



มูลนิธิแม่ฟ้าหลวง ในพระบรมราชูปถัมภ์
Mae Fah Luang Foundation under Royal Patronage

Mae Fah Luang Development Manual

CULTIVATE LAND, CULTIVATE PEOPLE





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PREFACE

The Mae Fah Luang Foundation under Royal Patronage carries out reforestation programs to help restore the upland ecosystem and to maintain the purity of this important source of fresh water and fresh air. This is coupled with an effort to "cultivate people" who live in those ecosystems, to live well and with dignity without putting undue pressure on the forest.

Three booklets in the "Cultivate Land, Cultivate People" series are "Surveying the Forest" "Cultivating Sugar Palm in the Forest" and "Cultivation of Rattan in the 'Economic Forest.'"

The contents of this booklet have been derived and synthesized from the guidelines of the Princess Mother and ongoing development work at the Doi Tung Development Project initiated by HRH the Princess Mother since 1987. The Doi Tung Development Project is animated with the spirit of "helping people to help themselves" and "helping people live in harmony with the forest." Based on the sum of past experience of the Doi Tung Development Project, these lessons are drawn from the development principles first used here, that have since been applied elsewhere and are applicable to any number of different places and different circumstances.

The Doi Tung Development Project permanent reforestation project was started in 1988. This was followed two projects in nearby Thoet Thai Subdistrict in Mae Fah Luang District: the FTP 33 Enhanced Reforestation Project in Pang Mahan village started in 2005 with a program to study and develop tea oil (*Camellia oleifera*) and other oil-producing plants under the auspices of the Chaipattana Foundation, and a "forestation without planting" program

at Puna village in 2006. In accordance with a royal decree in 2009, the Mae Fah Luang Foundation extended its efforts to support development in Nan Province. These projects demonstrate that the principles behind "Cultivate Land, Cultivate People" program developed by the Mae Fah Luang Foundation can make a marked improvement in the quality of life for those who live with the forest, while also being beneficial to society, the economy and the environment as a model of sustainable development.

All the people involved in the preparation of this book, whether it be those engaged in fieldwork, agriculture experts, interviewees, analysts or the editors and proofreaders have carried out their respective tasks in the spirit of his Majesty the King, who described the role of a teacher, or in this case a transmitter of knowledge:

- 1) Teaching and transmitting knowledge should be carried out in a pure and principled way without the introduction of personal preference or prejudice
- 2) Teaching and transmitting knowledge should be thorough and done without fear that the student knows more or is more clever (Kanok Wongtrangan, Interview of June 12, 2010)

There are a few things to keep in mind while studying this book:

- 1) Firstly it is important to understand the principles of "Cultivate Land, Cultivate People" before getting into the "whys" and "wherefores" of specifics such as which forest to target or which plants are most suitable—details of which will be addressed later in other contexts. Rather this volume will serve as a compass pointing to what should be done, how it should be done, when it should be done and to what extent it should be done in order to be appropriate and correct. As for technical know-how in regards to raising seedlings, planting technique and looking after the plantations -- this can be garnered

from various sources above and beyond this volume, such as manuals for the cultivation of plants which are widely available in the market or available from government agencies, universities, and research institutes, not to mention the insights of local folk wisdom.

- 2) For an ideal learning experience, the reader should take the knowledge obtained from this book and apply it to real situations in a thorough and circumspect manner. Practical results, good and bad, provide excellent lessons on the path to improving the project you are working on.
- 3) If the reader should encounter difficulties in carrying out a project and cannot find a solution in the technical manuals, it is recommended that you carefully consider the facts of the situation in terms of social and geographic factors and seek a solution based on reason guided by what is best for the community as a whole.

Finally, when the principles and methods are in close accord, the people who carry out the project, and those who lend support to the community to do so, are useful role models in the art of development, something to be further addressed later in this volume.

For details on how to put together a development team, please consult the guidelines for development as presented in the Mae Fah Luang development texts.

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PEOPLE HUNGRY, FORESTS FADE

As evident in past decades, the policy of forcing people out of the forest, or moving those who live close to the forest to new locations, in order to protect the forest was not able to stem degradation of forests in a lasting way. This was due to failure to address the true root causes of the problem. People encroaching on the forest can be divided into two broad groups: 1) those who are well off but cut trees and exploit the forest for money, and 2) those who are needy and struggle in order to subsist and survive.

Thailand has no shortage of reforestation projects--there are new ones every year--but very few places see the forest fully restored, with trees instead continuing to be felled and devastation brought to neighboring lands that bear the brunt of the environmental damage. By now it should be obvious that it is simply not enough to ban activities in the forest, because people lacking a legitimate means to support themselves will do just about anything to survive.

When a forest is destroyed to make new farmland, it might create more agricultural area, but without adequate knowledge and insufficient capital to invest in irrigation, seeds and soil development, cultivation suffers as the land loses fertility and the process repeats itself, with people moving to a new forest for cultivation for as long as the soil remains fertile, and then moving on again, all in hope to survive. Thus, a necessary condition for taking care of the forest is to first take care of the people who live off the forest lands, to make sure they have enough to eat and live on. If that basic requirement is achieved, then the forest is free to flourish. People who depend on the health of the forest for their livelihood will cherish and take good care of the forest, creating a positive feedback cycle that enhances and protects the forest.

An example of the dynamic that leads to cutting trees and destroying the forest can be found in Chalermphrakiat district in Nan Province. Assuming the average family in the rural area has five members, and the average person consumes one kilogram of their staple food rice a day, that comes to almost 400 kilograms of rice per person per year. A family of five can be expected to consume up to 2,000 kilograms of rice per family per year, or if measured in terms of unhusked rice, they must produce 3,400 kilograms each year in order to feed themselves throughout the year. But due to the lack of irrigation and lack of knowledge. Their output is only 170 kilograms per rai (0.16 ha) . That means they would need at least 20 rai (3.2 ha) of land to grow enough rice to support a single family. As the land deteriorates, production drops and they must move on to a new location more fertile than the last. One family thus needs between 3 and 7 plots to support themselves, or an average of 5 plots per family amounting to 100 rai (16 ha) per family just to get by and meet their basic needs. Chalermphrakiat district has 1,273 households all of whom have faced this dilemma, which can be found repeated in all parts of Thailand, and has been this way for decades. Taking this into account, it is easy to see why the upstream forests of Thailand have been degraded and reduced so rapidly.

In addition to the loss of natural resources that are of value to the country, communities in these areas fall into a vicious cycle of debt and are taken advantage of by merchants. They are tricked into buying hybrid seeds and fertilizer and chemicals for weed control, the cost for which is deducted directly from the production output which they are obliged to sell to the merchant who makes the loans. What's more, the loans have to be repaid within 4 months with an interest rate of roughly 20 percent when it comes to harvest time. Often the yields are not good, whether due to lack of expertise or the lack of irrigation and this pushes down the sale price. The next round of planting is undercut if money is short, for the farmers then have to borrow money at the exorbitant interest rates common in the countryside, again in the range of more than 20 percent per month and in the end some farmers will lose their land to creditors. They will abandon their home and go looking for work in the city. Sensible people will seek honest work, but some will seek shortcuts to an easy income and may turn to drug trafficking or prostitution with all the social problems that follow. Worst of all, it follows that

the family structure is weakened, leading to more and more children being born in homes lacking parental care.

What's more, there are health problems associated with use of chemicals in rural cultivation. The pollution of land and water in once abundant parts of the country is beyond easy hope of restoration.

Therefore, reforestation must start with the cultivation not just of land but of people. Depending on the availability of capital and on local conditions, the two can be done in tandem, but there is no point trying to engage in a reforestation scheme until the people in the area have enough to eat and get by.

