs and systems to management forest. Since the founding of New China, village committees have made rules to regulate forestry activities. For example, in some places of Hongjiang, there is a custom of regulating the digging of bamboo shoots, namely Huokuan Wine. In order to prevent farmers of neighboring villages from digging bamboo shoots, farmers of a village raise money and invite prestigious people to dinner. At the table, people define rules on forbidding digging bamboo shoots. After the meal, all the people will obey the rules. Up to now, the Huokuan Wine still works.

Surveys show that forest farmers have rich experience, knowledge and customary regulations, which will help make forest management plans.

8. Attitudes and views of different stakeholders towards forest management policies and systems

8.1 Members of forest farmers cooperatives

According to our survey, the cooperative members have good knowledge of and highly satisfied with the policy of the forest management. They acquire more resources through the cooperatives, such as harvesting quota, bamboo renovation and road building. But they also think the participation and transparency is not sufficient; the status of the forest farmers is very passive and they are not acquainted with the financial conditions of forest farms. Because of the insufficient transparency of management information, farmers have doubts about the internal management and operation of the forest farms. Forest farms annually organize financial check by forest farmer representatives, which however doesn't ensure the majority of the farmers understand the financial conditions.

8.2 Non-cooperative members

Non-cooperative members report less knowledge of and satisfaction with forest management policies. The non-cooperative members are not very satisfied with the control of the harvesting quota and forest management of the cooperative. Part of the forest farmers know that the forest harvesting quota must be distributed to the households according to the national policy, while considering the operation of the forest farms at present, farmers don't have the harvesting quota independently and the total harvesting quota has to be applied for from the farm. The majority of the farmers hope to get the quota and make marketing decisions independently. While the managers of the farms and some of the municipal forestry staffs consider the profits gained through price difference as needed by forest farm self-operation and various napes of construction and service work.

8.3 Forestry authorities at the county and town levels

As a whole, after the reform of the forest tenure, the State started to loosen the control over forest management. It vested the local forestry department and forestry managers (forest farmers included) with more management authority. The harvesting quota distributive pattern changes from distribution from higher to lower levels to review and approval level by level, which means local forestry authorities arrange the harvesting quota scale according to their forest resources and farmers settle the harvesting schedule according to their livelihood development demands. The annual harvesting schedule is changed; local forestry authorities draft harvesting schedules according to the local forestry managers' application and resources conditions. Some places also

see the development of forest manage scheme in the hope that local forestry authorities would have five-year manage plans on forest resources to ensure long-term management. The reduction and exemption of the forestry resources' cultivation funds and other forestry taxes and fees lower the farmers' burdens; The reform in the forestry product market system breaks the forestry department's monopoly, introduces different mainstays, broadens the marketing channels for forest products and gives more choices and room to the farmers. These supporting forestry manage policy reforms also give impetus to local forestry development. The reforms reduce the power and income from charges to some extent and may have some influence on the development of local forestry sectors. But in Hongjiang city, the implementation of the policies was welcomed rather than opposed by the local forestry authority because of the other measures taken by local government, such as the reform in the personnel system of forestry authorities which includes all the forestry managers into the targets of governmental financial support,.

9. Problem analysis on policies and systems

Although the forestation funds have been reduced, the cost is still a little high. Although the forestation funds have been cut by about a half, there are still little high forest charges. Take Hongjiang City for example, the total forestry cost is RMB162, while the local average sales price is just RMB700, which shows that the forestry cost accounts for 23%. High charges affect farmers' forest management initiative. Especially for the poor farmers, inputs in applying for forestry cutting permits are too high and dampen their initiatives on timber sales ways.

Forest management is too costly while State subsidies for farmers are too low. It is found in the survey that the present forest management cost is very high. In Hong Jiang, the forest management costs include: reforestation cost, the management and protection cost in the previous three years, and the cost for cutting and sales. The cost of each cubic meter of afforestation is about RMB365-400. Farmers sell timber to timber companies at a price of RMB750 per cubic meter on average, so the net income of every cubic meter timber is about RMB350-385, or RMB3,150-3,465 per mu of woodland. At the same time, the production cycle of timber is usually 15 years, so the average annual income of woodland per mu is about RMB210-230. Subsidies are lower compared with the cost, and much more inadequate compared with agricultural production subsidies. Thus in the survey, many farmers have expressed the hope that governments can increase subsidies for farmers for "better forestation and better forest-management".

Imbalance between various forestry subsidies causes new conflicts. Forestry subsidy policies are imbalanced, which results in different benefits for farmers. A farmer can get a subsidy of RMB230 every year for returning reclaimed land to forestry, and this subsidy policy will last for 16 years, which will help independent operation after forests grow up. A farmer can get a subsidy of RMB8.5 per mu every year as the forest ecological benefit compensation (after 2010), and can only cut 15% of the stock volume after forests grow up. A farmer can get a one-off subsidy of RMB100 for forestation projects, but can operate the forest independently after forests grow up. The farmers who enjoy ecological benefit compensation believe that the current amount of compensation for ecological benefits is too low, making farmers unhappy with the change of their forest land into public welfare forests. For governments, different subsidies focusing on different objectives lead to different target farmers and standards, but each piece of wood for the farmers has the same meaning for livelihoods. Farmers hope that they can be included in the subsidy project in which they can obtain higher subsidies.

Forest councils have no financial support, affecting its operation and development.

