

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 Zhejiang Province



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

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Technical Synthesis Report on the Pilot Application of Training Material in Longquan County, Zhejiang Province

1 Introduction

1.1 Description of the issue

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

Since household joint contracting responsibility system started to be implemented from the 1980s; forest farmers have become quite independent forestry producers, with constant improvement of status and income. Forestry “policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility” in early 1980s’ and a new round of collective forest tenure right reform since 2003 clarify collective forest property rights and responsibilities, which greatly motivated forest farmers’ enthusiasm in forest management.

However, there is no tradition of participatory forest management (PFM) in China. If the forest tenure reform is to be effective, the capacity of forest farmer cooperatives to manage forest resources, in a participatory way, needs to be strengthened. The participation of multi-stakeholders, in particular forest users and community based organizations in the policy implementation is one of the most important challenges in the implementation of the tenure reform of collective forests in China. Bureaucratic forest management systems based on administrative orders do not produce optimal benefits to the farmers. Therefore, under current policy system, it is very essential to find a PFM way that suits practical development situation of China's forestry, which has important significance for improving forest management in China.

With the financial support from EC, the project on “Supporting Policy, legal and institutional frameworks for the reform of forest tenure in China's collective forests and promoting knowledge exchange” is being jointly implemented by FAO with SFA. The PFM is possible to be implemented in China.

Located in the southeast coastal area of China, Zhejiang Province is a pilot province of collective forest reform and FFCs development in China. FFCs vigorously developed and have become an important model in forestry management. Conducting pilot study in Zhejiang Province and discussing on the possibility and necessity of PFM have important significances in improving PFM and providing reference for other provinces.

1.2 Literature review

1.2.1 Relative concepts

(1) Participation. International documentations have various and sharply different definitions of “participation” (Liu Jinlong, 2007; Zhou Dapeng, 2005). World Bank (2005) thinks that participation is a process, through this process, participants exert affect and take part in controlling in innovation development, in decision making, and in resources that they can affect, the participation includes participation elements (participants, project, technique and participation degree) and participation process (participants identification, features and constitution, participation degree identification, participation technique selection, application and appraisal of participation).

(2) PFM. There are many concepts similar as PFM, such as participatory forestry, PFM, Farm forestry, Agro-forestry, Community forestry, Social forestry, joint forest management. (Liu, 1999).

Due to the differences in each country’s natural social economic conditions, in current forest resource situation and existing problems, in policy, law and mechanism, in current stage and in the starting point to observe issues, experts in each country have not come into a uniform definition of participatory forestry (Liu Jinlong, 2004). Sharachchandra (2001) regards that PFM should be cooperation between communities and state institutions in forest management. Liu Jinlong (2004) thinks that PFM should be closely related with rural development, community farmers should positively take part in forest management activities and earn benefits, and reform should be conducted with regard to land ownership and benefit distribution, etc., so as to improve benefit relationship between forest management and community people.

1.2.2 Development process of PFM

PFM came from forest management innovation practices in the 1960s’. In the 1970s’, especially the 8th World Forestry Conference in 1978 emphasized to list forestry into rural development, and proposed “forest for people”. In this period, participatory forestry idea was in the beginning stage. In the 1980s’, under the proposal of FAO, developing countries, especially southeast Asia countries, implemented “Community Forestry” project with strong practical features. India and Nepal entrusted state-owned forest land to be managed by community, and gained significant effects. In 1992, UK International Development Research Center issued *Participatory Forestry or Participatory Forest Management*, which systematically explains participatory forestry. Afterwards, participatory forestry is gradually applied by institutions like FAO, World Bank, etc.

1.2.3 Experience on PFM from other projects

Colfer et al. (1996) designed 4 participatory methods and implemented them in Kalimantan Barat and Indonesia; they think that iterative continuous method and participatory card classification method are very effective.

Miranda, et al. (2002) reckon that under certain cultural, economic, institutional and politic condition, participatory method is the exclusive effective way for environmental service paying financial tool, so as to make stakeholders bear responsibilities and achieve effective cooperation in forest management.

Jones (2003) mentions that participatory and practical certification agreement can do its utmost to improve local livelihood and reduce poverty, which indicating that participatory will play an important role in local poverty alleviation.

Balooni (2002) regards that PFM reform in India based on community is successful. The principle of PFM is based on the relationship between two major stakeholders “joint management” and “offer and application”, which is the relationship between rural community and forestry institute.

Meghji (2003) points out that residents in Tanzania community play an important role in PFM, and bring evident effects in local resource management.

Headley (2002) introduces how Jamaica Forestry Ministry encourages local community residents to conduct PFM practices, so as to promote SFM in local regional and state level.

Mustalahti (2008) selects Tanzania, Mozambique, Laos and Vietnam as study sites, and analyzes local sustainable PFM based on cases.

Participatory forestry study of China started in the early 1990s'. Liu Jinlong (1998) raised the concept of participatory forestry. Conducting participatory forestry practices with systematic application of community participation theory and method started in Yunnan and Sichuan Province. Around 1990, with the assistance of The Ford Foundation and RECOFTC, integrated with programs like China Yangtze River Shelterbelt Forest Program, forest tenure right reform, etc. China conducted study, trial and extension of community residents' participatory protection forest management model, forest protection and development, poverty alleviation, etc. A series of participatory forestry training, planning and implementation methods suitable for local conditions have been initially developed, which promote coordination and cooperation of multi-institutions including forestry, poverty alleviation, social science, etc. (He Pikun, 1995). Forestry adoped participatory methods in great scale started from Sino-German Afforestation Projects (SGAPs) since 1993, and conducted institutionalization of community PFM in SGAPs after 1998 (Ye Jingzhong, et al, 2001).

1.2.4 Drafting of collective forest area PFM plan

Drafting and implementation of forest management plan (FMP) is always an urgent but unsolved key issue in southern collective forest area's forest management process. After forest tenure right reform, forest management entities of southern China collective forest area are forest farmers, how to draft FMP with the main body as forest farmers, and ensure its implementation has become the hot issue of study (Zhou Jun, et al., 2009). Experts conduct study on significance, depth and range of FMP drafting, as well as on drafting and implementation issue, implementation effect and relevant mechanism, etc. (Hao Jihai, 2007; Wen Liangsheng, 1996; Li Ling, 2004; Li Zhibin, 2008).

PFM plan drafting should comply with the following principles (Jiang Hong, et al., 1997; Ye Jingzhong, et al., 2001; Wang Chunfeng, 2006): ① highlight the principal status of forest farmers; ② take administrative village as basic unit; ③ mutual communication between forest farmers and forestry institutes to reach agreement; ④ Promoting village to self-manage the collective forest.

The basic process of PFM plan drafting based on the unit of administrative village contains the following six periods (Kang Xingang, 2001; FAO, 2004; Wang Chunfeng, 2006).

① Establishing guiding group; ② selecting FMP drafting village; ③ communication and coordination; ④ participatory training; ⑤ establishing drafting group; ⑥ drafting FMP.

Main activities of administrative village FMP drafting should include (Wang Chunfeng, 2006): ① analyzing and assessing current local forest resource condition; ② discussing on how to manage and utilize local forest; ③ discussing on relevant measures; ④ drafting and approving FMP.

2 Objectives and methods

2.1 Objectives

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

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

2.2 Methods

The project organizes study mainly by participatory rural rapid assessment (PRRA) techniques, including:

(1) **Questionnaire Survey.** From December 20 to 24, 2010, the project team made a random

survey of 24 households in Bilong Village. All of them are FFC members as all farmers in Bilong Village took part in Nenfu FFC. And the main survey content covered member's family profile, FFC participation situation, existing forestry policies assessment, etc.

(2) Key Information Interviews. We conducted interviews with key information persons, including officials from Longquan Forestry Bureau, forest stations of Zhulong Township, key member of Nenfu FFC, and leaders of Bilong Village. The main content covered existing forestry policy assessment, the necessity and possibility of PFM, and suggestions on policies to promote PFM, etc.

(3) Secondary Data Collection. We collected secondary data, including relevant forestry policies and documents of China and Zhejiang Province, Longquan report on forest inventory, sub-compartment card, forest map, and basic map.

(4) Data Analysis Method. For data analysis, we adopted the method that integrates descriptive analysis, statistical analysis and comparative analysis. For data statistics, we used regular statistical tools like EXCEL, line graph, pie graph, and bar graph, so as to explain comprehension and understanding situation of members and farmers who are not FFC members of pilot village on forestry policies and local traditional knowledge.

(5) SWOT Analysis Method. We took SWOT analysis method to analyze forest farmers' participation in PFM, and confirm how to utilize strengths, overcome weaknesses, avoid threats and grasp opportunities to better promote local SFM and sustainable socioeconomic development.

3 Basic information

3.1 Description of activities and targeted groups/ interviewees

3.1.1 Activities

1) Attending planning workshop

The team leader met together with the other five research institutes for the discussion of the work-plan, procedure, and methods in the workshop from October 25 to 26, 2010.

2) Capacity building on PFM and improvement of training materials

① Collect information on forest management including forest resource, forest products, governance, decision-making and monitoring system by households survey, participatory group interview and secondary data collection.

② Collect different stakeholders' attitudes, activities and ideas on forest management policy at county, township, village and villagers, FFC members levels; Identify the attitudes, behaviors and views etc. of FFC members and villagers on PFM.

③ Analyze the existing problems relevant to the involvement of FFC members and villagers on PFM.

