

**KINGDOM OF THAILAND  
UNITED NATIONS CONVENTION TO COMBAT  
DESERTIFICATION ( UNCCD )**

**FIRST NATIONAL REPORT ON THE UNCCD  
IMPLEMENTATION**

**LAND DEVELOPMENT DEPARTMENT, MINISTRY OF AGRICULTURE AND  
COOPERATIVES, BANGKOK, THAILAND**

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It is a great pleasure that Thailand is ready to submit our first national report though we have just entered into force last June. In fact, this report is materialized by contribution of many persons involved. First of all, we wish to thank the UNCCD Secretariat for providing us a grant for preparation. We also would like to convey our sincere thank to Mr. U Wai Lin and Mr. Yang Youlin from Asian Coordinating Unit for their meaningful advice and friendly cooperation.

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## 2 . S U M M A R Y

Thailand has been taking care of environmental quality quite a long period of time. After the United Nations Earth Summit held in Rio de Janeiro in 1992 and emergence of many following international conventions, Thailand takes this opportunity to strengthen and increase effort and caring for more effective environmental quality management. Thailand has already shown keen interest and readiness which can be perceived from determination of present Constitution, The 9<sup>th</sup> National Economic and Social Development Plan (9<sup>th</sup> NESDP ), the Policy and Prospective Plan for Enhancement and Conservation of National Environmental Quality, and policies of the government. Each, in line with the UNCCD, contains essential guidance for revitalization of societies for effective management of natural resources.

The Constitution of 1997 gives administration power to local communities through Tambon <sup>1/</sup> Councils and direct the government to provide farmers with appropriate land uses and holding systems, sufficient water resources, protection of farmers' production and marketing, promotion of assembling for planning and protecting their mutual interests.

The 9<sup>th</sup> NESDP strategically promotes local and community participation with transparent administration system for improvement of management mechanism of natural resources and environment. It targets to conserve and restore natural resources with the aim to have : no less than 25 percent of conserved forest and 1.25 percent of mangrove forest, no exceed 0.8 million hectare of soil erosion, and 1.6 million hectare of problem soils developed.

The Policy and Prospective Plan for Enhancement and Conservation of National Environmental Quality integrates natural resources management and conservation of national environmental quality with sustainable economic and social development to ensure the quality of life. It focuses attention to roles and functions of people, technology, local organization and NGOs to constitute each sub-divided 5 year period Provincial Environmental Quality Management Action Plan. Having foreseen resource use upon conservation by decentralized administration and awareness of people, main policy devotes supporting and increasing management efficiency to coordination among organization, systematic decentralization of authority, establishment of social justice, amendment

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<sup>1/</sup> Tambon = Sub - district

of legal and regulatory framework, conducting research, and increasing conservation awareness of all levels of actor.

Policy of Thai Government also declares to restore the conditions and quality of natural resources to prevent degradation and depletion of natural resources for benefits of people's livelihood by means of good governance, popular participation, and promotion of technological research and development.

Coincidentally, combating desertification has been specifically under responsibility of Land Development Department (LDD) since establishment in 1963. Considering area of competent and mandate in corresponding with UNCCD main interest, the LDD was assigned to take full capacity as national focal point of the country. Land Development Act 1983 prescribes that the LDD has a duty to look after land development of the country. This year it receives as much as US\$ 60.32 million budget allocation for more than three thousand staff to combat desertification all over the country. Board of Land Development was put in place of national coordination body because of the right duty and composition of executive members from different concerning departments and chair by Minister of Agriculture and Cooperatives.

In Thailand, land degradation process starts from deforestation and results in soil erosion and salinization. Surprisingly, norm to address land degradation by Thai government is closed to the UNCCD's.

In fact, a task to combat desertification is a big deal. The LDD alone can not cover all aspects of desertification. Fortunately, at least two other departments have been working with two important aspects quite a number of years and cooperation with the LDD is already exist.

Meteorological data has been recorded and used for agriculture since 1923. Weather forecast by Thailand Meteorological Department (TMD) starts from conventional data recording by local stations throughout the country and moves forward to utilizing a sophisticated remote sensing technology that makes weather forecast available every day with more precise results.

Forest resources management has been specifically under responsibility of Royal Forest Department (RFD). Except for remote sensing and GIS computerized technologies that the RFD uses for forest management and monitoring, community participation have been proven successfully implemented at Doi Sammuen High Land Development Project which is ready to apply with other places.

The LDD also applies remote sensing and GIS computerized technologies with many activities i.e. land use planing, soil survey and classification, soil conservation, monitoring of land use change, and

expansion of soil salinization. Soil conservation service emphasizes more on biological method especially using vetiver grass. At present, the LDD promotes land development technology and extension service through Land Development Village and Volunteer Soil Doctor programs. The LDD also runs a New Theory program for individual farmer who owns a small piece of land. This program aims to establish self-sufficiency and minimize risk for individual farmer by a specific land use pattern and farm pond to have enough water for the whole year consumption. Other programs in line with UNCCD are as follow :-

- (1) Small - scale water resources development project
- (2) Farm ponds development project
- (3) Land development on high land community project
- (4) Saline soil development project ( phase 2 )
- (5) Tung Kula Rong Hai development project ( phase 4 )
- (6) Soil and fertilizer management project
- (7) Royal development and usage of vetiver grass project
- (8) Land use planning for watershed management project
- (9) Soil survey, analysis, classification for land use planning project
- (10) Soil and water conservation project
- (11) High land development project
- (12) Extension and public relation on soil and water conservation project
- (13) Land development research project
- (14) Royal land development project
- (15) Eastern soil and water conservation project

To summarize all advantages of current management environment, Thailand is ready with the following reasons.

- Thailand has Land Development Department that has been working in line with the UNCCD's and the focal point office is in there.
- Thailand has policies in line with the UNCCD's
- Implementation plans for combating desertification do exist. Though they have not been directly formulated under national action program of the UNCCD, however, minor adjustment can be made.
- Science and technology is already available. Monitoring and evaluation of major aspects of desertification has been proceeding with remote sensing, GIS, information database and computer technology.

- Combating desertification has been implementing throughout the country.
- Local participation is increasing and empowered by decentralized policies of the present government and present Constitution that leads to enactment of Tambon council and Tambon's Authority Organization Act 1994
- Annual budget for combating desertification is available on continual basis with respect to the 9<sup>th</sup> National Socio - economics Development Plan.
- Land Development Department has more than 3000 staff all over the country.



### **3. STRATEGIES AND PRIORITIES ESTABLISHED WITHIN THE FRAMEWORK OF SUSTAINABLE DEVELOPMENT PLANS AND/OR POLICIES .**

#### **3.1 National Economic and Social Development Plan ( NESDP )**

At present Thailand is at the beginning of the 9<sup>th</sup> NESDP. This five years development plan started in October 1<sup>st</sup> , 2001 and will be ended in September 30<sup>th</sup> , 2006 .

Priority of development of the 9<sup>th</sup> NESDP will be in line with solving the nation's urgent problems as follows :

- (1) To accelerate economic and social restoration.
- (2) To strengthen grass-root economy with the emphasis on community development and community business
- (3) To alleviate social problems and to solve poverty problem
  - To provide the poor with opportunities to access public services and natural resources by developing social protection network, strengthening grass-root economy and public management reform .

