

PUBLIC INTERVENTION IN FARMER-MANAGED IRRIGATION SYSTEMS: A THAI PERSPECTIVE

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INTRODUCTION

This paper describes a procedure adopted by the Thai Government to deal with farmer-managed irrigation systems, which are viewed as a component in the overall development activities for small-scale water resources. The objectives of this development effort are to provide water for drinking, domestic, and agricultural use in most areas of rural Thailand.

Irrigation systems in the context of the small-scale water resources program are usually on the order of 20-60 hectares (ha) of irrigated land. Annually, the government provides a budget for constructing headworks (i.e., permanent structures, such as spillways, embankments, and weirs for storing or diverting water) for selected irrigation project requests. The government expects farmers to take responsibility for construction of water conveyance facilities, operation, and minor maintenance of the systems. Projects are selected according to a set procedure which outlines various steps and the agencies involved.

There is disturbing evidence that of more than 2,000 weirs and tanks built under the procedure, only about one in five is being used effectively. Effective use means water made available by the construction of weirs or tanks is justified economically. Common uses are supplementary irrigation of rice and dry season vegetables. On the other hand, the available water in ineffective projects is used for domestic purposes and livestock. These uses, although benefitting farmers, cannot justify the cost of structures. Sources such as shallow wells can serve these purposes with much less cost.

The paper is divided into two sections: the procedure and analysis section outlines the procedure, reports observations, and offers an analysis of both. The second section presents suggestions for improvements arising from the analysis. These suggestions are tentative and are intended for discussion only. This paper and its analysis are the result of an on-going research project supported by the Ford Foundation and conducted by the Water Resources and Environment Institute, Khon Kaen University.

THE PROCEDURE AND ITS ANALYSIS

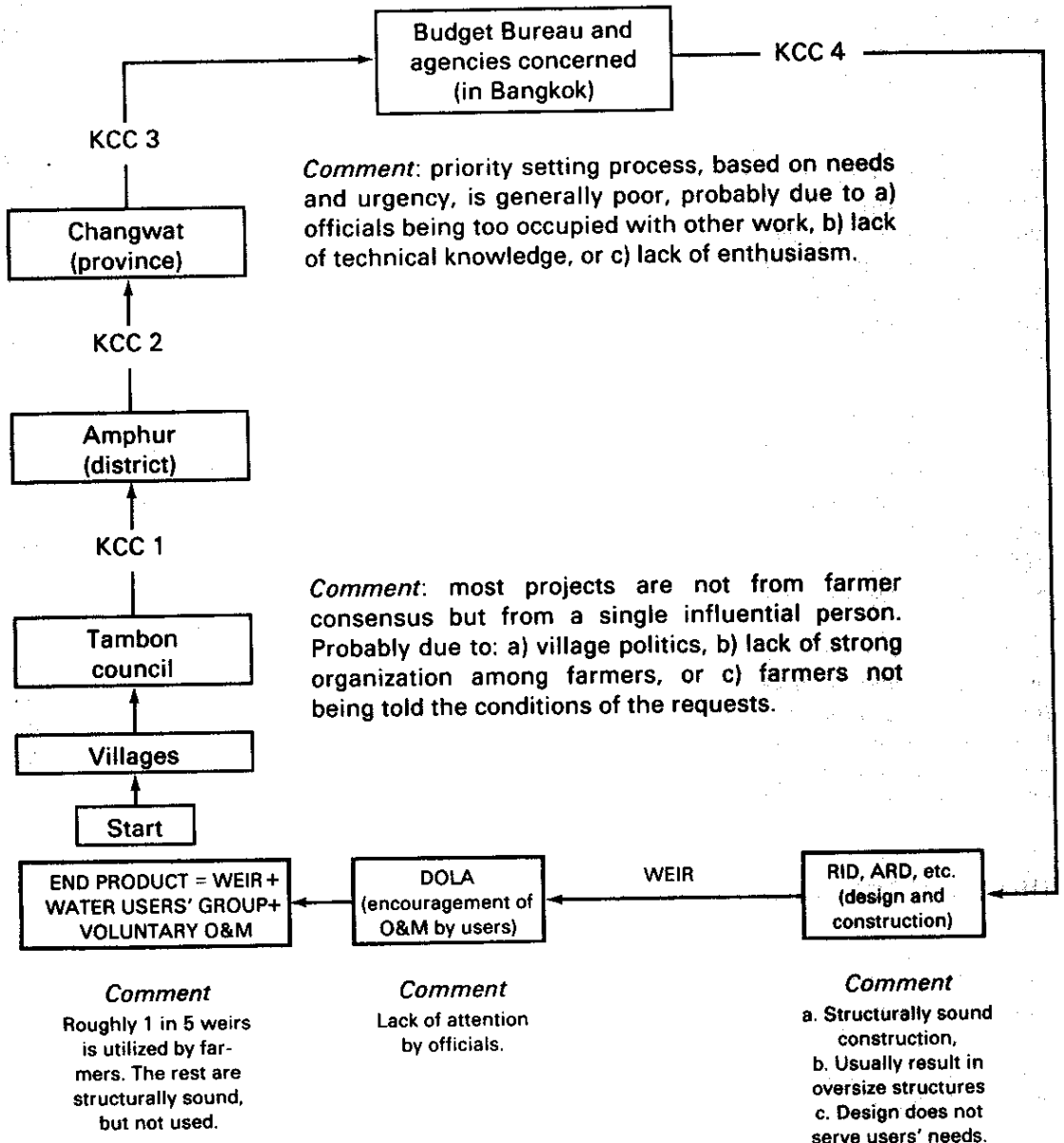
This section first describes the procedure in its theoretical form (i.e., as set by the government). Observations are then presented on the procedure at work. Finally, an analysis explains the observations.