The way to alleviate the pain of the cycle of poverty is to restore resources and provide capital. By reducing expenses and increasing revenue, an elevated quality of life can be achieved through various development activities such as irrigation management, improving soil fertility, promotion of agriculture, livestock husbandry and manual labor by capital input.

Good cultivation of land reinforces good cultivation of people. Getting local people involved in reforestation from the very start will help promote understanding based on shared concerns. Shared consultation and discussion can set rules to guide the joint management of resources.

Developing an "economic forest" will help villagers acquire skills, knowledge and expertise, and particularly through value-adding, processing, packaging, marketing and integration as well as through the establishment of business groups to oversee the output of forest resources. When people obtain a good life in harmony with the natural environment and have greater sense of self-worth, they can apply their enthusiasm and creativity to the problem of forest conservation.

[02]

CULTIVATE LAND, CULTIVATE PEOPLE

In 1987, the Doi Tung Development Project under the supervision of the Mae Fah Luang Foundation began work to plant nearly 50,000 rai (8,000 ha) of upstream forest, restoring land that had been damaged from shifting cultivation by villagers who had planted rice, corn and opium there.

The Princess Mother was concerned that setting aside the land for the forests would affect the villagers who had been using the land, asking "What will they eat?" She advised that the project should "go forward in a way that does not trouble the villagers."

That's how the Mae Fah Luang Foundation came up with the idea in 1988 of developing an "economic forest" which aimed to generate long term income for the people in the area in ways that improved their quality of life, increased self-reliance and made it possible for them to coexist with the forest in a sustainable way.

After considering several economic trees, the project determined that Arabica coffee and macadamia nuts were two crops with considerable potential for value-added processing. It was also decided that ornamental flowers, such as anthurium, should be planted in the shade of the forest.

In 1994 the Princess Mother expressed a desire to develop forest plots for farmers with little or no land, but who had knowledge about cultivation and were of upstanding behavior and were willing to work hard. An area of 4,000 rai (640 ha) was designated for fruit tree, other useful plants, and commercial tree plantation, such as namwa bananas, Indian gooseberry and different varieties of bamboo and wood such as dendro calamus (phaidong) and other

varieties of bamboo, and trees such as cassod (khilek), teak, Burmese padauk and payom trees that help maintain the quality of the upstream forest, with additional land allocated for the villagers to live on.

The Princess Mother's vision to "cultivate land, cultivate people" was realized by putting aside land where people could be trained in skills and knowledge of forest products to promote the coexistence of people and the forest. This was successfully realized at Doi Tung and became a developmental principle of the Mae Fah Luang Foundation, which was then expanded and applied to other locations such as the reforestation project in commemoration of His Majesty the King FTP 33 (Assisted Tree Regeneration Project) at Pang Mahan, Thoet Thai subdistrict, Mae Fah Luang district, Chiang Rai province in 2005, including a project by the Chaipattana Foundation to study and develop the cultivation of oil tea and other oil-bearing plants. The following year, 2006, a project of "reforestation without planting" was started at Puna, Thoet Thai subdistrict, Mae Fah Luang district, Chiang Rai province. Most recently, the model of 'cultivate land, cultivate people' was applied since 2009 to solve problems and develop the land in Nan province.

Before taking the reader into further detail about the development and implementation of various projects based on the Mae Fah Luang Foundation principle of "cultivate land, cultivate people" it is useful to first expand on the meaning of "cultivate land, cultivate people":

"Cultivate land" in this context refers to forest planting, or reforestation, which means the revitalization of a degraded forest to make it abundant and fertile again. "Cultivating people" covers many dimensions, but first and foremost it means creating development opportunities to improve the quality of life for the poor and for those who had lacked opportunities.

To begin with, expenditures need to be reduced and income increased in the short term to allow villagers to pay off debt. Subsequently there is a need to increase long-term revenue. This can be boosted through value-added activities.

This economic activity will lead to “cultivating people” in the second sense of the word which is to develop knowledge, skills, abilities and initiative necessary to make lasting long-term improvements, while empowering villagers to depend increasingly on themselves and continue to develop their community even after the development project is completed or withdrawn. This includes preserving the forest which naturally benefits the community living near the forest.

Lastly, “cultivating people” means to cultivate the consciousness of the villagers in communities near the forest to forever cherish and preserve the forest according to the wishes of His Majesty the late King Bhumibol Adulyadej, who had said “Trees should be ‘planted’ first in the hearts of the people. Then the people will plant trees on the land and nurture them.” (1976)

Thus cultivating land and cultivating people are inseparable. Both are needed for success; we need to cultivate the land to cultivate people, and we need to cultivate people to maintain the land and forests. The two ideas are linked, and they support and expand upon one another. For example, hiring villagers to cultivate and / or care for the forest can generate short-term income that can help defray expenses. Offering training in management and technical skills in areas including agriculture, livestock and handicrafts, as well as encouraging local people to cultivate an economic forest can generate sustained high returns in the long run while protecting the forest from encroachment.

2.1 Cultivate Land

2.1.1 Reforestation- Conservation forest

In 1987, the Mae Fah Luang Foundation undertook a reforestation project at Doi Tung, by clearing badly degraded forest area and completely plant it anew. This project was studied, adjusted and improved upon in later years by using a combination of assisted tree regeneration at Pang Mahan and ‘reforestation without planting’ at Puna.

Reforestation at Doi Tung

At Doi Tung, the Mae Fah Luang Foundation promoted the planting and conservation of nearly 50,000 rai (8,000 ha) of upstream forest in areas where villagers had been engaged in shifting cultivation and cleared forests to plant crops including rice, corn and opium. The project replaced these crops in the degraded forests with newly planted trees. Most of the trees selected for afforestation were pine trees (sambai), because it is a species that grows quickly.

The reforestation started with hiring the local villagers as labor and paying them a "unit price" wage along the line. It was the wish of the Princess Mother that villagers should learn the value of increased productivity on their own, gain insight into how things work and easily grasp the essence of the problem.

Forest conservation in the early stages at Doi Tung thus focused on creating income in the short-term and importantly, cultivating people to use an orderly and disciplined approach in their work, to create understanding of the importance of quality, time and compensation as a result of the effort put into work.

The villagers were paid in cash per unit of work on a daily basis where possible. For example, diggers got paid for each hole that met the standard size and agreed-upon requirements, or by the number of saplings planted, or the amount of the fertilizer spread for each sapling.

Even though forest conservation at Doi Tung is linked to developing an "economic forest" and promoting new jobs related to that, it takes at least three years before the trees in an "economic forest" provide any yield. In the meantime, the Doi Tung Development Project hired local residents to look after the trees planted over a three year period, to assure healthy growth of the saplings, corresponding roughly to the time it takes for the "economic forest" to provide sufficient yields to earn profits. With profits from the crops, the focus changes from hiring people to look after the forest to hiring people to harvest the fruits of the economic forest and increase their income accordingly. At this point it becomes possible

to hire more people to engage in the value-added processing of the economic forest products. When the economic forest becomes the source of a stable income, it is natural that the villagers will protect and take care of it.

One of the lessons learned by the Doi Tung Development Project was that replanting a forest does not necessarily lead to the return of the wildlife that once lived there. The number of animals and diversity of animal life can remain diminished even when the forest grows back quickly. The Mae Fah Luang Foundation investigated this problem and discovered the pine trees that had been planted resulted in a monoculture, with no other trees able to grow among them, and what's more the pine was not native to the area. Thus it could not provide adequate sustenance to the forest animals, most of which did not return. What's more, during the dry season, the pine trees are highly flammable when dry and the forest is at risk of fire. Since that study, it was decided that if a fire occurs in the pine forests of Doi Tung, it should be contained but allowed to burn out, clearing the land for native plants to return naturally, in accord with what is referred to as "reforestation without planting." The idea is to allow the forest to regenerate itself naturally until the original environment is restored. This important lesson learned by the Mae Fah Luang Foundation at Doi Tung has led to adjustments in policy and is now applied to other projects as well.