The plan consists of strategies in areas relevant to the combat of desertification. With objective to gain effective and transparent management system while maintaining the balance of resource use and conservation, the following targets should be met :

- (1) Conservation and restoration of natural resources as well as utilization with the aim to have no less than 25 percent of conserved forest and 0.2 Million hectare of mangrove forest.
- (2) Soil erosion protection should not less than 0.8 million hectare a n d
- (3) 1.6 million hectare of problem soils will be developed.

The guiding strategies focus on improvement of management mechanism of natural resources and environment by promotion of local and community participation with transparent administration system. Conservation and restoration of natural resources will be implemented to keep ecological system in balance whereas supporting economic foundation in sustainable manner. Deteriorated and problem soils will be developed by applying sustainable agriculture and organic agriculture in order to raise fertility and suitability for higher agricultural production as well as least effect to the environment .

#### **3.2 National Environmental Action or Strategy**

At national level, the Policy and Prospective Plan for Enhancement and Conservation of National Environmental Quality was adopted

according to the Enhancement and Conservation of National Environmental Quality Act of 1992.

The Policy and Prospective Plan for Enhancement and Conservation of National Environmental Quality aims for integration of natural resources management and enhancement, and conservation of national environmental quality, with sustainable economic and social development, and to ensure the quality of life. It includes policies and guidelines for enhancement and conservation of environmental quality for 20 years (1997 - 2016). This extended period is required to resolve environmental problems, in that an extended timeframe is needed for effective implementation. In addition to prioritizing environmental problems that require immediate attention and essential measures for rehabilitating and enhancing environmental quality, other important factors that will play a major role during the 20 year implementation period include the following :

- (1) Increased population as producers, consumers and resident.
- (2) Technology for production, information, communication , services , treatment of environmental problems , and for environmental quality promotion .
- (3) Roles for local organization at all levels to participate in administration and management of resources, and promotion of environment quality, monitoring, and increasing local awareness.
- (4) Roles for NGOs to participate in concerning environmental matters with organization at different levels, especially monitoring programs and increasing public awareness, as well as mobilizing environmental volunteers .

Roles and functions of these elements must be clearly specified and established in the Five Year Environmental Quality Management Plan, and must be translated or formulated in yearly implementation plan at provincial levels called the Provincial Environmental Quality Management Action Plan .

Vision of the Policy and Prospective Plan for Enhancement and Conservation of National Environmental Quality for managing environmental quality includes :

- (1) Natural resources are the resources base for sustainable development. Utilization of these resources for economic development purposes is based on conservation and social justice.

- (2) Administration and management of environmental quality overall are decentralized to be effective, with power being transferred from central offices to local institutions. Thus, all government agencies, the private sector, NGOs and local level institutions can participate in formulation of policy and planning, an a monitoring program.

(3) People have awareness and are willing to work together to protect, and rehabilitate environmental quality.

This plan aims to achieve the following objectives :

(1) Protect and rehabilitate environmental quality for enhancement of quality of life and better health of human beings.

(2) Conserve natural resources to be the resource base for sustainable development, by rehabilitating degraded natural resources for future development, by preserving and sustainably using non-renewable resources.

(3) Building institutional capacities to administrate and manage environmental quality, in addition to decentralizing power to provincial and local authorities.

To protect remaining natural resources, and rehabilitate degraded resources as the resource base for sustainable development over the long-time. Its goals directly deal with resources :

◆ Land Resources

(1) Effectively use of land resources for various activities based on their capacity and conforming to environmental conditions, taking into consideration the impact on the country as a whole.

(2) Conserve, rehabilitate and improve degraded soil and land as resource base for sustainable development, by accelerating rehabilitation of abandoned areas and solving problems of soil erosion, that cover 59.5% and 41.7% of the countries' area, respectively.

(3) Conserve areas containing unique ecosystems and geology based on the natural balance.

◆ Forest Resources

(1) Protect 50% of country as forest cover; of this figure at least 30% is designated as conservation forest, and the remaining 20% is designated as economic forest.

(2) Utilize forest resources based on maintaining balanced ecosystems and environmental quality.

(3) Conserve bio-diversity sustainability.

The 20 year period plan consists of the following policies :

◆ Policy on Natural Resources

(1) Increase efficiency in utilizing natural resources; coordinate any utilization of natural resources and reduce conflicts; and,

accelerate rehabilitation of degraded natural resources for basic inputs of sustainable development.

(2) Systematically decentralize power and authority of central offices to regional offices to enhance administration and management of natural resources as well as strengthening relationship among government agencies, private sectors, NGOs and local people.

(3) Support application of resource economics for effective management of natural resources and establishment of social justice.

(4) Amend legal and regulatory framework enabling support for more effective administration and management of natural resources, and recognition of rights and responsibilities of local people to demonstrate ownership of resources.

(5) Support study, research, and establishment of a standardized database network of natural resources.

(6) Increase conservation awareness among senior government officers, politicians at all levels, private sector, and the general public, in order to integrate concepts for natural resources development.

The Policy and Prospective Plan for Enhancement and Conservation of National Environmental Quality is essential policy guideline for implementation within 20 years, that later will be divided into four five-year plans for environmental quality management. A five-year plan consists of programs, roles, and functions of concerned agencies.

The National Environment Board shall have the power and duty to submit policy and plans for enhancement and conservation of national environmental quality to the cabinet for approval.

It shall be the duty of all government agencies concerned to take actions within their powers and functions, that are necessary for effective implementation of the Environmental Quality Management Plan, and, in order to ensure that actions are taken to achieve the objectives and goals as prescribed, it shall be the duty of the Ministry of Science, Technology and Environment to give advice to government agencies and state enterprises which are concerned with formulation of work-plans of any taking of actions, with a view to implementing the Environmental Quality Management.

After the Environmental Quality Management Plan has been published in the Government Gazette, it shall be the duty of all government agencies and state enterprises concerned to take actions within their powers and functions that are necessary for effective implementation. As aforementioned, and the duty of the governor of each province to formulate a Provincial Environmental Quality Management

Action Plan, and submit the plan to the National Environment Board for approval.

### **3 . 3            G o v e r n m e n t ' s            P o l i c y**

Thai Government's policy on natural resources and environment is in line with UNCCD's. The present Thai Government has the policy to restore the conditions and quality of natural resources and bio-diversity, to prevent degradation and depletion of natural resources, and to recycle and reuse natural resources and bio-diversity in a manner that is beneficial to people's livelihood. National development must be well balanced and provide a basis for sustainable economic and social development of the country. The following policies show a close relationship with UNCCD.

- ◆ Manage the environment, natural resources and bio-diversity in an integrated manner by upholding the principles of good governance and popular participation by the people and the local community.

- ◆ Promote technological research and development with a view to increasing Thailand's capacity to manage, conserve and restore the environment. Support the beneficial use of natural resources from all sources, including the recycling of waste and other used materials.

### **3 . 4            S u b - c o m m i t t e e            o n            A g e n d a            2 1**

Since 2000 the Environment Board assigned a sub-committee on Agenda 21 to assess and monitor achievement of implementation of Agenda 21 in Thailand. Sustainable development indicators of the United Nations Commission on Sustainable Development (CSD) have been selected and adjusted for specific condition of Thailand. In addition, indicators of UNDP and the National Economic and Social Development Board of Thailand are also selectively incorporated. Desertification was included in an interim-report of 2002 in a considerable manner i.e. : use of chemical in agricultural sector; forest depletion and land slide; effect of drought and existence of soil salinization and causes. The report reveals three problems facing implementation of Agenda 21 : institutional problem ; organization structure and authority problems ; and financial problem. However, to tackle such problems, measures are already in places. Many coordination offices are established. Management of natural resources and environment becomes more decentralized to local level with assistance of National Decentralization Committee. A new financial mechanism has been created to support development activities of local communities through various funds.

