



CANADIAN
MODEL
FOREST
NETWORK

RÉSEAU
CANADIEN DE
FORÊTS
MODÈLES



Ngao Model Forest: A Synthesis Report of the Activities for the Period 2000-2011



By
A.Y. Omule

March 2012

EXECUTIVE SUMMARY

This synthesis report on the Ngao Model Forest (NMF) in Thailand summarizes the project activities, impacts, and lessons learned from the NMF, and some recommendations for the NMF Association (NMFA).

Some lessons learned from the NMF include the following:

1. Community forests and conservation networks are an important tool for the Model Forest to achieve its strategic objectives of participatory sustainable forest management.
2. Model Forests can strengthen community forest organizations.
3. Natural resource conservation and improving the livelihoods of the people are not mutually exclusive; they need to work in tandem.
4. For Model Forests to succeed, there is a need to mainstream the MF activities to the daily activities of the stakeholders.
5. People can improve their livelihood and health through improved quality and abundance of natural resources, such as water, and forests.
6. Public relations to raise awareness of conservation efforts is an important element of the Model Forest development.
7. Sustainable funding can be achieved by seeking local sources of funding (such as local governments, industry organizations and banks), rather than relying solely on international donors.

The NMF was established in 2000 to demonstrate a participatory approach to the conservation and sustainable use of forest resources in the Thailand. The NMFA has implemented several programs and a series of related activities, including: 1) Development of a comprehensive inventory database; 2) sustainable forest management; 3) training, extension, public awareness; 4) networking and technology transfer, and; 5) management and administration. Progress has been made in many of these program areas. However, this progress has not been fully documented and widely shared.

In January 2012, the Canadian Model Forest Network (CMFN) approved a support grant to the NMFA, to support a project to prepare a synthesis report of the activities and progress in the NMF over the period 2000-2011. The intention was to widely disseminate the achievements, lessons learned and recommendations from NMF.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	2
LIST OF ABBREVIATIONS	4
1 INTRODUCTION	5
1.1 BACKGROUND	5
1.2 METHODOLOGY	5
2 NGAO MODEL FOREST	6
2.1 MODEL FOREST APPROACH.....	6
2.2 LOCATION OF THE NGAO MODEL FOREST	6
2.3 PROBLEMS BEING ADDRESSED	10
3 MODEL FOREST ACTIVITIES	10
3.1 OVERVIEW	10
3.2 ITTO (2000-2002).....	11
3.3 GOVERNMENT OF JAPAN (2000-2003) (MODEL FOREST PILOT)	11
3.4 GOVERNMENT OF CANADA 2003-2004	14
3.5 IDRC/IMFNS AND RECOFTC RESEARCH SUPPORT GRANT AGREEMENT (APRIL 2003 – JUNE 2004)	15
3.6 IDRC/IMFNS AND DNP RESEARCH SUPPORT GRANT AGREEMENT (JANUARY – DECEMBER 2006)	16
3.7 CMFN AND NMFA GRANT AGREEMENT (MARCH 2008-MARCH 2009)	19
3.8 UNDP GEF SMALL GRANTS PROGRAMME 2010-2011	23
3.9 THE BANK OF AGRICULTURE AND AGRICULTURAL COOPERATIVES 2010 – 2011	24
4 IMPACT OF THE MODEL FOREST	25
5 LESSONS LEARNED	25
6 RECOMMENDATIONS.....	26

LIST OF TABLES

Table 1. Landuse in the Ngao Model Forest. These data are from the ITTO pre-project PPD 5/99 Rev. 1 (F) report.....	9
--	----------

LIST OF FIGURES

Figure 1. Map of Thailand (left) and a relief map of the Ngao Demonstration Forest (NDF).....	7
Figure 2. Map of the Ngao Demonstration Forest showing the different forest/land use types.....	8

LIST OF ABBREVIATIONS

BAAC	Bank of Agriculture and Agriculture Cooperatives
C&I	Criteria and Indicators of Sustainable Forest Management
CMFN	Canadian Model Forest Network
DNP	Department of National Parks, Wildlife and Plant Conservation
FAO	Food and Agriculture organization of the United Nations
GEF	Global Environmental Facility of the UNDP
GIS	Geographic Information System
GO	Government Organization
GOC	Government of Canada
GOJ	Government of Japan
GOT	Government of Thailand
IDRC	International Development Research Centre
IMFNS	International Model Forest Network Secretariat
ITTO	International Tropical Timber Organization
KUFF	Kasetsart University Faculty of Forestry
LCFDC	Lampang Community Forest Development Centre
MF	Model Forest
MONRE	Ministry of Natural Resources and Environment
NDF	Ngao Demonstration Forest
NGO	Non-Governmental Organization
NMF	Ngao Model Forest
NMFA	Ngao Model Forest Association
NTFP	Non-Timber Forest Products
RECOFTC	Regional Community Forestry Training Centre for Asia and the Pacific
RFD	Royal Forest Department
SFM	Sustainable Forest Management
SAO	Sub-district Administration Organization
UNDP	United Nations Development Programme
USDA	United States Department of Agriculture

1 Introduction

1.1 Background

The Ngao Model Forest (NMF) was initiated in 2000 to contribute to the conservation and sustainable use of forest resources in the Thailand, while deriving from these resources their full economic potential so as to improve the livelihoods for rural families and communities in the Ngao District, Lampang Province. The NMF has implemented several programs and a series of related activities, including: 1) Development of a Comprehensive Data Base; 2) Sustainable Forest Management; 3) Training, Extension, Public Awareness; 4) Networking and Technology Transfer, and; 5) Management and Administration. Progress has been made in many of these program areas. However, this progress has not been fully documented and widely shared due to limited reporting capacity in English.

In January 2012, the Canadian Model Forest Network (CMFN) approved a support grant to the Ngao Model Forest Association (NMFA). The purpose of this grant was to support a project by the NMF to prepare a synthesis report of the activities and progress in the Model Forest over the period 2000-2011. The purpose of this project, therefore, is to synthesize the various reports from the activities in NMF from 2000-2011, with the intention to widely disseminate the achievements, lessons learned and recommendations from Ngao.

This project was conducted on behalf of the NMF by A.Y. Omule, *PhD*, International Consultant, Bangkok, Thailand. Dr. Omule was assisted by Mrs. Phusin Ketanond of the Thailand Department of National Parks, Wildlife and Plant Conservation (DNP) and Dr. Khwanchai Duangsathaporn of the Kasetsart University Faculty of Forestry (KUFF), Bangkok. Mr. Ubol Jarig the president of the NMFA and Mr. Sumai Maimun of the Lampang Community Forest Development Centre (LCFDC), Thailand Royal Forest Department (RFD) coordinated arrangements for Dr. Omule, Mrs. Phusin and Dr. Khwanchai to meet with the NMFA members, Ngao village chiefs and the Bank of Agriculture and Agricultural Cooperatives (BAAC) Ngao Branch.

This synthesis report is the result of this support project. The remainder of this section outlines the project methodology. Section 2 describes the NMF, Section 3 describes the project activities – what was done and how it was done, Section 4 summarizes the Model Forest impacts, Section 5 summarises the lessons learned from the NMF, and the last section provides some recommendations for the NMFA.