Reforestation- Assisted Tree Regeneration at Pang Mahan

In 2005, the Siam Commercial Bank Public Company offered to provide funds to the Mae Fah Luang Foundation with special attention for a "Cultivate Land, Cultivate People" project known as the reforestation project in commemoration of His Majesty the King FTP 33 (assisted tree regeneration project) located in Pang Mahan village, Thoet Thai subdistrict, Mae Fah Luang district, Chiang Rai province, in an area with degraded forests near the Myanmar border.

The original reforestation guidelines were modified and improved to engage in "selective reforestation," which highlights selection of tree species native to the area or especially suited to local conditions, along with letting parts of the forest regenerate naturally.

This plan to conserve upstream forests guided by the "Cultivate Land, Cultivate People" principles involved these steps:

1. The target area of the project was to be clearly mapped out and divided into work zones to determine in advance which areas would be used for cultivation and which land would remain as protected forest.
2. Research and study the local area. Timely data collection and surveys of the social and geographic conditions of the target area needed to be carried out sufficiently thoroughly to determine the actual problems, available resources, the capital needs of the community, and to obtain the factual data to use in preparing well-considered plans and monitoring developments.

The in-depth socio-economic survey was done jointly with villagers and other stakeholders in the project, so they could share knowledge while also building mutual understanding, confidence and respect between the villagers and the project work team.

Another important point to keep in mind is that while much of the land was protected land or located in reserved forests, the land was also a crucial source of livelihood for the local villagers, so finding common ground between villagers and officials was essential. Those collecting data on the local social and geographical conditions must build an understanding with the villagers. It is important to be transparent, forthcoming and clear in order to reduce contradictions that might follow the project during implementation. It was also important to map out clearly the exact area where the forest is protected, where economic forest cultivation can be done, where sustenance farming can be continued, and where residents can reside.

The survey process of the Pang Mahan Reforestation Project consisted of studying and comparing the target area with information from:

- 1) satellite maps
- 2) aerial photographs
- 3) ground survey (water, soil, and forest)

Information gleaned from the first two sources contributed to the broad picture and overall understanding, while the walk-through provided current, in-depth information at that time, including socio-economic data concerning the members of each household. This included collection of timely and accurate economic data, social data and population data and determining how the community would be affected by the project, as well as information about how the land could be divided up and allocated most beneficially, with GPS markers used to record coordinates for clarity.

Each survey produced a record created jointly by project staff and land owners. Officials and land owners signed statements of intent to cooperate with the owners of neighboring plots and / or community leaders and / or representatives from relevant government agencies affiliated with the project.

In addition, water sources were identified and sample plants collected, including indigenous wild plants, to best determine what kinds of plants should be introduced for reforestation.

3. Building understanding and gaining trust from of the community requires communication through words and actions that instill a sense of faith in the project. The community will then become a partner in planning and carrying out goals of the project. To this end, communication and trust building activities were made to be easy to understand and the concepts and plans expressed simultaneously through a variety of channels. One must adapt according to local conditions and local circumstances to meet with success.

The Mae Fah Luang Foundation process involves meeting with community leaders who are respected by villagers, to reach an understanding with them and enlist their help in communicating with other members of the community.

A village meeting is held then to clarify the proposed activities. If any people raise objections, their concerns must be addressed to assure the process gains widespread support. In some cases it may be necessary to speak individually to those with objections, to clear matters and

reach an understanding. If there any doubts or problems remain, they need to be addressed and worked on together. Problems should not be left unresolved or left to linger, but should be dealt with as soon as possible, especially problems concerning people's livelihood. Some urgent issues such as water supply, food and health should be tackled during the first months of the project (within the first 10-150 days, depending on the type of activity and problem being solved) to show the sincerity of the project staff in dealing with local problems and build trust with the community.

This process is referred to as a "Quick Hit" by the Mae Fah Luang Foundation. Community involvement in thinking, seeing and doing is stressed at every step of the process.

4. The trees selected for planting were determined by local conditions, since it was desirable to restore the forest to its original natural condition. Research was conducted of the environment, and species were selected that previously grew in the area or in neighboring areas and / or varieties that could benefit local residents and wildlife. Plans were made to restore the forest without cutting down existing trees or burning to clear the land.

5. Planting methods were specified in advance, from raising the saplings, transplanting, planting, to maintaining the trees according to a work schedule in order to avoid mistakes and potential misunderstanding. Communication strategies varied, it was done one way with the villagers at Pang Mahan, but a different approach was used at Doi Tung due to barriers of language and cultural differences between project staff and the villagers. For example, to avoid mistakes about the technical names of different species, a color system was used, in which each bag with the sapling was dabbed with a color to clearly differentiate the different species. Matching colors were then painted on sticks to mark which plot got what type of sapling.

6. Allocation of forest area refers to dividing the forest into distinct zones for efficient data-based management. This included identification of extant forest, degraded forest, farming areas, villages, roads, rivers and other kinds of information which factor into a comprehensive

planned reforestation. It was especially important for each area to be clearly defined, staked out, marked and identified to indicate the mutually agreed upon boundaries.

Communication was essential between local residents and government agencies such as the Royal Forest Department, the Department of National Parks, Wildlife and Plant Conservation, and the District Administrative Organization and Sub-District Administrative Organization. With this in mind, the Mae Fah Luang Foundation issued land documents, which, while not legally binding, served to identify and certify that the persons named in the document were granted permission for a specified period to use the land in accordance with certain conditions.

7. Water conservation and management was carried out using three types of weirs: weirs for domestic consumption, weirs for agriculture, and weirs for conservation. This included digging connecting ponds system from high upstream to retain water for use during the dry season. To obtain maximum benefit from the beginning, the amount and quality of existing water sources must be carefully considered. Is the water quality good? Is there enough throughout the year? If not, water use practices should be studied to determine water consumption requirements for agriculture, etc. according to priority, taking into account resources to determine where new weirs should be constructed.¹

8. Measures to prevent forest fires in every way possible requires both support from individuals and the participation of the community. One needs to engage with the local community and manage locally, with the project spreading awareness and providing support. For example, the project can offer training on how to put out fires, demonstrating the use of fire extinguishers, creating fire barriers by planting banana trees, and encouraging the community to organize forest fire lookout teams. In accordance with local beliefs, the project can have villagers swear to uphold a "no cut, no burn" policy.

9. The project established a farmer assistance fund to enhance the productivity of the area comprehensively. With a plentiful supply of agricultural water, crops can be grown three times a year, so assistance should be provided to assure year-round availability of water. Another

¹ For more information, see the Mae Fah Luang Development Approach Manual: Irrigation Management

way to assist production is by setting up a seed bank for better quality varieties of rice, corn, soybeans, and green beans, to enhance their yields. A fruit and vegetable seed bank should be established to collect and store local seeds for future propagation, with the aim to encourage use of indigenous plant varieties.

In such work, the community also needs to focus on food, and so promote kitchen gardens to reduce household expenditures. Funds should also be set aside for animal husbandry, drawing on volunteers knowledgeable in such matters, along with putting aside resources, such as funds for swine flu vaccines, or distribution of fish fry to local ponds and reservoirs to generate additional income. The types of seedlings and techniques of animal husbandry selected is dependent on local geographic and social conditions with an emphasis on community needs. In the case of the Pang Mahan Reforestation Project, funds were set aside to purchase LPG gas for cooking to reduce the cutting of trees for fuelwood.

10. Helping the community and school. Promote activities complementary to cultivation by, for example, providing small grain grinders as food-processing initiatives in the community, or funding value-added processing of animal feed, or collecting vegetable seeds for agricultural projects, or setting up youth camps to cultivate awareness and spread information about policy principles and project activities.