### 3.5 National Conservation Strategy

As the goals of the 9<sup>th</sup> National Economic and Social Development Plan aim to reduce no less than 0.8 million hectares of areas effected by soil erosion and improve no less than 1.6 million hectares of areas of problem soils, Land Development Department responds with missions, development goals and development strategies as follows :

#### M i s s i o n s

- (1) issues land use policy and land use plan.
- (2) implements soil improvement and soil and water conservation projects for sustainable use .
- (3) services of knowledge, information and transfers land development technology .

#### D e v e l o p m e n t g o a l s

- (1) Updates information and developed soil and land use database in GIS computer system covering the whole country for up to date, reliable, quickly and easily accessible information.
- (2) Availability of land use plan and land use zoning for agriculture , industry, tourism, urbanization etc.
- (3) Availability of land resources development plan for 2000 sub-districts where technology transferred and services centers are already existed
- (4) With in 2004, Land Development Department will successfully provide soil and land use information system for all technology transferred and services centers of 2000 sub-districts for preparation of agriculture development plan.
- (5) Increases the implementation of land resources development plan to reduce no less than 1.6 million hectare of areas facing soil erosion problem as well as improves no less than 3.2 million hectare of acid soils, saline soils and organic soils aiming to increase crop production and maintain fertility for healthy environment in risky and priority problem areas within the year 2006 .
- (6) Increases knowledge and capacity of volunteer soil doctors.

#### D e v e l o p m e n t s t r a t e g i e s

Strategy 1 Conducting Land resources survey and classification as well as provision of land use zoning and monitoring land use condition for appropriate land utilization and maintaining sustainable land use in favor of environment .

Strategy 2 Improvement of land resources management in integrated manner to increase crop production as well as rehabilitate land resources and environment qualitatively.

Strategy 3 Improvement of research measures for effectiveness and applicable land resources management.

Strategy 4 Improvement of technology transfer system, public relation, land development services, soil and land use information to approach target groups.

Strategy 5 Improvement of land resources' data and information systems to cover the whole country.

Strategy 6 Re-organization of operation system and improve efficiency of personnel.

### **3.6 Scientific and Technical Desertification Control Activities**

Thailand has just entered into force of the UNCCD. In the mean time, there is no specific national action plan available for combating desertification. Nevertheless, scientific and technical desertification control activities have been in operation by specialized agencies for a long period of time. Most agencies provide information through the internet system.

Thailand Meteorological Department ( TMD ) has combined conventional observation with advance remote sensing technology for weather forecast.

Weather forecast system of Thailand Meteorological Department (TMD) is based on local and international ( WMO ) network of conventional meteorological observations, its radar network and satellite receiving facilities. The main office in Bangkok holds responsibility for the whole country and can overrule the forecasts made by its regional centers. All data are transmitted analyzed and kept at TMD's main office.

TMD's conventional Meteorological observation network consists of 55 regular surface observational stations, 10 hydro-meteorological station, and 34 agro-meteorological stations. More than 10 stations in lower Chao Phraya Basin and more than 20 stations in upper Chao Phraya Basin. Upper-air observations (radiosonde) are made at 5 stations. Upper wind-only observations are also carried out at a few additional stations. Normally, weather observations at most stations are made every 3 hours. During intense weather, and hourly observation are made for stations in affected areas.

TMD's satellite image receiving facilities include high-resolution satellite receivers and their graphic periphery. GMS-5/s-VISSR (geostationary) images, both in infrared and visible (LR and VIS) ranges are received and processed hourly. Additional satellite products, such as

water vapor images, composite data are routinely received via internet link ( World Wide Web ), especially from NASA's WWW satellite archive site and University of Wisconsin-Madison's SSEC-WWW site.

Currently, TMD has an access to the Internet via two commercial Internet providers in exchange for forecasting data. The accesses are most of the time reliable. TMD uses Internet for supplemental satellite data and other forecasting products, such as the global numerical p r o d u c t s .

Royal Forest Department ( RFD ) uses remote sensing and GIS computerized technologies to follow change of forest area and encroachment. Forest plantation has been emphasized more on diversification. Community involvement in forest management has been successfully implemented in Doi Sammuen High Land Development Project which is ready to apply with other places. Forest resource has been taken care of as a major component of watershed and environment.

The LDD also applies remote sensing and GIS computerized technologies with many activities i.e. land use planing, soil survey and classification, soil conservation, monitoring of land use change, and expansion of soil salinization. Soil conservation service emphasizes more on biological method especially using vetiver grass. At present, the LDD promotes land development technology and extension service through Land Development Village and Volunteer Soil Doctor programs. The LDD also runs a New Theory <sup>2/</sup> program for individual farmer who owns a small piece of land. This program aims to establish self-sufficiency and minimize risk for individual farmer by a specific land use pattern and farm pond to have enough water for the whole year consumption. Other programs in line with UNCCD are as follow :-

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- (10) Soil and water conservation project
- (11) High land development project

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<sup>2/</sup> detail in appendix



- (12) Extension and public relation on soil and water conservation project  
 (13) Land development research project  
 (14) Royal land development project  
 (15) Eastern soil and water conservation project

### **3.7 Implementation of the recommendations of the Committee on Science and Technology (CST)**

Due to newly establishment, Thailand has not yet implemented the recommendations of the Committee on Science and Technology. Nevertheless, some comparable activities have already existed for many years for example, recording of meteorological data since 1923. The Soil Salinity Research Section of the Land Development Department has been involved in soil salinity management programs since 1963 by conducting agronomic research, soil salinity classification and demonstration of some management measures. A pilot project to monitor expansion of soil salinization in Kham Tale Sor district Nakon Racha Sima province has just begun this year. Hopefully in the near future recommendations of the CST will be applicable.

## **4. INSTITUTIONAL MEASURES TAKEN TO IMPLEMENT THE CONVENTION**

### **4.1 Establish and Functional National Coordination Body (NCB)**

#### Legal status

After Thailand entered into force of the UNCCD, Ministry of Science, Technology and Environment, in capacity of national focal point of Agenda 21, handed over responsibility to Ministry of Agriculture and Cooperatives (MOAC). Considering area of competent and mandate of the LDD which is corresponding with UNCCD main interest, the MOAC designated the LDD to take full capacity as national focal point of the convention.

At present the LDD performs under Land Development Act 1983. As a matter of fact, the department carries on activities in the same field ever since establishment in 1963. Section 10 of the Act prescribes that the Land Development Department shall have the duty to survey the land and to analyze the soil or land in order to determine the fertility and its suitability for utilization, classification, and development, and to prepare land census or conduct economic surveys of the land for the purposes of this Act and other tasks assigned to it by the Land

Development Board. Paragraph 1 in section 3 provides a definition of “ Land Development ” which is in line with UNCCD as follow.