Although Hongjiang City gives certain policy support to the forestry council, such as special arrangements for the application for harvesting quota, there is no financial support for the council's own operation. In Shuanglong Village, to solve the financial problems, the forest council introduces two approaches. The first approach is that the forestry council becomes a branch of the village committee, so that the village collective economic income can be used to pay part of the expenses of the forestry council. The other approach is that farmers need to pay RMB10 of management fees every cubic meter of timber when applying for cutting permits. In Shuanglong Village, the collective economic income is very limited, with RMB12,000 of the collective returning land for farming to forestry, about RMB 10,000 per year of the collective forest land contract fee, and only RMB 1,000 per year of harvesting management fee, all of which can only be able to support the village committees' administrative expenses. So the funds to be used for the council's operation are very limited. Although Shuanglong Village Forestry Council has been in place for more than three years, during which it also conducted a general election, there is no change of the high degree of dependency on the village committee and it has not been well developed.

The implementation of institutions about FFC is insufficient. There are clear definitions about the systems for forestry resource management, meeting and working, the procedures for cutting and sales, obligations of managers, obligations and rights of forest farmers, etc. But there are some problems in implementation. Farmers benefit from the reduction of production costs and labor investment provided by the forest center, such as improved infrastructure, forest protection, transportation, mediation of disputes. However, these benefits are at the cost of transferring sales right of timbers to the forest center. From the perspective of timber sale commodity chains, farmers are completely at the bottom of the commodity chain, and in rather passive positions.

Farmers generally don't understand financial operation. Because of the poor transparency of forest management information, farmers have doubts about forest internal management and operation. Broad and equitable participation of ordinary forest farmers in policy making and management is hardly ensured by the forest center, which is led and organized by the committee of the village. Main reasons for some farmers' dissatisfaction include unfair distribution of benefits caused by manager's control over harvesting quotas and forest operation. The forest center just organizes representatives of forest farmers to check accounts each year, but this doesn't ensure their full understanding of the situation of the center's financial operation. Now, the level of participation by farmers in forest center management is very low, and their rights to know information, operate and participate are not well respected. The doubts of farmers are legitimate expression that they want greater benefits, and are also sign of asking for a healthier

functioning of the forest center.

Procedures of forest fire insurance, mortgages and other forestry policies are so cumbersome that farmers' benefits are affected. Some forestry policy implementation procedures are very cumbersome and complex, affecting farmers' participation. For example, the procedure of forest fire insurance claims is too complicated. In particular, if the burned area is very large, the procedure of identification and claims is more complicated. Forestry mortgage loans require farmers to submit applications, invite forest resources assessment agencies to assess, go to forest management department for warrants and other entry procedures, in addition to the communication with banks for limited accounts. Because the program is quite complex high costs are involved. Due to the lack of funds, most farmers prefer to borrow money from their relatives and friends or sell timber; If this cannot solve this problem, some farmers choose to transfer their forest tenures, which leads to ineffective protection of the rights of the farmers.

It may easily lead to interest conflicts that harvesting quotas are merely determined by FFC. Some farmers reported that forest farmers, including those who are not part of the forestry center, have no harvesting quotas of their own and have to apply to the forestry center for the quotas under the current operation model, while according to the State policies the quotas should be assigned to every household. Most forest farmers expect access to harvesting quotas and free choice of buyers in timber sales. However, according to the views of managers of the forestry center and forestry officials of Liuyang Municipality, the profits the forestry center have obtained are necessary for the operation, construction, and services of the center. So there is a conflict between the forestry center and forest farmers in interest distribution, which, to some extent, greatly dampens farmers' production enthusiasm.

Management rights transfer widened the income gap between farmers. The tenure reform of collective forests has identified farmers owning 70 years of forest land use rights and forest ownership. Meanwhile, circulation of the land tenure has become common in the village, but the difference in land transfer is that in addition to lack of labor, migrant labor constraining factors, planting costs, families' need of large cash expenditures, small forest area, and scattered distribution are all important motivations for the circulation of land tenure. The long forestry production cycle and relatively high returns on forest management draw more investment into this field. Business owners, wealthy families and the urban middle class begin to turn to forestry investment. So the farmers who work on the circulation of land tenure are recognized as those who own "money". When the trend of concentration appears, the central government and local governments hope to remove operational difficulties in production by supporting the development of forestry cooperatives but not reducing the flow of forest conditions.

In the face of difficulties, some poor rural households have to transfer their forest tenures to other relatively rich households to obtain money for emergency. Compared with richer forest farmers, these farmers show more reliance on forestry resources. After getting one-off income from the transfer of forest tenures, their livelihood be challenged in the future. Because of their lack of capital, contract price increases caused by higher prices of forest products and other factors, it is quite hard for them to get the contracts of forest land from others. After losing a vital livelihood capital, poor forest farmers are vulnerable to poverty. Rich forest farmers, by contrast, are becoming richer by contracting more forest land. The contracted areas of some farmers even reach 700 mu, while the contracted areas of some farmers are zero mu because of one-time transfer of the forest tenure. As farmer's vital asset for livelihood, forest land, especially timber forest land, plays a crucial role in helping farmers cope with risks and gain stable income in the long term. On one hand, the circulation of the forest tenure promotes large-scale operation of forestland in the context of deregulation; on the other hand, the result of such a large-scale operation is gradually eliminating some poor forest farmers' rights to benefit from forests, and bringing more benefits to rich farmers. To be large-scale or not to be, it is a question need to be reflected on.

