

Land and Water Development in the People's Irrigation System (PIS) of Northern Thailand: Institutional Authority and Structure of the PIS

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1. Introduction

1.1 Significance of the Study

Presently, villagers in northern Thailand engage in several kinds of economic activities. Five major types of such enterprises include agricultural production, home industry, trading, service, and manual labor. The agricultural activity generally covers various kinds of cultivation and animal raising; paddy, cash crop and dry-rice farming; vegetable gardening; fruit orchards; and poultry and cattle raising.¹ Recent research findings, however, confirm that rice is the main crop in northern Thailand.²

In an agricultural nation such as Thailand, irrigation plays a very crucial role in the process of farm production. Although Thailand is situated in a rainfed monsoon area, the quantity of water is still inadequate to meet agricultural demand. Historically, an irrigation system was first introduced to Thailand when the country began to export rice as her major export commodity. A modern irrigation system was initiated in 1892 as part of the Rangsit Land Development Project. In brief, the traditional irrigation dams for agriculture which are formally called people's irrigation systems (PIS) have been in existence in northern Thailand for about 700 years. Historical evidence suggests that such systems were effective during the reign of King Mengrai in Chiang Mai.³ More recently it has been reported that more than 2,000 traditional irrigation systems (or muang fai systems) are at present operating in the Chiang Mai Valley, the main rice producing area of northern Thailand.⁴ These community irrigation systems cover an area of over 600,000 rai,⁵ whereas the four completed government irrigation systems serve a smaller area of about 325,000 rai.⁶ These statistics obviously indicate the major role of the muang fai systems in the region and their

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predominance in the largest cultivation area of northern Thailand, the Chiang Mai Valley.

Previous research reports on the muang fai systems (or the PIS) have focused upon historical development and organizational structure of the systems.⁷ However, no systematic study on the decision-making structure of major government institutions relating to agricultural development in the PIS areas has ever been made. This study attempts to fill the gap left by previous research, and to answer certain key questions. For example, which major government institutions are directly concerned with the PIS? What are their decision-making patterns and processes in respect of resource use for agricultural development in the PIS areas? What are the major problems and constraints encountered by the public agencies and the PIS?

1.2 Major Objectives and Scope of the Study

This study contains five major objectives which include:

1.2.1 To review governmental institutions connected directly with the People's Irrigation Systems (PIS), and examine the effect of their decision-making structure on agricultural development in the PIS areas;

1.2.2 To explore the possibility of improving the management systems of the PIS through provision of technical assistance and training but without any direct government intervention;

1.2.3 To design and conceive an institutional framework appropriate to the socio-economic environment of the country for channeling and distributing production inputs and services to PIS members for increasing cash crop production. In this respect, the private sector's existing role will be investigated and it will be ascertained whether it could serve as a main conduit for providing these services directly to PIS members;

1.2.4 To review the changes in institutional arrangements and field operations needed to implement the participatory approach of the PIS at every stage of assistance; and

1.2.5 To examine the existing project coordination mechanisms at various levels: the village; the district; the provincial; and the national, and recommend whether any adjustments are necessary to improve the implementation capacity of the PIS.

Because of time and budget constraints, discussions on the organizational structure, management, and major problems of the PIS in northern Thailand are treated generally. A more detailed empirical analysis of the PIS, particularly in the pilot areas of the four basins, will be highlighted in the draft final report. Moreover, suggestions to realize objectives 1.2.2, 1.2.3, 1.2.4, and 1.2.5 are not made in this interim report. However, potentials for future PIS development are briefly suggested.

1.3. Research Methodology

1.3.1 Methods of data collection

Three methods of data collection are employed in this study. First, information needed for the study was obtained from documentary reports and research on policies, goals, activities, functions, responsibilities, and performance of government agencies connected directly with the PIS areas. Second, provincial governors and heads of concerned field agencies and regional offices who are responsible for agricultural development in Chiang Mai, Lamphun, Prae, and Lampang were interviewed to ascertain goal perceptions, actual decision-making processes, and the problems and constraints to agricultural development. Moreover, PIS administrators of villages and commune headmen, and about 250 PIS farmers in the pilot areas of the four basins were also interviewed to gather information concerning the PIS management, their participation in agricultural development programs, and the major problems encountered by them. Third, field visits to the project sites to observe the existing conditions, which provided a wider perspective to the studies, were made several times.

1.3.2 Data analysis

The basic method of data analysis used in this report is qualitatively oriented, and descriptive statistics is utilized. That is, the descriptive and analytical technique is mainly employed in the study.

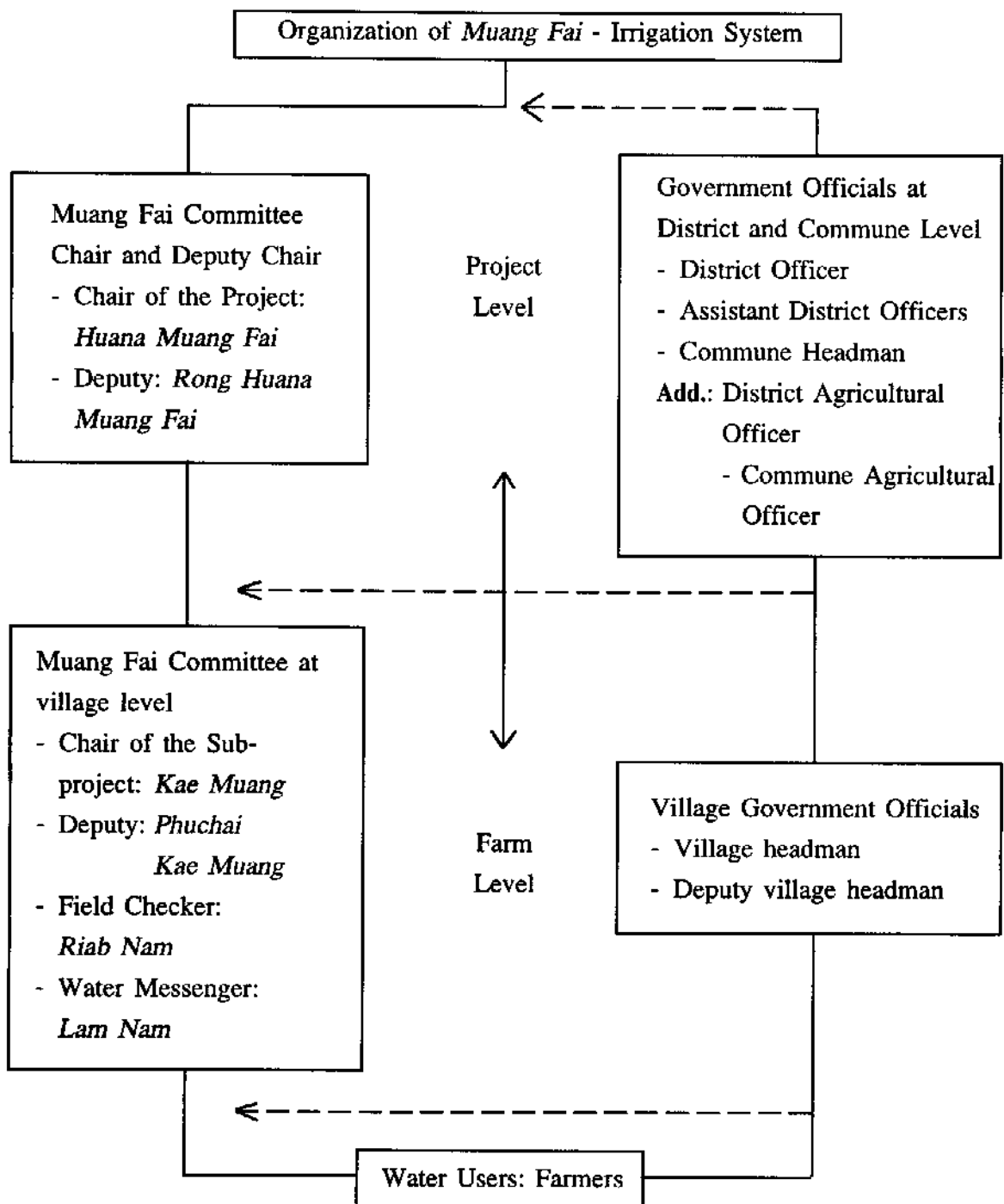
2. Organizational Structure, Management, and Major Problems of the People's Irrigation Systems (PIS)