11. Monitoring and evaluating reforestation and other operations. The Mae Fah Luang Foundation stresses the importance of getting the community to continually monitor its progress and follow-up with evaluations in order to make necessary adjustments in a timely manner. In the early stages of the project the project staff will engage in a walk-through with the villagers once a year to collect socio-economic data, assess forest conditions and the biological health of the forest. Reforested areas will be surveyed to measure the height and girth of trees, the number of trees growing and how many original species have returned in the wake of forest fires and illicit forest encroachment, indicated by marker pins and GPS coordinates. The Foundation promotes the establishment of a committee to manage activities

and keep track of overall resources remaining in the area for the continued benefit the community, delivering ownership of the development project to the people.

Reforestation without Planting at Puna

In the reforestation with planting project at Pang Mahan village, the staff found that the forest can recover by itself if the forest canopy is sufficiently intact to distribute and propagate seedlings, provided there has been no long-term use of herbicides or chemicals and it has not been burned down to the ground, ridding it of both people and animals. Under the project to study and develop the cultivation of oil tea and other oil-yielding plants, promoted jointly by the Mae Fah Luang Foundation together with the Chaipattana Foundation, the "reforestation without planting" approach has been put into effect since 2006.

In the procedure established at the Pang Mahan project site, the area was divided into 5 parts: "conservation forest," "economic forest," "sustenance forest," "cultivation area" and "residential area," will all clearly demarcated. The protected forest area is not to be encroached upon by people or domesticated animals in accordance with project rules agreed upon with the villagers. Along with this, "cultivating people" looks at promoting activities to reduce expenses and generate income such as duck bank (*Cairina moschata*) and the growing and caring of tea tree seedlings in the economic forest zone, while at the same time employing villagers to guard the protected forest. Results show that the protected forest can restore itself and introduce a diversity of trees in a rather short period of time.

Conservative Forest Reforestation Lessons Learned

Based on the Mae Fah Luang Foundation's experience in three different forest planting projects, different lessons can be drawn about the reforestation of conservative forests.

1. Reforestation without planting: the reforestation of the conservative forest can take place without planting and can restore itself relatively quickly to a state that is close to its original conditions through natural rejuvenation, with good results for fertility and biodiversity.

But not all areas are suitable for reforestation without planting. For one, there must be sufficient forest canopy still intact for the propagation of seeds and new trees. Furthermore, natural regrowth requires that herbicides have not been used for a long time.

The process of "cultivating people" comes into play to prevent villagers from interfering in the protected forest area in order that it might recover itself.

2. Reforestation should focus on the participation of the villagers. From planting seedlings to transplanting, reforestation work creates jobs and added income for villagers and introduces technical skills about tree cultivation.

3. For upstream forest conservation to be effective, in the early stages it may be necessary to take measures that prevent villagers from encroaching on the forest for farming. Not until the villagers have adequate income from working the "economic forest" and related sidelines, can the hiring of guards to look after the protected forest be eased.

2.1.2 Reforestation- Economic Forest

The cultivation of land and people must be done in parallel. For upstream forest conservation, it is critical to create a good relationship between people and the forest. The "economic forest" does just that. The advantage of the "economic forest" is that it doesn't take much space nor require the destruction of many trees but it does help to establish a long term income source for the community and can be planted as an addition to the existing forest. The income is significant as the material is processed and creates new jobs which improve the skills and knowledge of the villagers.

Based on the experience and results of "economic forest" projects conducted by the Mae Fah Luang Foundation under the guiding principles of the Princess Mother, the foundation is confident that balanced economic, social and environmental development can produce good results with the proper application of central principles. The steps and processes of promoting economic forest can be divided into 4 main stages as follows:

Preparation, Seeding, Planting, and Maintenance

1. Preparation

1.1 Data collection

- 1.1.1 The forest area should be surveyed and studied², consulting villagers to gain an understanding of the traditional economy. Are cash crops being grown? If not, or if not appropriate, what species would do well and can be grown instead?³
- 1.1.2 Survey understanding, opinion, needs and willingness of the villagers.
- 1.1.3 Study the supply and demand of the market. Crops that are produced in over-abundance or unduly subject to price fluctuations should not be supported. Instead, the needs of the provincial and national market should be taken into account as well as inputs that need to be brought in from elsewhere.
- 1.1.4 Feasibility Studies on Investment into the promotion of processing. For example, it is not worth investing heavily in processing machinery if the volume of product to be processed is in short supply or the operation falls far below capacity.

1.2 Prepare people

- 1.2.1 Public relations, communication and understanding should be extended to villagers and their leaders in the target area in order to foster co-operative thinking. Work decisions are based on mutual understanding.
- 1.2.2 Provide appropriate technical training and know-how before distributing seeds or saplings for seeding and planting.

1.3 Seed preparation

- 1.3.1 Collect seeds from the local environment.

² For more information, see the Mae Fah Luang Development Manual: "Cultivate Land, Cultivate People" Series: Forest Surveying

³ For more information, see the Principles of Selecting Plants to Promote an Economic Forest in page xx

1.3.2 Contact the Department of Agriculture or Department of National Park, Wildlife and Plant Conservation to purchase seeds and seedlings.

1.4 Prepare the land for planting

2. Seeding

2.1 Build nursery structures for the seedlings

3. Seeding and planting

3.1 Distribute seeds and saplings to villagers for planting

4. Planting in the forest and cultivating new plots

5. Maintain growth at every stage and increase yield

5.1 Encourage local leaders and members of the community to agree upon rules for maintenance, management and the punishment of offenders.

5.2 Impress upon the community the serious consequences of forest fires and forest burning, and cultivate awareness in the new generation.

Principles of Selecting Plants to Promote an Economic Forest

1. Best Planting: Planting should focus on restoration of local plants, but if it is necessary to introduce non-native plants, care should be given to suitability to local terrain and local climate. To minimize risk, new plants should be avoided if they are too demanding of water resources or demand too much time to look after. New plants should first be nurtured in an experimental plot to test suitability. These plants should be cultivated with paid labor to lighten the community burden until results are demonstrated, after which the community can confidently take ownership of the project.

2. Establish dependable income: The output of forest product should possess a medium to high market value and there must exist a definite market to absorb the product. There should be high market demand to justify the input, for example, and not just demand at the moment

but expected demand in the future when the product is ready to go to market. (Demand over supply)

3. Create real work. Income generating activities must have the potential to generate real income in a way that can be maintained and sustained. There should be continuous development in the processing of agricultural goods, agricultural tourism, etc. Find out how to best create / maximize value.

4. Support of villagers is key: The project has to be something they really want and it needs to meet the consent of the villagers.

5. Consider the impact on the environment. Before doing anything, one should ask two questions. What do the people get out of it? What does the environment get out of it? For example, planting eucalyptus can bring high monetary returns but it causes severe damage to the soil.

A Case Study of an Economic Forest under Mae Fah Luang Foundation

- **Growing Coffee under the Forest Canopy and Macadamia Nut at Doi Tung**

The Princess Mother expressed concern about the livelihood of villagers during the replanting of the forest land. "If the land used by villagers is returned to forest, what will they do for a living?" She thus instructed development teams "not to cause distress to the villagers." In this spirit, the Mae Fah Luang Foundation has promoted "economic forests" since 1988 in six areas, and has converted 3,642 rai (about 583 ha) of land to economic forest with the aim to generate medium, and long-term income for people while improving their quality of life in the long term through self-reliance and sustainable forest practices. The Foundation promoted the planting of Arabica coffee and macadamia nuts, along with the planting of ornamental flowers such as anthurium that grow naturally in forest shade.

The Doi Tung Development Project selected Arabica coffee and macadamia nuts to grow in the economic forest because these sell at high prices and suitable to the area. Given significant market demand, the labor intensive processes of cultivating, harvesting and processing can help achieve the goal of job creation and the distribution of profits to the communities in the area.