- ④ Provide training to the farmers, especially FFC members, based on the materials developed by the project.
- ⑤ Facilitate and guide pilot villages to draft a forest management plan at the village level. The contents of forest management plan will follow the “simplified guidelines in formulating forest management plan”, which was developed by the Forest Resource Department of SFA.
- ⑥ Evaluate the strengths, weaknesses, opportunities, and threats concerning PFM at the village level and identify the gap and needs on the development of forest management plan.
- ⑦ Provide recommendations on the improvement of the materials.

3) Policy evaluation and improvement of the training materials

- ① Review the policies at national, provincial and county levels and the policy impacts on the forest management at the village level.
- ② Participatory policy evaluation on relevant forest management topics in relation to the forest tenure reform was carried out by household survey. The evaluation covered relevant policy issues, including:

- Harvesting quota control system;
- Taxes and charges;
- Micro-mortgage financing policy;
- Public forest compensation fund management;
- Government’s role in market for making payment for environmental services;
- Non-timber forest products;
- Traditional forest-related knowledge and customary regulations etc.

- ③ Propose policy recommendations that will boost participatory and sustainable forest management.

3.1.2 Target groups

Target groups of PFM plan training are pilot village’s core members, common members, farmers who are not FFC members and forestry technicians (table 3-1).

Xiaozhuang Village has 14 trainees (including 3 females), 10 of whom took part in the whole training; Bilong Village has 13 trainees, 12 of whom took part in the whole training (including one female), including township forest station technicians, core members, village officials and villagers.

Table 3-1 Target groups

Target groups	Xiaozhuang Village	Bilong Village
Sub-total	12	19
Forestry technicians	1	1
Relationship with Core members	1	2

FFC	Common members	4	13
	Non-member	7	3 (elementary school teachers)
Relationship with village committee	Village officials	3	4
	Villagers	8	11

3.2 Social and economic information on pilot village

3.2.1 Xiaozhuang Village

Located in the northeast part of Longquan, Xiaozhuang Village is 16 km from Longquan and 32 km from government seat of Jinxi Township. Xiaozhuang Village has 133 households with a population of 494, 34.87 hectare of arable land, and 975.47 hectare of forest land, and its per capita net income of farmers was 5440 yuan in 2008 and 6053 yuan in 2009. The main economic sources are moso bamboo and edible mushroom plantation.

3.2.2 Bilong Village

Located at Zhulong Township in the northwest boundary of Longquan, Bilong Village is 30 km away from Zhulong Township and 80km away from Longquan. Bilong Village has 175 households with a population of 612, 38.67 hectare of arable land, and 3700 hectare of forest land. Since it is remotely located with poor transport facilities but rich forest resources, forest farmers are highly economically dependent on forest resources. Its per capita net income of farmers in 2008 stood at 5007 yuan, benefiting from high prices for agaric and mushroom in 2009, and that in 2009 came in at 14000 yuan.



A Location of Longquan



B Location of pilot villages

Figure 1 Location of pilot area

4 Analysis of forest management in the pilot village

4.1 Resources and changes in history

4.1.1 Xiaozhuang Village

The total land area is 959.8 hectares, including 58.53 hectares of bare land and 901.27 hectares of forest land. The forest coverage stands at 90.1%.

Among forest land, forested land area reaches 858.47 hectares (Table 4-1), accounting for 95.3%, among which, high forest area is 517.27 hectare, representing 57.8%, and bamboo forest area totals 349.93 hectares, accounting for 42.2%. The total live stock volume is 46644 cubic meters, and stock volume of scattered trees amounts to 34 cubic meters. High forest age group structure is shown in table 4-2.

4.1.2 Bilong Village

The administrative land area of Bilong Village is 2782.07 hectares, and the actual land area totals 3816 hectares. In the administrative area, forest land area is 2664.93 hectares, and bare land 117.13 hectares. Its forest coverage is 90.46%.

Among forest land, forested land area reaches 2516.53 hectares, accounting for 94.43% (Table4-1). Forest stock is 145950 cubic meters, among stock is 145798 cubic meters, representing 99.9%. High forest age group structure is shown in table 4-2.

Table 4-1 Resources in pilot village

Land type	Xiaozhuang Village		Bilong Village	
	Area (Hectare)	Ratio (Percent)	Area (Hectare)	Ratio (Percent)
Total area	959.80		2782.07	
Forest land	901.27		2664.93	
Among which: forested land	858.47	95.25	2516.53	94.43
Shrub land	6.80	0.75	3.07	0.12
Immature forest	8.70	0.97	100.53	3.77
Bare land	27.27	3.03	18.33	0.69
Land suitable for afforestation	0	0	26.00	0.98
Land for other use	0	0	0.47	0.02
Bare land	58.53		117.13	

Table 4-2 High forest age group structure

Age group	Xiaozhuang Village	Bilong Village
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	Area		Forest stock		Area		Forest stock	
	Hectare	Percent	Cubic meter	Percent	Hectare	Percent	Cubic meter	Percent
Total	517.27	100	46610	100	2516.53	100	145792	100
Young forest	61.67	11.92	4204	9.02	993.20	39.47	29638	20.33
Half-mature forest	167.13	32.31	10040	21.54	778.87	30.95	28522	19.56
Near-mature forest	58.73	11.35	6205	13.31	242.20	9.62	23068	15.82
Mature forest	229.73	44.41	26161	56.13	414.73	16.48	52359	35.91
Over-mature	0	0	0	0	87.53	3.48	12205	8.37

According to forest resource monitoring data, based on tree growth rate of Longquan, high forest is classified to calculate growth amount, average annual forest growth rate of Xiaozhuang Village stands at 8.5%, total growth amount at 3975 cubic meters; average annual forest growth rate of Bilong Village at 6.75%, and total growth amount at 9844 cubic meters (see Table4-3). Moso bamboo forest is one of the major sources of pilot village, moso bamboo forest data are in table 4-4.

Table 4-3 Forest growth amount in pilot villages

Unit: Percent, cubic meters

Village	Growth rate	Total growth amount	Conifer	Fir	Broad-leaved
Xiaozhuang	8.5	3975	1966	1766	243
Bilong	6.75	9844	1731	4913	4280

Table 4-4 Bamboo forest resource in pilot villages

Unit: hectare, stem, stem/hectare

Village	Area	Bamboo amount	Per hectare amount	Annual logging amount
Xiaozhuang	349.93	627290	1793	71690
Bilong	70.33	110400	1570	12617

4.2 Main forest products and changes in history

4.2.1 Xiaozhuang Village

The main forest products of Xiaozhuang Village include bamboo wood, bamboo shoots, edible fungus and timber. Per capita moso bamboo forest area in Xiaozhuang Village is 0.71 hectares, and bamboo wood is the main forest product of the village for a long time. Since 2007, due to the foundation of Xiaozhuang Bamboo Shoots Specialty Cooperative and extension of moso bamboo management techniques, farmers have started to focus on bamboo forest management, and bamboo shoots have gradually become the village's main forest product.

4.2.2 Bilong Village

The main forest product of Bilong Village is timber, followed by edible fungus that base on wood dust, such as agarics and mushroom. Furthermore, there are a few moso bamboo wood, bamboo shoots and tea.

In recent years, farmers' enthusiasm for growing edible fungus has improved, and the proportion of edible fungus income in per capita net income of farmers has increased.

4.3 Farmers' income dependency on the forest management

4.3.1 Xiaozhuang Village

Since 2000, moso bamboo forest has been greatly developed, farmers' income from moso bamboo forest has advanced, which contributed to their reduced economic dependency on timber. 51.45% of per capita net income of farmers derives from forest management.

4.3.2 Bilong Village

Over a long time, due to abundant forest resource, forest farmers have high economic dependency on timber. Before the mid 1990s, 80% of forest farmers' income derived from forest. With the improvement of transportation and development of local economy, there are a growing number of young migrant workers. With the extension of edible fungus cultivating techniques and increase of market prices, forest farmers' economic dependency on timber has reduced. In 2009, 57.03% of per capita net income of farmers comes from forest management.

4.4 Governance of forest management

From 1952 to 1982, forest management was mainly collective management. Since 1982, pilot villages conducted forestry "policy for stabilizing mountain right and forest right, delineating hilly land allocated for private use, and determining forestry production responsibility", and distributed forest to households for their independent management in the form of responsibility hills and hilly lands allocated for private use.

4.5 Intervention with forest management

As of 1985, the *Forest Law* came into force, regulating that logging license needs to be applied for logging, and logging shall be carried out in line with the logging site and way outlined by the

license. Besides, regeneration should be accomplished in the same year or the following year. But No.1 document of the Central Committee of the CPC in 1985 regulates: “Further release mountain area and forest area policies. Uniform purchase of timber in collective forest area is cancelled, timber market is open, collective and forest farmers’ timber may freely enter the market, selling and purchase may be negotiated”, which opened timber market in the southern part of China, stimulated farmers’ enthusiasm for timber logging, leading to the logging of lots of local timber. The No. 20 Document of the Central Committee of the CPC in 1987 timely prevented abuse and illegal logging, strictly regulating timber market. With the implementation of the harvesting quota system, logging management is regulated.

4.6 Advantages and disadvantages of existing forest management

4.6.1 Xiaozhuang Village

Advantages: With clear-cut property right, rich bamboo forest resources, and farmers’ experience in managing bamboo forest, Xiaozhuang Bamboo Shoots Specialty Cooperative can settle bamboo shoots sales well.

Disadvantages: low quality of some forest land; inconvenient transportation; extensive forest management; quite a lot of low-yielding forest, mainly involved in natural regeneration; FFC needs to be further regulated.