This section discusses three major topics: (1) the organizational structure of the people's irrigation systems; (2) the management of the people's irrigation systems; and (3) the major problems of the people's irrigation systems.

2.1 Organizational Structure of the People's Irrigation Systems

In order to help better understand and meaningfully assess the management capacity of the PIS in northern Thailand generally and of each muang fai under study in particular, it is useful to first examine the whole picture of the organizational structure of the PIS. In

Figure 1: The Organization of a People's Irrigation System*



*Adapted from Wanpen Surererk, *Historical Development and Management of the People's Irrigation Systems in Northern Thailand* (Chiang Mai: Department of Geography, Faculty of Social Sciences, Chiang Mai University, 1985), p. 172.

general, the nature of the PIS organizational structure in Chiang Mai and Lumphun and in other northern provinces is basically similar.⁸ Perhaps the only distinction is in minor details of the sub-system such as the muang fai chief's term of office and the polling place. These differences are not significant enough to affect the work of the system, however.⁹

As shown in Figure 1, the total picture of the PIS organizational structure consists of three major components: the muang fai committee at project level; the muang fai committee at village or farm level; and the water users or the farmers. These three groups also have certain kinds of linkages and interact in one way or another with government officials at the district, commune and village levels.

At the project level, the muang fai committee is responsible for the management of community irrigation affairs and headed by the chief of the muang fai or huana muang fai. In running muang fai activities, especially of a large system, the chief of the muang fai is usually assisted by one or more deputies depending upon the size of the muang fai or number of water users. A huana muang fai and his deputies are generally elected by the majority of farmers and then formally appointed by the district officer.¹⁰

At the village or farm level, the kae muang is chair of the subproject (or chief of the ditch) in addition to serving as a member of the muang fai committee. He may be helped by one or more deputies. Other members of the muang fai committee include a field checker (riab nam) and a water messenger (lam nam). Here again, whether and how many staff each muang fai needs is closely related to the size of the system or number of the farmers. A kae muang, his deputy, a field checker, and a water messenger are all elected by the majority of the PIS members.

The third component is the water users or farmers. As PIS members, the farmers have the right to use water and duties to perform in accordance with the rules, regulations, and agreements of the muang fai.

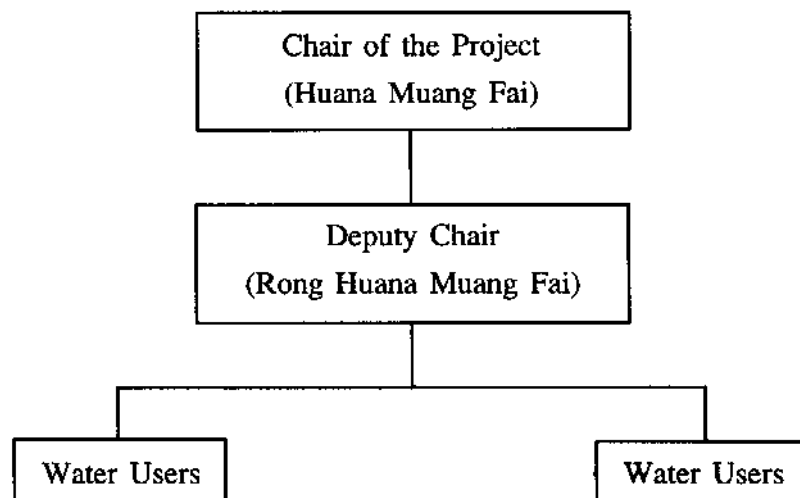
The linkage between the muang fai committee and government officials at the district, commune, and village levels is very close. For example, the district officer has authority to appoint any persons to be the chief of the muang fai and his assistants, as many as required, and has authority to dismiss those appointees if he is so recommended by the majority of water users.¹¹ Moreover, district and commune agricultural officers assist the district officer in providing agricultural extension services to the farmers. In addition, a study on biodata of the chiefs and assistant chiefs of community irrigation systems in northern Thailand suggests that most of them are village and commune headmen.¹² These village and commune leaders are directly and indirectly elected by local voters respectively. They, however, are under the supervision of the district officer and have to assist their boss in implementing

various development projects in the villages and communes.

In brief, the abovementioned organizational structure of the PIS in northern Thailand suggests that there are at least three major models of community irrigation systems in the PIS areas: (1) the small system model; (2) the medium system model; and (3) the large system model.

2.1.1 The Small System Model

Figure 2: The Organization of a Small Community Irrigation System

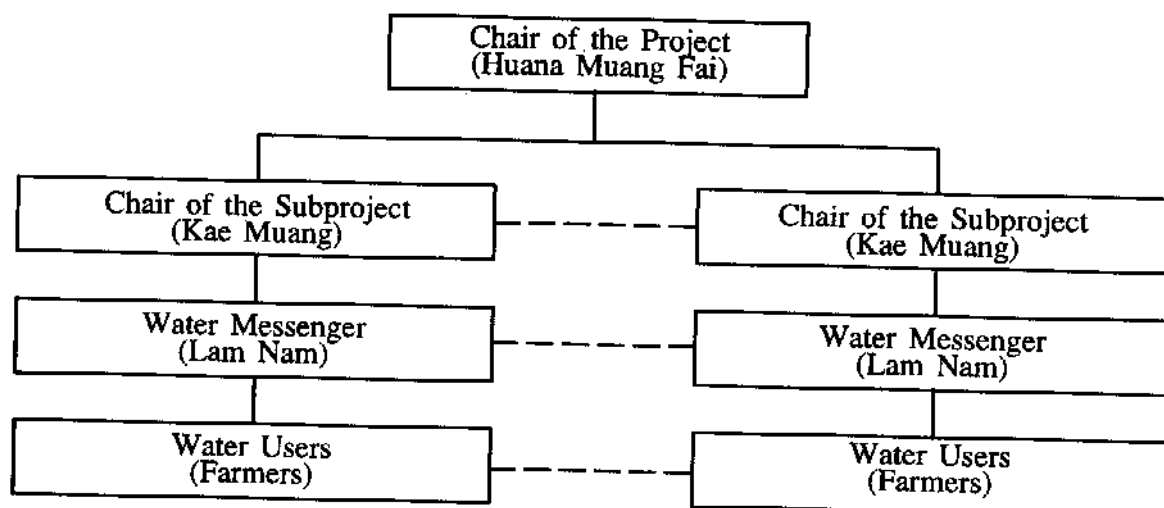


Legend: _____ = Hierarchical Relationships

The organizational structure of a small community irrigation system generally consists of the chair of the project or chief of the muang fai, a deputy chair, and the water users. The chief of the muang fai is responsible for the overall management of the muang fai. He is assisted by a deputy chair who also serves as a water messenger. Examples of small community irrigation systems include Fai Na Sary, Fai Na Yang, and Fai Pa Kwang all of which are located at Mae Sab Village, Samerg District, Chiang Mai. They are classified as small systems because of the system size and because each of them has a small number of water users (less than 100). The system is so simple that the chief and his deputy can keep direct contact with the farmers without using the services of a water messenger.