1.2 Methodology

The synthesis report was prepared as follows:

1. Circulated a draft project proposal to the International Model Forest Network Secretariat (Ms. Christa Mooney) and to Mrs. Phusin Ketanond and Dr. Prasard of the DNP to confirm project outputs and methodology.

2. Collected previously undocumented information through meetings with members of the NMFA, the Ngao District village chiefs, and the BAAC managers (a total of 21 participants).
3. Prepared a draft synthesis report that includes outcomes, outputs, lessons learned and recommendations from Ngao Model Forest. The draft report was to be reviewed by the NMFA, the CMFN and the IMFN Secretariat.

2 Ngao Model Forest

2.1 Model Forest Approach

The Model Forest approach was initiated in Canada during 1990s. Its aim was to promote people participation in sustainable forest management. The concept of the Model Forest emphasizes the involvement of stakeholders from different levels and sectors in regard to their interests, roles, and responsibilities in forest management. In the Asia-Pacific region, regional model forests were first introduced in 2000 with financial support from the Japanese Government to China, Myanmar, Philippines, and Thailand. In 2000, the Ngao Demonstration Forest in Lampang, a northern province of Thailand, was selected as the site to pilot the feasibility of the Model Forest Approach. This marked the introduction of the Model Forest concept to Thailand.

2.2 Location of the Ngao Model Forest

The Ngao Model Forest (NMF) shares its boundaries with the Ngao Demonstration Forest (NDF), which covers an area of 175,159 hectares, and is located north-west of Lampang Province in northern Thailand between 18° 20' and 19° 05' north latitude, and 99° 45' and 100° 05' east longitude (Figure 1). The NMF consisted of approximately 84 villages, 17,069 households and about 58,888 people in or around the forest in 2005.

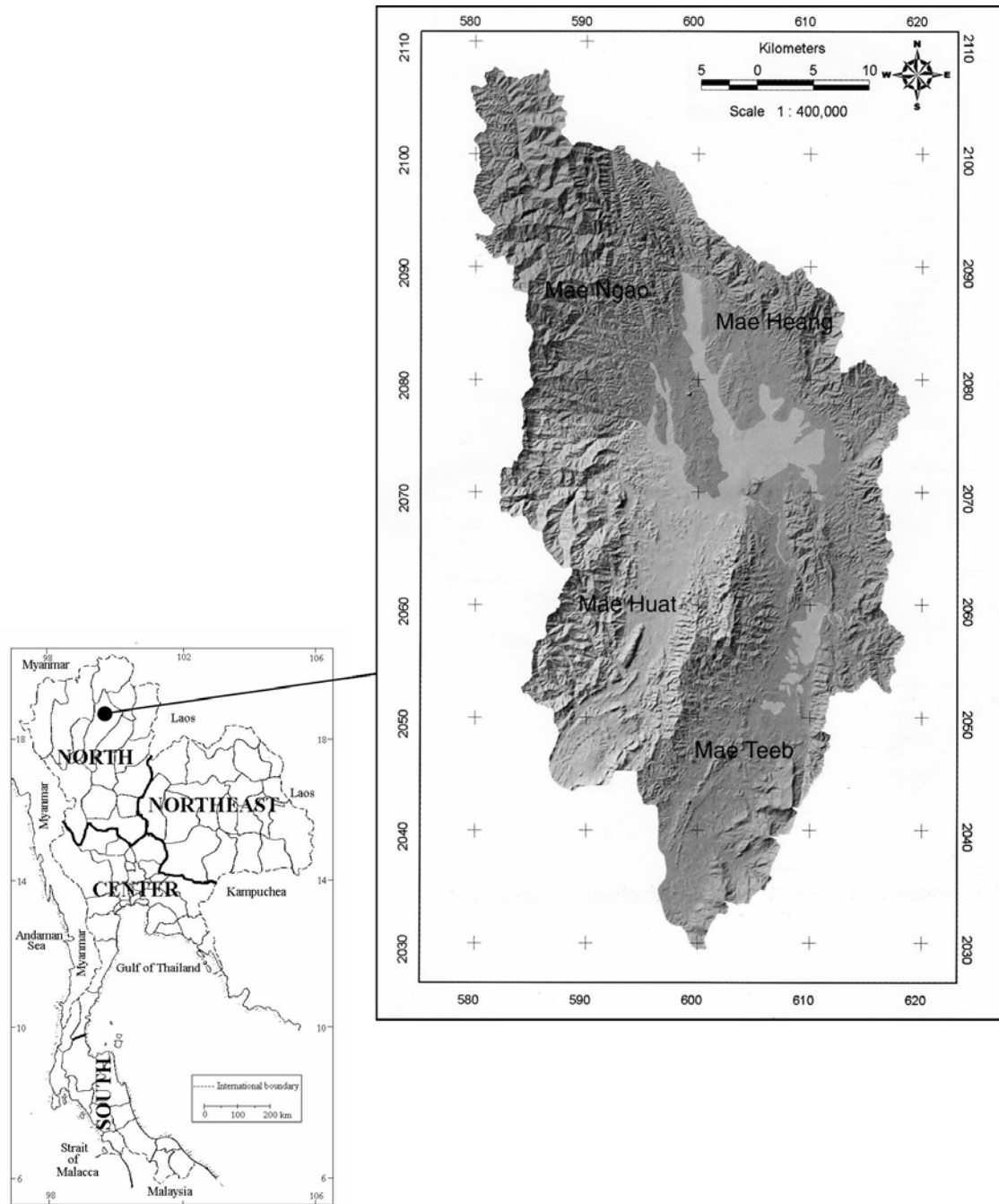


Figure 1. Map of Thailand (left) and a relief map of the Ngao Demonstration Forest (NDF).