4.6.2 Bilong Village

Advantages: clear property right, rich forest resources, and fertile soil; Nengfu Cooperative passed FSC certification, which is good for its forest product sales.

Disadvantages: lack of techniques; big proportion of low-yielding forest, and lack of improvement fund; steep mountains, high management and regeneration cost; lots of substances on forest ground with fire risk.

5 Analysis of the constraints on the PFM in the pilot village/FFC

5.1 Mechanism and basic requirement on the implementation of PFM

Forest management indicates that the objective of all activities implementation is to create or maintain a healthy forest which can produce products and services that meet forest owners’ needs. Participation means that local residents participate in development plan, and the objective of the activities is to change their lives. The most advanced form of participatory is that participatory idea is embodied in negotiation and decision making process of all stakeholders and each project level.

The basic requirement is that stakeholders of forest management jointly take part in relative forest management decision making, especially it needs to focus and respect opinions of forest management entities.

5.2 Attitude, behavior, and capacity analysis of different stakeholders

Stakeholders mainly include FFC members, core members and competent forestry authorities. Study and analysis of 39 FFC members, 18 farmers who are not FFC members, four forestry institute staff and two FFC core members are as follows.

5.2.1 FFC members

They hope that FFC can really achieve the effective matching between “small households” and “big market”, and would like to maintain good cooperation with FFC, such as selling products through FFC and investing in FFC. As for forest management, they hope that the government can offer funding support in low-yielding forest improvement, and scientific institutes can provide superior seedlings and silviculture and tending techniques.

5.2.2 Farmers who are not FFC members

There is no non-member assessment, as all farmers of Bilong Village are FFC members. A total of 18 surveyed farmers who are not FFC members of Xiaozhuang Village have low awareness of FFCs, as they think that FFCs only use government policies, and that they can not bring practical benefits to farmers.

5.2.3 County forestry bureau and township forest station staff

In recent years, government has highly encouraged the development of FFCs, issued and implemented many supporting policies, providing a good platform for the healthy development of FFCs. FFC members all have gained benefits.

Farmer training is very necessary, which is good to improve quality and awareness of farmers, and can enable them to better understand national policies and master techniques, and boost SFM.

5.2.4 FFC core members

According to the head of Nengfu Cooperative Bilong area, drafting PFM plan in the unit of the village indicates the government’s care for farmers, but actual situation should be taken into account, for instance, Bilong Village has joined Nengfu Cooperative, and Nengfu Cooperative drafted FMP in 2008, so it is not very necessary to draft it again in the unit of the village.

For the part of Deputy Director of Xiaozhuang Cooperative, PFM plan drafting is favorable to help farmers improve management level and quality awareness, so as to better promote forest management.

5.2.5 Village officials

Training can improve farmers’ quality, but proper time needs to be selected so as to avoid busy farming season. FMP drafting should show more respect to farmers’ opinions, but some small place names in sub-compartment card fail to accord with small place names with which farmers are familiar, resulting in farmers’ difficulty in taking part in FMP plan.

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

Two pilot villages both consider that: (i) government does not allow afforestation after burning, which affects afforestation quality and forest growth speed; (ii) Forest road density is too low, which is not good for intensive forest management. Bilong Village also regards that: (i) policy for banning broad-leaf forest logging not only fails to effectively protect broad-leaf forest resources, but also greatly hinders farmers' enthusiasm for broad-leaf forest silviculture. (ii) There is a large area of local low-yielding forest, but there is a lack of government support in low-yielding forest improvement funding and techniques.

6 Capacity building

6.1 Trainees

Except project team members and training experts, stakeholders of the training include representatives of competent forestry authorities, village officials, FFC members and farmers who are not FFC members.

Representatives of competent forestry authorities are mainly forestry technical staff of Longquan Forestry Bureau, Jinxi Township Forest Station and Zhulong Township Forest Station, who provided sufficient data and materials for the training, such as sub-compartment card, 1:10000 topographic map, forest resource information, and relevant policy documents, and participated in sub-compartment outlining, contributing strong resources and technical support for the training and PFM plan drafting.

Village officials are mainly Village Party Head, Village Director, Women Director, etc, who were responsible for communication and liaison with farmers. They introduced pilot village and its forest management situation and development plan, and raised practical recommendations, which greatly facilitated the training.

FFC members and farmers who are not FFC members are villagers of Bilong Village. Having lived in the village for a long time, they know local history, culture, customs and practices. Having long engaged in local forestry production and management activities, they boast abundant knowledge and experience in forest management.

6.2 Training methods and contents

6.2.1 Training methods

(1) The trainers' method of explanation with group discussion: the main content of the training was explanation by the trainers. For specific cases (such as ecological public welfare forest compensation, harvesting quota policy), group discussion was conducted to make the participants better understand relevant concepts, principles and methods of PFM.

(2) Icebreaker game: all people sat at a round table, and selected their favorite fruits from the fruit

dish (banana, apple, and orange), and then sat in the team with the same fruit selection. The participants made self-introduction. In case of some situations that some participants were not aware, they asked the familiar participants to introduce. Through introducing own experiences, the participants' enthusiasm was motivated to develop an active atmosphere.

(3) Brainstorming method: in group discussion, the trainers raised new concepts in forest management, which aroused the association of the participants. Based on the association, the participants brought a series of new concepts, which provided more possibility for creatively solving problems. The trainers raised questions to the participants on workshop objective and related issues, helping the participants broaden their mind, and motivating them to speak.

(4) Observation and interview: after careful field study observation, the trainers and the participants discussed current forest conditions, and knew more management conditions through interview with relevant staff.

(5) Participatory discussion: by creating a relaxing and harmonious atmosphere, the trainers let the participants freely share their own ideas, and did not criticize or commented on the opinions and ideas of the participants during discussion. The participants were asked to put forward their own opinions and ideas on the questions as many as possible.

6.2.2 Training content

- 1) Basic contents of the project;
- 2) PFM;
- 3) Assistance techniques of forestry technicians for countryside to conduct FMP drafting;
- 4) Preparation for PFM plan;
- 5) Current forest management system assessment;
- 6) SWOT analysis and strategy planning;
- 7) Drafting monitoring plan;
- 8) Methods for drafting FMP;
- 9) Methods for conducting PFM;

Finally, training effect was assessed.

6.3 Practice of draft forest management plan

In order to scientifically, reasonably and orderly manage forest, and give full play to ecological, economic and social impact of forest, based on forest resource condition and social, economic and natural conditions, forest management entities draft the medium and long term plan for forest tending, protection and utilization, which is FMP. Scientifically drafting and implementing FMP is not only a must for managing and utilizing forest resource and improving benefit earning ability of forest management in a sustainable manner, but also an effective measure and means to carry out sustainable forestry development strategy.

6.3.1 Drafting process of FMP

PFM plan drafting training. PFM plan drafting method and technique training was conducted in Bilong Village during December 15-17 and December 20-22, 2010.

Participatory discussion and sub-compartment outlining. Members were asked to outline forest resource condition in 1:10000 topographic map, mainly indicating that for the following 5 years, which sub-compartments need logging, which sub-compartments need tending and which sub-compartments should be categorized as ecological public welfare forest to strengthen tending, etc.

FMP drafting. Based on the result of participatory discussion and sub-compartment outlining and secondary forest resource survey data, project team members conducted various FMP design, forest management project planning and space time allocation for different forest types, so as to develop the main result of FMP.

6.3.2 Framework and content of FMP

- (1) Basic situation. Mainly introduce geographic location and natural condition, social economic structure, forest tenure right reform situation, etc.
- (2) Forest resource and management appraisal. Mainly analyze current forest resource condition and forest management appraisal of Bilong Village.
- (3) Guideline, objective and overall arrangement of forest management.
- (4) Forest tending plan. Mainly consisting of afforestation regeneration, young forest tending, tending and thinning, mountain closure, seedling demand estimation, etc.
- (5) Forest logging plan. Mainly including logging and utilization principle, confirmation of reasonable annual logging amount, logging area allocation, consumption amount and growth amount.
- (6) Non-timber resource tending and utilization. Mainly plan for the tending and utilization of bamboo resource, rare tree species resource, etc.
- (7) Forest and biodiversity conservation. Mainly analyze forest fire and forest pests and damage control, and analyze the environmental impact of forest management activities.
- (8) Investment and benefit analysis. General appraisal of investment and benefit of whole management period.

6.3.3 Knowledge and techniques owned by the cooperative for drafting FMP

1) Forest farmers have long-term experience in managing forestry

According to the introduction, farmers have specialized in forest plantation for a long time. The pilot villages are key timber production villages in Longquan with a large forest area, and plantation accounts for a high proportion. Timber income was once the most important income source of the villagers.

2) Forest farmers are familiar with local forest resource conditions

Due to strong economic dependency on forest resource, and close relationship between households in every natural village (for example, villagers of some natural villages have sort of relative relationship), forest farmers who participated in training and management plan drafting are very familiar with local forest resource conditions, especially the conditions of the group.

3) FFC founders and core members boast high quality and excellent capacity

Founders of two case FFCs are core leaders of leading enterprises, founder of Nengfu Silviculture Cooperative has 28 years' experience in enterprise founding and operation, thus having very high quality; founder of Xiaozhuang Bamboo Shoots Cooperative has 8 years' experience in enterprise operation, thus having high quality. With the guidance of FFCs, farmers' income and livelihoods have improved significantly. Founders and core members have quite clear-cut planning for the development of FFCs, and boast abundant experience in forest product processing and utilization, so they can lead local farmers to gain better forest management benefits by strengthening forest management.