Part of the forestry policies are out of place, causing the farmers to lose the opportunity of benefiting from the policies. The tenure reform has been treated as "China's third land revolution" in implementation, so publicity on the forest tenure reform by governments at all levels is comprehensive. As a result, farmers have better understanding of the forest land ownership, payment of warrants. But for other forestry policies, the governments have not take specific measures for implementation, and most of the forestry policies are publicized by way of meetings among village cadres, who then hold meetings among village representatives that convey them further to the villagers. In the traditional Chinese society, such a way was a very effective mode of transmission. However, with the increasing number of migrant workers and longer migrant time, farmers in rural communities are hard to meet regularly, so an oral tradition of information transmission has been challenged. The lack of a new transmission leads to limited knowledge of relevant policies among farmers.

Although most of them have recognized the advantages of a clear tenure brought by the tenure reform, most forest farmers need to improve their knowledge of forestry policies. Forest farmers of Guanyintang Village are not clear about the way and amount of various kinds of forestry subsidy policies. Some subsidy policies, such as the subsidy for forestation in barren mountains, are even unknown to some farmers. Farmers' understanding of forestry management policies, such as forestry taxes policy, timber transportation and management policy, and policy of license for forestry products processing, is poor too. But the publicity of harvesting quotas and

harvesting licenses is relatively good. Farmers know little about forest farmer's cooperatives, especially on how the forest centers determine purchase prices, how they distribute harvesting quota and how they spend the funds, etc.

The operational risks in forestry management are high, and responses to risks are inadequate. There is a lack of flexibility of current forestry management policies when coping with emergencies, and these policies can't protect forest farmers' income of the year. For example, local governments haven't issued appropriate policies to encourage farmers to make use of the trees crushed by snow, and only allow staff of the township forestry station to take those dead trees out. So farmers suffered heavy losses. According to some farmers' estimation, it will take at least five years for forest resources to restore to the pre-disaster level. In addition, forest fires and pests also impose serious threats. Comparing with crop production, forest products are characterized by a long production cycle and heavy investment. If there is a fire, farmers whose main income sources are forestry would be almost entirely exposed to risks.

10. Policies recommendations

1) Further increasing direct forestry subsidies and reducing forest charges. According to the investigation, farmers generally reflect that forestry taxes, charges and costs for forestation are too high and they can benefit little from forest management. Although the taxes on special agricultural products have been cancelled, forestry taxes and charges account for 23% of the sales price of timber; the forestation cost is growing for the increase of seed and labor costs, and the amount of forestry subsidies only accounts for 25% of the forestation cost; all of these seriously dampen forest farmers' enthusiasm. Compared with agricultural production, forest management features more initial investment, a longer period of growth and benefit cycle and more significant environmental externalities in forestry business. However, the amount of state subsidies to farmers is far less than that needed in agricultural production. It is recommended to further reduce forestry taxes and charges, particularly fees for nurturing and re-vegetation, and to increase subsidies for forest farmers. In addition to forestation subsidies, there also should be subsidies for tree management. The amount of ecological compensation for public-welfare forest shall be increased and farmers shall be encouraged to build forest roads. Through forest policies, costs could be further reduced, especially regional disparities. It will enhance farmers' enthusiasm for forestation and increase their income.

2) Increasing investment in infrastructure and improving transportation condition of forestland. According to the investigation, transportation in forestland is a serious problem for forest farmers and the condition of transportation is a key factor for the cost of transportation and labor. After the tenure reform of collective forests, farmers and the village lack income sources for the investment in forest roads. In order to improve the transportation conditions in forestland, it is recommended that governments make certain investment in the construction of forest roads and carry out projects of forestry infrastructure, such as comprehensive agricultural development and the "Six Small Projects" in rural areas.

3) Providing certain amounts of funds to the board of forestry and helping it really take the responsibility for the management of community forestry. At present, the operation of the board of forest mainly relies on the limited income of village collectives. It is only sufficient for the village committee to maintain some basic forestry resource management activities and is insufficient for the board of forestry to give full play to its role. Therefore, it is suggested that certain amounts of funds be provided to the board of forestry.

4) Taking certain measures regarding the construction of a forestry management service team to deal with labor shortage caused by local young labor forces working outside. The village sees a very serious outflow of young labor force. Therefore, it is suggested that the local forestry department should take certain measures to help the village set up a forestry management service team and provide some financial subsidies. At the same time, service market operation is needed to help farmers with labor shortages grow and manage the forest.

5) Improving the negotiation mechanism of forest products between farmers and cooperatives. For cooperatives with unified purchase and sales, communication and discussion between farmers and cooperatives should be strengthened. Appropriate purchase prices of forest products should be jointly determined, and the consultation process should be open to the public.

6) Promoting the transparency and publicity of forest farmer's cooperatives in institution and information. Harvesting quotas of trees should still receive public review. Opening the amounts of all kinds of forestry subsidies, taxes, and charges to the public, and making sure that the financial systems of cooperatives are implemented. Opening the fees advanced paid by cooperatives to farmers, for instance, the purchase limit of forest insurance and how it is compensated, etc.

7) Promoting the institutionalization of village regulations and civil agreements. Some informal practices, such as mutual borrowing of harvesting quota and circulation of forest tenure among local people, play a significant role in forest management. These informal practices are usually simple and widespread. But once a dispute occurs, there is a lack of legal validity. So it is especially important to institutionalize these informal regulations and agreements.