The reason for choosing macadamia nuts in 1988 was a combination of high market demand and limited global yield. There were then only two major areas of production, Australia and Hawaii in the United States. Even today, macadamia is the most expensive nut in the world, and even if demand eases and does not meet expectation, it still contributes to the conservation of the upstream forest because it is an evergreen tree that is also sturdy enough to stand for a hundred year.

Arabica coffee, for its part, is a good substitute for opium because it thrives under the same kind of growing conditions. It is also suitable because it can grow under the shade of big trees and does not disturb the forest. Finally, coffee produces enough yield to harvest and process in about 3 years, while macadamia takes about 7 years. Both plants yield for 50 years, thus providing villagers with a steady income in the mid- and long-term.

However, when the project was being considered, neither Arabica coffee nor macadamia nuts were widely cultivated in Thailand for commercial purposes, so knowledge and skills were lacking. Villagers underestimated work needed to maintain the trees and the speed needed for harvesting, leading to major losses. Up to half the 832,000 coffee plants planted were lost as well as about half the 83,000 macadamia trees.

The Doi Tung Development Project found that one of the nagging problems faced by farmers was lack of motivation rather than lack of ability. Locals otherwise knowledgeable in tree care were not pruning or applying fertilizer as they were supposed to do.

In addition, project officials could not adequately monitor the application of fertilizer provided to the villagers over the expanse of six large areas with a total of one million trees, so the method was changed. To give the villagers more of a stake in the fruits of their labor, it was arranged for them to rent the trees, rather than working on a wage basis. (Land at Doi Tung is officially forest land, so the villagers could not own it legally.) If they cared for the trees well they got good returns on their labor, according to agreed-upon terms. Given a sense of ownership, the villagers paid more attention to their plots and worked harder. They were careful in selecting only ripe coffee beans to sell to the project.

The villagers selected for the first group to rent coffee trees were those found to be the hardest-working, so they could set an example for other villagers to follow. The project saw yields increase in coffee cherries from 0.5 to 1.5 kilogram per tree, and the quality of the coffee beans improved, winning recognition from the SCAA (the Specialty Coffee Association of America). It is a measure of the success of the project that it brought out the potential of both people and forests in a mutually beneficial way.

In the year 2010, 22 years after the economic forest project started, the Doi Tung Development Project saw income from processed drinks from Arabica coffee and macadamia nut reach 124 million baht (about US\$ 4 million). This directly led to job creation in the project area, employing 783 people (both those directly hired and those contracted to supply raw materials), and providing indirect beneficiaries to families of those working for the project, benefitting a total of 3,915 people.

Furthermore, Doi Tung brand coffee and Doi Tung cafes continue to be popular and highly valued. But what is more important than income and economic development at the community level is the development of ideas, knowledge, ability, dignity, confidence, as well as innovative thinking and decisiveness on the part of people who once planted opium. They have now become cultivators of coffee and macadamia and have even become owners of coffee farms with the option to

branch out into other businesses as they see fit. They dream of living a better life and are prepared to make that dream come true. The whole family can stay together and children and grandchildren can look forward to getting an education.

Thongchai Wibulchitcharoen, a 39-year-old Akha villager residing in the forest development project area of Doi Tung has become a coffee roaster and owner of a coffee plantation thanks to the Cultivate People program. Thongchai and family had previously earned only 8,100 baht a year growing upland rice, corn and opium. In 1996 he and his mother were hired to grow coffee in the economic forest of the Doi Tung Development Project. When the project started renting coffee plants to farmers, Thongchai grabbed the opportunity and became owner of over 8,000 coffee trees growing under the forest canopy. This led to an increase in his income, allowed his mother and wife to open a small goods shop and giving the opportunity to all five of his children to attend school.

In 2010 Thongchai wanted to earn more, so he applied for a job as coffee roaster for the project, increasing his family income to 172,500 baht a year. He is now known as an expert coffee roaster and has become a member of Mae Fah Luang District Administrative Organization. Thongchai's next goal is to open a coffee shop to help fund higher education for his kids.

This shows that if people are invested in and realize the value of the forest, they will cherish and protect the forest of their own accord. The forests of Doi Tung Development Project have never been seriously threatened by wildfires, because the villagers help keep it in good condition, clearing weeds and dried leaves capable of fueling a wildfire, while refraining from logging or cutting trees. This is possible because they have stable income from other sources. The result is regrowth of the original forest and growth in newly planted forest areas which has kept Doi Tung under forest cover, shady and cool for now since 1988. When isolated wildfires occur, the forest

is allowed to grow itself back, letting nature take its own course to heal itself until a moist forest with its natural ecosystems is fully regained.

So even though people in the Doi Tung Development Project area had to stop hilltop cultivation of rice and other crops when the development project started, they have since been able to earn better incomes from afforestation and other auxiliary occupations.

Put another way, the villagers can continue to collect forest products and wild foods for personal use and betterment of the community once they no longer have to destroy the natural forest for survival. When the forest provides direct economic benefits, it gives people the opportunity for education, and other life opportunities. Thus it can be said that the forest "cultivates" people with ideas, consciousness and a better awareness of nature which allows them to take better care of the forest in turn, leading to a better life. Without this mutual "cultivation," things could revert back to greedy ways and the forest would be destroyed.

- **Cultivating Tea Oil and Bamboo at Pang Mahan and Puna**

Thoet Thai subdistrict in Chiang Rai province is a major source of tea in the country. Some villagers have their own plots and there is a small tea processing plant. Growers are grouped into a cooperative to manage productivity and safeguard the interests of members, but tea cultivation is limited to this one small group and does not adequately serve to elevate the quality of life for most people in the area, some of whom would still be apt to encroach on the forest. Given this situation, the Mae Fah Luang Foundation recommended the cultivation of other cash crops to increase local income.

Bamboo is a traditional native plant found in northern Thailand. The phai dong or phai waan (sweet bamboo) being introduced by the Doi Tung Development Project is easy to grow and is not costly, making a low-risk investment. The bamboo shoots are

edible and highly nutritious and bamboo is a familiar traditional building material. When the bamboo is two years old, the shoots can be sold fresh or processed for added value, bolstered by proven market demand.

What's more, edible bamboo worms can be cultivated and processed on a small scale following through a micro enterprise by a group of local housewives for both domestic sale and sale to neighboring countries such as China, where the product is popular. Bamboo worms sell for up to 250 - 300 baht (about US\$ 8.00 - 10.00) per kilogram.⁴

The Mae Fah Luang Foundation promotes the economic forest in which villagers work out for themselves the details of fair distribution per person and allocation of land by the drawing of lots.

In 2006, HRH Princess Maha Chakri Sirindhorn paid a visit to the Mae Fah Luang Foundation to study and promote the cultivation of tea oil, as well as other oil-bearing crops under the auspices of the Chaipattana Foundation. Her Majesty graciously promoted planting in the villages of Pang Mahan and Puna in Thoet Thai subdistrict and graciously introduced the seeds and seedlings of oil tea plants from China for study and ultimate use, and further arranged for the Chaipattana Foundation to support the establishment a tea oil processing plant at the Research Center for the Development of Tea Oil and Oil Plants in Mae Sai district, Chiang Rai province.

Tea oil has many benefits. Oil derived from the seeds of this species of tea is of high quality and suitable for cooking. It is an unsaturated fat and the proportion of fatty acids is similar to or even better than that of olive oil. Currently, Thailand does not extract sufficient tea oil for domestic consumption, and importing at high cost from China. Cream made from the oil is fragrant and can be mixed to make cosmetics, as it has qualities good for the skin. And the residue of the oil extraction contains the active substance saponin which counters the spread of cherry worm in rice fields as well. Another by-product of cultivating oil tea is the natural beauty the flowering tea bushes bring to the scenery, fostering development of eco-tourism and / or agricultural

⁴ The price at Pang Mahan village, Thoet Thai subdistrict, Mae Fah Luang district, Chiang Rai province in 2011

tourism, both of which serve indirectly to generate additional income.