**“ Land Development ”** means any act done to the soil or the land in order to increase the productivity or quality of the soil or the land, or to increase agricultural production, and shall include the improvement of the soil or the land, or to increase agricultural production, and shall include the improvement of the soil or the land which is infertile either naturally or due to its utilization and the conservation of soil and water to maintain natural balance or for suitable utilization of land for agricultural purpose .

#### R e s o u r c e s

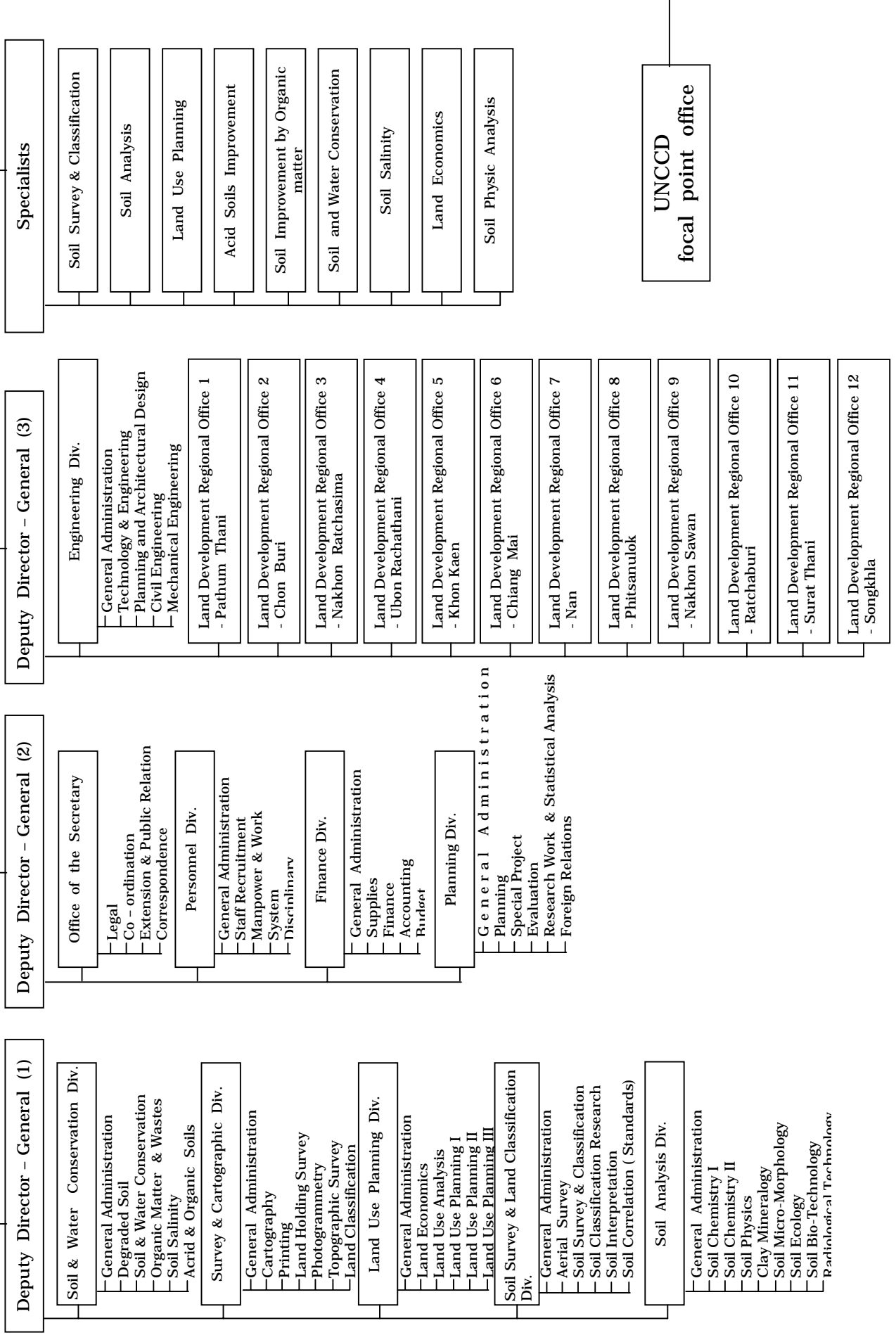
The LDD's task force consists of 1680 government officials and 1646 employees. Out of the total of government official the majority of 808 hold Bachelor degree whereas 134 and 11 received Master degree and Philosophy of Doctor respectively and the less is others.

Administration structure is composed of an Office of Secretary, Office of Specialists and 10 divisions in Bangkok and 12 regional offices scattered throughout the country. A line of command is shown in a diagram on the next page .

As a government organization, the LDD receives financial support through budget allocation system which is approved by the Cabinet annually and later approved by the Parliament.

**LAND DEVELOPMENT DEPARTMENT**

**Director - General**



### Cross - cutting and multidisciplinary characters

Since the LDD is assigned by the MOAC to be a coordinating body. The LDD itself operates under Land Development Act 1983 which is governed by Board of Land Development. The Board consists of the Minister of Agriculture and Cooperatives as Chairman, Permanent Secretary of Agriculture and Cooperatives as Deputy Chairman, Secretary - General of the Office of National Economic and Social Development Board, Director - General of Land Department, Director - General of the Public Welfare Department, Director - General of the Royal Forest Department, Director - General of the Royal Irrigation Department, Director - General of the Agricultural Extension Department, Director - General of the Agricultural Department, Secretary - General of the Office of Land Reform for Agriculture, Secretary - General of the Office of Agricultural Economics and not more than three qualified persons appointed by the Minister as members, and the Director - General of Land Development Department as Member and Secretary. The Board may appoint a sub - committee to consider or carry out any act as assigned by itself. An example of sub - committee is a sub - committee for land use planning and implementation at provincial level. However composition of non - government sector is still very few and means of communication follows routine line of bureaucratic system.

### S t a t u s o f i n f o r m a t i o n d a t a

Information system of the LDD is already opened to public via internet system. Intranet system is also available and readily attached to the internet. The LDD produces and displays several information which are relevant to combating desertification for example : soil survey data, soil improvement and conservation, land use map, land use p l a n n i n g , a n d e t c .

Web - link allows external information sharing among members of the Board of Land Development while intranet with local area network makes internal information exchange applicable.

Daily climatological data and weather forecast can be received from web-page of the TMD likewise information on past and present status of forest in Thailand as well as management policies and programs are r e a d y i n R F D ' s w e b - p a g e .

#### **4.2 Institutional Framework for Coherent and Functional Desertification Control**

Apart from difficulty and less effective country development mechanism in the past, the present Constitution of the Kingdom of Thailand B.E. 2540 (1997) gives the right and administration power to local community in preservation, maintenance and balanced exploitation of natural resources and in promotion, maintenance and protection of quality of the environment. Tambon <sup>1/</sup> Councils were established and empowered by self administration, taxation, creation of development programs and others : Community Forest Act is under Parliamentary process.

Formulation of plans at national, ministry and department level as well as government policies is logically based on public interest and local need. Action plans consistently follow the same basis as higher - level plans. To worthily run land development programs, the LDD carefully selects areas where significant problems exist and villagers are willing to cooperate. Volunteer soil doctors actively involve in the whole implementation processes from planning till monitoring and evaluation.