8) Simplifying the procedures of policies to support and benefit agriculture, rural areas and farmers, such as the procedures of claims for forest fire insurance and forest tenure mortgage, etc. From the point of view of the current implementation of the two policies, the procedures are too complicated and cost too much, which prevents farmers from benefiting from the two policies. Asset evaluation, certificates of forest tenure and other complicated things are required for forest tenure mortgage and all of these costs are borne by farmers. The process is time consuming and require financial investment, but there is no guarantee of farmers' successful access to loans. So this makes most farmers don't want to apply for forest tenure mortgage and this access to fund-raising is blocked. It is the same situation for forest fire insurance claim reporting and auditing. Therefore, simplifying the procedures of such policies is really necessary.

9) Separating resources for supporting FFCs from those supporting forest farmers and protecting farmers' interests from being affected by FFCs. In order to promote the development of FFCs, limited resources which are used to support villages are transferred to support FFCs, thereby resulting in the unfair distribution of resources and the exclusion of non-FFC members from the policy target groups. It is recommended that government take special support measures to promote the development of FFCs.

10) Carrying out dynamic monitoring on the trend of forest tenure circulation, analyzing the reasons for circulation, and reducing the occurrence of passive transfer due to the lack of funds. Besides the reason of economic consideration, lack of labor, and no interest on forestry operation, a considerable portion of forestland is transferred because of farmers' lack of funds for production and consumption expenditure. When the period of financial difficulty is over, these farmers usually regret for their previous decision of forest land transfer, but they can do nothing. In order to protect these farmers' rights for forestry operation and reduce the proportion of random transfer, it is recommended to monitor the reasons for forestland transfer and provide financial support to farmers who are in temporary trouble.

11) Taking certain measures to guide farmers to adopt diversified operation approaches and improving their forestry income. Currently, farmers rely mainly on the sales of primary forest products like timber. The share of forestry income is relatively low in the household income and the level of net profit of forestry is low too. It is suggested that the local government take certain measures to guide farmers to adopt diversified operation approaches and help farmers engaged in family tourism or wood processing make full use of local tourism resources

and forest resources. Effort shall be made to improve farmers' forestry income and increase employment opportunities for forestry. Young people are encouraged to remain in the local labor force for forestry business activities.

12) Promoting the publicity of current forestry policies, and making farmers better benefit from the forestry policies and better monitor the implementation process. There is a lack of organized and effective publicity of forestry policies, and the main ways for publicity include oral notification of village cadres and public review. These methods are not suitable for the current conditions of forest farmers and lead to a low level of understanding of forestry policies. So it is recommended to adopt various ways to promote the publicity of forestry policies, such as TV, brochure of policies, specialized forestry policy advocacy meeting, etc.

13) Establishing forestry insurance mechanism to improve farmers' capacity to cope with storm, snowstorm, pests and fire, etc. The forest resources of Qixingling Village mainly are Nan bamboos and may easily be affected by storm. Since there is no forestry insurance, losses caused by natural disasters are mainly borne by forest farmers themselves. This reduces farmers' capacity to cope with natural disasters and is not conducive to the recovery of forest resources.

11. Experience and lessons drawn from the application of the materials

Improving farmers' enthusiasm. The training process is very long and the contents are also challenging as they require much intellectual inputs. Ways must be figured out to maintain trainees' enthusiasm. The implementation process can be slightly simplified. And the annual work plan should be more detailed.

Farmers' core goal is to maximize economical benefits rather than sustainable forest management. The participatory forest management planning has its philosophy, including the pursuit of sustainable forests and a well-designed management plan. But in fact, farmers' main goal is to maximize economical benefits. The farmers have weak awareness of sustainable and healthy forest management but focus on ways to pursue economical interests and forestry industrialization.

The applicable scope of the training materials is limited. They seem more suitable for collective forests, community forests rather than individual households..

The subject selection is easily affected by village leaders. In the actual training process, when we form a planning group, it is easily dominated by the village leaders, or limited by time schedule or other uncertainties. Rural elites have more chances than ordinary farmers and women. We need to make decision depending on the specific circumstances.

Forest management plans are hard to implement. In fact, farmers prefer to follow their own management style in practical operation. Even though Guanyintang forest farm has already had a very detailed autonomous forest working plan, the plan didn't work very well according to the forestry official of Guandu Forestry Station. He said the villagers actually didn't manage their forest in accordance with the plan. Instead, they still insisted on their own felling style. For example, forests in Guanyintang are all natural secondary forests, usually pure fir or mixed by fir, pine or bamboo. The current plan indicated that farmers should fell all the woods when they harvest and then afforest in situ. However, they fell selectively and don't not grow new trees. So the plan actually produces few results. It shows that the forest planning hasn't worked well and it's necessary to try new planning approaches such as participatory forest management.

12. Recommendations regarding the implementation of participatory forest management at the village/FFC level

FFCs/FCs need to deepen forest management and property rights. Forestry councils are the main forestry organizations in Hongjiang County at present. However, they are different from FFCs. It's a kind of non-profit self-help and self-governing organization consisting of different contractor households. Forestry councils still follow the guidance of governments and their functions haven't been included into the forest business scope. According to applicable laws, forest management plans should be made by forest resource owners or managers engaged in forest resources management activities, with a clear and fixed management scope, and there are also requirements on the forest area, with clear ownership, management rights, the disposition and usufruct. There are obstacles for Forestry Council to participate in making forest management plan. Thus, they need to go further in forestry management and property rights.