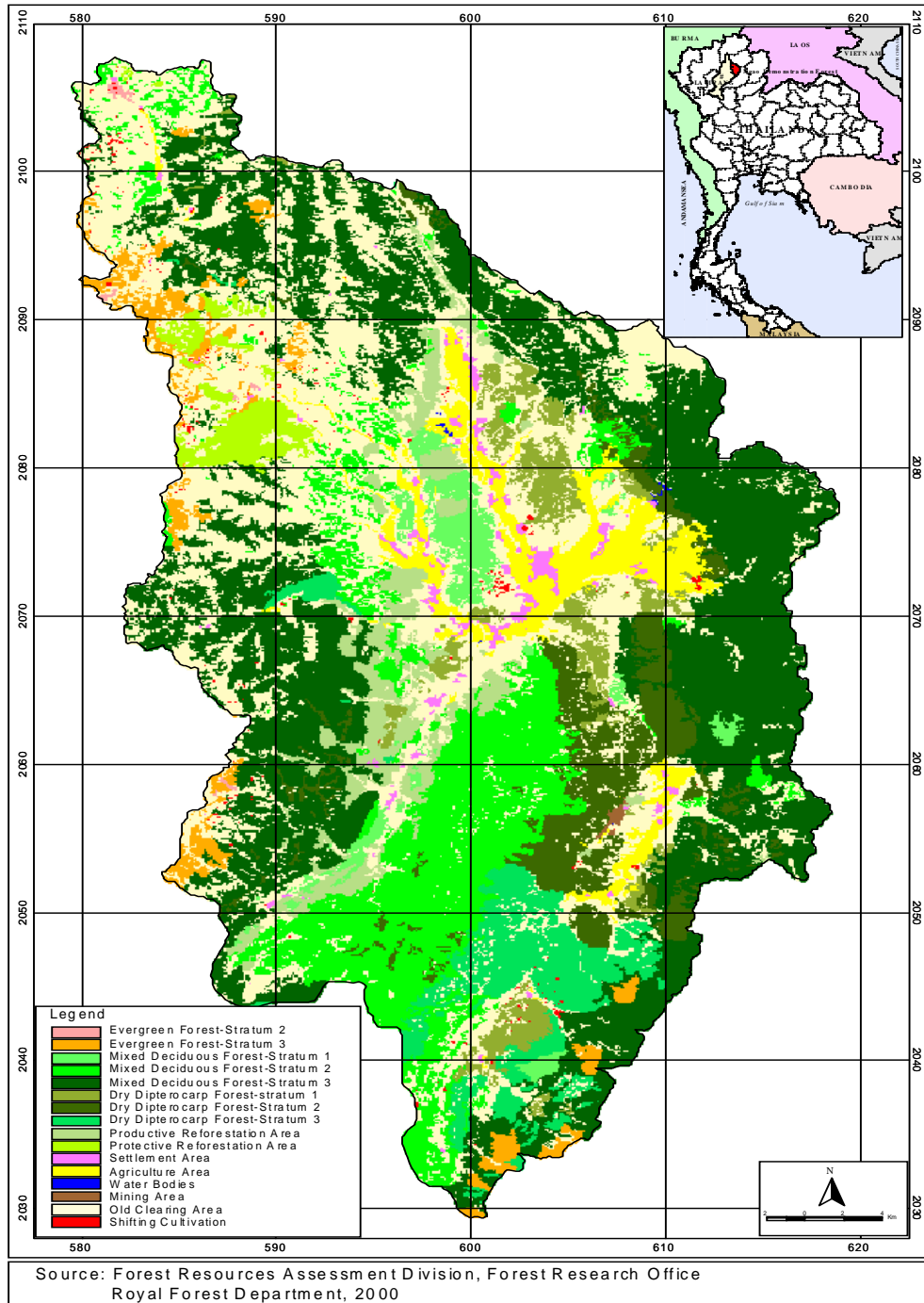


Figure 2. Map of the Ngao Demonstration Forest showing the different forest/land use types.

The Ngao Demonstration Forest was established in 1961. It is the only Demonstration Forest in Thailand, and it has a long history of being the base for the introduction, testing and adaptation of new forest management techniques. The establishment of a Model Forest as part of the Demonstration Forest further expanded this history.

The Ngao Model Forest activities are additional to those of the demonstration Forest. It does not override any existing legislation or administrative frameworks. Instead it provides a forum within which the partners undertake collaborative projects that address their broad range of forest based needs and values. These projects are also expected to play a key role in supporting the development of new forest policies at the national level.

The Ngao Model Forest covers an area rich in biodiversity and includes two national parks (Figure 2). The existing resources exhibit a wide range of conditions from highly degraded sites to remote and fairly undisturbed areas. In addition, traditional farming systems practiced by small landowners have created a complex mosaic of conditions, reflecting difficult economic, social and environmental conditions. The following table summarizes the current land use in the project area (Table 1). The government (public) owns most (99.8%) of the forest areas in Thailand and in the Ngao MF.

Table 1. Landuse in the Ngao Model Forest. These data are from the ITTO pre-project PPD 5/99 Rev. 1 (F) report.

<i>Land use</i>	<i>Area</i>	
	(ha)	(%)
Forest Area		
Evergreen Forest	4,172.13	2.38
Mixed Deciduous Forest	78,082.92	44.58
Dry Dipterocarp Forest	24,222.51	13.83
Productive plantation	7,061.67	4.03
Protective Plantation	2,548.89	1.46
Total forest area	116,088.12	66.28
Non-Forest Area		
Settlement Area	4,724.85	0.98
Agriculture Area	8,095.32	4.62
Old Clearings	48,868.92	27.90
Deforested Area (1989-93)	203.85	0.12
Water Bodies	49.86	0.03
Mining Area	128.52	0.07
Total non-forest area	62,071.32	33.72
TOTAL	175,159.44	100.00

2.3 Problems Being Addressed

The main issues being addressed in the Ngao Model Forest include:

1. Encroachment of forest lands
2. Illegal logging
3. Over-exploitation or extensive use of non-timber forest products (NTFP)
4. Conflicts in resource use and allocation between forest managers and local villages
5. Forest degradation
6. Forest fires
7. Water supply pollution and shortage
8. Low household income

Thus, the overall goal of the NMF is to implement project activities (e.g., partnership development, capacity building, livelihood improvement, community forest development, forest resource management, coordination and communication and networking, and awareness campaigns) that will:

1. Make the Ngao forests fruitful and healthy places for various flora and fauna to flourish.
2. Lead to clean water resources, free from chemicals, for household use and consumption, and for agriculture, all year round.
3. Bring about better cooperation among all relevant groups in recovering, conserving and using the Ngao forests.
4. Enable the people to use the forests sustainably and in harmony.

The intended situation when the various project activities are successfully implemented (or qualitative indicators of successes) in the NMF include:

1. Increased awareness and local participation in forest conservation
2. Better attitude towards conservation and forest officers
3. Better practices in resources management
4. Improved measures for water and soil conservation
5. Expansion of community forests and networking
6. Increased forest rehabilitation and plantations
7. Increased local household income

3 Model Forest Activities

3.1 Overview

The NMFA activities are funded largely from various international donors, including the International Tropical Timber Organization (ITTO), Government of Japan (GOJ), Government of Canada (GOC), and USDA Forest Service. Recently several local donors have emerged, including the BAAC, SAO and industry organizations. The NMFA activities are described chronologically by source of funding and support.

3.2 ITTO (2000-2002)

The following projects were supported by the ITTO in 2000-2002 in the NMF:

1. **ITTO Pre-Project PPD 5/99 Rev. 1 (F)** “Development of a model forest project for sustainable forest management in Thailand” (February – November 2000): This Project collected information and prepared a work plan that included a project proposal for development of a Sustainable Management Model forest in Thailand. The project was supported by a grant from the International Tropical Timber Organization (ITTO) and International Model Forest Network Secretariat (IMFNS). The Forestry Technical Office of the RFD took responsibility for this project over a period of 10 months starting from February until November 2000. The project activities included make a database of forest resources using the Geographic Information System (GIS), conducting a forest inventory, and a socio-economic survey of the local people who rely on the forest resources.
2. **ITTO Project PD 2/99 Rev. 2 (F)**: “Preparatory Studies to Install a Continuous Monitoring System for the Sustainable Management of Thailand’s Forest Resources” (2000-2002): Ngao MF was used as a pilot area for the development and testing of national forest resources monitoring procedures. A set of permanent plots were established throughout the MF on a systematic 1.5 km x 1.5 km grid. These plots could form potential baseline information for the monitoring of the NMF resources and activities.