2.1.2 The Medium System Model

Figure 3: The Organization of a Medium Community Irrigation System



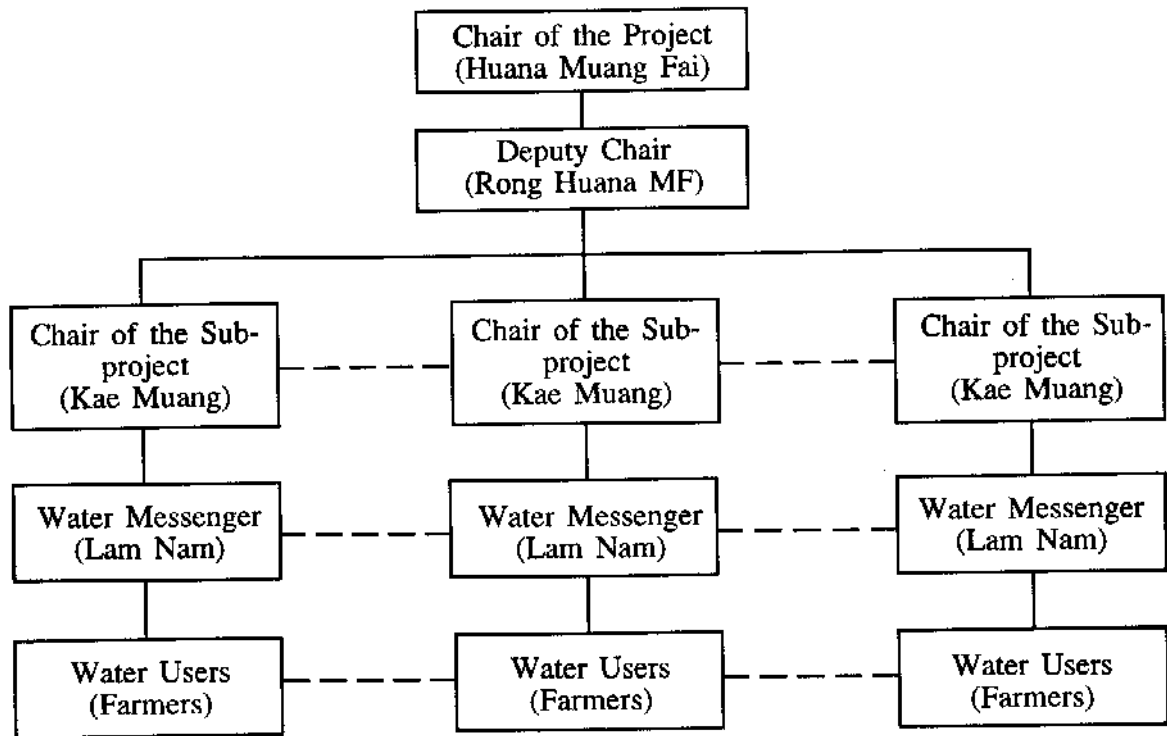
Legend: ——— = Hierarchical Relationships
 - - - - = Functional Relationships

As shown in Figure 3, the organizational structure of a medium community irrigation system reflects a more complicated system, consisting of four major components, namely: the chair of the project; the kae muang; the water messenger; and the water users. In general, the overall functioning of this system is similar to that of the small system described earlier. Perhaps the main distinctions are that this system is larger than the former and contains more administrators (kae muang) to assist the chief of the muang fai. It also has a number of exclusive water messengers to perform their daily functions instead of using the services of the deputy chair or the kae muang as practiced by the small system.

The medium-scale system of community irrigation generally has about 100-200 water users. Fai Mai Rai Lor in Sanpatong District, Chiang Mai, and Fai Luang in Mae Prig District, Lampang are illustrations of this system.

2.1.3 The Large System Model

Figure 4: The Organization of a Large Community Irrigation System



Legend:

- = Hierarchical Relationships
 - - - - - = Functional Relationships

The organization of a large community irrigation system as illustrated in Figure 4 represents a more complex model than that of the medium system. It consists of at least 5 major actors: the chair of the project or huana muang fai; the deputy chair; the kae muang; the water messenger; and the water users. Functionally, this system operates in a similar manner to the medium-scale model. The main differences are that this system is larger than the former not only in terms of more water users, but also more PIS administrators (a deputy chair, and 3 or more kae muang) to assist the chief of the muang fai in the management of muang fai affairs.

Generally the large system of community irrigation has over 200 PIS members. Illustrations of this system include Fai Mae Terk in Prae and Fai Nong Yang Krai in Lumphun, each of which has 220 water users and 350 PIS members respectively.

2.2. Management of the PIS

The people's irrigation system or the muang fai irrigation system is built and managed communally by a local group of water users. Prior to when the first national irrigation project, the Mae Faek on the Mae Ping River, was constructed, community irrigation supported all the irrigated land of northern Thailand.¹³

The muang fai irrigation system is a traditional technology comprising a diversion dam and a canal which is built of local materials such as bamboo, stones, and logs. Generally, the weir (fai) is of the submersible type and serves to raise the water level and slow down the flow in the river so that the water is conveyed into a main canal to the farm fields. With the said technique, the river flow is allowed to continue so as to benefit the downstream land area. The system is operated without a head regulator to control water at the intake, and therefore the whole volume of water flows into the main canal. Nevertheless, excessive water is normally drained back into the river by simply breaching the canal bank at the point near the intake.¹⁴

The non-permanent structure of the weir (because it is built of bamboo and logs) implies that it is likely to demand a large amount of seasonal labor and urgent maintenance. The larger the weir size, the more maintenance and materials it requires. The scarcity of local resources such as bamboo and logs has become more obvious since regulations concerning the national forest reserve land were passed around 1950. However, the government has given some kinds of support to many local villages for the development of the existing traditional system. At present, some weirs of the community irrigation systems are constructed of concrete or are reinforced at the foundation with permanent materials. In this way, the muang fai system has gradually integrated new technology and materials. Nevertheless, the present structure of most weirs in northern Thailand is still temporary in nature¹⁵ and needs to be developed if the system is to be more effective.

Although the physical nature of the weirs and the availability of sufficient water for farm irrigation are important factors contributing to the success of agricultural development programs, it is the men, specifically, the PIS administrators who manage the weirs.

This section is concerned with management of the PIS. It discusses 6 subtopics: (1) the authority and responsibilities of PIS administrators; (2) the modalities of PIS members' cooperation; (3) the by-laws; (4) methods of water distribution; (5) the participation of PIS members in planning, design, construction, and O & M works; and (6) the linkage to the government central administration.

2.2.1 Authority and Responsibilities of PIS Administrators

By "PIS administrators," we mean those who hold administrative posts in the management of muang fai affairs. They include the chief of the muang fai; the deputy chief; the kae muang; the assistant kae muang; and the water messenger or the lam.