The FFCs in Liuyang have contracted forest land, however, the management rights are still in farmers' hands. The FFCs participate in forest management and forest products marketing. Their cooperation is not very active. To carry out participatory forest management, joint participation of farmers and FFCs is required.

Improvement of forestry knowledge and techniques. Formulating a forest management plan requires some professional forestry knowledge and techniques as well as the awareness of forestry policies. However, farmers presently don't know the forestry policies very well and also have some technical and knowledge difficulties in forest management planning, which requires trainings on publicizing policies, laws and forestry knowledge and skills.

Cultivation of the sustainable management awareness. The purposes of participatory forest management are the same with other forest management types, i.e. the sustainable and healthy development of forestry health. Although farmers have accumulated precious local experience, their sustainable management consciousness is still relatively weak. For example, in Shuanglong Village, when the planning group conducted objective analysis, the core objectives were defined as "improved economical benefit" for the farmers though the forestry workers put forward the "economical and ecological win-win benefits" goal. Farmers neglected the ecological sustainability and this was reflected in the planning. To conduct participatory forest management, the sustainable management consciousness also needs to be built and improved, or it will go against participatory forest management planning.

13. Recommendations regarding the training materials

First, forest farmers have rich forestry management experience, knowledge and practices and they usually make decisions about forest management business through discussing with their neighbors and good friends. The training materials are quite systematic, but too complicated for the farmers to practice. It is suggested that the training materials be simplified to be more applicable and suitable for the forest farmers.

Second, the training materials are too professional for forest farmers to understand and apply. It is good for forestry technicians and officials who are highly trained, but farmers can't understand them well. The training materials are also too theoretical for the forest farmers to apply. Inclusion of more practical cases are desirable.

Third, the participatory forest management is not only one forest management approach, but also an idea about forest management. The existing training materials have offered description of this idea, which is insufficiently however. They emphasize the planning process but ignore training on the philosophy about participatory and sustainable management. This needs to be intensified because only the farmers truly understand what the participatory forest management is and can implement the PFM planning well. Otherwise, the participation will become a mere formality.

14. Annex

Forestry Policy Assessment Survey in Hunan Province

Questionnaire Statistics ³

1. Basic information about the respondents

1.1 The overall sample size

We have received 71 valid questionnaires in this questionnaire survey. There are 18, 18, 22, 13 valid questionnaires respectively in Guanyintang, Qixinling, Shuanglong, Dongping Villages.

Table 1 Overall samples distribution (N=71)

	Sample size	Proportion of total samples (%)
Guanyintang	18	25.4
Qixinling	18	25.4
Shuanglong	22	31.0
Tongping	13	18.2
Total	71	100

1.2 Basic characteristics of the samples

The survey involves sample characteristics including gender, age, nationality, income, education and identity.

Table 2 Gender proportion of the overall samples (N=71)

	Male (%)	Female (%)	Simple size
Guanyintang	83.3	16.7	18
Qixinling	94.4	5.6	18
Shuanglong	63.6	36.4	22
Tongping	69.2	30.8	13
Total	77.5	22.5	71

Table 3 Distribution of the education levels of the samples (N=68)

Illiteracy	Primary	Junior	Senior	Above of junior	Simple
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³ Note: each “N” represents the total number of effective values of the question.

	(%)	school (%)	high school (%)	high school (%)	college (%)	size
Guanyintang	0.0	33.3	55.5	5.6	5.6	18
Qixinling	5.6	22.2	61.1	11.0	0.0	18
Shuanglong	5.3	36.8	42.1	15.8	0.0	19
Tongping	23.1	15.4	46.1	7.7	7.7	13
Total	7.4	27.9	51.5	10.3	2.9	68

Table 4 Identity characteristics of the samples

	Is anyone of family members a village cadre? (N=66)			Does any one of family members hold public office? (N=67)		
	Yes (%)	No (%)	Sample size	Yes (%)	No (%)	Sample size
Guanyintang	0.0	100.0	17	0.0	100.0	17
Qixinling	18.8	81.2	16	0.0	100.0	16
Shuanglong	27.3	72.7	22	9.1	90.9	22
Tongping	27.3	72.7	11	8.3	11.1	12
Total	18.2	81.8	66	4.5	95.5	67

Table 5 Main income sources of the samples (N=67)

	Migrant workers (%)	Agricultural income (%)	Forestry income (%)	Individual business (%)	Others (%)	Sample size
guanyintan	41.2	0.0	29.4	23.5	5.9	17
Qixinling	37.5	37.5	21.0	0.0	0.0	16
Shuanglong	72.7	4.5	13.6	18.2	0.0	22
Tongping	36.4	36.4	18.2	9.0	0.0	11
Total	49.3	9.0	23.9	14.9	2.9	67

Table 6 Participation in forestry organizations and associations (N=62)

	Participated (%)	Not participated (%)	Sample size
Guanyintang	87.5	12.5	16
Qixinling	56.3	43.7	16
Shuanglong	73.7	26.3	19
Tongping	63.6	26.4	11
Total	71.0	29.0	62

2. Conditions of farmers' forest lands and forestry management

2.1 Forest area

Table 7 The total forest areas of surveyed farmers (N=67)

	Below 10 mu (%)	10~50 mu (%)	50~100 mu (%)	Above 100 mu (%)	Sample size
Guanyintang	0.0	61.1	27.8	11.1	18
Qixinling	6.3	37.5	31.3	24.9	16
Shuanglong	4.5	45.5	31.8	18.2	22
Tongping	36.4	36.4	18.2	9.0	11
Total	10.9	46.3	26.9	15.9	67