3.3 Government of Japan (2000-2003) (Model Forest pilot)

In 2000, the Ngao Demonstration Forest in Thailand, was selected by the Thailand Royal Forest Department (RFD) as the site to pilot the feasibility of the Model Forest Approach. The objective was to develop Ngao Demonstration Forest as the first Model Forest for sustainable forest management in Thailand. The fundamental attributes considered in the selection were:

- Partnerships from different agencies including government organizations (GO), non-governmental organizations (NGO), and local stakeholders (48,000 + persons, 5,170 households, 62 Villages, in 2000)
- Commitment to SFM
- Ngao River watershed within 175,159 hectares of high biodiversity
- Activities reflect local and national level
- Good governance and constructive work
- Share knowledge and experience

The pilot stage of the Model Forest approach was planned to be three years starting from 2000 to January 2003, and was extended to September 2004. This pilot project was supported with a grant from the Government of Japan (GOJ) with the FAO acting as the executing agency. The title of the project was “Regional Project on Assistance for the Implementation of the Model Forest Approach for Sustainable Forest Management in the Asia-Pacific region” (GCP/RAS/177/JPN) (February 2000 – January 2003).

This pilot focused on providing knowledge and understanding of the Model Forest by the local people, and to build networks to develop and support sustainable forest resources management. It involved the following activities:

1. Promote the principles of Model Forests for SFM.
2. Promote public awareness of conservation.
3. Partnership development (formation of the NMFA).
4. Training and study visits.
5. Promote and demonstrate “best practices” for utilization of natural resources for SFM.
6. Seedling production.
7. Technical research and development.
8. Publications.
9. Model forest workshops.

These activities are described in detail as follows:

1. Promoting the principles of Model Forest for Sustainable Forest Management
 - a) Produced and distributed a document titled “Model Forest Development Guide”.
 - b) Conducted a National Model Forest workshop.
 - c) Prepared a Poster of the Model Forest.
 - d) Distributed leaflets titled “Ngao : Model Forest for Sustainable Forest Management”.
2. Promote public awareness of conservation
 - a) Met with local people to discuss problems related to forest conservation and livelihood in the area.
 - b) Conducted youth education programs, such as the Camp of Natural Resources Conservation.
 - c) Conducted training of local people on conservation and forest management.
 - d) Conducted other activities on tree and forest conservation.
3. Partnership Development
 - a) Visits to target groups and potential stakeholders.
 - b) Meetings to develop partnership group.
 - c) Set up the Ngao Model Forest Interim Committee in October 2001.
 - d) Ngao Model Forest Association was established and legally registered on October 25, 2002 with 24 members. There were 15 committee members.
 - e) Meetings of the Ngao Model Forest Committee and stakeholders.
 - f) Identification of stakeholders: National Inception Workshop November 22-24, 2002
4. Training and study visits
 - a) Mr. Surapong Chaweeapak attended the Practical Case Study on Sustainable Forest Management Meeting in Japan; Mr.Thunnarint Na Nakorn attended the Community Level Criteria and Indicator Meeting in Nepal; Mr. Pulsathit Wongsawat and Mr.Boonyarith Suphaphol attended the Conflict Resolution in Forest Resource Management Meeting at RECOFTC, Thailand; Mr.Sumai Maimun attended the Facilitation Skills for Community Forestry at RECOFTC, Thailand;

and Mr. Suphachai Nuchit attended the Community-based Tourism for Conservation and Development at RECOFTC, Thailand.

- b) The NMFA Committee members, 10 representatives from Sub-district Administration and Chiefs of Villages visited the Nursery of Bamboo and Herb Management and Utilization at Prachinburi Province, Chachoengsao Province, Kanchanaburi Province and Angthong Province.
- c) The NMFA Committee and related agencies visited some successful NGOs. They also visited the strong communities that play an important role in development and conservation of forests in Nan Province and Phrae Province.
- d) Mr. Tawee Srithep and Mr. Boonmee Kamton, the representatives of farmers, attended a rattan training course on production of rattan culms.

5. Promotion and demonstration of the utilization of natural resources for sustainable management

- a) Set up demonstrations of sustainable bamboo management at Huay Mae Hin forest.
- b) Established a demonstration plot of economic bamboo.
- c) Established a demonstration plot of herbs and native bamboo.

6. Seedling distribution

- a) Built a nursery of size 8 m x 12 m.
- b) Produced and distributed seedlings.

7. Technical Research and Development

- a) A national set of C&I with 7 Criteria and 67 Indicators was adopted by Royal Forest Department (February 2002). National level criteria (7) were adopted as a frame work for Ngao MF by Ngao MF Project Committee (July 2001). An initial set of indicators were gathered through field visits by the C&I team and at a workshop (October 2001). After refinement and screening process, 7 criteria and 61 indicators were developed for NMF. The final set of C&I for Ngao MF, consisting of 7 criteria and 59 indicators, was adopted in consultation with stake holders (March 2002).
- b) There were technical studies on the culture of some edible insects, and the cultivation and growth and yield of bamboo (*Dendrocalamus strictus*) in a natural environment. This activity was supported by a grant from the USDA Forest Service.

8. Publications

- a) Model Forest Development Guide
- b) Economic utilization of Raintree (*Samanea saman* (Jacq.) Merr.) in Ngao Model Forest
- c) Bamboo cultivation
- d) Manual of produce the bamboo product and bamboo charcoal
- e) Planting and Utilizing the Paper mulberry (*Broussonetia papyrifera* (L.) L'Herit) in Ngao Model Forest
- f) Brochures of Model Forest for Sustainable forest management
- g) Bamboo Poster for promote the planting and utilizing the bamboo
- h) Ngao Model Forest Newsletter

9. Model Forest workshops

a) Two national level workshops were held: (1) National Model Forest workshop and a workshop titled “Development of Local C&I for SFM for Ngao Model Forest”.

b) At the regional level:

- NMFA representatives attended the Regional Model Forest Workshop on Monitoring (Linnan-China/ Lampang-Thailand/ Pyay-Burma/ Tacloban – Philippine).
- NMFA nominated two forest technical officers (Mr. Surapong Chaweepak and Mr. Kunawut Langkarnsith) and representatives of Bamboo Industrial Entrepreneur to attend the Best Practices for Bamboo, Hickory and Ecotourism Development Meeting in Lin’an , China.
- NMFA representatives participated in the Field/Model Forest Level C&I for Sustainable Forest Management Workshop in China.
- NMFA representatives participated the Forestry, Legislation and Practices and their Impacts on Sustainable Forest Management on Model Forest Approach Workshop at Philippines

c) At the international level, NMFA representatives participated in the following:

- The 3rd International Workshop on Model Forest for Field-Level Application of Sustainable Forest Management in Japan.
- The International Training Workshop on Sustainable Bamboo Management and Processing Techniques for Small-size Bamboo Enterprise at China.
- The 4th International Workshop on Model Forest for Field-Level Application of Sustainable Forest Management in Japan.

4. Collected and reviewed documents related to forest policy. The review was done by Mr. Thanapol Saranak, Forestry Administrative Officer, Office of Natural Resources Conservation).

3.4 Government of Canada 2003-2004

A summary of activities undertaken from February 2003 until September 2004, supported by a grant from the Government of Canada (GOC) is presented below. These activities were conducted under the “Project for the Preparation for the Establishment of a Regional Model Forest Centre/ Network for the Asia - Pacific Region (GCP/RAS/195/CAN) Bridging Initiative Phase (February 2003 – January 2004)”. The FAO, Asia-Pacific Regional Office was the executing agency for this project. The project aimed to continue to strengthen the Model Forests that were developed in the Asia – Pacific Region and building the data center of Model Forest in Asia – Pacific region, to facilitate, exchange knowledge and experience and also support the regional countries who applied the Model Forest Approach to promote sustainable forest conservation and management. The project started from February 2003 until January 2004, and was extend to September 2004.