The 9<sup>th</sup> NESDP aims to develop human resource for Thai society to become knowledgeable, creative, innovative, inventive and ready for changing and development. This aim has been transferred and constituted a principle of strategy 6 of the LDD. Guidance for capacity building for personnel was made up of 6 activities as follows :

(1) Qualitatively and quantitatively task force development in science and technology as well as management capability in line with assigned duty.

(2) Support and provide scholarship for education, training, workshop and study tour, independently and in technically exchange program.

(3) Develop skill, knowledge and performance in analyzing problems and solutions at local level to catch up with changes.

(4) Quicken development of personnel in areas of information technology specifically those who work closely with farmer.

(5) Increase capability of personnel for negotiation in resources negotiation assembly by qualitatively and quantitatively skill and performance development and develop database and linkage among organization nationally and internationally.

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<sup>1/</sup> Tambon = Sub - district

(6) Capacity building for researcher and extension officer in areas of technology and local knowledge development for land resources  
r e s t o r a t i o n .

Besides, the LDD also aims to improve performance of volunteer soil doctors. The following activities are planned.

(1) To set up a management network whereby each Tambon's volunteer soil doctor represents the LDD in taking care of land resources and being a member of committee of Tambon's Agricultural Technology  
T r a n s f e r r e d     a n d     S e r v i c e s     C e n t e r .

(2) To set up a knowledge network by gathering successful demonstration plots and study centers for volunteer soil doctors to learn  
a n d     a p p l y     t o     t h e i r     o w n     l o c a l i t y .

#### **4.3 National Action Plan as part of the National Economic and Social Development and Environment Protection Plans**

As mentioned in 3.6 that Thailand has just entered into force of the UNCCD, however, National Action Program is on the schedule. The NAP will follow the NESDP, and plan of the Ministry of Agriculture. Therefore it will be considered as strategic framework within the overall development plan. Approaches of preparation will be integration of local and regional contexts. The UNCCD's principles will certainly be implemented in partnerships, participatory and cooperative fashion among government agencies and local communities. Hopefully, linkage of NAP with sub-regional and regional action programs will be materialized soon.

#### **4.4 Coherent and Functional Legal and Regulatory Framework**

Besides the right and empowerment to raise public participation that Section 79 and 290 of the Constitution of the Kingdom of Thailand B.E. 2540 (1997) gives to local community to deal with resources exploitation and their own environment, Section 84 helps to revitalize farmers with appropriate land uses and holding systems, sufficient water resources, protection of farmers' production and marketing to achieve maximum benefits, and promotion the assembling of farmers to lay down agricultural plan and protecting their mutual interests.

### **5. PARTICIPATORY PROCESS IN SUPPORT OF PREPARATION AND IMPLEMENTATION OF ACTION PROGRAMS**

### **5.1 Effective Participation of Actors in Defining National Priorities**

Though the principles of the UNCCD have not been directly followed, the LDD's public awareness strategy does exist. In fact, it has been continuously implemented and developed by a Public Relation Section of the Office of Secretary. The strategy aims to achieve the following activities :

(1) Promote awareness for Thai to realize value and importance of land resources through curriculum of all level of education together with setting up of local organization network to maintain sustainable exploitation .

(2) Extension promotion for more application of information technology in training and education .

(3) Continuously develop learning processes for land development by establishment of learning database which can be accessed through web site .

(4) Propagation of seasonal production information and agricultural early warning to minimize affect of natural disaster.

(5) Appropriately transfer technology from the field for soil, water and crop management

(6) Campaign to provide knowledge and understanding to formers on using chemical for example fertilizer and soil conditioner while promote using natural substance to substitute chemical

(7) Support services of knowledge and appropriate land development technology through community's technology transferred and service centers .

(8) Propagation of local technology and knowledge utilization incorporation with new technology .

(9) Public relation and establishment of network of mutual understanding among farmers and communities including concerning agencies to support organic farming .

## **6. CONSULTATIVE PROCESS IN SUPPORT OF THE PREPARATION AND IMPLEMENTATION OF NATIONAL ACTION PROGRAMS AND THE PARTNERSHIP AGREEMENTS WITH DEVELOPED COUNTRY PARTIES AND OTHER INTERESTED ENTITIES**

### **6.1 Effective Support from International Partners for Cooperation**

Having no existing UNCCD's national action program, so that at present, there is no consultative support and partnership agreements with developed country parties and other interested entities in preparation and

implementation of national action program. Nevertheless, practically, all laws as well as important policy documents and budget proposals, eg. Constitution, national development plan, national environmental plan, national action plan, programs' budget and etc., must be scrutinized by public hearing and consultation, consultation and recommendation by concerning agencies, revision by responsible Minister, and passing for approval by the Cabinet and the Parliament.

## **7. MEASURES TAKEN OR PLANNED WITHIN THE FRAMEWORK OF NATIONAL ACTION PROGRAMS, INCLUDING MEASURES TO IMPROVE THE ECONOMIC ENVIRONMENT. TO CONSERVE NATURAL RESOURCES, TO IMPROVE INSTITUTIONAL ORGANIZATION, TO ENHANCE KNOWLEDGE ON DESERTIFICATION AND ITS CONTROL AND TO MONITOR AND ASSESS DESERTIFICATION AND DROUGHT**

### **7.1 Adequate Diagnosis of Past Experiences**

Though it is too early for Thailand to have national action program which is directly fitted in the principles of UNCCD, past experience contained some exhaustive diagnosis in areas of forest depletion, extent of soil erosion and wild spread of saline soil. Such diagnosis have been undertaken by the RFD and the LDD quite a number of years. The results becomes one of important strategies for taking care of natural resources and environment of the 9<sup>th</sup> NESDP in order to achieve the targets of no less than 25 percent of conserved forest and 1.25 percent of mangrove forest, whereas soil erosion should not exceed 0.8 million hectare and 1.6 million hectare of problem soils will be developed.

### **7.2 Established Technical Programs and Functional Integrated Projects to Combat Desertification**

The on going Land Development Villages ( LDVs ) Program is established with the objectives in line with UNCCD's principles. One of which is to protect and restore land degradation. In addition, the volunteer soil doctors program helps farmers to learn how to manage and utilize their soils for farming sustainably and even to prepare their farm plans .

### **7.3 Action Programs Implemented in Compliance with Priority Fields set out in The Convention**



No measures have been identified and taken according to those proposed in article 4 of the Regional Implementation Annex for Asia of the United Nations.

#### **7.4 Linkage Achieved with Sub-Regional and Regional Action Programs (SRAP & RAP)**

Thailand is proceeding to take part in regional cooperation programs. The linkages with TPN1 and TPN2 are under taking. Still, both linkages have been in very early stage. Up to now only one delegate has joined the TPN2's 1<sup>st</sup> workshop during 18 - 21 December 2001.

#### **7.5 Effectiveness of Measures in Local Capacity Building**

The present Constitution determines to undertake decentralization of power to localities for the purpose of independence and self-determination of local affairs, develop local economics, public utilities and facilities system and information infrastructure in the locality thoroughly and equally throughout the country. This determination was intensified in decentralization policy of the government and divided into three approaches. The first approach places an emphasis on local revenue collection and decentralization of fiscal power to local authorities in order to achieve budget management that is more independent, taking into consideration the needs and appropriateness for development of the localities.

The second approach is to encourage clear, appropriate and step-by-step decentralization of power from the central government to the local authorities. At the same time, the potential of local civil service administrations and local governmental organizations must be strengthened and further developed in line with the activities of each locality. There must be greater independence with regard to local budget management and allocation, income acquisition and management of local properties.