4) Cooperative organization can effectively collect views from various parties

As the ground organization of forestry production and management, the cooperative can not only solve forestry production and management problems that the government can not “integrate”, the authorities can not “undertake”, the households can not “do” or that are “not cost-efficient to do”, but also effectively give play to the role of forest production and management in knowledge accumulation, conclusion and practices, and provide effective intellectual guarantee for drafting FMP in Xiaozhuang Village.

6.4 Needs of villagers/FFC members in the development of FMP

6.4.1 Professional knowledge of FMP drafting

Under the current precondition of household management of collective forest, in order to support the cooperative and village to conduct SFM activities, forestry authorities and grass-roots forestry working stations should provide professional knowledge for FMP drafting to guide and help the cooperative and village independently draft FMP. After the plan is approved by forestry authorities, the cooperative and Bilong Village and its members carry out activities like logging and forest tending in accordance with laws and FMP.

6.4.2 Participatory method

SFM relates to various stakeholders, such as government, cooperative, villagers, and households. How to fully motivate various stakeholders to participate in FMP drafting is beyond the reach of the village and households. Therefore, it needs to integrate various stakeholders with the help of forestry authorities and forest stations, so as to develop a partnership mechanism with multi-party participation, and use participatory method to enable various stakeholders to effectively take part

in FMP drafting, and make FMP not only accord with national policies and regulations and public benefits, but also meet forestry management demand of forest management entities.

6.4.3 Financial and tax preferential policy

Concerning the funding by the government for the cooperative to offer services such as information, training, product quality standard and certification, infrastructure development, marketing, and technical extension, it should be allocated to be used by the cooperative. For cooperative members who log their own forest, forest tending fund on them should be exempted and reported to relevant functional authorities for the record.

6.5 Assessment on the capacity building

After the forest in southern collective forest area has been allocated to household management, capacity building is an effective way for the state to improve forest farmers' participation in SFM and FMP drafting, to promote SFM in southern collective forest area, to increase initiative of forest farmers in managing forestry, so as to promote income of forest farmers. The training quality has a direct impact on the training effect.

6.5.1 Significant capacity building effects

Based on self-evaluation of 22 whole-time trainees, project capacity building has significant effects (table6-1). It can be found from table 6-1 that before the training, most trainees did not know or knew little about the training content. Weighted average point is only 1.32-1.68, and only few trainees (mainly forestry technicians and core FFC members) had some understanding of training content. After the training, although it is still quite hard for trainees to understand the content like "how to prepare for PFM plan", understanding of other training content improves significantly, and weighted point ranges between 3.59 and 4.00.

6.5.2 Experience on capacity building

1) Attention from forestry authorities

Longquan Forestry Bureau attached high importance in the project, not only providing materials like secondary survey report of forest resource in Longquan, sub-compartment card of Bilong Village, and 1:10000 forest map, but also taking part in the whole process of participatory training.

2) Excellent characters and capacity of cooperative founders

Founders of Nengfu Silviculture Cooperative are core leaders of Zhejiang Nengfu Travel Products Co. Ltd. They have accumulated rich experience in 28 years' history of enterprise founding and operation, and have developed excellent characters. After the project team explained the project demand to the deputy director of the case cooperative, the deputy director immediately organized members who had ideas and were familiar with local conditions to arrange training affairs.

Table 6-1 Capacity building effects

Contents	Criteria	Before training					After training					Weighted scores	
		1	2	3	4	5	1	2	3	4	5	Before training	After training
To define PFM and identify the roles of farmers and foresters in that		8	14	0	0	0	0	3	6	8	5	1.64	3.68
To describe the key competencies of a facilitator		11	8	3	0	0	0	2	6	7	7	1.64	3.86
To explain how to prepare for planning in PFM		12	8	2	0	0	0	2	7	11	2	1.55	3.59
To demonstrate how to make a framework for assessing a forest management system		12	7	3	0	0	0	2	6	7	7	1.59	3.86
To demonstrate how to assess a forest management system using an appropriate analytical framework		11	7	4	0	0	0	1	7	7	7	1.68	3.91
To identify additional information needs and design assessment methods to meet those needs		13	8	1	0	0	0	1	7	6	8	1.45	3.95
To demonstrate how to do a trend analysis in forest management		14	8	0	0	0	0	2	5	10	5	1.36	3.82
To demonstrate how to do a SWOT analysis		17	3	2	0	0	0	1	4	11	6	1.32	4.00
To demonstrate how to identify strategic options		15	5	2	0	0	0	3	5	6	8	1.41	3.86
To explain how to use a logical framework in making a forest management plan		14	7	1	0	0	0	3	3	11	5	1.41	3.82
To explain how to develop a PFM monitoring system		16	4	2	0	0	0	3	5	8	6	1.36	3.77
To demonstrate how to develop a PFM monitoring framework		18	0	3	1	0	0	2	6	10	4	1.41	3.73
To support farmers to prepare a draft forest management development plan		17	3	1	1	0	0	3	5	9	5	1.36	3.73
To demonstrate how to enhance the likelihood of implementing a forest management development plan		15	5	0	2	0	0	2	6	9	5	1.50	3.77

3) Positive participation of members

All the villagers of Bilong Village have joined in Nengfu Silviculture Cooperative, so all the trainees were members. The training period was just the harvest season of main local income sources--edible fungus and mushroom, when members were very busy with their farm work. When they knew the objective and content of the project, most of them positively took part in the project training and PFM plan practice.

4) Excellent training material

Guide for Facilitators in PFM Plan Drafting and *Guide for Trainers of Facilitators* organized by FAO to draft fully consider capacity training of forest management entities, and encourage them to participate in FMP drafting beneficial to realize SFM, and provide good training opportunities for them to join plan drafting.

5) Training experts with a strong sense of responsibility

Two teachers of the training come from School of Environment Science and Technology and School of Economy Management of Zhejiang A&F University respectively. The teacher from School of Environment Science engages in education and scientific research of forest management over a long time, and has abundant experience in FMP and brief FMP drafting. The teacher from School of Economy Management engages in education and scientific research of forestry economy theory and policy, forest resource economy and environment management over a long time, and has made special accomplishments in SWOT analysis and Participatory Rural Rapid Appraisal. They attached highly attention in project training, and started to study training materials and prepare PPT two months in advance. During the training process, according to the actual situation of trainees, they properly adjusted training schedule, way and content arrangement to ensure training effect.

6) Diversity of training methods

Based on the arrangement of training material and trainees condition, in order to improve interest of trainees and training effect, the training experts adopted diverse training methods, including self-introduction, icebreaker game, theory lecture, participatory drawing, and discussion.

6.5.3 Lessons from capacity building

1) Trainees have not received special training in advance

Trainees have not received special training in advance. They understood and grasped training materials on their own, which could lead to misunderstanding, and could cause the training to fail to gain expected effect.

2) Restriction of training time

Since the project allocated very tight schedule, after contacting with Longquan Forestry Bureau, the project team conducted the training in Xiaozhuang and Bilong villages during December

15-24, when it was the harvest season of local edible fungus. Nearly every household breeds edible fungus, with the amount ranging from 5000 bags to 30,000 bags. Labor force was nearly busy with edible fungus collection everyday, so it was hard for them to take part in the training for five consecutive days. Of course, it was more difficult to conduct training and PFM plan drafting for ten consecutive days in accordance with the training material requirements.

3) Sharp contrast of trainees' characters

The education backgrounds of trainers vary from 1-year elementary schooling to university graduation, with very sharp contrast in normal education. Some trainees focus highly on follow-up non-degree education, and take part in various trainings many times. But some trainees never receive non-degree education. Therefore, some trainees have strong comprehension ability while others may be weak in this aspect. Therefore, some problem discussions witnessed difficulties. Take strategy selection as example, trainees expected that experts and forestry technicians helped them select instead of selection by themselves.

4) Specific steps did not involve group discussion

Conducting group discussion can analyze and discuss on the problems more deeply, thus gain more recommendations and ideas and reach common agreement finally. Due to various reasons, specific steps of the training in Xiaozhuangg Village did not involve group discussion, opinions of 1 or 2 participants with strong control power always represented opinions of all participants, even though other participants might have different ideas, they may not express it, which may result in lack of complete and deep discussion on some problems, which should be avoided in future training.

5) Field survey was not made

It was unfortunate that the training suffered from rainy and blizzard weather, resulting in wet and slippery mountain road difficult to walk on, so the field survey of forest resource situation of Xiaozhuangg Village was not made. However, it was lucky that the trainers have got materials like Xiaozhuangg Village sub-compartment card and 1:10000 topographic map in advance, and printed them out to let the villagers have more direct feeling, minimizing negative impact of failure to make field survey. Finally, the task of guiding villagers to design FMP was successfully accomplished.

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

7.1 Logging quota control system

7.1.1 State level

The *Forest Law* came into force in 1985. Based on the principle that timber consumption amount should be lower than growth amount, harvesting quota is conducted for forest, and the quota is inspected every five years. In June 1987, the *Designation on Strengthening Forest Resource Management in Southern Collective Forest Area and Restraining Excessive Deforestation* was issued, regulating that timber for production of rural enterprises and timber for self consumption of farmers shall be included in harvesting quota; in 1988, the Standing Committee of the National People's Congress modified the *Forest Law*, further clarifying harvesting quota mechanism; in August 1998, State Forestry Administration (SFA) issued the *Circular on Conducting Forest Logging Quota Inspection*, and started to conduct forest harvesting quota inspection mechanism. In order to motivate development timber plantation, the *Circular on Adjusting Timber Plantation Logging Management Policies* issued in 2002 and the *Opinions on Improving Commercial Plantation Logging Management* unveiled in 2003 indicated that priority shall be given to logging of commercial plantations. The *Resolution on Accelerating Forestry Development* (hereinafter referred to as Resolution) issued by the State Council and the Central Committee of the CPC in 2003, the *Guidance on Classified Policy Implementation in Forest Logging Management* issued by SFA in 2004 and the *Opinions on Reforming and Improving Collective Forest Logging Management* published by SFA in 2009 further improve forest harvesting quota mechanism.