The following activities were implemented:

1. Consultation on Proposed Establishment of Regional Model Forest Centre for Asia-Pacific Meeting by collaborative of FAO and IMFNS at Hilton Hua Hin Spa & Resort Hotel, Thailand.

2. Regional Workshop/ Consultation on Monitoring and Evaluation (M&E) System for Model Forest/ Model Forest Networking for Asia-Pacific for prepared to logic model evaluation plan.

3.5 IDRC/IMFNS and RECOFTC Research Support Grant Agreement (April 2003 – June 2004)

A Research Support Grant Agreement between RECOFTC and IDRC/IMFNS supported implementation of project activities in NMF starting April 2003 until June 2004. RECOFTC was the coordinating unit. Activities 1-7 were implemented by Wild Fauna and Flora Protection Division of DNP, and Activity 8 was implemented by RECOFTC.

Activity 1: Strengthening partnership group of Ngao Model Forest

The project realized that stakeholders meetings and exchanges are very important for Model Forest partnership development. A number of meetings helped enhance interaction and communication amongst partners. As a result, information and experiences concerning forest resource management were shared. An improvement in relations between local people and government officers was noticed and it resulted in an increase in local people's participation in the Ngao Model Forest project.

Activity 2: Promote awareness and participation among all stakeholders of the Ngao Model Forest

Different campaigns including sign board installation, poster, brochure and leaflet distribution, study visits, youth education programs, and tree planting events were organized to promote awareness and local participation in forest conservation. The results from these activities made people more aware of forest values, and two schools had integrated the community forest concept into their educational programs.

Activity 3: Additional support for maintenance and management of bamboo demonstration plot

The project established a demonstration plot on bamboo forest management (2.4 ha) in Mae Haeng village. The bamboo species were *Dendrocalamus membranaceus*, *Thyrsostachys siamensis* and *Dendrocalamus asper*. The plot in Mae Haeng village demonstrated to local people how to maintain and harvest bamboo shoots and culms for subsistence and commercial uses. Local people currently use the plot as a source of bamboo seedlings for their private bamboo plantations.

Activity 4: Extension of collaborative management of forest resources

Community forests were recognized by the project as an effective collaborative forest management tool. A community forest demonstration site was established in Huai Mae Hin area, the pilot area for sustainable collaborative management of the Prao Hua Tung village, to raise awareness among local people and show effective operations of community forest management. The operations include the formation of community forestry committee, implementation of forest maintenance, forest patrolling, and developing a guide for forest management.

It was observed by the project that people have increased their awareness and have participated in forestry activities more. The concept of community forestry has been extended to neighbouring communities. Support was also provided for the development of the Rong Ta and Pun Pattan community forests.

Activity 5: Propagation techniques and seedling production to support bamboo cultivation

The project organized trainings and study tour programs on bamboo cultivation techniques for local stakeholders. The techniques included bamboo propagation and nursery establishment. The purposes of this training were to enhance local people's knowledge on bamboo forest conservation, and to improve the production of private bamboo forest cultivation. Target groups were local people and students.

Activity 6: Facilitating implementation of Model Forest Project in Thailand through providing stationary and supplies, and travel assistance for MF development and monitoring

The project provided materials and supplies to Ngao Model Forest field office and support partners to participate in different workshops or meetings.

Activity 7: Translation of manual for bamboo sticks and charcoal production to English

The Bamboo Stick and Charcoal Production handbook was translated into English and made available for the public.

Activity 8: Strengthening Partnership and Building Capacity in Ngao Model Forest

Three workshops were organized at village level to allow representatives from key stakeholder groups; community forestry groups and community leaders, Sub-district administrative organizations, local schools, youth groups, forest products business sector, religious institutes, government agencies, and Ngao Model Forest Association to share and exchange views on Ngao Model Forest Management.

The results from these workshops made people realize that there was a need to have a strategic plan for Ngao Model Forest Management. Representatives from the eight main groups mentioned earlier gathered and formed an alliance of Ngao Model Forest Conservation. Through the participatory process, consultation, and public hearing, the alliance developed a five-year Sustainable Management Strategy of Ngao Model Forest. It was approved by the head of Ngao district office in March 2005, and was distributed widely to the public.

3.6 IDRC/IMFNS and DNP Research Support Grant Agreement (January – December 2006)

The International Development Research Centre (IDRC) on behalf of the International Model Forest Network Secretariat (IMFNS) approved a research support grant to the DNP to undertake a project titled "Ngao Model Forest 2006 Work Program" starting from 1 January to 31 December 2006. The specific objective of this research support grant was to facilitate carrying out four of the nine areas of work in the 2006 Ngao Model Forest Work Program; namely (1) strengthening the NMFA management and administration capacity, (2) extension of awareness activities, (3) providing supports to facilitate better implementation of collaborative management, and (4) training local stakeholders on the production of good gene teak seedling.

To accomplish the project objective, the Ministry of Natural Resources and Environment (MONRE) approved the nomination of Mrs. Rungnapar Pattanaviboon as National Project Counterpart. Mrs.

Phusin Ketanond and Mrs. Walaiporn Satitviboon have been nominated by DNP as the project manager and chief financial officer of the Ngao Model Forest Project, respectively.

The following activities were implemented:

Activity 1: Strengthening the Ngao Model Forest Association management and administration capacity

1. Three NMFA meetings were held during January – October 2006 to monitor the implementation of model forest activities and discuss future plans as follows:
 - NMFA meeting on January 31, 2006, held in cooperation with the Kasetsart University Faculty of Forestry at Pong Tao Sub-district Administrative Organization (SAO), Ngao, Lampang. The participants were representatives of local SAOs, schools, government units and communities, approximately 60 persons in total.
 - NMFA meeting on June 2, 2006, held at the Teak Improvement Center, Ngao, Lampang. Participants were NMFA committee members and key community leaders, about 17 in total.
 - A general assembly meeting of the NMFA was held on October 25, 2006 at the Luang Nua Sub-district Administrative Office, NMFA, to report the past year activities, share experiences with local stakeholders and the public, and identify future activities. There were 46 participants representing 40 partners. During the meeting a new 15-member MFA committee was elected. The new committee is chaired by former president, Mr. Ubon Jarig.
2. A two-day workshop on “Project design and proposal formulation” was held in cooperation with Yonok University at Ban Pong Sub-district Administrative Office, Ngao MF, on 27-28 July 2006. The workshop objective was to improve the MFA partners’ knowledge and skills in the project design and project proposal preparation. There were 55 participants, representing local SAOs, communities, community forests, schools and forestry units. The workshop was divided into two parts: a series of lectures and a practice session. The lectures included project document preparation, including project design, format and components of project proposal, preparation of project proposal based on the requirement of SAO and UNDP. For the practice session, participants practiced problem analysis and project proposal formulation.
3. A two-day workshop on “Fund raising and resource mobilization” was held at Pong Tao Sub-district Administrative Office, on 25-26 September 2006. The workshop was aimed at improving skills and knowledge of the partners in resource mobilization and fund raising to ensure long-term financial sustainability of Ngao MF. There were 57 participants representing local SAOs, communities, schools, forestry units, Ngao district office, RECOFTC and Faculty of Forestry, Kasetsart University. The workshop built upon the skills and knowledge generated from the previous regional MF workshop “Towards Financial Sustainability: Skills for Leveraging Resources” held in Madiun, Indonesia during December 6-10, 2004 and delivered by MF staff attended the mention workshop.
4. In cooperation with RECOFTC, a two-day workshop on “Review and development of Ngao MF strategic plan 2005-2010” was held at Ban Pong Sub-district Administrative Office, on November 17-18, 2006. The main objective was to review Ngao MF strategic plan 2005-2010 and develop an

action plan for year 2007. There were 47 participants representing MFA, partners and other stakeholder groups.