The chief of the muang fai is elected by the majority of water users to take care of all community irrigation activities, such as checking weir and ditch conditions, supervising any necessary repairs, controlling water use and PIS members' performance, as well as enforcing the written irrigation agreement called "Sanya Muang Fai."¹⁶

Specifically, the responsibilities of the chief of the muang fai can be classified into two categories: the engineering work; and the administrative work.

The engineering work includes: (1) to annually inspect the ditch and weir to see whether there is any damage to be repaired; (2) to calculate the members' shares of material required for maintenance; (3) to supervise and give advice on maintenance work; (4) to allocate the water; and (5) to control water use of the ditch in his charge.

The administrative task covers: (1) to enforce work agreements; (2) to arbitrate in case of disputes among PIS members; (3) to control the funds collected for irrigation activities; (4) to keep the irrigation records such as agreements, membership registration, and account book; (5) to call the annual meetings; and (6) to assign work to his assistants and messengers.¹⁷

In a large community irrigation system, a deputy chief of the muang fai may be elected by the farmers to assist the chief in running the PIS affairs.

A kae muang is also elected by the majority of PIS farmers to assist the chief of the muang fai in the management of the PIS. The tasks of the kae muang in both the upstream and downstream irrigation community are basically the same. A minor difference is that the kae muang of the upstream irrigation system seems to have more independent authority over certain matters, such as constructing small weirs or embankments within his muang (ditch), deciding on the method of bringing in water, as well as making the necessary arrangements and requests for water from other muang in case there is a scarcity of water in his village. In the downstream irrigation community, these issues must be taken up with the chief of the muang fai, and the kae muang acts on the instruction of the chief. The kae muang cannot act on his own because he is only in charge of a branch of the muang fai and all the branches of that particular weir must follow a corresponding pattern. In this case, the chief must see to it that all of the branches in his charge follow the same systematic pattern with respect to building more weirs, selecting the method of bringing in water, and making arrangements for relief supplies of water when shortages occur. However, the kae

muang still retains the authority to fine PIS farmers who are under his jurisdiction either less or more than what is stipulated in the irrigation agreement and the irrigation members must comply with his decision.

Similarly to the chief of the muang fai, an assistant kae muang may be elected by the water users to relieve the kae muang of some of his office burden. The scope of the work of an assistant is related to how much the kae muang assigns him to do. In general, main duties of the assistant include: (1) to help keep records and documents of irrigation activities; (2) to help keep an account book on expenses in connection with the muang; (3) to help check the irrigation equipment and supervise repair and maintenance work; (4) to help allocate water to the farmers; and (5) to act as representative of the kae muang when requesting relief water supplies from other muangs when there is a water shortage.¹⁸

Another administrative post which also plays an important role in the traditional irrigation system is that of the "lam nam." The term "lam nam" is widely used by northern villagers to mean "water messenger." Generally, there would be at least one lam or water messenger for each muang. Nevertheless, if the muang has only 20-30 PIS members the kae muang would perform the duties of the lam himself.

The main functions of a lam are to inform PIS members of the meeting schedules, the assigned dates for repair or maintenance work, as well as the material and equipment each member must bring. On the surface, the lam's duties may seem to be insignificant, but in actuality he plays a very vital role in the system. His post is one which demands a great deal of responsibility because it is essential for irrigation farmers to be informed of the exact dates as well as the amount and types of equipment needed for repair or maintenance work. In addition, because it is a collective effort, every water user has to be punctual to assure that the tasks are successfully performed for the next cultivating season. In order to assure this punctual cooperation, a lam sometimes has to go back and forth several times to contact farmers personally. If a lam fails in performing his duty, he will be fined according to the rules.¹⁹

2.2.2 Modalities of PIS Members' Cooperation

PIS members' cooperation is one of the most important factors contributing to the success of the community irrigation systems in northern Thailand. The modes of cooperative effort of water users with regard to irrigation work vary with the size and the complexity of the systems. In general, at least five work activities have to be performed by irrigation farmers in their annual routine: repairing the weir; clearing the canal; performing the ritual; allocating water; and clearing the canal bank.²⁰

The irrigation activities begin at the end of May before the wet season rice cultivation. Every year the sequence of events is the same, so that the PIS members know exactly when the activities will be carried out and what kinds of materials and tools they have to prepare ahead of time. Each family that cultivates within the irrigated area is responsible for providing labor, tools, and materials.

Generally, the traditional irrigation systems of lowland communities clearly define the rights and duties of each individual member. The size of contribution assessed varies with the size of cultivation (in rai) or with the size of water share (in local units called taang). Therefore, farmers who grow in large-size fields contribute a larger amount of resources than those who cultivate on small-size fields. In contrast, some muang fai organizations, such as the Fai Na Pae located along the Mae Pae River, Chiang Mai, actually require each family to share equal responsibility, no matter how large or small an area that family cultivates.²¹

In brief, there is no serious problem with regard to the PIS farmer's cooperative efforts in carrying out the irrigation activities of the PIS. As a matter of fact, all 250 PIS farmers interviewed reported that they were willing to cooperate with the government to develop the PIS to enable the system to distribute sufficient water to their farm areas throughout the year by providing various kinds of support, especially labor and materials.²²

2.2.3 By-Laws: People's Irrigation Act and Sanya Muang Fai

The Act for the Control of Muang Fai and Panang (B.E. 2477) has been amended several times since its first promulgation in 1934. The present amendment, which is the fourth, is entitled the People's Irrigation Act (B.E. 2482). This law was effective on October 17, 1939. According to this act, administrative officers at the district and provincial levels have been officially involved in the irrigation activities of the local community since 1934. The district office, the administrative subdivision of the province, has to look after the administrative work of the irrigation system. PIS farmers have to report the extent of the activities of their particular community irrigation system to the administrative officers in the province in order to forward the report to the Ministry of Agriculture and Cooperatives.²³

Moreover, the district officer is empowered to appoint any qualified persons to be the chief of the muang fai and his assistants, and to dismiss those appointees if he is so recommended by the majority of PIS members.²⁴ In addition, local administrative officials also share the responsibility of arbitrating when there are disputes among PIS farmers.²⁵

It is evident that the People's Irrigation Act stipulates the rights and duties, as well as rules and regulations for those engaged in the community irrigation system. However, in actuality we found that this statute only applies to government officials. At the local

community level, the PIS farmers formulate their own rules and regulations. Surprisingly, this has been instrumental to the success of the traditional irrigation system in northern Thailand.²⁶

When many people live together as a community, it is necessary for them to have rules and regulations to serve as a code of conduct so that such a community may continue to exist peacefully. There is no exception for the traditional irrigation system, which brings together people of nearby villages who share common interests to protect. As mentioned earlier, the community irrigation system has existed since ancient times and it was found that a set of rules has been laid down to ensure smooth and efficient governance of the system. Such rules are widely known among PIS farmers as Sanya Muang Fai or the Irrigation Agreement.

