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## NAM CHUEN WATERSHED MANAGEMENT FRAMEWORK FOR SUSTAINABLE DEVELOPMENT

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### ABSTRACT

Initial implementation of the most of development projects concerned with natural resources and environment management encountered many problems including : lack of interagency problems solving and integrated management, lack of awareness and persistent conflicts among the government agencies, the local people and various NGO's. Nam Chuen watershed has been chosen as a pilot sub-watershed project to demonstrate integrated, Natural Resources and Environment Management planning on an ecosystem basis.

Natural Resources and Environment Management Framework for Sustainable Development (NRE/MFSD) has been formulated and used as a supporting mechanism guideline for Natural Resources and Environment Management (NREM) Planning by the multi-stakeholders. The strategies of NRE/MFSD process are the component of three main functions.

1. Core Planning Team (CPT) :
2. People Participation (PP) :
3. GIS Applications :

In the planning process CPT and PP were reviewed the three main components: Government policies (NRE concerned), the capability or potential of natural resources, and the local (people) needs. They were also used GIS to support in the process of data analysis which included identification of issues and exploration of alternative spatial objectives. The CPT and PP proceeded to resolve their issues on the

basis of a joint commitment to reconcile government policies, the potential of local land base and the needs of local people. The overall results of the NRE/MFSD are expressed in its vision, goal and strategic objectives. The specific management direction is contained in sectoral goals, objectives, targets, management guidelines and resources management zones. Implementation, monitoring and evaluation procedures are also defined.

This project has been strengthened the ability of planning and implementing the Natural Resources and Environment Management project for sustainable development. The most important strategy is people participation process which applied throughout the process. The use of GIS helped them to understand spatial implications as they sought to resolve the issues and establish the management direction, and helped them gain greater confidence in the planning process and decision making. They all believed and has a confident that NRE/MFSD shall relieve all conflicts in the area and leads to the sustainable development.

## **INTRODUCTION**

The Nam Chuen sub-watershed is a 727 Km.<sup>2</sup> area located in Phetchabun, Chaiphaphum and Khon Kaen provinces. It is one of three sites, designated by the 1995 Cabinet Resolution, to prepare and implement The Pilot Watersheds Management Action Plan (B.E. 2538-2542). In 1997, it was designated under an additional Cabinet Resolution to implement The Management Action Plan for Population in Protected Areas of the Pilot Watersheds. The purpose of the pilot project is to demonstrate integrated Natural Resource and Environmental Management planning on a sub-regional, ecosystem basis. The Office of Environmental Policy and Planning (OEPP), Ministry of Science, Technology and Environment (MOSTE) has lead responsibility for this multi-province initiative.

Initial implementation of the project encountered many problems including : lack of interagency problem solving and integrated management, lack of awareness of the 1997 Action Plan and persistent conflicts among the government , the local people and various NGO's.

In an effort to improve the implementation and effectiveness of the Nam Chuen Action Plans, the Natural Resources and Environmental Management (NREM) project, a technical cooperation project between Canada and the Royal Thai Government was invited to include the Nam Chuen as one of its

participatory integrated NRE planning pilot projects. The NREM project is a five-year initiative to strengthen the capacity of Thai agencies to develop and implement integrated policies, plans and projects in natural resource and environmental management.



Figure 1 Country Development

MOSTE (OEPP) and NREM staff defined four primary objectives for the Nam Chuen NREM Pilot Project:

- 1) To strengthen the Nam Chuen Action Plan, and the watershed planning process used to develop it, by applying participatory, ecosystem-based NRE management planning approach.
- 2) To develop a GIS database and applications to support the participatory management planning approach.
- 3) To design and implement a public participation strategy in support of the planning initiative.
- 4) To develop the system to monitor the implementation of the plan.

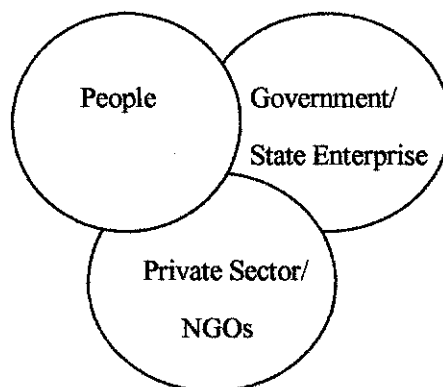
These four objectives have now been achieved and the product of the process in the Nam Chuen Watershed Management Framework for Sustainable Development (NC-MFSD). The MFSD provides direction to agency project planning and budgeting in the Nam Chuen sub-watershed area. Key plans affected include the NC Action Plan, the Provincial Development Plan, and the Provincial Environmental Action Plan, as well as Or Bor Tor and line agency budget planning related to natural resources and environment.