2.2 Forest land contracting

Table 8 Contracting among surveyed farmers (N=56)

	Contracted (%)	Not contracted (%)	Sample size
Guanyintang	21.4	78.6	14
Qixinling	41.2	58.8	17
Shuanglong	26.3	73.7	19
Tongping	16.7	83.3	6
Total	28.6	71.4	56

2.3 Forestry income

Table9 Forestry income of surveyed farmers (N=56)

	Below RMB1000 (%)	RMB1000~5000 (%)	RMB5000~10000 (%)	Above RMB10000 (%)	Sample size
Guanyintang	0.0	26.7	6.7	76.6	15
Qixinling	5.6	33.3	16.7	44.4	18
Shuanglong	22.2	33.3	22.2	22.3	18
Tongping	20.0	40.0	0.0	40.0	5
Total	10.7	32.1	14.3	42.9	56

3. Assessment of forestry management policies

3.1 Application for forest cutting quotas

Table 10 Farmers applying for forest cutting quotas (N=57)

	Applied (%)	Not applied (%)	Sample size
Guanyintang	58.3	78.6	12
Qixinling	93.8	6.2	16
Shuanglong	45.0	55.0	20

Tongping	22.2	77.8	9
Total	57.9	42.1	57

3.2 Whether the forest cutting quotas are enough

Table 11 Famers' views on whether the forest cutting indicators are enough (N=29)

	Enough (%)	Not enough (%)	Sample size
Guanyintang	50.0	50.0	4
Qixinling	53.8	46.2	13
Shuanglong	77.8	22.2	9
Tongping	66.7	77.8	3
Total	62.1	37.9	29

3.3 Convenience degree of applying for forest cutting quotas

Table 12 Famers' views on the convenience degree of applying for forest cutting quotas

	Whether the application for quotas are easy (N=29)			Whether the application procedures are simple (N=28)		
	Easy (%)	Not easy (%)	Sample size	Simple (%)	Not simple (%)	Sample size
Guanyintang	50.0	50.0	2	100.0	0.0	1
Qixinling	78.6	21.4	14	71.4	29.6	14
Shuanglong	88.9	11.1	9	100.0	0.0	9
Tongping	100.0	0.0	4	100.0	0.0	4
Total	82.8	17.2	29	95.7	4.3	28

4. The scope of forestry policies and the degree of farmers' satisfaction

4.1 Forest cutting licenses

Table 13 The degree of farmers' knowledge of the forest cutting licenses (N=61)

	Very well (%)	Well (%)	Generally (%)	A little (%)	Not at all (%)	Sample size
Guanyintang	0.0	25.0	6.2	37.5	31.3	16
Qixinling	50.0	31.3	12.5	6.2	0.0	16
Shuanglong	28.6	23.8	19.0	19.0	9.6	21
Tongping	25.0	12.5	12.5	25.0	25.0	8
Total	26.2	24.6	13.1	21.3	14.8	61

Table 14 The degree of farmers' satisfaction with the forest cutting licenses (N=43)

	Completely satisfied (%)	Satisfied (%)	Generally (%)	Not satisfied (%)	Dissatisfied (%)	Sample size
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Guanyintang	0.0	25.0	37.5	25.0	12.5	8
Qixinling	13.3	33.3	13.3	40.1	0.0	15
Shuanglong	20.0	60.0	13.3	6.7	0.0	15
Tongping	20.0	20.0	40.0	0.0	20.0	5
Total	14.0	39.5	20.9	20.9	4.7	43

4.2 Timber transport licenses

Table 15 The degree of farmers' knowledge of the timber transport licenses (N=46)

	Very well (%)	Well (%)	Generally (%)	A little (%)	Not at all (%)	Sample size
Guanyintang	0.0	0.0	0.0	0.0	100.0	7
Qixinling	27.3	0.0	0.0	27.3	45.4	11
Shuanglong	4.8	14.3	0.0	19.0	61.9	21
Tongping	14.3	0.0	0.0	14.3	71.4	7
Total	10.9	6.5	0.0	17.4	65.2	46

Table 16 Whether farmers have applied for the timber transport license (N=34)

	Applied (%)	Not applied (%)	Sample size
Guanyintang	0.0	100.0	5
Qixinling	25.0	0.0	8
Shuanglong	13.3	86.7	15
Tongping	16.7	83.3	6
Total	14.7	85.3	34

4.3 Forestry Taxes

Table 17 The degree of farmers' knowledge of forestry taxes (N=47)

	Very well (%)	Well (%)	Generally (%)	A little (%)	Not at all (%)	Sample size
Guanyintang	0.0	0.0	0.0	0.0	100.0	7
Qixinling	25.0	8.3	16.7	16.7	33.3	12
Shuanglong	4.8	19.0	9.5	14.3	52.4	21
Tongping	0.0	0.0	0.0	14.3	85.7	7
Total	14.9	10.6	10.6	17.0	46.9	47

Table 18 Whether famers have experienced forestry taxes (N=30)

	Experienced (%)	Not experienced (%)	Sample size
Guanyintang	20.0	80.0	5
Qixinling	75.0	0.0	8
Shuanglong	36.4	63.6	11
Tongping	50.0	50.0	6
Total	46.7	53.3	30

4.4 Public-welfare forest subsidy policy

Table 19 The degree of farmers' knowledge of the public-welfare forest subsidy policy

(N=48)