Activity 2: Extension of awareness activities

1. A number of visits and informal meetings were made by the MF staff to schools, communities and Ngao MF partners, to create good relationship with the local groups and promote their participation.
2. To promote awareness and local participation in forest and environmental rehabilitation, a tree-planting event was held on National Arbor Day, 12 May 2006, by MFA in cooperation with the Lampang and local forestry units, local SAOs and Ngao district office. There were about 600 participants, including government officers, students and local villagers. Approximately, 5,000 seedlings were planted in public areas.
3. In cooperation with Tham Pha Tai National Park and local schools, a 3-day youth camp was held at Tham Pha Tai National Park, between 29 September – 1 October 2006. The objective of the camp was to promote awareness and participation among local youth. The participants were secondary school students from 8 schools located in eight sub-districts of Ngao. There were 63 participants in total. The camp was divided into four sessions: lectures, field study, group discussion and camp fire activity. Subjects presented included (1) general information of Tham Pha Tai National Park, (2) biodiversity (3) value and importance of forest, (4) agro-forestry, (5) roles in youth and natural resource and environmental conservation, and (6) local participation in forest and environmental conservation activities.

Activity 3: Providing supports to facilitate better implementation of collaborative management

1. To increase capacity and effectiveness of collaborative management of forest, the MONRE staff made regular visits and meetings with communities and stakeholders during January – November 2006 to promote participatory appreciation and provide guidance concerning sustainable forest management and organization administration.
2. A two-day workshop on “Community forest network development” was held on 17-18 July 2006 at Ban Rong Sub-district Administrative Organization (SAO), Ngao District Lampang Province. Participants were representatives from SAOs, community forests, forest units and local schools located in NMFA. There were 99 participants in total. The workshop included presentations and brain storming through group discussions. From the workshop it was found that there were 41 community forests in the area and being management by 40 communities located in 10 sub-districts in the NMFA. To the local communities, these community forests were the source of water supply, food, fuel, and construction material. In term of management, most community forests adopt village committees as their forest committees. Activities under taken in these forest areas included forest patrol, fire break construction, enrichment planting and check dam construction. However, illegal logging and over harvesting of minor forest products continued in many areas. This was

partly because most communities have not set regulations to control the use and management of forests and their resources.

Activity 4: Training local stakeholders on the production of good gene teak seedling

To encourage using high quality genetic seedling for teak planting, two one-day training sessions on “Propagation by rooted cutting of high genetics quality of teak (*Tectona grandis* Linn.F.)” were held on 2nd and 3rd August 2006 at the Teak Improvement Centre (TIC), Ngao District, Lampang Province. Participants were local people from communities located in Ngao MF. The total number of participants for the training course 1st (August 2, 2006) and course 2nd (August 3, 2006) were 28 and 27, respectively. The training was divided into 2 sections; theory and lecture and a practice section.

The lectures included (1) teak plus tree selection, (2) principles of plant propagation in general and focus on factors affecting rooted cutting of teak, (3) stock plant management (i.e., how to rejuvenate cutting material and manage teak hedge orchard to obtain suitable cutting materials, and (4) cutting procedures and environmental control during the cutting process. The participants were shown and practiced plus tree selection and how to rejuvenate cuttings by budding technique. They built a propagator and practiced the cutting processes.

These training sessions have increased awareness of local villagers and officials in using high quality genetic seedling for teak planting. The Chief of Ngao District paid special attention to the training program since many farmer groups of Ngao earned their living through producing and selling teak seedlings. Ngao District Office has later set a plan to extend the training program to cover all the 10 sub-districts of Ngao.

3.7 CMFN and NMFA Grant Agreement (March 2008-March 2009)

The Canadian Model Forest Network (CMFN) approved a research support grant to the NMFA to undertake the research support project titled “Supporting Sustainable Forest Management and Action Research in the Ngao Model Forest” starting from March 3, 2008 to March 31, 2009. The specific objective of this research support grant was to facilitate carrying out five activities under the 2008-2009 Ngao Model Forest Work Program: (1) facilitating Ngao MF coordination and implementation, (2) extension of awareness activities, (3) supports to community forests and network development, (4) demonstration factory for value-added bamboo products, and (5) capacity building for local economic development.

To accomplish the project objective, the partners of Ngao Model Forest approved the nomination of Mr. Ubol Jarig (president of Ngao Model Forest Association) and Mr. Nipon Komonwatjana (chief financial officer of Ngao Model Forest Association), as the project manager and chief financial officer of the 2008-2009 work program, respectively.

The following activities were implemented:

Activity 1: Facilitating Ngao MF coordination and implementation

1. Three NMFA meetings were held during November 2008 – March 2009 to monitor the implementation of model forest activities and discuss future plans as follows:
 - NMFA meeting on November 10, 2008, held in cooperation with local government organizations, at Lampang Primary Education Service Office 1, Ngao, Lampang. The participants were NMFA committee members and key community leaders, representing local SAOs, schools, government units and communities.
 - NMFA meeting on January 23, 2009, held at Na Kae Sub-district Administration Office, Ngao, Lampang. Participants were MFA committee members and key community leaders.
 - A general assembly of the NMFA was held on March 27, 2006 at the Luang Nua Sub-district Administrative Office, NMFA, to present stakeholders and public the annual reports and share information and experiences related to MF and sustainable management.
2. The IMFN brochure was translated into Thai, and 5,000 copies were printed and distributed to Ngao MF partners and public to promote the MF approach. In addition, 2,000 copies NMFA leaflets were prepared and distributed to stakeholders and visitors to promote NMFA and MF implementation.
3. The NMFA committee members participated in the Forests and People Forums of Lampang Annual Festival, held on December 29, 2008 to share experienced related to collaborative forest management and to promote MF approach.
4. The NMFA supported conservation events of Ngao District office through MF exhibition, presenting information on MF approach, IMFN, NMFA, and Ngao MF and its success.
5. NMFA and partners facilitated sharing experiences with Cambodia senior forest officers visiting Ngao MF on February 3, 2009. Their main objective was to visit Huai Mae Hin Forest, the demonstration site of collaborative management of wild bamboo, and share experiences related to partnership in support of sustainable forest management.
6. The NMFA distributed materials and participated in public events to help partners, stakeholders and public to have a better understanding of MF Approach and roles of IMFN and MFA in supporting sustainable development.
7. Consultative meetings were held to encourage active involvement of the partners and stakeholders in MF planning and implementation. Through meetings, four main activity programs were prioritized for the next proposal, including (1) strengthen NMFA and Ngao watershed network, (2) rehabilitation of community forests, (3) development of sustainable agricultural systems/alternative livelihoods and (4) networking.
8. Financial support was among their main concerns since government has limited budget. Project proposals were later formulated and submitted to donors, such as UNDP (small grant program) and SAOs (Sub-district administration Organization) for funding support.