7.1.2 Zhejiang Province level

Zhejiang Province attaches great importance to forest harvesting quota management. *Forest Management Regulations of Zhejiang Province* were issued in 1993, which expressly regulate that harvesting quota shall be adopted for forest; in 2004, Zhejiang Provincial Committee of the CPC and Provincial Government issued the *Opinions on Fully Promoting Forestry Modernization Development*, specifying to strengthen forest harvesting quota mechanism reform; for industry material forest and fast-growing and high-yielding forest with enterprises' investment in planting and tending, their demand for harvesting quota shall be met; in July 2004, *Forest Logging Management Guidelines for Zhejiang Province* make specific regulations on forest harvesting quota, including logging management, logging license management, and relevant legal responsibilities; in April 2006, Zhejiang Provincial Government issued the *Circular on Fulfilling Forest Logging Quota Work during the "Eleventh Five Year Plan" Period*, with a view to guiding the harvesting quota work of the province during the said period.

7.2 Taxes and charges

7.2.1 National level

China has started to levy value-added tax (VAT) since 1994, and has established Vat-based circulating tax system (Li Min, et al, 2002; Lai Riwen, et al, 2004), and gradually implemented forestry preferential policies. The State Council issued *Regulations on Collecting Agricultural Tax on Agricultural Specialties* in 1994, regulating that timber is only collected 8% agricultural specialty tax in production step, but in March 1994, the Ministry of Finance (MOF) promulgated *The Circular on Specific Issues of Agricultural Specialty Tax Collection*, which increases the tax collection in timber production and purchasing steps. In 1995, MOF and State Administration of Taxation (SAT) issued *the Circular Forestry Taxes Issues* and *Forest Law*, regulating that forest tending fund should only be used in afforestation and forest tending. *The Circular on Forestry Taxes Policy Issues* which was issued in 2001 regulates that agricultural specialty tax of small fuel wood can be exempted or reduced. *The Circular on Value-added Tax Exemption Policy for Several Agricultural Production Materials* issued in the same year regulates that value-added tax is exempted on forestry production fertilizer, etc. Both the Resolution and the *Opinions on Fully Promoting Collective Forest Tenure Right System Reform* issued in 2008 propose to reduce taxes and charges; in 2009, MOF and SAT issue the *Circular Distributing Management Guidelines of Forest Tending Fund Collection and Utilization*, regulating that forest tending fund should be collected not exceeding 10% of forest products sales income.

7.2.2 Zhejiang Province level

Zhejiang Province is advanced in the reform of forestry taxes and charges, and the reform adopts the principle of reducing farmers' burden. *Regulations on Forest Management in Zhejiang Province* unveiled in 1993 emphasizes that expect regulated charges, no other charge should be collected on forest farmers. *Management Guidelines (Amendment) on Collective Forest Tending Fund and Regeneration and Improvement Fund in Zhejiang Province* issued in 1998 further clarifies collecting range, criteria and method. The *Opinions on Fully Promoting Forestry Modernization Development* promulgated in 2004 clearly mentions that forestry taxes and charges burden should be relieved. *Several Opinions on Further Strengthening Collective Forest Tenure Right System Reform* issued in 2008 conducts reform in forest tending fund mechanism of collective forest, and initially exempts forestry "two funds" in China. Zhejiang has become the first province that has achieved "no burden" on farmers from the perspective of policy.

7.3 Micro-mortgage financing policies

Due to constant strengthening of the reform, rural micro-mortgage has become a positive approach to solve the problems of agriculture, farmers, and countryside, playing an important role in the process of increasing farmers' income and narrowing income gap between rural and urban areas

(Tian Mingcheng, 2010). In order to guarantee smooth implementation of rural micro-mortgage, the central government and Zhejiang Province have issued a series of policies (table 7.1).

Table 7.1 Micro-mortgage policies

Name	Time	Issuer	Main content or role
Forest Law	1998	Standing Committee of the National People's Congress	User right of forest land including timber forest can be transferred according to law and be evaluated for contribution, etc, which build value foundation for forest land mortgage
Management Guidelines on Rural Credit Cooperatives Household Micro-mortgage	2001	People's Bank of China (PBOC)	Clearly request the rural credit cooperatives to offer micro-mortgage services, simplify mortgage procedure, for the convenience of farmers' mortgage
Resolution	2003	State Council	User right of forest, trees and forest land can be inherited, mortgaged in accordance with law.....legal contributions or conditions
Management Guidelines of Forest Resource Assets Mortgage and Registration	2004	SFA	Further broaden forestry financing channel, regulate operation of forest resource assets mortgage and registration
Interim Regulations on Forest Resource Assets Evaluation Management	2006	MOF and SFA	Make regulation on bank mortgage loan project evaluation management
Guiding Opinions on Implementing Collective Forest Tenure Right Reform and Forestry Finance Development Services	2009	PBC, SFA, MOF, China Banking Regulatory Commission, and China Insurance Regulatory Commission	For micro forest farmer loan businesses like micro-mortgage and household joint mortgage, the actual interest rate for borrowers should not exceed 1.3 times of basic interest rate

Management Methods on Central Financial Interest Subsidy Fund for Forestry Loan	2009	MOF and SFA	Confirm interest subsidy objectives and range, interest subsidy rate and duration, and relevant management measures
The Opinions Promoting Forestry Modernization Development	2004	Provincial Committee of the CPC, and Provincial Government	If ownership is clarified, and forest land usage and features do not change, user right of forest, trees and forest land can bemortgaged.....
The Circular on Practically Implementing Forest Contracting Period Extension	2006	Provincial Committee of the CPC, and Provincial Government	Continue to extend forest contracting period for 50 years, and further clarify ownership, release management right, realize disposal right and ensure profit right
Management Methods for Forest, Trees and Forest Land Transfer in Zhejiang Province	2006	Provincial Forestry Department (PFD)	Regulate conditions and procedures for forest resource transfer
Guiding Opinions on Conducting Forest Resource Assets Mortgage Loan to Support Forestry Development in Zhejiang Province	2006	PFD, PBC Hangzhou Branch	Promote the implementation of forest property right mortgage loan
Interim Management Methods on Micro-mortgage Company Pilots in Zhejiang Province	2008	Provincial Finance Office, Provincial Industry and Commerce Bureau, Provincial Banking Regulatory Bureau, PBC Hangzhou Branch	Leave abundant development space for the operation of micro-mortgage companies, which fully reflects flexibility and independence

Forestry plays important position in mountain economic and social development of Zhejiang Province. Zhejiang Province launched pilot experiment in October 2008 to provide micro-finance for small enterprises and households, by the end of May 2010, Zhejiang has accumulatively distributed over 800 million yuan of forest property right mortgage loans to 20,000 households (including enterprises), with the loans reaching 2 billion yuan in 2010.

7.4 Public forest compensation fund management system

Ecological public interest forest development is the strategic action for sustainable economic and social development, and promoting ecological culture development. Ecological public interest forest development started from *the Circular Conducting Forestry Classified Management Reform Pilot Work* issued by Ministry of Forestry in 1996. In 2001, SFA appointed 11 provinces (municipalities, autonomous regions) as national ecological public interest forest area pilot provinces, making the official launch of ecological public interest forest development (policies shown in table 7.2).

Table 7.2 Management policies of public interest forest

Title	Time	Issuer	Main content or role
The Circular on Conducting Forestry Classified Management Reform Pilot Work	1996	Ministry of Forestry	Require each province (autonomous region) to select 2-4 counties (municipalities) to conduct forest classified management reform pilot
Interim Management Methods for Ecological Compensation Fund	2001	MOF and SFA	Regulate compensation fund management
Methods for Key Public Interest Forest Allocation Management Methods on Central Forest Ecological Impact Compensation Fund	2004	MOF and SFA	By the end of 2004, allocated 104.1 million ha of key public interest forest
Management Methods on Central Forest Ecological Impact Compensation Fund	2004	MOF and SFA	Clarify fund distribution and compensation standard
The Circular on Issuing Central Ecological Impact Compensation Fund in 2006	2006	MOF	Clear fund distribution and compensation standard
Management Methods on Central Financial Forest Ecological Impact Compensation Fund	2007	MOF	Clarify compensation objectives, fund distribution and compensation standard
The Circular on Conducting Ecological	1999	PFD	Conduct ecological public interest forest development pilots in 21 river origin

Public Interest Forest Development Pilots				counties and key forest area counties
Planning Outline of Ecological Public Interest Forest in Zhejiang Province	1999	Provincial Development and Reform Committee, and PFD		Raise development plan of 2 million hectares of key public interest forest
Methods (Interim) for Ecological Public Interest Forest Definition in Zhejiang Province	2001	PFD		Fully launch the definition work of ecological public interest forest
Management Methods (Interim) for Key Ecological Public Interest Forest in Zhejiang Province	2005	Provincial Government Office		Clarify definition, conservation, and management of ecological public interest forest
Guiding Opinions on Provincial Level Public Interest Forest Extension	2009	PFD		The area of province level and above public interest forest reaches 2.6035 million hectares, accounting for 39.75% of total forest land area in Zhejiang

Since Zhejiang Province comprehensively conducted public interest forest compensation system in 2004, it increased compensation standard from 120 yuan/hectare in 2004 to 255 yuan/hectare in 2009, facilitating smooth development of public interest forest.