	Very well (%)	Well (%)	Generally (%)	A little (%)	Not at all (%)	Sample size
Guanyintang	0.0	12.7	0.0	0.0	87.3	7
Qixinling	31.3	25.0	12.5	12.5	18.7	16
Shuanglong	35.0	40.0	20.0	0.0	10.0	20
Tongping	20.0	0.0	20.0	20.0	40.0	5
Total	27.1	29.2	14.6	6.3	22.8	48

Table 20 Whether farmers have received public-welfare forest subsidies (N=35)

	Received (%)	Not received (%)	Sample size
Guanyintang	50.0	50.0	4
Qixinling	85.7	14.3	7
Shuanglong	94.7	5.3	19
Tongping	20.0	80.0	5
Total	77.1	22.9	35

4.5 The certificates of forest ownership

Table 21 The degree of farmers' knowledge of the certificates of forest ownership (N=61)

	Very well (%)	Well (%)	Generally (%)	A little (%)	Not at all (%)	Sample size
Guanyintang	6.7	46.7	13.3	6.7	26.6	15
Qixinling	22.2	38.9	5.6	11.1	22.2	18
Shuanglong	35.0	20.0	20.0	10.0	15.0	20
Tongping	50.0	12.5	20.0	12.5	0.0	8
Total	29.5	31.1	14.8	9.8	14.8	61

Table 22 The degree of farmers' satisfaction with the certificates of forest ownership

(N=35)

	Completely satisfied (%)	Satisfied (%)	Generally (%)	Not satisfied (%)	Dissatisfied (%)	Sample size
Guanyintang	11.1	22.2	33.3	33.4	0.0	9
Qixinling	20.0	50.0	0.0	30.0	0.0	10
Shuanglong	41.7	41.7	8.3	8.3	0.0	12
Tongping	75.0	0.0	25.0	0.0	0.0	4
Total	31.4	34.3	14.3	20.0	0.0	35

4.6 Forest right mortgage policy

Table 23 The degree of farmers' knowledge of the forest right mortgage policy (N=47)

	Very well (%)	Well (%)	Generally (%)	A little (%)	Not at all (%)	Sample size
Guanyintang	0.0	33.3	11.1	0.0	55.6	9
Qixinling	16.7	33.2	16.7	16.7	16.7	12
Shuanglong	10.5	52.6	10.5	10.5	15.9	19
Tongping	14.3	14.3	28.6	0.0	42.8	7
Total	10.6	38.3	14.9	8.5	27.7	47

Table 24 Whether farmers have experienced forest right mortgage (N=34)

	Experienced (%)	Not experienced (%)	Sample size
Guanyintang	50.0	50.0	4
Qixinling	0.0	100.0	8
Shuanglong	0.0	100.0	16
Tongping	0.0	100.0	6
Total	5.9	94.1	34

4.7 The policy regarding the publicity of forest cutting quotas

Table 25 The degree of farmers' knowledge of the publicity of forest cutting quotas (N=49)

	Very well (%)	Well (%)	Generally (%)	A little (%)	Not at all (%)	Sample size
Guanyintang	22.2	11.1	0.0	0.0	66.7	9
Qixinling	20.0	26.7	6.7	20.0	26.6	15
Shuanglong	16.7	22.2	11.1	16.7	33.3	18
Tongping	16.7	16.7	16.6	0.0	50.0	6
Total	14.3	28.5	8.2	14.3	38.7	49

Table 26 Whether farmers have experienced the forest cutting quotas publicity (N=31)

	Experienced (%)	Not experienced (%)	Sample size
Guanyintang	60.0	40.0	5
Qixinling	57.1	42.9	7
Shuanglong	46.2	53.8	13
Tongping	33.3	66.7	6
Total	48.4	51.6	31

4.8 Forest land circulation policy

Table 27 The degree of farmers' understanding of the forest land circulation policy (N=48)

	Very well (%)	Well (%)	Generally (%)	A little (%)	Not at all (%)	Sample size
Guanyintang	14.3	14.3	0.0	0.0	71.4	7
Qixinling	21.4	14.3	7.1	28.6	28.6	14
Shuanglong	10.5	36.8	10.5	15.8	26.4	19
Tongping	0.0	37.5	12.5	50.0	0.0	8
Total	12.5	20.8	12.5	16.7	37.5	48

Table 28 Whether farmers have experienced forest land circulation (N=31)

	Experienced (%)	Not experienced (%)	Sample size
Guanyintang	0.0	100.0	3
Qixinling	28.6	71.4	7
Shuanglong	46.2	53.8	13
Tongping	0.0	100.0	8
Total	25.8	74.2	31

4.9 Forestation subsidy policy

Table 29 The degree of farmers' knowledge of the forestation subsidy policy (N=47)

	Very well (%)	Well (%)	Generally (%)	A little (%)	Not at all (%)	Sample size
Guanyintang	0.0	0.0	0.0	0.0	100.0	6
Qixinling	15.4	38.5	7.7	7.7	30.7	13
Shuanglong	10.5	36.8	10.5	15.8	26.4	21
Tongping	9.5	38.1	9.5	4.8	38.1	8
Total	10.6	29.8	8.5	4.3	46.8	47

Table 30 Whether farmers have received forestation subsidies (N=31)

	Received (%)	Not received (%)	Sample size
Guanyintang	0.0	100.0	3
Qixinling	62.5	37.5	8
Shuanglong	15.4	85.6	13
Tongping	28.6	71.4	7
Total	29.0	71.0	31