Activity 2: Extension of awareness activities

1. A number of visits and informal meetings were made by the MFA staff to schools, communities and NMFA partners, to create good relationship with the local groups and promote their participation.

2. To promote awareness and local participation in forest and environmental rehabilitation, tree-planting events were held on special occasions, such as National Tree Planting Day, Buddhist Days, King's birthday and Queen's birthday, by MFA in cooperation with local forestry units, local SAOs, Ngao district office and local communities and schools. Approximately, 12,500 seedlings were planted in public areas.
3. In cooperation with Ngao district office, forestry units and local schools, a 3-day youth camp was held at Community Forest Development Centre 3 (Lampang) , Ngao, Lampang, between 18-20 February 2006. The objective of the camp was to promote awareness and participation among local youth. The participants were secondary school students from 10 schools located in 9 sub-districts of Ngao. There were 60 participants. The camp was divided into four sessions: lectures, field study, group discussion and camp fire activity. Subjects presented included (1) value and importance of forest, (2) current forest situation in Thailand, (3) biodiversity and conservation, (4) sustainable management (5) forest rehabilitation, and (6) roles of youth in forest and environmental conservation. In addition to practicing forest nursery and identify edible plants around the training centre, participants visited Jae Sorn National Park and Siam Cement Factory, located in Jae Hom district, Lampang, to experience nature conservation and landscape management for minimizing industry pollutions.

Activity 3: Support to community forests and network development

1. To increase capacity and effectiveness of community forest management, MFA committee and partners made regular visits and meetings with forest committees and stakeholders to promote participatory appreciation and provide guidance concerning sustainable forest management and organization administration.
2. In consultation with MF partners, eight active community forests in eight sub-districts of Ngao, representing different forest conditions, were set as priority for financial support. These forests were (1) Ban Nong Hiang, (2) Ban Huai Tak, (3) Ban Had Chieo, (4) Ban Nam Long, (5) Ban Hang Nuea, (6) Ban Dong, (7) Ban Pan Tai (8) Ban Mae Ngao Tai and Ban Pong. Technical and financial support and capacity building were provided to facilitate development and implementation of the community forest activities in these areas. Protection and rehabilitation activities were carried out by committee and stakeholders of the community forests, including (1) the erection of boundary signs, community forest and regulation signboards, (2) regular forest patrols to prevent illegal activities, (3) enrichment plantings to enhance biodiversity and future production, (4) check dam construction for soil and water conservation and (5) fire break establishment forest fire breaks.
3. Approximately, 30,000 seedlings were raised and distributed to communities to plant on community forests and public areas. Most species were native and multi-purpose for both human and wildlife, such as *Tectona grandis*, *Cassia fistula*, *Syzygium cumini*, *Garcinia nigrolineata*, *Ficus callosa*, *Xylia kerrii*, *Pterocarpus macrocrpus*, *Azelia xylocarpa*, *Thyrsostachys siamensis* and *Dendrocalamus membranaceous*.
4. A community forest workshop was held to update information and encourage sharing knowledge and experiences related to community forests of Ngao MF. The participants were committees and stakeholders of community forests and MF activity leaders, approximately 100 in total. The main

discussion issues were strategies for enhancing forest conditions and products, management plans, administrative organizations, fund raising and successes of Huai Mae Hin community forest – the demonstration site of collaborative management of wild bamboo. Following the workshop, several communities organized trips to share experiences with the management team of Huai Mae Hin forest. The workshop drew attention of communities to community forest development and implementation towards sustainable management.

Activity 4: Demonstration factory for value-added bamboo products

A demonstration (community-scale) factory for bamboo stick production was initiated at Ban Hua Tung, as part of collaborative management of bamboo forest in Huai Mae Hin Forest. Equipment for processing bamboo sticks was provided to the community, including saw, circular-saw cutting machine, stick-shaping machine, stick-finishing machine and electric carpenter's plane.

Technical support and capacity building for factory management towards zero-waste policy and equal benefit sharing was introduced. In addition, techniques for producing high-quality bamboo charcoal with simple oven, known as "Iwate Kiln", from recycled petroleum containers were also introduced by MF partners. Wood vinegar, a by-product from bamboo charcoal production, can be applied to orchards and organic farms to eliminate pests, improve soil quality and accelerate growth of trees and fruits.

The factory has not only helped to raise local people income through value-added products, but also promote efficient utilization of forest resources. It is also a part of learning site for sharing knowledge and experiences with partners and public related to collaborative management starting from collaborative management of bamboo forest to efficient utilization & value-added creation and operating a factory for the benefit of community.

Activity 5: Capacity building for local economic development

1. In consultation with partners, Ngao MF Association conducted a pre-survey to visit organizations well known in economic development, including local communities, local economic groups and development projects. Information on raw materials, production processes and marketing opportunities were shared during these visits.
2. Training on "Medicinal Plant Product Processing" was held at Hin Sorn Royal Initiative Study Development Centre, Chachoengsao Province in central Thailand. The participants were members of "Woman Group - Ban Pong community", a Ngao MF partner, a total of 10. The training included lectures on general information of medicinal plants and products, field study of medicinal plants in collection plots and forests, and practices processing medicinal plant products with simple facilities that available and affordable elsewhere. The medicinal plant products produced at the training were basic materials for daily use, including liquid soap, dish detergent, shampoo, ointment and balm.
3. Training on "Local Medicinal Plant Products" was held at "Medicinal Plant Processing Group", a member of NMFA, located in Ban Rong sub-district, Ngao MF. The participants were local villagers

of Ngao MF, with 20 in total. At the training, participants practiced processing herbal oils (patchouli oil and *Zingiber montanum* pain-relief-oil) and herbal instance teas (*Carthamus tinctorius* tea, *Kaempferia parviflora* tea, *Curcuma Zanthorrhiza* tea) and herbal snack (dried ginger). Marketing strategies for herbal products were also introduced. The training helped local villagers not only reduce household expenditures but also increasing income. The trained participants and partners were able to produce medicinal plant products for their own household uses and selling for income generation. Furthermore, the methodology in processing herbal products was applied to preserve several agricultural products. This helped to reduce waste during over supply period and create economic alternatives at the same time.

3.8 UNDP GEF Small Grants Programme 2010-2011

The UNDP provided support to the NMFA through its GEF (Global Environment Facility) Small Grants Programme for the period 2010-2011. The agreement was signed on 6 December 2010 under the project titled “developing Community Forest Model” THA/SGP1084/43/CORE/10/06.

The following activities were implemented under this project:

Activity 1. Strengthening NMF partnership

1. Consultative Meetings of MF Association and community forests stakeholders (3 meetings)
2. Multi-stakeholder forum (twice a year). These meetings increased understanding and brought cooperation of the MF by the government officials, NGOs, especially the sub-district administration officials, schools heads, non-formal education centre, a group of housewives, the Corrections Department, the Bank of Agriculture and Agricultural Cooperatives (BAAC).