The last approach is to encourage local people, civil society and private organizations to participate in local administration, thereby providing for inspection, monitoring, and evaluation of local administration. Such participation ranges from decision-making process, policy formulation, and procurement to appointment and removal of local authorities for transparency and efficiency as well as in response to needs of local people. Promote better understanding with regard to roles and responsibilities of all organizations concerned so that local decentralization process can proceed in an effective manner.

The LDD helps to strengthen management capacity of local actors by organizing Land Development Villages and Volunteer Soil Doctors programs, installation of soil suitability data in Tambon's Technology Transferred Centers, and provision and transferring of farm ponds.

#### **7 . 6 P a r t n e r s h i p A g r e e m e n t s A p p l i e d**

At the moment, there is no partnership agreements applied due to regional cooperation is still in very early stage.

### **8. FINANCIAL ALLOCATION FROM NATIONAL BUDGETS IN SUPPORT OF IMPLEMENTATION AS WELL AS FINANCIAL ASSISTANCE AND TECHNICAL COOPERATION INCLUDING THEIR INFLOWS, AND THE PROCESS TO IDENTIFY THEIR REQUIREMENTS, AREAS OF FUNDING AND SET A PRIORITY**

#### **8 . 1 A d o p t e d F i n a n c i a l M e c h a n i s m s**

Although NAP has not yet implemented even so budget preparation and allocation are based on local needs and problems in respective areas. A annual budget allocation mechanism basically starts from compilation of costs of projects and programs proposed by implementation units to make up a budget proposal of departmental level and further combined to be a proposal of line ministry. After the first improvement by responsible Minister, it will be scrutinized by the Cabinet for revision and adjustment. A revised proposal will be firstly agreed by the Cabinet. Then a Draft Annual Budget Act will be prepared in combination with a budget document and proposed for an agreement by the Cabinet. Later a House of Representatives will carry on a scrutiny process and accept this draft. Final decision belongs to the Upper House before the Act can be enacted for a new coming fiscal year which will be started on the first of October every year. Considering budget allocation in relation to combating desertification in fiscal year 2002, the LDD receives approximately US \$ 60.32 million for land resources management program.

#### **8 . 2 N A P F i n a n c i n g**

No actions have been taken to mobilize resources at national and international levels because time and resources are not allowed to begin t h e N A P .

#### **8 . 3 T e c h n i c a l C o o p e r a t i o n D e v e l o p e d**

Technical cooperation is about to start because Thailand has just begun to join TPN 1 , TPN 2 and contact with Gansu Desert Control Research Institute in China. In addition, preliminary cooperation between Thai and Vietnam began by which Vietnamese delegates visited Thailand e a r l y t h i s y e a r .

## **9. REVIEW OF BENCHMARKS AND INDICATORS UTILIZED TO MEASURE PROGRESS AND AN ASSESSMENT THEREOF**

### **9.1 Operational Mechanisms for Monitoring and Evaluation**

Utilizing remote sensing and geo - information system technology, the LDD can monitor land use changes, soil erosion and expansion of saline soils. Land use data is regularly updated every two year by field survey and interpretation of satellite data. Comparing land uses of different periods by geo - information system technology helps the LDD to produce knowledge of land use changes, land use monitoring and assessment. On the one hand monitoring and assessment of soil erosion and saline soils are similar to the land use changes in terms of method and technology used, on the other hand they have been done more irregularly due to more specific data utilization. All these data are ready in digital format in local area network of the LDD.

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1 1 . A P P E N D I X

**His Majesty's "New Theory"  
On Managing Agricultural Land**

Among concepts and theories concerning the conservation of nature and the environment can be cited the theory on solving the problem of drought and water shortage for agriculture. His Majesty's "**New Theory**" aims to maximize benefits for farmers from small plots of land while supplying them enough water to last the entire year. The New Theory provides socio-economic benefits as well as enhances the environment in general.

The New Theory devised by His Majesty is based on simple but fundamental principles that can be summarized as follows. The average plot of land for a Thai farmer being estimated at 15 rai <sup>3/</sup>, the Theory allocates 5 rai to rice cultivation, 5 rai to field and horticultural crops, 2 rai to dwellings and other uses, and the remaining 3 rai to a pond (4 metres deep) holding 19,000 cubic metres of water. The land use ratio is thus 30 - 30 - 30 - 10.

Following is a detailed introduction to the New Theory as given by His Majesty on 5 March 1994.

1. In short, this methodology is for farmers owning small plots, of about 15 rai, the average holding for Thai farmers.

2. An important principle is to enable the farmer to achieve self-sufficiency, initially at a frugal level, emphasis being placed on unity within the community.

3. The Theory allows sufficient rice production for one-year consumption on the basis that a family growing 5 rai of paddy should produce enough rice for the entire year. This is another important principle of the theory.

4. To this effect, approximately 1,000 m<sup>3</sup> of water per rai must be available during the dry season as a general rule. Based on the 30-30-30-10 ratio, water requirements are as follows:

Paddy	5 rai	5 x 1,000	5,000 m <sup>3</sup>
Field crops or fruit trees	5 rai	5 x 1,000	5,000 m <sup>3</sup>
Total			10,000 m <sup>3</sup>

---

<sup>3/</sup> 6.25 rai = 1 hectare

It is estimated that 10,000 m<sup>3</sup> must then be stored for the dry season. Therefore, the following formula for land allocation per plot has been developed :

Farm pond	3 rai and 4 meters deep with a capacity of 19,000
Dwellings & other uses	2 rai
Rice fields	5 rai
Field & horticultural crops	5 rai
Total	15 rai

5. The most important obstacle consists in the reservoir or pond being filled up only once a year during the rainy season. Evaporation causes a loss of 1 centimeter per day without rainfall. This means that if there are 300 such days, the pond's water level drop 3 metres (in the case of a 19,000 m<sup>3</sup> pond, a  $\frac{3}{4}$  loss results in 4,750 m<sup>3</sup> remaining). More water must be added to ensure sufficiency in water.

6. Therefore, if the New Theory is to work effectively, there must be a large body of water nearby to feed the farm ponds, just like a big tank filling up water jars. In the case of the project at the Mongkhon Chaipattana Temple in Saraburi Province, the Huai Hin Khao Reservoir was built, with a capacity of 800,000 m<sup>3</sup>. Using the old practices, this would be sufficient to irrigate 600-800 rai. But with the New Theory, as much as 3,000 rai, or 5 times more, could be covered.

7. Alone, the 800,000 m<sup>3</sup> in the reservoir would formerly have irrigated 800 rai ( the Mongkhon Chaipattana Temple Project covers an area of 3,000 rai, subdivided into 200 plots).

The reservoir would thus have supplied water for a 4 rai plot.

The farm pond by itself supplies water for 4.75 rai.

The total is 8.75 rai per 15 rai plot.

It is evident that the total of 8.75 rai is barely sufficient. To be fully productive, the remaining 6.25 rai would require the intervention of benevolent fairies ( i.e. to ensure enough rainwater ). But if one considers the fact that when there is no need for water, or when rain falls, rain-water can be stored in the reservoir and ponds in reserve for later use with the reservoir and ponds together serving as a regulator. It is believed that this system will provide enough water.