4.10 The Grain for Green Project

Table 31 The degree of farmers' knowledge of the Grain for Green Project (N=47)

	Very well (%)	Well (%)	Generally (%)	A little (%)	Not at all (%)	Sample size
Guanyintang	0.0	16.7	0.0	0.0	83.3	6
Qixinling	23.1	23.1	15.4	0.0	38.4	13
Shuanglong	15.8	10.5	10.5	21.1	42.1	19
Tongping	0.0	16.7	16.7	0.0	66.6	6
Total	13.6	15.9	11.4	9.1	50.0	44

Table 32 Whether farmers have experienced the Grain for Green Project (N=31)

	Experienced (%)	Not experienced (%)	Sample size
Guanyintang	33.3	66.7	3
Qixinling	57.1	42.9	7
Shuanglong	30.7	69.3	13

Tongping	16.7	83.3	6
Total	34.5	65.5	29

5. Farmers' comments of forestry resource and management

5.1 Forestry coverage rate

Table 33 Farmers' views on the change in local forestry coverage rate (N=61)

	Higher and higher (%)	No change (%)	Lower and lower (%)	Sample size
Guanyintang	41.2	29.4	29.4	17
Qixinling	38.9	11.1	50.0	18
Shuanglong	70.6	5.9	23.5	17
Tongping	88.9	11.1	0.0	9
Total	55.7	14.8	29.5	61

5.2 Species diversity

Table 34 Farmers' views on the change in local species diversity (N=60)

	Higher and higher (%)	No change (%)	Lower and lower (%)	Sample size
Guanyintang	41.2	29.4	29.4	17
Qixinling	38.9	11.1	50.0	18
Shuanglong	70.6	5.9	23.5	16
Tongping	88.9	11.1	0.0	9
Total	30.0	40	30.0	60

5.3 Forestry farmers' income

Table 35 Farmers' views on the change in forest farmers' income (N=59)

	Higher and higher (%)	No change (%)	Lower and lower (%)	Sample size
Guanyintang	87.5	0.0	12.5	16
Qixinling	72.2	16.7	11.1	18
Shuanglong	77.8	22.2	0.0	16
Tongping	88.9	11.1	0.0	9
Total	78.0	8.5	13.0	59

5.4 The degree of difficulties in farmers' earning money from forestry

Table 36 Farmers' views on the change in the degree of difficulties in farmers' earning money from forestry (N=59)

	Harder and harder (%)	No change (%)	Easier and easier (%)	Sample size
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Guanyintang	29.4	17.6	53.0	17
Qixinling	33.3	11.1	55.6	18
Shuanglong	43.8	18.8	37.4	16
Tongping	12.5	37.5	50.0	8
Total	32.2	18.6	49.2	59

5.5 Forestry management policies

Table 37 Farmers' views on the change in local forestry management policies (N=55)

	Stricter and stricter (%)	No change (%)	Looser and looser (%)	Sample size
Guanyintang	7.7	7.7	84.6	13
Qixinling	11.1	38.9	50.0	18
Shuanglong	43.8	0.0	56.2	16
Tongping	12.5	0.0	87.5	8
Total	20.0	14.5	65.5	55

Table 38 Farmers' views on the change in the influence of local forestry policies on the farmers' livelihood (N=55)

	More and more favorable (%)	No change (%)	More and more disadvantaged (%)	Sample size
Guanyintang	83.3	8.3	8.4	12
Qixinling	55.6	38.9	5.5	18
Shuanglong	100.0	0.0	0.0	16
Tongping	100.0	0.0	0.0	8
Total	81.5	14.8	4.7	54

5.6 Forest management rights

Table 39 Farmers' views on the change in forest management rights (N=54)

	More and more independent (%)	No change (%)	More and more restricted (%)	Sample size
Guanyintang	75.0	16.7	8.3	12
Qixinling	77.8	22.2	0.0	18
Shuanglong	94.1	5.9	0.0	17
Tongping	100.0	0.0	0.0	7
Total	85.2	13.0	1.8	54

5.7 Forestry taxes

Table 40 Farmers' views on the change in local forestry taxes (N=46)

	Less and less (%)	No change (%)	More and more (%)	Sample size
Guanyintang	50.0	37.5	12.5	8
Qixinling	43.8	50.0	6.2	16

Shuanglong	93.3	0.0	6.7	15
Tongping	85.7	14.3	0.0	7
Total	67.4	26.1	6.5	46

5.8 Forestry administrations services

Table 41 Farmers' views on the change in local forestry administrations services

	Better and better (%)	No change (%)	Worse and worse (%)	Sample size
County-level forestry administration (N=46)				
Guanyintang	72.2	27.8	0.0	11
Qixinling	46.7	46.7	6.6	15
Shuanglong	60.0	40.0	0.0	15
Tongping	80.0	20.0	0.0	5
Total	60.9	37.0	2.1	46
Town-level forestry administration (N=45)				
Guanyintang	70.0	30.0	0.0	10
Qixinling	40.0	53.3	6.7	15
Shuanglong	73.3	26.7	0.0	15
Tongping	60.0	40.0	0.0	5
Total	60.0	37.8	2.2	45
Village-level forestry administration (N=53)				
Guanyintang	53.3	46.7	0.0	15
Qixinling	41.2	47.1	11.7	17
Shuanglong	93.3	6.7	0.0	15
Tongping	83.3	16.7	0.0	6
Total	64.2	32.1	3.7	53

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/>