Activity 2. Developing and rehabilitating NMFA community forests

1. Conducted inspection of forests to protect against fire, hunting and illegal harvesting of wood and bamboo (culms and shoots). There were four inspections per month by a group of 3-5 persons paid about \$3 per person. The villagers believed that this activity reduced illegal logging by 80%.
2. Constructed 300 semi-permanent and temporary check dams to store water and sediments. These dams increase soil moisture in the forest thereby protecting against fire and increasing regeneration, and preventing soil erosion. However, a tropical depression in 2011 (Nokten) destroyed about 60% of the dams.
3. Conducted traditional activities to protect the forest, including tying yellow ribbons of cloth around trees, and building joss (shrine) houses in the forest. From a stakeholder evaluation, there was general agreement among the stakeholders that maintaining these cultural activities contributed to forest conservation.
4. A youth camp of 60 persons was held in the Tham PHA Thai National Park within the NMF. From an evaluation, the participating youth said they gained awareness of forest conservation. Two youth groups were formed following this youth camp – the NMF Youth Group and the NMF Watershed Group.

5. A study tour was conducted inside the MF by the NMFA members, village representatives and Sub-district administration officials (a total of 100 persons). They visited demonstration check dams, bamboo management demonstration plot, and a food bank. The participants were enthusiastic and believed that ways could be found to improve community forests.
6. A two-day study tour was held outside the model forest in the neighboring Lampoon province by a group consisting of 6 persons per community forest in the NMF. The group visited check dams, a learning centre, a herb plating site (sufficiency economy demonstration), a community market and a demonstration of adding value to bamboo. One sub-district gave away part of its land to the community forest in their sub-district.
7. A temporary nursery was established and 20,000 seedlings were raised, of which 70% were bamboo and the remainder herbs and other edible plants. The villagers recognized the need to consult with the RFD for technical advice, and also that monocultures destroyed forests.
8. Established fire breaks, which reduced forest destruction by about 70%.
9. Prompted enrichment planting of bamboo in community forests, planting of trees along paddy field boundaries and planting rubber trees.
10. Lessons learned from this activity were that the budget to do activities was not sustainable and villagers, because of poverty, cannot participate in these activities without external budget support. There was also limited knowledge of some activities, such as building check dams.

Activity 3. Development of agricultural systems and alternative ways for livelihood

1. Promoted adding value to NTFP. For example, the villagers collected Indian goose berry, lychee and longan fruit from the forest to make juice.
2. Promoted agroforestry for forest conservation, whereby the NMFA officials collected agricultural information from other progressive networks to distribute to the NMF villages.
3. Exhibition & public forum participation

Activity 4. Disseminated information about the Model Forest

1. Produced leaflets and presented results of the GEF project.

3.9 The Bank of Agriculture and Agricultural Cooperatives 2010 – 2011

The BAAC was established by the Government of Thailand (GOT) in 1966 as a state enterprise under the jurisdiction of the Ministry of Finance. The BAAC's mission is to extend credit widely and directly to individual farmers as well as through farmer institutions. The Ngao branch of BAAC got interested in supporting the NMF and approved financial support.

The BAAC conducted the following activities in the NMF:

1. Established a nursery and encouraged villagers to raise 300,000 seedlings of bamboo. The bank bought the seedlings from the villagers to plant in the forest, and trained villages on seedling planting.

2. Contributed funding to build two semi-permanent check dams through a local participatory approach.
3. Established two learning centres on community forests, focusing on bamboo life cycle, bamboo management, biodiversity, check dam construction, and soil and water conservation.
4. Promoted more efficient charcoal production from bamboo.

4 Impact of the Model Forest

Establishment of the Model Forest in Ngao has had the following impacts in the Ngao community:

1. Several conservation network groups have been set up, such as the Youth Conservation Network and Bamboo Conservation Network.
2. The NMFA has become a focal point of forest conservation activities in the Ngao community, including community forests.
3. The NMFA has contributed to improved integration and coordination of conservation activities by the villagers, government officials, the SAO and other organizations. This means there is now less conflict among these groups.
4. The relationship between local people and government officials has improved as a result of various meetings and workshops, as well as the change in the attitude of the government officials from “command and control” mode of forest conservation to participatory forest conservation when dealing with the local people.
5. The NMFA has provided a unique opportunity for the government officials to learn skills and gain experience in participatory forest management and conservation.
6. The condition and quality of natural resources, including soil, water and forest resources, have improved. For example, based on anecdotal evidence, the villagers reported that the quantity of NTFP such as bamboo shoots, mushrooms, herbs and other edible plants has increased. This in turn means the villagers’ income has increased from the harvesting and sale of the NTFP, as has their health.
7. The villagers and conservation networks have accepted most of the management and use patterns introduced by the NMFA.
8. People are more aware of forest values, and the potential of forest to improve their livelihoods and health.
9. The NMFA contributed to the development of community forests in Ngao. The number of community forests increased from 14 prior to formation of the Model Forest to now 41. The NMFA acts as consultant to the community forests through activities such as selection of target area, holding meetings and workshops, capacity building through exchange of knowledge and pilot villages.
10. Local schools are integrating the concept of community forests into their educational programs.

5 Lessons Learned

The following major lessons have been learned from the NMF:

1. Community forests and conservation networks are an important tool for the Model Forest to achieve its strategic objectives of participatory sustainable forest management.
2. Model Forests can strengthen community forest organizations.
3. Natural resource conservation and improving the livelihoods of the people are not mutually exclusive; they need to work in tandem.
4. For Model Forests to succeed there is a need to mainstream the Model Forest activities to the routine activities of the stakeholders.
5. People can improve their livelihood and health through improved quality and abundance of natural resources, such as water and forests.
6. Public relations to raise awareness of conservation efforts is one of the most important activities of the Model Forest.
7. Sustainable funding can be achieved by seeking local sources of funding (such as central and local governments, industry organizations and banks), rather than relying only on international donors.

6 Recommendations

The following recommendations are suggested for the NMFA, to ensure success of the Model Forest. The NMFA should continue to:

1. Strengthen community forest leadership, including community forest leaders as well as the NMFA committee members). The leaders should understand community forest principles, lead the people, and practice good governance.
2. Raise awareness of the importance of forest conservation and networking among the people in Ngao, especially the youth.
3. Encourage the government officials to improve their skills and understanding of community forests concepts, so they can transfer the technology to the villagers.
4. Inform people about what and how they can access forest products and services, and have consensus on management plans, prior to establishment of new community forests.
5. Organize community forests based on common origin, culture and family ties. This way it is easier to achieve consensus and, therefore, better forest management.
6. Practice good governance in community forests.
7. Prepare mechanisms and tools to guide and monitor the Model Forest activities, such as strategic and implementation plans.
8. Encourage more networking and coordination of conservation activities.
9. Raise funds from central and local governments, rather than relying solely on international donors. This is important because of the increased costs for the MF coordination and facilitation activities, such as transportation and communication costs.
10. Seek technical support from the government officials.
11. Develop curriculums incorporating forest conservation in specific areas for local schools.
12. Establish regulations for using community forests through a participatory approach.
13. Undertake natural resource participatory forest and socio-economic monitoring to provide feedback on the performance of the NMFA in achieving its strategic objectives. For example, the NMFA could seek funds to adapt the methods developed under the ITTO Project PD2/99 Rev. 2 (F) (Section 3.2), or to develop new methods, to monitor forest biodiversity and condition in community forests.

14. Encourage the establishment of value-added factories on a cooperative basis, for more equitable distribution of benefits from the forest.

The NMFA should establish an identity, a symbol that it can be easily recognized. For example, the NMFA could adopt bamboo management as its strongest area to promote.