8. Another issue is the rather high cost of investment for which the farmers will need outside assistance ( the government, foundations, and the private sector ). The operational expenses, however, can be absorbed by the farmers themselves .

The family's agricultural land, which in Thailand averages 10 - 15 rai per household, should be divided as follows:

**Step One :** Use thirty per cent of the land, for a reservoir. This should be dug to a depth of four metres for a capacity of 19,000 cubic metres of water collected from rainfall. With this much water, the farmers can irrigate their crops throughout the year. They can also raise fish, aquatic plants, as well as crops around the reservoir which are other ways to earn household income. On a visit to the site of this Royal Initiative on 25 January 1993, His Majesty recognised this by saying : “ **Fish raising brings in extra income even after only a few months.** ”

**Step Two :** For the sixty per cent of the land used for agriculture, this plot is divided into two parts .

30 per cent rice cultivation ;  
30 per cent field or horticultural crops depending on local conditions and the market .

His Majesty commented that 1,000 cubic metres of water per rai would be needed. To follow this cropping regime through the dry season, a total water reserve of 10,000 cubic metres would be needed.

**Step Three :** The final ten per cent, a little over one rai, would be used for housing, trails and walkways, dikes, and also for growing household vegetables and raising livestock .

For the average land holding of fifteen rai, the “New Theory” breakdown is 30-30-30-10. His Majesty's “New Theory” Initiative for agricultural development has the following strong points :

- 1) This method can be used by small landholders who own about fifteen rai ( the average for Thailand.)
- 2) Two aims of this method are for farmers already living frugally to be self-sufficient and for the lives of these local farmers to be harmonious .
- 3) By being self-sufficient the farmers can produce enough rice for their annual needs; self-sufficiency on a plot of five rai is an important component of the “New Theory”

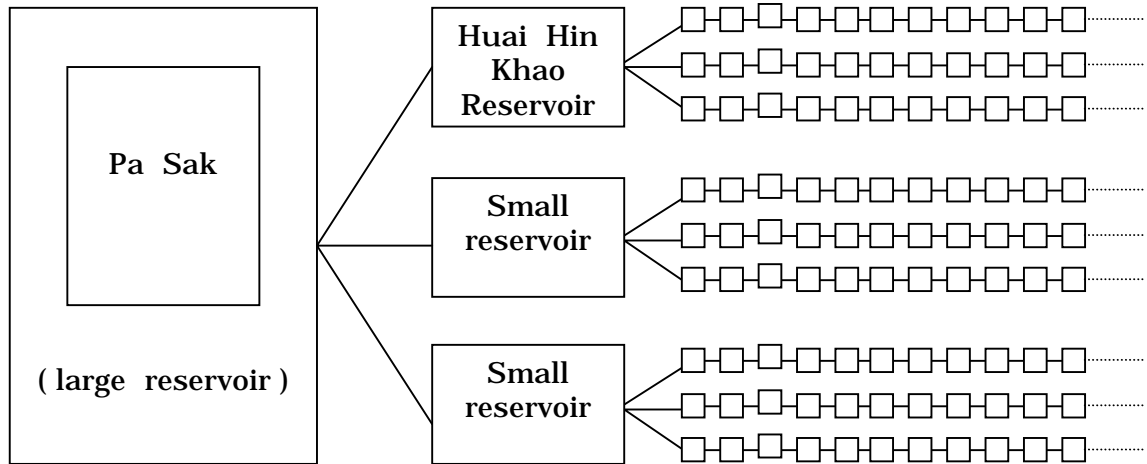
His Majesty's “New Theory” is comprehensive. It estimates evaporation in the four-metre deep reservoir as being one centimetre per day without rainfall. Thus, if there is no rain for 300 days in a year, the water will drop three metres. Water must be added to keep the reservoir full or else the water level will drop to only one meter.

If there is a large nearby source of water to top off the water in the smaller reservoirs, this plan will work more efficiently.



A diagram of the plot as used at Wat Mongkhon Chaipattana  
f o l l o w s :

### The New Theory Model Plan at Wat Mongkhon Chaipattana



As this diagram shows, when the dry season came, the villagers were able to pump water from the reservoir for various uses. If there was not enough water, the villagers could request more water from the Huai Hin Khao Reservoir through irrigation works built to link these smaller reservoirs. This adds to the annual supply of water for the village.

His Majesty's confidence in the "New Theory" is high:

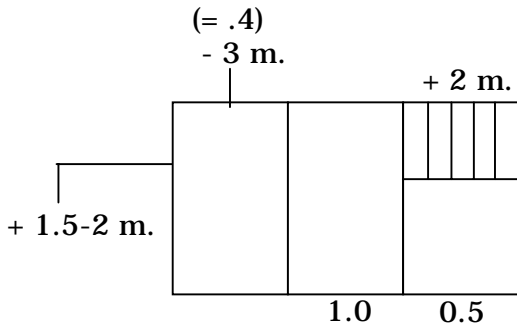
***" Doing a little more helps the villagers increase their income. In places outside the 3,000 rai test area, the villagers have accepted our principles and are starting to do the same on their own initiative. But we cannot go too fast. The project should support 3,000 rai. But our technical experts suggested starting with 700 rai even though the theory calls for 3,000 rai. "***

The New Theory is a Royal Initiative that farmers in all parts of the country have proven to be practical. They have taken His Majesty's plans and put them into practice.

The New Theory has spread happiness in Thailand. His Majesty's tireless efforts and sharp insight have mobilised much good to the country's people.

His Majesty the King, Honorary President of the Chaipattana Foundation has provided the text of his own notes on the New Theory. They are reproduced verbatim as follows,

**RELEVANT DATA**

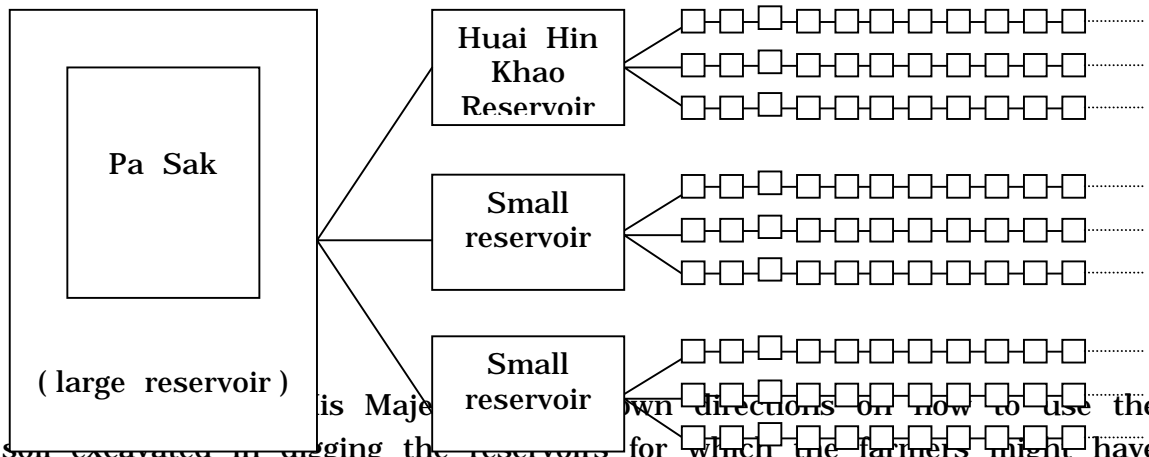


The large reservoir will completely evaporate so replenishment is needed (from the Pa Sak River )  
 A 3-metre deep reservoir evaporates as follows :  
 1 rai = 1,600 square metres  
 3 rai = 4,800 square metres  
 x 4m. = 19,200 cubic metres