Sanya Muang Fai is the written agreement drafted by PIS members and administrators. The agreement contains the rules and regulations by which members of the particular traditional irrigation system must abide. In addition, since the agreement is a mutual promise between PIS leaders and water users, whenever a new chief of the muang fai is elected, a new agreement is written up. At the end of each agreement are the signatures of all PIS farmers and administrators as evidence of acknowledgement. Whoever fails to comply with the agreement is liable to face punishment.²⁷

2.2.4 Methods of Water Distribution

In general, the community irrigation system in northern Thailand uses two methods of water distribution: continuous and rotational. During the wet season, the system lets water run continuously in both main and secondary canals. A major task at this time is to avoid excessive flow and flood. When water supply is small, the organization makes a careful distribution to ensure that most PIS members can obtain sufficient water to meet their cultivation needs, using the rotational system at both the main and secondary canals.²⁸

The irrigation water is released into the farm areas by two different procedures. The first is locally called kin nam muang lak or kin nam muang soi which means direct irrigation of the fields from the main or secondary canals, regulated by the field turnout (tae nam). Under this method PIS farmers have a direct access to the canal. The second is known as kin nam hua, which means water flowing from the upper fields to the lower ones until it goes to the field drainage. The water users may use bamboo pipes or simply pierce a hole through the field dike. This system is effectively utilized in slop areas and on the terraces. In general, the individual PIS members irrigate their fields by employing the two methods.²⁹

2.2.5 PIS Members' Participation in Planning, Design, Construction, and O & M Works

At the project level, planning in irrigation activities and crop cultivation is generally conducted by PIS administrators. It does not involve a systematic planning process in the sense understood by professional planners and scholars of management science. It is simple in that PIS farmers are usually informed of the planned schedules of irrigation work at the annual meeting place. Questions may be raised at the meeting, but most of them are matters of clarification rather than challenging the leader's decision. This is because of two major reasons: (1) partly the fact that each year the sequence of events is the same and the PIS members know exactly when the activities will be carried out and what kinds of materials and tools they have to prepare in advance; and (2) partly because northern farmers tend to have a high degree of trust and belief in their local leadership.³⁰ In certain cases, especially in a small system which contains a small number of water users, PIS administrators tend to keep contact with individual farmers personally to inform them of the designated dates of yearly activities.

At the farm level, there is no need for systematic planning in crop cultivation. This is partly because the farm size of PIS members is very small - the average farm size per family is about 4-7 rai. Moreover, rice is usually grown for family consumption and any other excess supplies of cash crops are generally sold to local merchants at the farm site or to a nearby market. There is no serious problem with respect to marketing their excess products.

However, PIS members' participation in other activities concerning water management is relatively high, especially their part in building of the weir, reconstruction and repair of the weir, clearing the irrigation canal, and election of PIS administrators, particularly, the chief of the *muang fai*.³¹

2.2.6 Linkage to the Government Central Administration

As discussed earlier, the People's Irrigation Act of 1939 grants authority to the district officer by assigning responsibility to him to appoint or demote the irrigation leaders of the PIS according to the majority opinion of the PIS farmers. Since the central government does not include the local irrigation administration in the formal structure of the district administration or the RID Northern Region Office, the traditional irrigation system has always operated as an autonomous body. The linkage to the central government has been through the district officer, with requests and reports from the PIS going directly to him and then being forwarded to the provincial government and the Ministry of Agriculture and

Cooperatives in Bangkok. Occasionally, the PIS may keep contact with the RID regional office when there is an irrigation development project to be implemented collectively.³²

In certain cases, such as the Fai Muang Mai located on the Mae Klang River in southern Chiang Mai, in an attempt to deal with a new kind of relationship with the government agencies, the Fai Muang Mai has expanded its functions. There has been a successful local effort towards having the needs and problems of community irrigation recognized and getting the projects funded by external agencies.³³

2.3. Major Problems of the PIS

Apart from the temporary structure of most PIS mentioned earlier and the shortage of water, especially in the dry season, as reported by most respondents, other important problems which tend to affect the effective operation and the management capacity of the PIS include: (1) the water users at the upper end do not release the water to the lower end of the canal; (2) the distribution system and structures are not usable; (3) no improvement of irrigated areas; (4) the lack of understanding of laws and regulations by water users; (5) the lack of knowledge of water use planning; (6) the improper span of control of certain PIS; and (7) the lack of funds for constructing permanent weirs.

The abovementioned problems have to be solved if the PIS in northern Thailand is to effectively attain its objectives.

3. Major Government Agencies Directly Connected with the People's Irrigation System and the Effect of their Decision-Making Structure upon Agricultural Development in the PIS Areas

The analysis of this section centers on reviewing major government agencies directly connected with the people's irrigation system, their policies, goals, and activities. It is often documented that the almost independent operation of those public agencies responsible for agricultural development in the PIS areas and other provincial and district development units tends to result in several problems in the use of resources for agricultural development in the PIS areas of the 4 basins under study.

3.1. Major Government Agencies Directly Connected with the PIS

This section examines three major types of public agencies: (1) the agencies responsible for farm irrigation; (2) the agencies responsible for agricultural development; and (3) other service-giving agencies.

3.1.1 Agencies responsible for farm irrigation

Previous studies on water resource development in Thailand, particularly in the northeast, have suggested that at present more than ten departments are actively engaged in development efforts in the area.³⁴ Several departments, if not as many as in the northeast case, are also actively involved in water resource development in northern Thailand. This section briefly examines the three major departments which are directly involved in water resource development for farm irrigation in the PIS areas only. They include: (1) the Royal Irrigation Department (RID); (2) the Office of Accelerated Rural Development (ARD); and (3) the Land Development Department (LD).

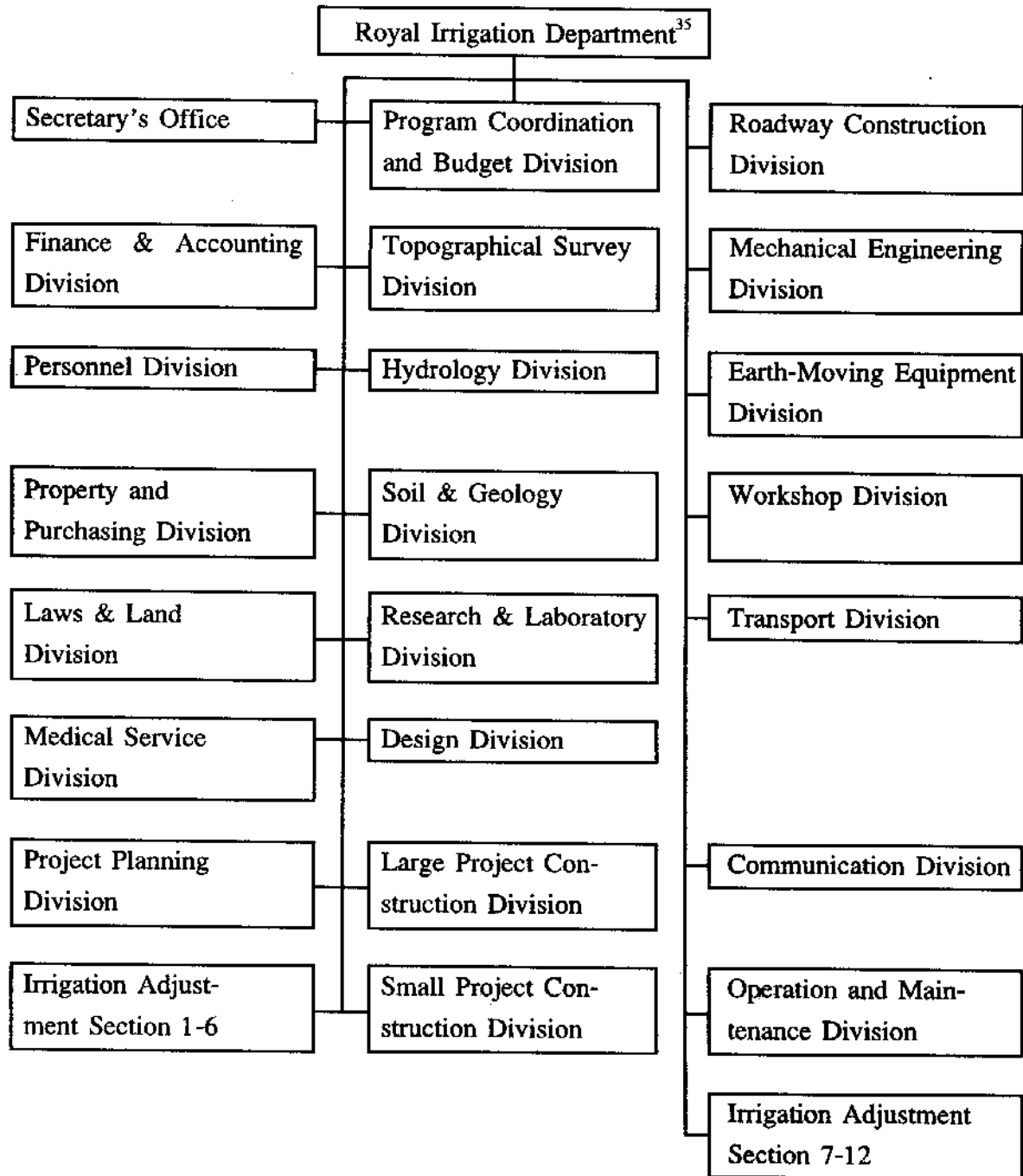
The Royal Irrigation Department in the Ministry of Agriculture and Cooperatives is directly responsible for irrigation planning. The various divisions and offices under this department are illustrated in Figure 5.