The plants introduced from China based on the research findings of HRH Princess Maha Chakri Sirindhorn are useful in numerous ways. They generate income and promote the welfare of the Thai people. The farmers get a good price and the market for tea oil is vigorous and dependable.

That being said, the oil tea plant, *Camellia oleifera*, is not native to Thailand, so the princess made a point of selecting sites for the planting of oil tea in places that most closely resembled the topography and climate of its native habitat in China.

Princess Sirindhorn graciously promoted the use of experimental plots tended to by local hires while also arranging instruction to teach them how to plant and look after the plants on their own. Initially, experts from China, Thai academics and practitioners visited the site to observe and offer advice to ensure productivity in terms of quantity and to ascertain the quality before handing it over to the villagers to manage on their own.

Tea oil plants take at least 8 years to mature before the seeds can be extracted and processed to make cooking oil. Tea oil can be promoted as a long-term cash crop in conjunction with pai dong (sweet bamboo), which is a medium-term cash crop that ripens and begins to yield income after 2 years.

- **Cultivating Sugar Palm and Rattan in Nan**

Looking at the sum of work experience and the continuous effort to improve the quality of work based on lessons learned in the development projects of the Mae Fah Luang Foundation, a clear pattern emerges. Principles derived from previous work can be applied to help offset the poverty and the extreme degradation of natural resources found in the country and around the world. The foundation strives to spread the example of its development model and methodology in a way that is faster, more

efficient, and over a wider area, while at the same time being cost effective and efficient. The desire to communicate with the villagers in a timely way to win understanding, engagement and a sense of ownership animates the project from the very beginning. This powerful "explosion from within" helps power the engine of self-sustained development.

The promotion of economic forests in Nan province started with a joint survey of the forest with members of the local community, the assessment of their needs and the collection of data for analysis. Taking into consideration local plants suitable to the economic forest and promoting them instead of plants from elsewhere, the foundation chose to promote sugar palm, rattan⁵ and jade tree (ton yaeng) as cash crops.

These traditional plants were not doing well in the forest due to the degradation of the forest from cutting and burning and the lack of forest management, so that natural growth of sugar palm, rattan and the jade trees had greatly diminished. The foundation met with villagers and local leaders who readily agreed to reintroduce these species and find mechanisms to restore the forest to its natural fertility, because it is such a valuable resource for forestry, society and the economy.

In the past, the villagers harvested the rattan, sugar palm and jade trees and rushed to sell the produce to middlemen, who then processed it to sell to the retail market. But it was found that if the villagers are encouraged to process their own produce locally through privatized small businesses or micro enterprises, they can keep the added value in the community instead of losing it to the middleman. For example, if the community sells raw palm sugar to the middleman, they get 17 baht per kilogram, whereas the same product baked and dried sells for 180 baht per kilogram (in May 2012). Therefore, if processed locally, the community has the opportunity to gain the 163 baht difference as income. In addition, sugar palm has the potential to be processed into different kinds of foods, giving many more ways of adding value. With

⁵ For more information, see the Mae Fah Luang Development Manual: "Cultivate Land, Cultivate People" Series: Growing Sugar Palm in the Economic Forest, and the Mae Fah Luang Development Manual: "Cultivate Land, Cultivate People" Series: Growing Rattan in the Economic Forest

a little research, the community can assess the market and take the next steps to create and introduce new quality products. Rattan, for its part, is a periodic plant with the potential to bring long term stability and sustainable income to the community.

Today, the quantity of rattan that can be harvested from nature has dropped significantly, but the market demand for rattan furniture and other products is still strong. Rattan is popular, desirable and can sell at a high price. The promotion of rattan planting integrated with value-added rattan processing will lead to employment and a better income for the community.

Lesson Learned from Cultivating Economic Forest

The promotion of economic crops in the Mae Fah Luang development program seeks economic prosperity and revenue as a vehicle or a means to reach the goal of sustainable development. It is about creating a situation where the people and the forest can grow and thrive together.

The successful economic forest program shall:

1. Come to an accurate understanding of the community from observation and participation at every step along the way. The immediate benefits of the forest economy will increase cooperation and provide a sense of ownership. It will also become a major motivator to push people to develop themselves while developing the ability to maintain, sustain and manage the project on their own.
2. Promote economic forest cultivation in tandem with the development of processing activities that add value throughout the entire production chain. Only then can the process be considered successful and sustainable, for both people and the forest, in the long run.
3. Recognize that development projects must bear the risk of potential failure, especially the introduction of non-traditional economic activities or species of plant new to the area. It is better to start with experimental plots cared for by hired labor, which serve to distribute income and allow gradual attainment of technical skills and knowledge. Before promoting

a particular activity it should be determined if the results meet expectations and have the potential to produce truly stable incomes. If so, the villagers can then pursue the activity themselves as the project is gradually transferred to the people as stakeholders and caretakers.

2.1.3 Reforestation- Sustenance forest

Safeguarding villager interests is a core principle of cultivating a "sustenance forest." To meet local needs, surveying is key to find out what types of trees are most valuable to villagers both in terms of consumption and use, such as wood for house construction, and wicker for furniture. The input and cooperation of villagers should to be taken into account from the start to best determine what to plant so that the resulting forest closely meets the needs of villagers. And rules guiding forest usage and harvesting of trees must be agreed upon within the community.

In the case of the Doi Tung Development Project, the promotion of coffee and macadamia nuts in the economic forest in 1994 was followed by the generous suggestion of the Princess Mother to put aside 4,000 rai (640 ha) of forest land for use by local residents with knowledge in cultivation, who were of good conduct, diligent and experienced in cooperating with the project, and who had no land or insufficient land for their own needs. They were allocated land to grow food for their own household use, and were encouraged to grow fruits that prospered in the forest such as Namwa bananas, Indian gooseberry and giant bamboo along with other varieties of bamboo and trees such as cassod trees (*Senna siamea*) and trees useful for construction such as teak, Burmese padauk (*Pterocarpus macrocarpus*), and phayom (*Shorea roxburghii*) trees all of which help maintain the quality of the upstream forest.

In the case of the reforestation project at Pang Mahan, the Mae Fah Luang Foundation promoted establishment of a gas fund to reduce use of forest trees for fuelwood. However, the villagers, especially the older residents, were not accustomed to the flavor of food when cooked on a gas stove. The project took this into consideration and modified its approach by promoting the planting of the fast growing cassod trees (*Senna siamea*) to meet the fuelwood needs of the community.

2.2 Cultivate People

The key to success in sustainable afforestation is to cultivate people by gradually developing the life and livelihood of the community living in the forest area.

- 1) Villagers need enough to get by, including an ample supply of rice throughout the year and basic medical care and basic public utilities.
- 2) Villagers need a steady, sufficient source of income. This can be augmented by increasing the value of local output to help erase debt at least in part, if not entirely. Access to quality education, practical training about disease prevention and access to better treatment are important. And the final step is:
 - 3) To maintain sustainability. This means saving income and investing in small or micro-based community enterprises; to be self-reliant and cultivate an attitude of self-improvement; to be resilient; and become environmental and socially conscious. As for "cultivating people" it depends on the problems and financial circumstances of each community but has the common goal that cultivation should be carried out continuously and in an integral way until people can stand on their own with dignity.

For the more details on the principles and procedures on how to "cultivate people" please refer to the Mae Fah Luang text on developmental guidelines.