1 rai = 1,600 square metres	1,000,000m <sup>3</sup> Water = >1,000 rai
3 rai = 4,800 square metres	100,000m <sup>3</sup> Water = >100 rai
x 4 m. = 19,200 square metres	1,000m <sup>3</sup> Water = >1 rai

A 3-metre reservoir can evaporate completely and may need to be replenished from a larger reservoir  
 Water 3 rai; ricefield 5 rai; trees 2 ½ rai; field crops 2 ½ rai; settlement 2 rai

**The New Theory Model Plan at Wat Mongkhon Chaipattana**



His Majesty's own directions on how to use the soil excavated in digging the reservoirs for which the farmers might have no use. If thirty per cent of the total area is excavated, the dirt dug up should total between 10,000-13,000 cubic metres. His Majesty's instructions are also reproduced here verbatim:

**PROBLEM OF UTILIZING EXCAVATED DIRT IN "NEW THEORY"**

<b>A C T I V I T I E S</b>		
1. Topsoil (50 cm.) add to agricultural land (5 rai)	2 , 4 0 0	m <sup>3</sup>
2. Build bank around reservoir 2 x 2 x (80+240)	1 , 2 8 0	m <sup>3</sup>
3 . A d d t o f r u i t t r e e a r e a a n d		
4. Field crops area (average + 1 m. 5 rai)	8 , 0 0 0	m <sup>3</sup>
5. Add to settlement & livestock area (2 m. 2 rai)	6 , 4 0 0	m <sup>3</sup>
(average amount for raising plot + 1 m.)	1 8 , 0 8 0	m <sup>3</sup>

**M E T H O D F O R I T E M 1**

Dig reservoir (3 rai) 50 cm. deep: add to rice field (5 rai)

Dig settlement area (2 rai) 50 cm. deep: add to rice field (5 rai)

Rice fields raised 50 centimetres

**M E T H O D F O R I T E M 2**

Dig reservoir (3 rai) 50 cm. deeper: build up bank around reservoir 2 x 2 x 3 m .

**M E T H O D F O R I T E M 3**

Dig out irrigation ditch 1 m. deep: build up ditch banks 50 cm.

(topsoil) ; and 2 m. wide : build up bank to 4 m.

Soil from the reservoir can be added (making up 1 m.)

**M E T H O D F O R I T E M 4 ( I T E M 3 A N D 4 )**

Relocate topsoil (50 cm.) to rice field temporarily

Dig out another 1.65 m. from the reservoir; bring topsoil from rice field

b a c k h e r e

**M E T H O D F O R I T E M 5**

Dig out topsoil (50 cm.) from settlement area: add to field crop area

Dig out another 1.35 m. from reservoir : add to settlement area, raising it

2 m . 0 . 5 + 0 . 5 + 1 . 6 5 + 1 . 3 5 = 4 . 0 m .

**NEW THEORY**

**First Stage**

1. Putting it in a nutshell: It is a procedure for the farmer who has a small plot of land (about 15 rai).

2. Main point: It is to enable the farmer to achieve self sufficiency, beginning with a frugal existence. This also demands solidarity in the community.

3. The production of sufficient yearly consumer rice requires 5 rai of paddy land per family. This is the important feature of the theory.

4. For the above production, water is required at the rate of 1,000 cubic metres per rai. Thus, five rai will require 5,000 cubic metres. For each plot of land (15 rai), five rai of paddy land and five rai of farmland (= 10 rai) will require 10,000 cubic meters of water per year.

This tentative formula has been set up:  
 Paddy land: 5 rai . Farm crops and orchard 5 rai.  
 Farm pond, 4 metres deep, holding about 19,000 cubic metres (19,200) : 3 rai . House and other uses : 2 rai.  
 T o t a l 1 5 r a i .

5. The most serious difficulty is : A reservoir or a pond which is filled only once a year, will suffer an evaporation rate of approximately one centimeter for each dry day. It means that in one year, supposing that there are 300 dry days, the level of the water will subside 3 metres (in the case,  $\frac{3}{4}$  of 19,000 cubic metres, leaving only 4,750 cubic metres of usable water). Outside water supply will be required so that there is e n o u g h w a t e r .

6. Supplementary water supply is required. For the Wat Mongkhol Chaipattana Project, a water reservoir with a capacity of 800,000 cubic metres has been constructed, which has to serve an area of 3,000 rai.

7. The 800,000 cubic metre reservoir itself will be sufficient for only 800 rai. ( The Wat Mongkhol Chaipattana Project has a scope of 3,000 rai. Divided into 200 plots of land.)

The reservoir will serve only 4 rai per plot of land. The farm pond in each plot of land serves 4.75 rai. It can be seen that it is somewhat precarious, (4.75 rai + 4.00 rai = 8.75 rai) if one considers that while 8.75 rai can be fully cultivated, the other 6.25 rai must be left to the whims of heaven. But if one considers that, in the periods when irrigation water is not needed or when it rains, the rain water can be stored in the reservoir and the farm ponds, in reserve for use in due time; the reservoir and the farm ponds act as rain water regulators. It follows that this system should provide enough irrigation water.

8. Another big problem is the rather heavy initial expense. The farmer will need external assistance. ( The government, the Foundation a n d p r i v a t e f u n d s )  
 But the routine expenses will not be heavy for the farmers.

N E W T H E O R Y  
 The Chai Pattana Foundation  
 15 M a r c h 1 9 9 4

**S e c o n d S t a g e**

After the successful establishment of the "Demonstration Center" at Wat Mongkhol Chaipattana and the extension at the "Disco Track", the farmers began to understand the method of operation and requested that it should be extended to their own plots of land. When concrete results have been obtained, the "Second Stage" has to be initiated.

It consists in having the farmers consolidate themselves in the form of "groups" or "co-operatives". Activities of the "Groups".

1. Production ( Seeds, land tilling, irrigation, etc.)
2. Marketing ( rice drying courts, barns , rice milling machine, marketing of the products )
3. Livelihood ( krill paste, fish sauce, food, clothing, etc. )
4. Welfare ( health , credits )
5. Education ( school, educational scholarships)
6. Social work and religion

These activities are done with the cooperation of the government, the foundation and private enterprises .

N E W T H E O R Y

The Chai Pattana Foundation

12 F e b r u a r y 1 9 9 5

**T h i r d S t a g e**

The co-operative will approach a credit source (bank) and a fuel source (oil company) for the establishment and running of a rice mill (2) , of a co-operative store (1.3), for credits (1.2), for the elevation of the standard of living ( 4 , 5 , 6 )

All this will benefit both the farmers as well as the bank and the community .

: The farmers sell rice at a good price (the price will not be cut); the bank and the company will get consumer rice at a low price ( they buy paddy rice directly from the farmers and will mill it themselves): (2)

: The farmers buy consumer goods at a low price ( it is a co-operative store buying goods at wholesale price ): (1,3)

: The bank and the company will be able to redistribute their resources .

N E W T H E O R Y

The Chai Pattana Foundation

13 F e b r u a r y 1 9 9 5