Functionally, the RID is responsible for the development of water resources for the purposes of agriculture, industry, consumption, water transport, energy, water retention, drainage, flood control and land development, and for drawing the master plan for the development of water resources throughout the country. This is implemented by construction of dams, reservoirs, weirs, irrigation canals and ditches. Its responsibilities also include pumping irrigation, the management of equipment, water distribution arrangements and the maintenance of irrigation programs all over the land.

There are irrigation offices in every region of the country. Irrigation Office I in Chiang Mai is responsible for the northern part of Thailand including Chiang Rai, Mae Hongson, Chiang Mai, Lamphun, Lampang, Prae and Nan, all of which are situated in the Mekong, the Salawin and the Pin-Wang-Yom-Nan river basins.

Communal or traditional irrigation programs are under the responsibility of the Small-Scale Construction Division of the RID, most of whose work consists of engineering and construction of small-scale projects. According to the law, a communal or traditional irrigation system is an irrigation system constructed by villagers for themselves, without any intervention by the government authorities. Later on such projects received more support from the government, especially from the RID, for the construction of permanent weirs in lateral ditches and sluice gates. Support for this was provided in terms of either a construction budget or design for which the villagers must arrange their own budgets, or both. But usually the support provided is in construction design, especially for downstream irrigation, which seems to receive more support from the Department. This may be due to the fact that downstream irrigation must serve a greater area with a limited amount of water. That is why the correct and systematic construction of the irrigation weirs is very important. On

Figure 5: Organization of the Royal Irrigation Department



the other hand, the upstream area never has problems of water shortage and water sharing arrangements. It is appropriate and helps avoid construction problems when the villagers in the upstream area conduct the construction on their own because they are more knowledgeable about the topography of their area than the government irrigation authorities.

Another enterprise of the Royal Irrigation Department that concerns and affects the traditional irrigation system is the construction of water drainage pipes and sluices at the openings of irrigation ditches (“muang” in the local dialect). This activity is accomplished under the water conservation program.³⁶

Despite the fact that this project has been under implementation for 14 years, it has not been evaluated to find out if its study goal has been achieved or not. Abha’s study suggests that there are problems with this project (to be discussed later) and also prejudices among the farmers consuming irrigation water against the Royal Irrigation Department. The RID should consider these carefully and, as soon as possible, conduct an evaluation of the project, especially in relation to its disadvantages, in order to find means of correcting them.³⁷

The Office of Accelerated Rural Development (ARD), Ministry of the Interior, also plays an important role in relation to irrigation. The organizational structure of the ARD is shown in Figure 6.

The task of this office is to fill the gaps of coordination between government agencies in rural areas in order to accelerate the development of areas urgently in need of development. Its responsibility includes listing and summarizing the needs of the people and development planning for each rural district in accordance with the national development plan for rural areas. This includes the provision of technical assistance in various fields, and financial as well as engineering support for rural development. It coordinates with other government agencies in order to bring help to the people.

There are Provincial Accelerated Rural Development Offices in almost every province, (53 provinces at present) and Accelerated Rural Development Centers in every region. The ARD Center for the Northern Region is in Lampang.

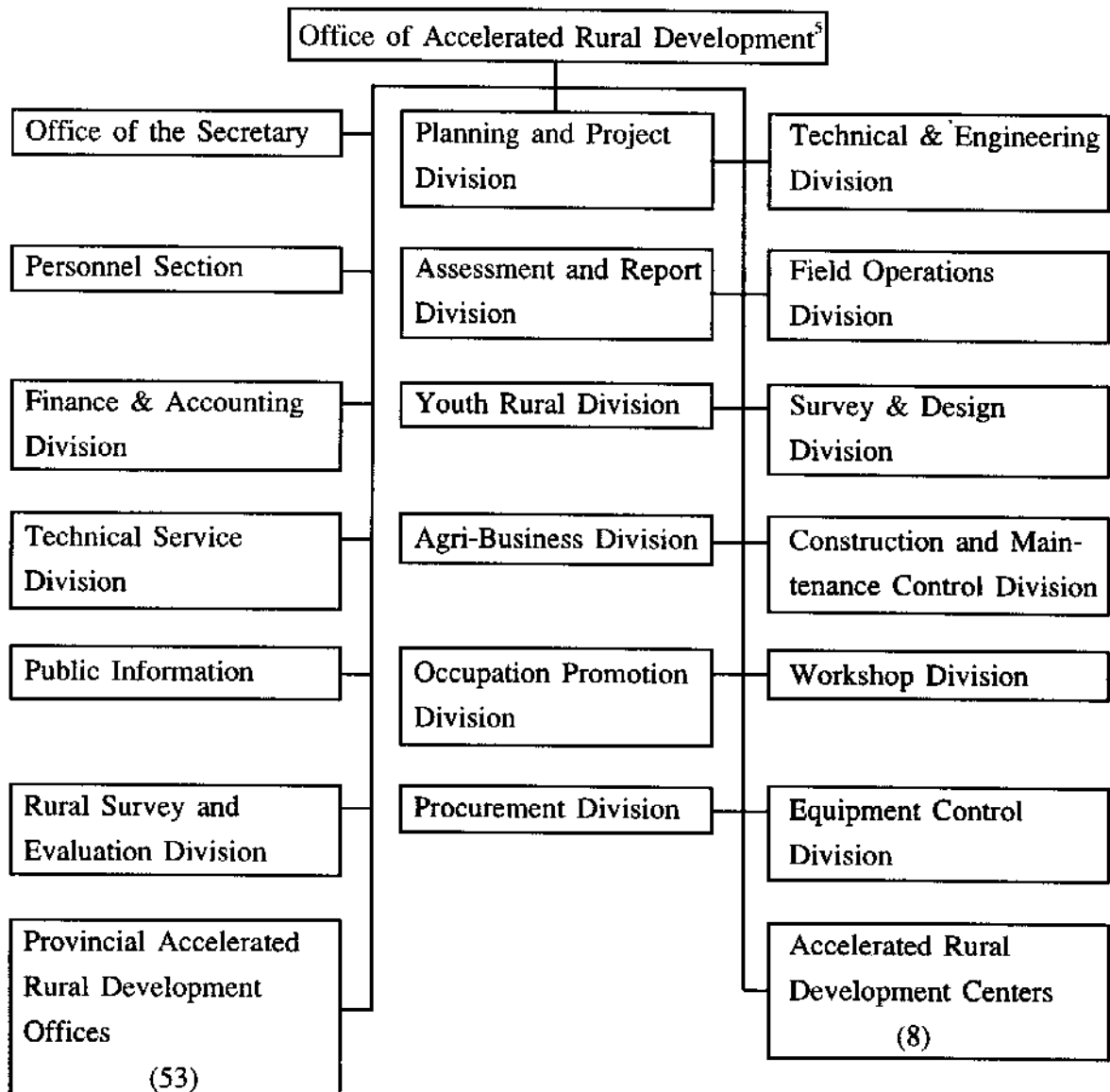
The mandate of the Provincial Accelerated Rural Development Offices is as follows:

(1) Engineering works and area development - includes road construction, and development of water resources, e.g. construction of weirs, digging artesian and shallow wells.

(2) Skill development and income generation, e.g. promotion of rice cultivation, mushroom culture and aquaculture.

(3) Social development through social services such as youth groups and communication, for example of technical and agricultural information by village visits, films, meetings, etc.

Figure 6: Organization of the Office of Accelerated Rural Development



In line with its responsibilities, this office is concerned with the irrigation systems available in the villages. It was found that many villages obtained assistance in the building of weirs or water reservoirs for agricultural purposes.³⁹

In contrast to the ARD's road construction activity, the water resource development project only started in 1976. That is why equipment and manpower were not adequate to undertake construction work. In the first year, a weir at Ku Bia, on Tai Sub-District in Sankampaeng District, Chiang Mai, was commissioned to be built by the engineering students of Chulalongkorn University during their field training course, drawing on the ARD budget of 400,000 baht. The work was completed in 1976. In the following year one more weir was constructed in Muang Luang, On Mua Sub-District, Sankampaeng, which is part of the upstream community, to replace an old one built in the traditional way.

So far, there has been no evaluation of the water resource development project, partly because it was started only a few years ago. Nevertheless, it is anticipated that there will be more requests for permanent concrete weirs to replace the traditional ones so that farmers do not have to repair the weirs every year as normally practiced at present. This permanent weir reduces the amount of repair work needed annually but the work allocation system is still the same. Another advantage of the new system is that it helps reduce deforestation problems, as the repair of the traditional weirs required many trees to be cut for this purpose.⁴⁰

Apart from the main responsibilities in land classification and land development, the Department of Land Development, Ministry of Agriculture and Cooperatives, is also involved in water resource development in the villages. The LD's water resource development project undoubtedly affects the farmers' traditional irrigation systems in northern villages of Thailand. Generally, the LD officers tend to implement the irrigation projects into the villages with little or no coordination with the other two departments.

At present, the three governmental departments, the RID, the ARD, and the LD, are undertaking their irrigation work without an appropriate line of demarcation of responsibilities. This is mainly due to the fact that presently the demarcation line of responsibility among governmental agencies is drawn at the Ministry level only, and generally in broad and rather vague terms. There is no demarcation of duties at the lower levels. This tends to cause duplication and overlapping of work between various Ministries and even among governmental agencies in the same Ministry.⁴¹

In brief, each agency has developed, under the general administrative frame, its own style and procedure for implementing projects, based upon its own successes and failures. Such semi-independent practice means that there is little or no coordination of operations among agencies either at the local level or at the policy-making level in Bangkok.

Consequently, there is duplication and overlapping in some areas, and conflicts among certain units, and the use of national resources tends to be wasteful and less effective.⁴²

3.1.2 Agencies Responsible for Agricultural Development

At the policy level, the Ministry of Agriculture and Cooperatives (MOAC) is in charge of policy-making with respect to national agricultural development policy. Theoretically, all departments under a Ministry including the MOAC assist the Ministry in formulating the Ministry's policy and development programs within the jurisdiction of each department.

To perform the above task effectively, each department is required to formulate the department's development projects based on the Ministry's program frames set in advance. The Ministry's planning agency, in principle, is responsible for integrating development projects of all departments into the Ministry's development programs. In practice, however, the planning unit is not as effective as intended. There are two major reasons for this problem. First, the Ministry's planning unit does not have an authority to allocate resources to various departments as a means to integrate development projects of the department. Each department is empowered to estimate its own budget and submit the budget request directly to the Budget Officer for approval. Second, the planning agencies of most Ministries are less effective generally because of the lack of qualified planners and project analysts to perform the assigned tasks. Thus, each department is likely to have less respect and trust in the Ministry's planning capacity and tends to formulate its own projects using its own style. As a result, the Ministry's planning unit tends to perform its function by compiling development projects rather than integrating them.

At the implementation level, especially at the provincial and district level, most departments have their representatives to implement the projects in the locality. Examples of these key positions include the provincial and district agricultural extension officers; the provincial and district livestock development officers; the provincial fishery officer; provincial irrigation officer; and the provincial and district forestry officers.

Administratively, the provincial and district agricultural development officers have to report directly to the provincial governor and the district officer, respectively, and at the same time they are under the direct control of their respective departments in the MOAC in Bangkok. This dual line of command, generally practiced in the provinces, tends to cause a problem of unity of command in the province. Moreover, it makes it more difficult for the governor, as the head of the province, to coordinate effectively all development projects of various field agencies in the province. Recent studies on development programs in various provinces of Thailand reveal that each local unit tends to formulate and implement its own

projects in the villages with little or no coordination with other units even among agencies under the same Ministry such as the MOAC.⁴³ Of course, this problem is not only the MOAC's problem, but also of all Ministries in Thailand.

In an attempt to cope with the abovementioned problem, the Thai government has adopted several measures, one of which is the creation of the planning agency, the Provincial Office, to integrate development programs in the provinces. However, in actual practice, this planning unit is not as effective as intended. This is partly due to a structural problem and partly because of the limited planning capacity of the provincial planning unit.⁴⁴

3.1.3 Other service-giving agencies

There are other government agencies which provide supportive services to the villagers in the PIS areas, such as the provincial and district land office, the provincial and district education offices, the provincial and district office of primary education, and the provincial commerce office.

The provincial and district land offices are basically responsible for land registration which includes the registration of land purchase and sale, as well as the issuance of land ownership certificates to the farmers. Several research findings suggest that land ownership is an important incentive of the villagers to improve their farm methods and cultivation areas.

The main responsibility of the provincial and district education office as well as the district and provincial office of primary education is concerned with the provision of educational services to the people including the PIS farmers. The education process is the development of man and his mentality. Education is essential to the farmers, because it enables the farmers to decide more rationally on whether to participate in any development project.

The main task of the provincial commerce office is to provide the farmers agricultural information with respect to farm prices and marketing. This kind of information is very useful to the villagers in that it should enable them to sell their farm products at more reasonable prices.