- 1) Create a development team in the target area.
- 2) Understand, Reach out and Develop: a socio-economic survey for baseline data.
- 3) Irrigation Development.
- 4) Holistic and Integrated Livestock Development.

Circumstances will vary but production teams should offer guidelines and examples from the development projects at Doi Tung and the reforestation projects at Pang Mahan to help promote a better understanding of the "cultivate people" principle of the Mae Fah Luang Foundation.

Cultivating People at Doi Tung

The Doi Tung Development Project started with forest planting, with most of the labor performed by men. This led the Princess Mother to ask, "Shall the women be left to do nothing? The work shouldn't be left entirely to the men, should we not also open opportunities to women to see what they are capable of doing?"

In the Doi Tung Development Project, there are 6 hill tribes. Each has different skills in various crafts such as weaving, embroidery and sewing but they lacked raw materials and proper equipment. Worse yet, the market was not developed and prices kept low by middlemen.

In 1990, the Cottage Industries Centre was established to promote training and support production of a variety of products. It began with a textile weaving centre and a carpet factory. These created opportunities for the younger generation of men and women because the work entailed considerable physical strength. A centre was later set up to process mulberry paper. Mulberry trees grow well in the forest, like bamboo. If villagers can make use of such products from the forest they have yet another reason to protect it. Later a ceramic factory was set up by drawing on local knowledge and boosting community skills to a common standard while supplementing household income.

By creating different kinds of jobs, the Doi Tung Development Project has promoted supplementary activities that add value along the entire length of the production chain in the project area.

To put it another way, planting and maintaining crops is just the "upstream" stage of the cycle, followed by value-added activities that serve to maximize yield and minimize losses, while improving quantity and quality and enhancing work to the highest standards. These are followed by "midstream" activities to stabilize profit, such as processing and clothing design, and then there are "downstream" activities such as branding, marketing and distribution that make the products popular and desired.

Through continued training and promotion men and women of all ages can gain technical skills and ability and can contribute according to individual aptitude, interest and knowledge without the necessity of a formal education or literacy.

In addition, tourism at the Doi Tung Development Project has created numerous job opportunities, especially in the service industry, which bring a steady income to the local community in the long term, while also serving as an important channel for linking the communities at Doi Tung with the outside world.

Cultivating People at Pang Mahan

The upstream forest conservation plan as practiced at the Pang Mahan Afforestation Project can be divided into 11 points (see pages 13-19). Cultivating forest and cultivating people both come into play here.

1. Basic information survey

This is a study of the basic socio-geographic reality of the target area with the goal of "getting at" the underlying reality. Comprehensive and sufficient up-to-date information covering different dimensions is collected to understand the needs of the people and other aspects of the problem. To lay out a plan of action, the basic facts provide background information and serve as a point of reference to track progress and evaluate performance.

The survey needs to be conducted jointly with the community and other stakeholders to learn together and gain a shared understanding to ensure mutual trust between the community and the project team. Another important aspect concerns the fact that most of the land is reserved forest or national park, but the survival of the villagers depends on being able to earn a living there. Because of these sensitivities, the participation of the community and all relevant parties is critical.

The joint survey provides a means to build understanding, clarity, transparency and reduce conflict which is bound to arise in subsequent stages of the process, especially when it comes

to determining which part of the forest is protected, which part is economic forest, which part is sustenance forest and which part is for growing food and habitation.

The survey process of the Pang Mahan Reforestation Project consisted of a study and comparative review of the target area based on: 1) satellite maps 2) photos taken from aerial surveys 3) confirmation on the ground. Information gleaned from the first two sources provides the big picture and overall understanding, while information collected on foot offers an in-depth, detailed and up-to-date view of the economy, society and population of the affected community.

Land use information in the area needs to document coordinates for clarity. Each survey will produce a joint record between project staff and the owner of the plot in question which is to be signed and endorsed by the owners of neighboring plots, and / or the community leaders and / or the representatives from government agencies participating in the survey. There needs to be a survey of water sources, as well as a collection of indigenous plant samples in order to know what to grow.

2. Building understanding and winning the confidence of the community

This means to communicate through words and actions to gain insight and create faith in the project until the community wants to join hands in ideas and action. As such, communication and trust-building activities must be easy to understand. Reaching out by different channels simultaneously and making necessary adjustments according to the conditions and circumstances of each location helps ensure success. The Mae Fah Luang Foundation process involves meeting with community leaders already respected by villagers to arrive at an understanding after which they can be facilitators in communicating, convincing, and winning the understanding of community members who will in turn help explain the project to the village.

If some people remain opposed, their concerns must be addressed so as to build consensus and a positive atmosphere. In some cases it may be necessary to speak to them individually

to clear things up and achieve understanding. If there are any doubts or problems, they need to be clarified and worked on together. Problems should not be left unaddressed or left to linger but should be addressed as soon as possible, especially issues dealing with daily livelihood. To help build trust with the community, some urgent problems, perhaps water supply, or food or health matters, should be addressed as soon as possible, starting within 10 days and finished in no more than 150 days.

This process is referred to as the "Quick Hit" by the Mae Fah Luang Foundation, to show the community the intent to work with them to get things done for their benefit. Community involvement in thinking, seeing and doing is stressed at every step of the process.

3. Water conservation and management

This is carried out using three types of weirs: for domestic consumption, for agriculture and for conservation, including the digging of systems of connecting ponds high on the hilltops to provide water for all and retain water for use in the dry season. Is there sufficient drinking water of good quality? If not, the water usage habits are studied to determine water consumption requirements for agriculture according to priority, taking into account capital resources to determine where new weirs should be constructed.⁶

4. Establishment of a Farmer Assistance Fund

The goal is to enhance the productivity of the area at every step of the cycle. For example, if the agricultural water supply is plentiful, it is possible to grow crops three times a year, or set up a seed bank for quality varieties of rice, corn, soybeans, green beans to enhance the yield. A fruit and vegetable seed bank should be established to collect and store local seeds for future propagation with the aim to encourage indigenous plant varieties that have been reduced or are lacking in the community. The community also needs to focus on their food needs and promote kitchen gardens to reduce household expenditures. Funds should be set aside for animal husbandry as well, drawing on volunteers who are knowledgeable in such matters, along with putting aside resources, such as funds to combat swine flu, or the distribution of fish fry to local ponds and reservoirs to generate additional income. The type

⁶ For more information, see the Mae Fah Luang Development Approach Manual: Irrigation Management

of seedlings and techniques of animal husbandry selected is dependent on local geographic and social conditions with an emphasis on community needs. In the case of the Pang Mahan Reforestation Project, funds were set aside to purchase LPG gas to reduce the cutting of forest trees for fuelwood as well.

5. Helping the community and school

Promote activities complementary to cultivation. For example, promote and provide support to small grain millers who can take on food-processing initiatives within the community, or fund the value-added processing of animal feed, or collect and distribute vegetable seeds for agricultural projects, or set up youth camps to cultivate awareness and spread knowledge about policy principles and project activities.

6. Monitoring and evaluating reforestation and other operations

The Mae Fah Luang Foundation emphasizes the importance of getting the community to continually monitor its progress and follow-up with evaluations in order to make necessary adjustments timely. In the early stages of the project, the project staff will engage in a walk-through with the villagers once a year to collect socio-economic data, survey forest conditions and assess the biological health of the forest. Reforested areas will be surveyed to measure the height and girth of trees, the number of trees growing and how many old species have returned. This is important in the wake of forest fires and illicit forest encroachment and changes are indicated by marker pins and recorded GPS coordinates. The Foundation promotes the establishment of a committee to manage activities and keep track of overall resources available in the area for the continued benefit the community, delivering a sense of responsibility and ownership of the development project to the people.

In any case, the above 6 steps (out of a total of 11 steps) of the Pang Mahan model guiding controlled cultivation in protected upstream forests have been repeated here to stress the importance of "cultivating people," the purpose of which is to get members of forest communities to participate, think, share, and prudently develop their beautiful wilderness.