7.5 Government's role in market for making payment for environmental services

As public goods, supply of environmental services is an important task of the government. Governments at all levels play an important role in organization and institution development. The Chinese government offers environmental services to the society, and has established lots of nature reserves in crucial ecological function zones, with a total area of 1.38 million km², accounting for over 14.4% of the total land area. In ecologically sensitive area outside nature reserves, the country has invested huge fund in implementing five key ecological development programs, such as "Nature Forest Protection Program", "Land Conversion Program", and "Sandification Control Program in the Vicinity of Beijing and Tianjin". Since 2001, China has established "Forest Ecological Impact Subsidy (Compensation) Fund", and annual compensation standard increased from 75 yuan/hectare to 150 yuan/hectare in 2010. Implementation of forest ecological impact compensation system is a complicated program, involving ecological public

interest forest definition, allocation, utilization and management of compensation fund, management and conservation of public interest forest, and document management. Therefore, Zhejiang Province attaches great importance to organization and institution development. As for organization development, Zhejiang Province Forestry Ecological Program Management Center was established at the provincial level; forest classified management work leading groups at various levels were set up; in some key counties (municipalities, districts), specific public interest forest management organizations were founded, and several ordinary counties are equipped with full-time management staff; public interest forest supervision stations were established in some key townships, and ordinary townships are equipped with supervisors.

7.6 Non-timber forest products

Non-timber resource is a significant component of forest resources, and the development of non-timber forest products is an important content of China’s forestry policies, but they mainly cover relevant comprehensive policies. In recent years, specific supporting policies (table 7.3) have been issued to support utilization and industry development of non-timber forest products like feature economic forest, bamboo, and flower seedlings.

Longquan is one of the central moso bamboo production areas in Zhejiang Province, and its bamboo forest area ranks second in the province, only next to that of Anji. With the implementation of development strategy of “enriching farmers by forest” in Longquan, “one moso bamboo changes life” comes true in new countryside construction of Longquan. Bamboo industry has become a leading industry for enriching farmers in the city. By the implementation of projects including “Spark Plan”, “Bamboo Industry Improvement Program”, and “Multiple Times Increase Plan”, the city’s moso bamboo industry has gained great progress.

Table 7.3 Non-timber forest product policies

Name	Time	Issuer	Main content or role
Outline of Forest Industry Policies	2009	SFA	Encourage famous superior new economic forest base, flower and tree seedling industry, forestry biomass energy forest, rattan base and rattan new products production techniques, ecological tourism, wildlife breeding and utilization
Renovating Plan of Forest Industry (2010 - 2012)	2009	SFA, National Development and Reform Commission,	Bamboo products, forest chemistry products, woody grain and oil products and biomass energy are listed into 10 major supporting industries

			MOF, Ministry of Commerce, and State Administration of Taxation	
The Opinions Promoting Forestry Modernization Development	2004	Provincial Committee of the CPC, and Provincial Government		Abolish moso bamboo harvesting quota management system, and adopt moso bamboo logging plan
Implementation Opinions on Accelerating Bamboo Industry Development	2007	Zhejiang PFD, Provincial Agricultural Department (PAD), and Provincial Finance Department		Support effective ecological bamboo forest demonstration area, develop leading enterprises and specialty cooperatives
Implementation Opinions on Accelerating Flower Seedling Industry Development	2007	Zhejiang PFD, PAD, Provincial Finance Department		Develop leading enterprises, create famous brands and scientific innovation, strengthen cooperative development

7.7 Traditional forest-related knowledge and customary regulations

7.7.1 Simple ecological safety awareness

From the long-term production and livelihood, farmers have accumulated simple ecological safety awareness. They fear the nature and conduct strict logging banning for ancient and rare trees, forest around the villages and houses, scenery forest, temple forest, etc, thus effectively protecting ecological environment. Part time logging banning is conducted for moso bamboo shoots, which promotes improvement of low-yielding moso bamboo forest.

7.7.2 Timber forest afforestation after burning

Afforestation after burning is traditional experience of farmers after long-term forest management, which is beneficial for the growth of timber forest, especially for masson's pine and fir. Therefore, farmers usually conduct burning in suitable weather conditions before afforestation.

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

Stakeholders mainly include FFC members, core members and competent forestry authorities. Study and analysis of 39 FFC members, 18 farmers who are not FFC members, four forestry institute staff and two FFC core members are as follows.

8.1 FFC members

8.1.1 Assessment on harvesting quota control system

FFC members are highly satisfied with harvesting quota policy, noting that application system is rational, quota distribution is fair, and harvesting quota policy has favorable implementation effect which is beneficial for improving forest management.

8.1.2 Assessment on taxes and charges

Logging applicants only need to pay 10 yuan/cubic meter of work design fee for logging in privately farmed plots of hilly lands. For logging in responsibility hills, additional contracting fee of 20 yuan/cubic meter should be paid, while other taxes and charges have been exempted. Therefore, all FFC members regard that current tax and charge policy is very rational.

8.1.3 Assessment on micro-mortgage financing policy

A total of 91.67% of FFC members in Bilong Village know micro-mortgage financing policy, among whom, 8 people have applied, accounting for 36.36%, and 6 people succeeded in application, representing 75% of the total, with failures attributable to lack of mortgage. Some do not apply as they have no fund demand. 100% of FFC members in Xiaozhuang Village know micro-mortgage financing policy, and 67% of members know that they can get micro-mortgage loan in the village, but only one person once applied for micro-mortgage loan, while others think it unnecessary, holding that micro-mortgage financing policy can solve farmers' fund problem to some extent, but the procedures are not convenient.

8.1.4 Assessment on public forest compensation fund management system

Public interest forests in both pilot villages have very small area, and only village officials join the efforts to define public interest forest. FFC members have little knowledge of ecological public interest forest policy, and only know annual loss compensation standard this year is 195 yuan/ha. FFC members consider that ecological public interest forest can be properly allocated in local steep hills and catchment sides.

8.1.5 Assessment on Non-timber forest products

Over 90% of FFC members do not know relevant policy on non-timber forest products. Only 2 people know fertilizer preferential policy, while others do not know any policy on non-timber forest products.

8.1.6 Assessment on Traditional forest-related knowledge and customary regulations

Since the village is located in mountain area, FFC members all have abundant traditional forestry knowledge in afforestation, and conduct fir afforestation and management after burning. As for ecological resource management, they attach importance to the conservation of ancient and rare trees, scenery forest, forest along four sides, and religious forest. Unwritten customary regulations protect relative tree species and forest. High results of assessment on traditional forest-related knowledge and customary regulations implementation and effect indicate that the importance of traditional forest-related knowledge and customary regulations for farmers and policy making should be respected and the role of customary regulations should be displayed.

8.2 Farmers who are not FFC members

Since there are no non-members in Bilong Village, assessment in this part comes from Xiaozhuang Village.

8.2.1 Assessment on harvesting quota control system

Farmers who are not FFC members all have applied for harvesting quota, which is usually below 5 cubic meters. Farmers who are not FFC members believe that it is acceptable that forest logging needs quota approval of the quota distribution situation. The general assessment (including enforcement effect and implementation effect) on harvesting quota policy is 3.22 points.

8.2.2 Assessment on taxes and charges

Farmers who are not FFC members have the similar idea to that of FFC members, saying that in the logging process, they only need to pay 10 yuan/cubic meter to the village, which is less than previous tax and surcharge. The general assessment (including implementation, rationality, effect) on taxes and charges policy is 3.68 points, which is higher than FFC members' assessment.

8.2.3 Assessment on micro-mortgage financing policy

All farmers who are not FFC members know micro-mortgage financing policy. Three people have applied and got micro-mortgage loan, while others think it unnecessary. Farmers who are not FFC members and got micro-mortgage loan all applied it in rural credit cooperative, and they should present forest tenure certificates in the application process. However, as approval procedure is quite complicated, none of them has got loan interest subsidy. The general assessment (including implementation, rationality, effect) on micro-mortgage financing policy is 2.83 points, which is lower than FFC members' assessment.

8.2.4 Assessment on public forest compensation fund management system

Farmers who are not FFC members express the situation similar to that of FFC members. Since only village officials participated in the definition of public interest forest, common villagers did not get involved in specific work, and they are not familiar with many regulations on public interest forest compensation policy. Few farmers who are not FFC members know compensation standard. The assessment on implementation effect of public interest forest policy is 3.4 points, which is equivalent to that of FFC members.

8.2.5 Assessment on non-timber forest products

According to the farmers who are not FFC members, they do not know relevant policy on non-timber forest products, and the assessment (implementation, effect) on relevant policy is 1 point; it is not implemented, the effect is very poor, and the assessment is lower than FFC members' assessment.

8.2.6 Assessment on traditional forest-related knowledge and customary regulations.

40% of farmers who are not FFC members know that ancient and rare trees, religious forest and scenery forest should not be logged, but there are not many relative forests, and they give 4.07 points for traditional forest-related knowledge and customary regulations (implementation and effect), which is the highest among all policy assessments, but lower than FFC members' assessment.

8.3 Competent forestry authorities (bureaus) at township and county level

8.3.1 Micro-mortgage financing policy should really benefit forest farmers

There are still several shortcomings in current micro-mortgage financing policy, including high application requirement, complicated application procedures, and difficulty in application. When forest farmers have fund demand, they borrow from relatives and friends instead of applying for loans. Therefore, micro-mortgage financing policy should be made closer to forest farmers, applying procedures should be simplified, and the proportion of credit loan should be increased. Meanwhile, there should be specific funds for micro-mortgage financing for forest farmers, so that they can get loans in time.