If the above services were effectively provided by concerned units, they would help facilitate the development process in the PIS villages. In actuality, however, they tend to have little or no coordination with other agencies in rendering their services to the farmers.

3.2. Decision-Making Structure of Major Government Agencies in the PIS Areas

At present, decisions concerning resource use in the rural areas rest with the Rural

Development Committees at four levels: the national level; the provincial level; the district level; and the commune or tambon level.

At the national or policy level, the National Rural Development Committee (NRDC) headed by the Prime Minister is responsible for formulating national rural development policy. The NRDC consists of high ranking officials from the Ministries of the Interior, Agriculture and Cooperatives, Education, Public Health, and Industry as Committee members, with the NESDB Secretary-General serving as member and secretary of the Committee.

At the provincial or coordination level, the Provincial Rural Development Committee (PRDC) chaired by the Provincial Governor is in charge of provincial development planning by integrating rural development projects of the local units in the province before forwarding them to the NRDC for final approval.

At the district level, the District Rural Development Committee (DRDC) headed by the District Officer is responsible for district development project planning by screening and integrating all Tambon development projects before sending them to the PRDC for consideration.

At the Tambon level, the Tambon Council chaired by the Tambon headman is responsible for Tambon project development planning and then submission to the DRDC for screening.

Structurally, local farmers seem to have some say in project development planning in the villages. But in reality, the Tambon Council's decisions on Tambon rural development projects tend to be influenced by district officials.

Moreover, the Provincial Office, the planning unit of the province, which serves as secretary of the PRDC, fails to effectively perform its task. This is mainly due to the structural problem and the limited planning capacity of this planning unit. Instead of integrating development projects of the local agencies in the province, the Provincial Office tends to serve as a compiler of these development projects.

The information obtained from interviewing the heads of agencies connected directly with the PIS seems to support the abovementioned findings. That is, each unit has developed its own styles and methods for carrying out projects. More importantly each is independent from others in performing its functions.

However, all informants reported that they preferred a collective decision making procedure to a single decision maker, particularly for those works which will affect other units. For example, to perform its function more effectively, the head of the provincial fishery office is willing to have a committee responsible for the job instead of having his unit only.

He also reported that the committee should at least include the district officer, a representative from the provincial irrigation office, a representative from the provincial agricultural extension office, the district police chief, and himself.

3.3. The Effect of their Decision-Making Structure Upon Agricultural Development in the PIS

The main affect of the decision-making structure upon agricultural development in the PIS is in resource management coordination among concerned units. As discussed previously, the major institutions connected directly with the PIS farmers such as the RID, the ARD, the LD, and the Provincial Agricultural Extension Offices in the four provinces under study, have developed their own styles and procedures for implementing projects. Such almost independent practice means that there is little or no coordination of operations among agencies. For example, the provincial agricultural extension office's success in crop growing promotion in the dry season depends essentially upon the availability of water for cultivation which is under the control of the RID, the ARD, and the LD. On the other hand, how much water the irrigation office can deliver to the farmers depends on how much water these concerned units are able to and will release. In addition, there is no formal linkage between the province and those units located in the province but reporting directly to respective bosses in Bangkok. Moreover, there is no unity of command in the province, which makes it more difficult for the office of the provincial governor, whose main responsibility is to coordinate and follow up the uses of resources in the province.

Footnotes

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²For further information please see Peter Kung, 'A Review of Irrigation Cropping,' in *ADC Report on Irrigated Agriculture in Northern Thailand* (Bangkok: Agricultural Development Council, 1974), pp. 103-116.

³Abha Sirivongs Na Ayudhaya, *A Comparative Study of Traditional Irrigation Systems in Two Communities of Northern Thailand* (Bangkok: Social Research Institute, Chulalongkorn University, 1983), p. 1.

⁴Preg Gypmontasiri et al., *An Interdisciplinary Perspective of Cropping Systems in the Chiang Mai Valley: Key Questions for Research* (Chiang Mai: Multiple Cropping Project, 1980), p. 15.

⁵Preg, *Ibid.*, p. 20.

⁶See Kung, *op. cit.*, p. 55.

⁷For further details please see, Wanpen Surarerk, *Historical Development and Management of the Peoples' Irrigation Systems in Northern Thailand* (Chiang Mai: Department of Geography, Faculty of Social Sciences, Chiang Mai University, 1985); Abha, *op. cit.*; and Uraiwan, *op. cit.*

⁸Wanpen Surarerk, *Historical Development and Management of the People's Irrigation Systems in Northern Thailand* (Chiang Mai: Department of Geography, Faculty of Social Sciences, Chiang Mai University, 1985), p. 171.

⁹*Ibid.*, pp. 164-165.

¹⁰People's Irrigation Act of 1939, article 13.

¹¹*Ibid.*

¹²Wanpen, *op. cit.*, pp. 164-170.

¹³Uraiwan *op. cit.*, p. 75.

¹⁴*Ibid.*

¹⁵Information obtained from a survey of existing PIS in Mae Khan Basin, Mae Tha Basin, Mae Lai Basin, and Mae Prig Basin, northern Thailand, conducted in 1985 by the TEAM.

¹⁶Abha Sirivongs Na Ayudhaya, *A Comparative Study of Traditional Irrigation Systems in Two Communities of Northern Thailand* (Bangkok: Social Research Institute, Chulalongkorn University, 1983), p. 30.

¹⁷*Ibid.*, pp. 30-31.

¹⁸*Ibid.*, p. 31.

¹⁹*Ibid.*, p. 32.

²⁰Uraiwan, *op. cit.*, p. 228.

²¹*Ibid.*, p. 229.

²²Information obtained from correspondence with 250 PIS farmers in the 4 basins of Mae Tha, Mae Lai, Mae Khan, and Mae Prig in northern Thailand, December, 1985.

²³Abha, *op.cit.*, p. 37.

²⁴People's Irrigation Act, article 13.

²⁵*Ibid.*, article 21.

²⁶Abha, *op. cit.*, p. 38.

²⁷*Ibid.*, pp. 38-39.

²⁸Uraiwan, *op. cit.*, p. 115.

²⁹*Ibid.*, p. 116.

³⁰Wanpen, *op. cit.*, p. 391.

³¹*Ibid.*, p. 393.

³²Uraiwan, *op. cit.*, pp. 142-143.

³³*Ibid.*, pp. 80, and 144.

³⁴For examples, see Interim Committee for Coordination of Investigations of Lower Mekong Basin, *Environmental Management in the Nam Pong Basin of Northeastern Thailand*, November 1979; and the Water Resource Planning Subcommittee, NESDB, *Water for the Northeast: A Strategy for the Development of Small-Scale Water Resources* (Bangkok: The Asian Institute of Technology, 1979).

³⁵National Institute of Development Administration (NIDA), National Research Institute, *Organization of Government Agencies of the Royal Thai Government*, 1976.

³⁶Abha *op. cit.*, p. 70.

³⁷*Ibid.*, p. 73

³⁸NIDA, *op. cit.*

³⁹Abha, *op. cit.*, p. 74.

⁴⁰*Ibid.*, p. 75.

⁴¹For further details, see Amara Raksataya and Thavan Vorathepputipong, *Thailand's Civil Service System Improvement Project*, December, 1985.

⁴²Puey Ungphakorn, *Asian Development Goals: Achievement and Failure: Role of AID* (Mimeographed), December, 1971, pp. 7-10.

⁴³For further information, see Amara and Thavan, *op. cit.*

⁴⁴*Ibid.*