[03]

THE QUALITIES OF A GOOD DEVELOPER

The success of any job depends not only on the objective but the means: at the heart of the matter are the principles, processes, methods and the quality of those who carry out the work.

The basic qualities of those who assume the duty of promoting economic forests can be described as follows:⁷

1. They must have basic knowledge of agriculture. It is important to understand the climate, the terrain and the indigenous vegetation of the target area.
2. They should be able to see the big picture and envision long-term results in order to help villagers to appreciate clearly the benefits of the economic forest. They must possess the communication skills necessary to persuade villagers and create understanding through talk and discussion. Taking these measures into account will lead to the formulation of a plan that is careful, practical and of true benefit.
3. They must be committed to results-oriented work, because the starting point may be zero and the work will be beset with pressures and obstacles along the way. A determination to succeed is key.

For example, Mr. Prayong Sisatjai, a field officer with the Mae Fah Luang Foundation walked along, worked together and exchanged ideas with the villagers from beginning to end, from survey to reforestation, in a prototype extension project aimed to develop Yaenan Chaung Township, Myanmar in 2011.

⁷ For more information, see the Mae Fah Luang Development Manual: "Cultivate Land, Cultivate People" Series: Growing Sugar Palm in the Economic Forest, and the Mae Fah Luang Development Manual: "Cultivate Land, Cultivate People" Series: Growing Rattan in the Economic Forest

When the project started to be successful, he then asked the local project staff he had been training the provocative question: "After you grow the trees, how do you make sure they will not be cut down again?"

Prayong returned to the villagers to discuss this topic, and they came up with the idea of a "community validation" in which the villagers agreed to protect the forest and make a written promise not to allow their livestock to enter the newly planted forest for grazing. Violators were deemed liable a 5,000 kyat (about 200 Baht or US\$6) fine, a substantial amount for the community.

It took only a single question posed by the official to stimulate villagers to think for themselves and come up with a solution to protect shared resources for the good of the community. This kind of method is useful because it helps instill a sense of ownership and empowers the community, and yet it is so simple as to be easily overlooked.

In answer to the question--what does sustainable development look like and where can it be found?--one could say that it involves people talking to one another and taking responsibility for the common good in harmony with nature.

[04]

SUCCESS STORIES OF CULTIVATE LAND, CULTIVATE PEOPLE

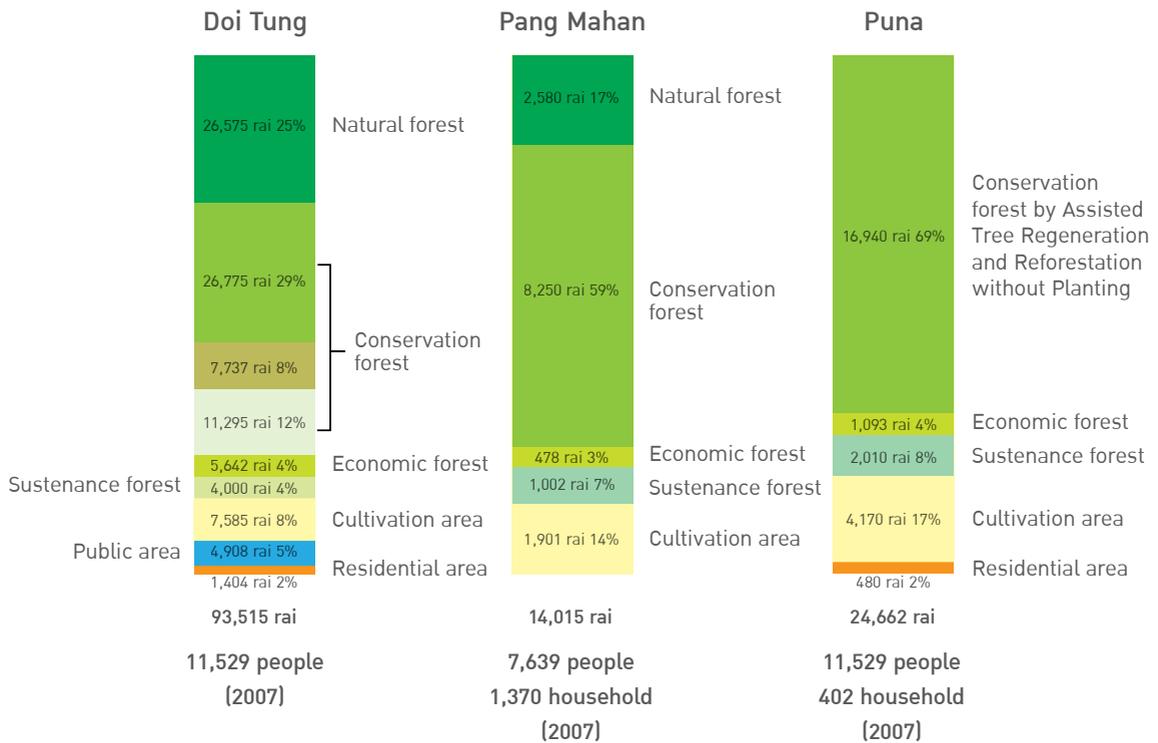


Figure 1:
 Comparative chart and graph of land use and afforestation according to type and location of projects run by the Mae Fah Luang Foundation

The Mae Fah Luang Foundation operates three types of mixed forest: economic forest, protected upstream forest and sustenance forest or “usable” forest that involves land allocation and sustenance plots. Special attention is directed to ongoing value-added processing in the projects at Doi Tung, Pang Mahan and Puna. All of these projects demonstrate the value of the “cultivate land, cultivate people” guidelines which allow people

to carry on their lives without imposing on the natural surroundings or other people. Instead they pursue the goal of relying on existing natural resources in a sustainable way that is of maximizing benefit while also in harmony with the geographic and social reality of the forest and community in each place.

Statistics on land allocation in each of the three projects show that the land use patterns of each project are similar. (Figure 1) Results share similar socioeconomic and environmental outcomes. (Table 1) Average income per resident has increased several fold.

In project areas, once there was enough food to eat, quarrels about division of resources decreased. As more people worked together to manage and maintain area resources, the degraded forest was restored to partial wilderness, a lush, green and abundant ecological system. There were fewer forest fires and fewer cases of invasive logging due to vigilant monitoring by the community living with the forest.

It can thus be concluded that if the principles put forward by the Princess Mother are adhered to as presented in this book, the forest will return. Sustenance forests take up approximately 8 percent of the total area, while another 20 percent of the land is set aside for economic use, the two of which combined amount to 28 percent of the total area; while cultivation area contributes to 10 percent and 2 percent for residential area. That leaves about percent of the forest available for protection and conservation as a watershed laced with brooks and streams.

In addition, economic development leads to the improvement of the quality of life in all aspects. It can be further observed that the forest is actually better off with a strong community in it. The forest is more likely to suffer degradation to the point of total deforestation if the villagers are not there to serve as stewards of the forest. Thus we can put to rest the misguided idea that the forest must be entirely cleared of people to protect it from deforestation.

Project	Conservation Forest	Economic Forest	Sustenance Forest	Cultivation Area	Residential Area
Doi Tung	77	4	4	8	7
Pang Mahan	76	3	7	14	0
Puna	69	4	8	17	2
Average proportion:	74	4	6	13	3

Table 1:
 Chart showing five types of forest
 in three different projects

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BIBLIOGRAPHY

Kanok Wongtrangan, 2010. Advisor to the Prime Minister Interview, June 12

"Cultivate Land, Cultivate People --A set of development guidelines on surveying the forest"
Mae Fah Luang Foundation 2012, Bangkok Editor, Pimpan Diskul Na Ayutthaya

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