8.3.2 Rational harvesting quota policy approval system

In order to facilitate harvesting quota application, Longquan regulates: if forest farmers apply for harvesting quota below 5 cubic meters, it shall be examined by township forest station and signed by responsible township director; if forest farmers apply for harvesting quota over 5 cubic meters, technicians of township forest station shall conduct pilot survey, followed by township government's examination and approval.

8.4 Village Committee

Village Committee plays a vital role in policy publicity and implementation, among others. The survey finds that local Village Committee conducts good publicity of policies which are beneficial to the committee, but fail to conduct enough publicity of policies that are not closely related to the committee, so that farmers do not know or are unsatisfied with relevant policies. For example, Village Committee is not very transparent for the definition of ecological public interest forest, thus for farmers, especially those who are not FFC members, assessment on relevant policies decreases.

Since different stakeholders hold different expectations of the same policy and have different games in practice, it is extremely important to consider policy design, pilot, extension and localization from the perspective of policy implementation process. In particular, at the beginning of drafting forest management policies, all stakeholders should be respected, and their needs should be fully considered, so as to improve policy acceptability and implementation effect.

9 SWOT analysis of forest management policies and systems from farmers' perspective

SWOT analysis is a method to analyze internal strengths and weaknesses and external opportunities and threats of the industry, so as to raise industry development strategy. Farmers are familiar with forest management policy and mechanism, and the project uses participatory training to let farmers conduct SWOT analysis in current forest management policy and mechanism.

9.1 Strengths

Pilot villages have clear-cut property right and rich forest resources, which are good for forest management; FFCs create conditions for better utilization of forest resources. Bilong Village has fertile soil, big forest land area, rich per capita forest resources, and current tree ages and species boast high diversity. Xiaozhuang Village has lots of moso bamboo forest and a high proportion of commercial forest.

9.2 Weaknesses

Farmers lack superior techniques for industrial plantation forest tending and low-yielding forest improvement; big proportion of low-yielding forest, lack of improvement fund; lots of substances on forest ground impose fire risks. Bilong Village has steep mountains, high management and regeneration cost, which is unfavorable for forest resource tending and utilization. Xiaozhuang Village has thin soil layer, poor site condition, old-aged labor force, and nonstandard operation of FFC can affect SFM.

9.3 Opportunities

In recent, the CPC and government gradually strengthen the policy support in rural area, especially in mountain area, and provide great support in institution development, financing, infrastructure development, specialty industry development, low-yielding forest improvement, etc, and the support gradually steps up. Transportation condition gradually improves, and FFC boosts development capability of farmers. Bilong Village participated in Nengfu Silviculture Cooperative, which passed FSC certification in 2009, increased demand for forest products and promoted timber prices.

9.4 Threats

Since afforestation after burning has quite severe impact on ecological environment and may result in forest fire, government strictly controls burning. However, it is unfavorable for afforestation and growth and tending of new forest, and increases difficulty for mature forest. Strict logging restriction on broadleaf forest will result in some dead or hollow broadleaf forest, which affects the usage value of resources. Investors of FFC in Bilong Village are mainly leaders of Nengfu Company, thus Nengfu Company has quite big influence on the cooperative, which may affect the benefits of farmers. Xiaozhuang Village thinks that unstable prices for forest products, especially for bamboo shoots, impose an important threat.

9.5 Counter measures

Based on SWOT analysis, following countermeasures are proposed from the perspective of government and farmers.

- 1) Government should conduct reform in logging and silviculture policy, properly lessen logging restriction on broadleaf plantations, properly lessen restriction on afforestation after burning, and promote plantation forest regeneration.
- 2) Develop information communication and benefit coordination mechanism between government, scientific institutions, enterprises, cooperatives and farmers, and accelerate distribution of scientific achievements to farmers.
- 3) Seek technical and funding support by government in forest road construction and low-yielding forest improvement, strengthen cooperation with scientific institutions, introduce techniques and superior seedlings, accelerate superior industrial plantations tending and low-yielding forest improvement, increase forest productivity, and improve overall forest quality..
- 4) Draft PFM plan, improve scientific resource tending and utilization, and promote SFM.

In conclusion, only by means of seizing opportunities, avoiding threats, and giving play to current industry foundation strength, special natural condition in mountain area, and great market strength,

with the improvement of livelihoods, forest management of Bilong will see a more prosperous future, and local green food will also increasingly win the favor of residents.

10 Problems analysis on the policies and systems

10.1 Confirm forest harvesting quota every five years

China's forest harvesting quota system has played a significant role in protecting forest resource and promoting SFM. However, forest product market changes can affect timber income. Therefore, forest management entities should, based on forest and market conditions, decide whether, when and how much it should be logged, but it always conflicts with harvesting quota.

10.2 Work design fee is borne by forest management entities

Since 2008, Zhejiang Province has exempted all forestry taxes and charges. Forest logging in pilot villages only need to pay work design fee, which is not high. However, work design is the responsibility of competent forestry authorities, thus work design fee should be included into government financial expense, and should not be borne by forest management entities.

10.3 Micro-mortgage financing extension needs to be improved

At present, Zhejiang Province has gained some achievements in forest property right mortgage loan. However, compared with the demand of forest farmers, neither scope nor depth is enough (Hangzhou Central Sub-branch, 2009). Lishui and Quzhou take forest property right mortgage loan as a government key task, and have developed a favorable promotion framework with powerful government leadership, clearly defined responsibilities, and joint efforts. For some institutions, their extension work differs in idea recognition and objective setting, imposing some impact on policy coordination and accelerating extension. Due to lack of professional forest asset evaluation staff and organizations, it is hard to ensure evaluation range and speed.

10.4 Quite low public interest forest compensation standard, single standard, and logging restriction

Concerning public interest forest compensation standard, central financial standard is 150 yuan/hectare per year, and that of Zhejiang Province stands at 255 yuan/hectare, and loss compensation standard reaches 195 yuan/hectare.. However, current public interest forest compensation standard remains too low (Central Committee of China Public Interest Party, 2009). In the compensation process, no classified compensation was implemented based on public interest forest quality, category and ecological zone significance, which reduced the utilization effect of public interest forest compensation funds.

Public interest forest logging banning policy implemented at present causes some overmature ecological public interest forests to fail to be utilized in time, which results in dissatisfaction of some forest management entities, and may lead to social contradiction, and bring negative impact on ecological public interest forest development and conservation.

11 Recommendations to policies

11.1 Further lessen harvesting quota management on timber forest

On the basis of dividing forest resources into ecological public interest forest and commercial forest, timber forest in commercial forest is further divided into natural timber forest and plantation timber forest. Natural timber forest only allows selective cutting and shelterwood cutting, so as to maintain natural features of natural forest; for plantation timber forest, independence right of forest management entities in logging shall be increased based on forest age and market conditions, management method of moso bamboo wood forest can be taken for reference, and planning management instead of quota management shall be carried out. In addition, FMP is drafted specifically for villages with rich forest resources and big forest management households, and logging plan is specified separately, which is beneficial for market-based management of timber forest.

11.2 List logging work design fee into financial budget

Zhejiang Province has exempted “two surcharges”, leaving only logging work design fee. It is recommended to include logging work design fee in financial budget, so as to further reduce farmers’ burdens.

11.3 Improve management of micro-mortgage financing

1) Increase financial input, and further improve supplementary policies. Encourage local financial departments to allocate specific funds, and provide forestry interest subsidy for loans based on actual loan size and duration, so as to cut financing cost of forest farmers, and increase their financing enthusiasm.

2) Strengthen communication and coordination, and improve cooperation mechanism. Further improve communication and coordination cooperation mechanism of forestry, financial administrative departments and financial institutions, by ways of establishing joint meeting system and developing long-term coordination mechanism, etc, jointly communicate and inform forestry development and policy change situation, forestry mortgage financing policy and project process, and work together to study relevant policies.

3) Step up government motivation to improve awareness and understanding. Improve attention of local government and relevant departments in forest property right mortgage financing, and promote the government to issues relevant policies for forest property right mortgage financing,

include forest property right mortgage financing in government work objectives, so as to promote extension of forest property right mortgage financing (PBOC Hangzhou Sub-branch, 2009).

11.4 Extend fund management experience in public interest forest in Zhejiang

Zhejiang Province focuses on strengthening the development and fulfillment of public interest forest management system, strictly controls fund utilization, and directly distributes loss compensation to forest management entities through banks, which reduces intermediate procedures and ensure farmers' benefits. This experience is worth extending and using for reference.

11.5 Properly lessen restriction on afforestation after burning to improve farmers' enthusiasm for managing timber forest

Afforestation after burning is farmers' experience accumulated over long-term forest management, which is beneficial for afforestation and young forest tending. Farmers takes afforestation after burning as an inevitable step of afforestation, but strict prohibition of burning will harm farmers' enthusiasm for afforestation. Properly lessen restriction on afforestation after burning can improve farmers' initiative in managing timber forest and promote forest regeneration.

12 Experience and lessons learnt from the application of the materials

12.1 Experience on capacity building

12.1.1 Attention from competent forestry authorities

Longquan Forestry Bureau attached great importance to the project, not only providing materials like secondary survey report of forest resource in Longquan, sub-compartment card of Bilong Village, and 1:10000 forest map, but also participating in the whole process of participatory training.