### **NAM CHUEN MANAGEMENT FRAMEWORK FOR SUSTAINABLE DEVELOPMENT**

The NC-MFSD reflects the integration of Government NRE policies, the natural resource and environmental capability of the sub-watershed area and the needs of local people. It was developed through three primary strategies:

#### **1. Development through a Core Planning Team (CPT)**

A core planning team (CPT) was established to develop the NC-MFSD in consultation with the affected villages. The CPT had 30 participants including RTG government officers from the Interior, Forestry, Agriculture, Parks and Environment agencies, and representatives of NGO's Or Bor Tors, and local villages. Thai and Canadian consultants were retained to assist the CPT in developing the MFSD and consulting with the villagers. By operating on a consensus basis and involving representatives of the affected agencies and public in a strategic and integrated planning process, the CPT was able to develop broad support for the NC-MFSD.



**Figure 2 Multi-Stakeholders Partnership**

## 2. Extensive Public Participation

A comprehensive public participation strategy (PPS) was designed to support the development of the NC-MFSD by the CPT. The strategy involved approximately 100 representatives from the villages (PP) in the sub-watershed (2-3 persons from each village). In a series of workshops that focused on key stages in the MFSD development including issues identification; vision, goals, and objectives setting; management zoning; as well as implementation and monitoring process development. Public Participation and Conflict Management training was provided to the CPT to increase the effectiveness of the participation process. This extensive public participation was broadly viewed as one of the most important elements in developing the NC-MFSD.

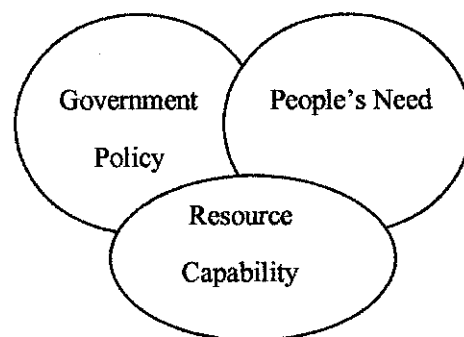


Figure 3 Essential Integration for Sustainable Development

## 3. Geographic Information System (GIS) Support

A GIS Team was established to support the project using government staff from each of the provinces (including some CPT members). Provincial offices were provided with GIS systems (PC-units) and relevant databases, and the GIS Team was given training in how to use the system to support the MFSD development and implementation process. The CPT and PP could access the results of GIS analysis, which included identification of issues and exploration of alternative spatial objectives. The use of the GIS helped the participants understand spatial implications as they sought to resolve the issues and establish management direction. It also helped them gain greater confidence in their planning and decision making.

## PRIMARY ISSUES

### Natural Resources and Environment

Deforestation as a result of illegal logging and slash and burn agricultural practices is a critical problem in the NC watershed. Impacts resulting from deforestation include: soil erosion and depletion, reduction in water quality and quantity for domestic consumption and agriculture, flooding, and loss of wildlife habitat and populations.

### Socio-economic and Community

Communities in the Nam Chuen Sub-watershed suffer from a wide range of problems including :

- Poverty. The majority of the local population is poor with significant dependence on low productivity agricultural activities, some of which are directly related to the natural resource issues.
- Land Title. Many local village populations are in conflict with the government over land allocation and title which does not exist for several villages.
- Poor Markets. Local producers have limited access to secure markets, and prices for their agricultural products are unreliable.
- Community Issues. Community issues include significant numbers of broken families, low education levels, narcotic problems, inadequate health care services, poor organizational support for local farmers and lack of infrastructure.

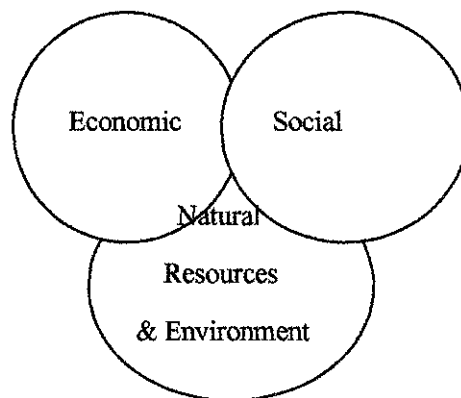


Figure 4 Ecosystem Balance

## **PRIMARY RESULTS**

The CPT and PP proceeded to resolve those issues on the basis of a joint commitment to reconcile government policies, with the capability and potential of the local land base and environment and the needs of the local people. After 11 CPT workshops and 6 PP workshops over an 18-month period the participants developed the Nam Chuen MFSD. The overall purpose of the MFSD is expressed in its vision, goals, objectives, targets, management guidelines and resource management zones. Implementation, monitoring and evaluation procedures are also defined.

### **Vision**

The Nam Chuen watershed is prosperous, with unity and cooperation among the people, green forests, fertile soils, good quantity and quality of water, clean air, healthy ecological conditions, and the people are well and living in happiness.

### **Goal**

People shall work together to conserve the natural resources and environment and restore the forests of the Nam Chuen watershed in order to provide a good living for the next generation.

### **Strategic Objectives**

1. To resolve land title issues, and allocate permanent settlement areas to the people in order to secure the sustainability of their lives.
2. To conserve and utilize natural resources wisely on the basis of people living in harmony with the forest.
3. To develop and secure the community in terms of occupations and local economic conditions.
4. To develop infrastructure and improve living standards for local people.

### **Specific Management Direction**

- 1) Goals, objectives, targets and management guidelines are defined for each of the following sectors.

A) Natural resources and environment:

- forest resource
- wildlife resource
- soil and land use
- water resource
- mineral resource

B) Socio-economic and culture:

- settlement
- community
- education
- health care
- religions
- culture
- infrastructure
- economic
- networking and organizational development
- tourism

2) Management zones include two major zones and four sub-zones.

**A) Conservation management zone.**

This zone should be protected from industrial development. Forest cover should be enhanced through rehabilitation of degraded areas in order to maintain and improve the quality of the ecological-systems including maintaining wildlife habitats, quality and quantity of water, soil fertility etc. Total area is about 369,500 rai\* or 81.32 % of the watershed area.

\* 2.5 rai = 1 acre



In order to address the present situation and problem, the conservation zone is subdivided into two sub-zones.

**A.1) Conservation management zone without problems:**

At present time this sub-zone is still covered with forest. There is no illegal occupation and most of this subzone is already declared as a protection or conservation zone by the government. The total area is about 312,600 rai or 68.80 % of the project area.

**A.2) Conservation management zone that has problems:**

Most of this area has already been declared a protection or conservation zone by the government but it has been cleared of forest cover and then used for agricultural production. This area is unsuitable for cultivation and it will be reforested as soon as possible. The total area is about 56,900 rai or 12.52 % of the project area.

**B) Cultivation management zone:**

This is the component of the sub-watershed area that is suitable for agriculture and land uses towns, villages, government offices, infrastructures, etc. This zone has also been sub-divided into two sub-zones.

**B.1) Cultivation management zone without problems:**

People occupy and utilize this area legally, they all have land title documents. Specific management guidelines are established to increase the sustainability of the agricultural and other development practices in this zone. The total area is about 43,460 rai or 9.56 % of the project area.

**B.2) Cultivation management zone with problems:**

This land area has been declared as national protection or conservation area but people have moved in and cleared the forest and are occupying the land illegally for agricultural and subsistence purposes. The CPT and PP were agreed that this area should be zoned as cultivation land, and that the government should consider giving this area to the landless people for subsistence purposes. Specific management guidelines are established to increase the sustainability of the agricultural and other development practices in this sub-zone. Total area is about 41,415 rai or 9.12 % of the project area.

In summary, the cooperation and consensus building generated an agreement amongst the CPT and PP members to return 60 % of the illegally occupied area (approximately 60,000 rai) to forest cover for conservation purposes and to provide 40 % of the illegally occupied area (approximately 40,000 rai) to the villagers for agricultural purposes.

**IMPLEMENTATION, MONITORING AND EVALUATION**

Implementation procedures were developed and tested by evaluation the consistency of current plans such as the Nam Chuen Action Plan with the NC-MFSD. In addition, the CPT and PP developed 243 new project concepts to address specific MFSD targets not addressed by current plans. The local people, Or Bor Tor and NGO's committed to allocate about 21 % of their own budget to implement these new project concepts continuously. In addition, the NREM project provided a 400,000 Baht budget for a new community project that would support the implementation of the MFSD. The CPT and PP members developed various options for this community project then selected one that emphasizes quality of life and natural resources and environmental development.

The Monitoring process addressed both the compliance of future projects with the NC-MFSD as well as the effectiveness of the MFSD in achieving its vision. Key indicators for monitoring are identified and the role of local people and organizations as well as the CPT are defined. CPT and PP members participated in monitoring and evaluation workshops, in which they learned, adapted and practiced procedures developed by the consulting team. Local people will participate in MFSD implementation and monitoring through existing local committees with feedback to the CPT which will meet periodically to evaluate and review the MFSD.

**OBSERVATIONS AND RECOMMENDATIONS FROM CPT, PP AND FACILITATORS:**

1. At local level, CPT and PP participants would like to see all concerned agencies promote the NC-MFSD amongst the local people, the Or Bor Tor, other government officers in the watershed and neighboring areas in order to engage more people in the implementation process. In addition, each of the Tambon and Districts (Amphoe) in the area should take responsibility for establishing coordinating agencies similar to a CPT to more effectively implement the NC-MFSD.
2. At provincial level, all concerned agencies in three provinces and line agencies from central should be directed to formulate their projects (eg. Provincial Development Plan and Environmental Action Plan) following NC-MFSD direction.
3. The concept of an MFSD and the participatory approach to its development should be recommended to high level decision-makers and the government for adoption as national policy. All provinces throughout the country should prepare their own Provincial MFSD. In addition, MOSTE should apply this approach for NRE management.