12.1.2 Excellent characters and capacity of cooperative founders

Founders of Nengfu Silviculture Cooperative are core leaders of Zhejiang Nengfu Travel Products Co. Ltd, who have accumulated rich experiences in 28 years of enterprise founding and operation, and have developed excellent characters. After the project team explained the project demand to the deputy director of case cooperative, the deputy director immediately organized members who had ideas and were familiar with local conditions to arrange training issues.

12.1.3 Positive participation of members

All the villagers of Bilong Village have joined in Nengfu Silviculture Cooperative, so all the trainees were members. The training period was just the harvest season of main local income sources--edible fungus and mushroom, when members were very busy with their farm work.

However, when they knew the objective and content of the project, most of them positively took part in project training and PFM plan practice.

12.1.4 Excellent training material

Guide for Facilitators in PFM Plan Drafting and *Guide for Trainers of Facilitators* organized by FAO to draft fully consider capacity training of forest management entities, and encourage them to take part in FMP drafting beneficial to realize SFM, and provide good training opportunities for them to participate in plan drafting.

12.1.5 Training experts with a strong sense of responsibility

Two teachers of the training come from School of Environment Science and Technology and School of Economy Management of Zhejiang A&F University respectively. The teacher from School of Environment Science engages in education and scientific research of forest management over long time, and has abundant experience in FMP and brief FMP drafting. The teacher from School of Economy Management engages in education and scientific research of forestry economy theory and policy, forest resource economy and environment management over a long time, and has special accomplishments in SWOT analysis and PRRA (Participatory Rural Rapid Appraisal). They attached highly attention in project training, and started to study training material and prepare PPT two months in advance. During the training process, according to the actual situation of trainees, they properly adjusted training schedule, way and content arrangement to ensure training effect.

12.1.6 Diversity of training methods

Based on the arrangement of training material and trainees condition, in order to improve interest of trainees and training effect, the training experts adopted diverse training methods, including self-introduction, icebreaker game, theory lecture, participatory drawing, and discussion.

After the forest in southern collective forest area has been allocated to household management, capacity building is an effective way for the state to improve forest farmers' participation in SFM and FMP drafting, to promote SFM in southern collective forest area, to increase initiative of forest farmers in managing forestry, so as to promote income of forest farmers. The training quality has directly impact on the training effect. Currently, there exist main problems in following three aspects.

12.2 Lessons from capacity building

12.2.1 Trainees have not received special training in advance

Trainees have not received special training in advance, they just understood and grasped training material on their own, which could lead to misunderstanding, and could cause the training to fail to gain expected effect.

12.2.2 Restriction of training time

Since the project allocated very tight schedule, after contacting with Longquan Forestry Bureau, the project team conducted the training in Bilong Village during December 19-24, when it was the harvest season of local edible fungus. Nearly every local household breeds edible fungus, with the amount ranging from 5000 bags to 30,000 bags. Labor force was nearly busy with edible fungus collection everyday, so it was hard to take part in the training for five consecutive days. Of course, it was more difficult to conduct training and PFM plan drafting for ten consecutive days in accordance with the training material requirements.

12.2.3 Sharp contrast of trainees' characters

The education backgrounds of trainers vary from 1-year elementary schooling to university graduation, with very sharp contrast in normal education. Some trainees focus highly on follow-up non-degree education, and take part in various trainings for many times. But some trainees never receive non-degree education. Therefore, some trainees have strong comprehension ability while others may be weak in this aspect. Therefore, some problem discussions witnessed difficulties. Take strategy selection as example, trainees expected that experts and forestry technicians helped them select instead of selection by themselves.

12.2.4 Inconsistent or unclear descriptions in training materials

Some descriptions in training materials are unclear. For instance, in the preparation stage of the part 2 of the guideline, "three optimal choices", "three key regions" and "three plots" related to PFM have several different descriptions, but the meanings are consistent. Modification is recommended. Furthermore, it is not very appropriate to confirm three optimal choices of PFM in the preparation stage, but the basis and standards for selection are not informed.

12.2.5 Project procedure arrangement needs reconsideration

It is unpractical that the guideline requires that drafting team members should contribute 10 days in 1 month and hold 10 meetings. Furthermore, it is not very realistic to conduct forest management study group activities.

13 Recommendations to implementation of PFM at village/FFC level

PFM emphasizes on the equity and joint participation of stakeholders, which mainly include relevant government functional departments, scientific research institutes, and FFC and farmers.

13.1 Government competent authorities should streamline administration, delegate power, and strengthen services

The ultimate goal of China's political system reform is to better serve people, and promoting the said reform should focus on improving governance capacity of the CPC and effect of government, meeting people's enthusiasm for participation in the administration and discussion of state affairs, ensuring their right to know, participation right, expression right, and supervision right, maintaining scientific, democratic and legal governance, and promoting scientific and democratic decision-making. Government competent authorities should streamline administration, delegate power to lower levels, promote democracy process, and listen more to the voice of farmers, so as to better serve them. At current stage, efforts shall be made first to strengthen the construction of mountain area infrastructure, especially forest road, and should gradually include logging work design fee in financial budget, so as to reduce forestry work cost of farmers and increase their incomes.

13.2 Scientific research institutions and technical departments should strengthen service awareness, and accelerate scientific achievement transfer

With the development of forest tenure right reform, farmers have stable expectation of forestry management income. Therefore, they have growing willingness for long-term forestry management, and they hope to introduce superior seedlings and techniques to conduct superior broadleaf forest tending, low-yielding forest improvement, and improve moso bamboo forest management level. Therefore, Scientific research institutions and technical departments should strengthen awareness to serve farmers, pragmatically conduct scientific research, and translate scientific achievements into real productivity, so as to make better contribution to forest farmers' income increase and sustainable forestry development.

13.3 FFCs should strengthen capacity building, improve cohesion and service level

FFCs are bridges between farmers and the market, facilitating communication between farmers and government. Currently, there are problems like nonstandard operation, weak service capability, etc. They should further strengthen capacity building, implement standard management, and improve cohesion of FFC members, so as to offer services for farmers, including purchase of agricultural means of production, and sale, processing, transportation and storage of agricultural products, as well as agricultural production-related techniques and information.

13.4 Efforts should be made to improve farmers' quality and PFM capability

Farmers' little comprehension of national policy, FFC and PFM, and weak participation awareness and capability directly affect PFM. For example, during the drafting process of PFM, farmers stressed that they could not take into account local development strategy, and that they only want

experts to make decisions for them. However, experts are outsiders after all, and they do not know farmers' real situations. If experts make development strategy decision, it may not accord with actual local conditions. Therefore, farmers capacity building should be further strengthened in two aspects: firstly, introducing talents, such as introducing undergraduates to serve as village officials; secondly, strengthening farmer training and education, such as popularizing forestry policy, FFC knowledge, FFC members' rights and responsibilities, and the methods for conducting PFM and decision-making.

14 Suggestions on amendment to training materials

14.1 Full embodiment of participation in FMP outline

Based on *Technical Guideline for Brief FMP Drafting* of SFA, integrated with participatory discussion, it should fully reflect national SFM concept and villagers' will in participatory SFM in the plan. Concerning the content, it is recommended that forest management objective and type can be integrated into one session.

14.2 Pre-training for trainers

If trainers consciously learn training materials and conduct training practice in case villages, it can fully exert subjective initiative of trainers, boasting some advantages. However, it may also affect training effect since trainers do not fully understand the training content. It is recommended to conduct pre-training and full discussion for trainers to comprehend and improve training materials, so as to unify training content and training method to improve training effect.

14.3 Integrating standards and using conforming language

Integrating standards mainly means that whether the project conducts training aims at case village or case cooperative should be unified.

The use of conforming language mainly refers to the use of Chinese language habits in the training materials.

Typeset recommendations: according to Chinese language habits , the first line of each paragraph indents two characters. All the titles should be set flush. Last line of every table should use real line. For example, last line of course schedule should use real line. One figure or table should be arranged in one page to avoid broken table or broken figure.

References

- [1]Li Min, Chen Shaozhi, Yan Qian. Study on Forestry Tax Policies.[J]. Forestry Economy, 2002(3): 48-50.
- [2]Lai Riwen, Huang Xiaohai. Appraisal on Current Forestry Tax Policies in China [J]. Forestry Economy Issues, 2004, 24(3): 143-145.
- [3]Cao Liefeng. Zhejiang Province has Abolished Collection of Forestry "2 Funds" since 2008 [J]. New Countryside, 2008, (3): 1.

- [4]Li Kai, Zhang Ming. Problems and Solving Measures in Forest Logging Quota System in China [J]. Jiangxi Social Science, 2004, (12): 242-246.
- [5]Zhang Baoyan, Lv Jianhua, Zhang Songyan. Problems and Solving Measures in Forestry Taxes and Charges in China[J]. Heilongjiang Science Information, 2010, (11): 100.
- [6]Tian Mingcheng. Problems and Countermeasures in Rural Micro-mortgage Financing Implementation [J]. Knowledge Economy, 2010,(12),37.
- [7] Jin Leshan. Payment of Valley Ecological Environmental Services: Market Role [EB/OL].
<http://news.aweb.com.cn/2005/9/20/15512383.htm>
- [8]He Xianming. Government Role Transfer and Way Selection in Ecological Civilization Development [J].Journal of Zhejiang Province Community Party School , 2010, (5), 23-29.
- [9]PBC Hangzhou Branch. Current Development Situation of Forest Property Right Mortgage Financing and Recommendations for Further Work in Zhejiang Province [EB/OL].
http://hangzhou.pbc.gov.cn/publish/hangzhou/1250/2009/20091015152057975524752_.html

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/>