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The Procedure

The procedure is shown in Figure 1 as a simplified flow chart. The boxes indicate groups of people and agencies. Phrases written in capital letters outside boxes are inputs or outputs to the boxes. Paragraphs alongside the flow chart are observations to be discussed later.

Figure 1. Implementation procedure for development of small irrigation systems.



To facilitate the discussion the following terms need to be clarified. Administratively, a group of villages forms a *tambon* (subdistrict), a group of tambons forms an *amphur* (district), and a group of amphurs forms a *changwat* (province). There are 73 changwats in Thailand. Bangkok, the capital of Thailand, is a changwat.

The flow chart starts at its lower left end and moves up. In every village there exists a village committee (at least on paper). The village committee makes a request, such as to have a weir built, to the tambon council. The council is supposed to screen all requests according to the need and urgency. It then passes on the list, called "KCC 1," to the amphur. Each tambon council is advised by a committee comprised of government officials representing the Ministries of Health, Education, Agriculture and Cooperatives, and Interior.

At the amphur level, a similar screening process is supposed to occur -- the outcome of which is the list of projects called "KCC 2." At present, amphur committees do not have any members with technical backgrounds. The committee is chaired by the amphur head administrator.

At the next level, a changwat committee, chaired by the governor of the changwat, prioritizes requests in KCC 2. Representatives from technically oriented agencies are present. Output is a list of requests called "KCC 3."

Everything described so far occurs within the changwat where requests originate. The KCC 3 is then sent to Bangkok for consideration by the Budget Bureau, agencies involved in design and construction, and other agencies concerned with securities. Feasible requests are approved, budgets allocated, and projects assigned to different agencies for design and construction. The output of this step is a list of projects and the agencies responsible for construction. The list is called "KCC 4." At this stage, all projects listed in KCC 4 are usually constructed unless exceptional technical difficulties are encountered. Important agencies responsible for design and construction are the Royal Irrigation Department (RID) and the Office of Accelerated Rural Development (ARD). Although there are several other government agencies involved in this phase, RID is responsible for the majority of the projects. Outputs from this phase of the procedure are headwork structures such as weirs or tanks.

Once the construction of the headwork structures is completed, the Department of Local Administration (DOLA), under the Ministry of Interior, is responsible for forming water users' groups and encouraging the groups to operate and maintain the facilities. Output from this phase is the end product: the headwork structure and voluntary operation and maintenance (O&M) by the water user group. This marks the end of the procedure.

With respect to time, the activities from KCC 3 down to the end product occur annually according to the Thai fiscal year. The activities from the start of the procedure up to KCC 3 are not affected by that fiscal year constraint. Site survey, design, and construction work are done between October and March every year. The time required from request to completion of construction varies from about 18 months to several years.

Before the procedure outlined in Figure 1 was introduced, requests were initiated through many uncontrollable channels. For example, an abbot of a village temple might initiate a request simultaneously to a parliament representative and to the RID. The representative might then contact other agencies. Sometimes, it happened that more than one agency intended to have a weir built in the same village without any knowledge of each other's intention. Request procedures were chaotic, inefficient, and unfair to other villages. This procedure was introduced to eliminate such problems.

Observations

The following observations made during the study relate to Figure 1, where summary comments are provided. The first observation concerns the steps from the village level to the KCC 1 list. The majority of requests originated from a single influential person such as a village headman or tambon headman, rather than from a group. This is probably due to 1) village politics, 2) lack of strong organization among farmers, or 3) farmers not being told the conditions of the request.

The second observation is made for steps from KCC 1 to KCC 3. Here the screening process was ineffective. It is normal to see requests processed without any field checks. According to a random check, only 4 out of 30 requests were technically feasible. Most requests did not meet the needs of the majority of users (as a consequence of factors noted in the first observation). The poor screening by the amphur and changwat are due to: 1) officials being too occupied with other work and routine responsibilities, 2) lack of technical knowledge, or 3) lack of enthusiasm.

The third observation is made at the design and construction step with KCC 4 as an input and permanent structures, such as weirs, as the output. Most structures observed were structurally sound but too large for the intended service. The design lacked flexibility and did not serve users' needs.

The fourth observation is made at the step where a water users' group is set up and O&M carried out. The task is assigned to the Department of Local Administration (DOLA). Lack of attention by officials is most apparent here.

Output of the previous step is the end product, which, in theory, should consist of the structure, the water users' group, and voluntary O&M. In reality, approximately one in five projects met the above expectation. The rest were structurally sound but not used for irrigation as planned. They were used for supplying water for domestic use and livestock. Such uses could be served more cheaply by other means.

The low percentage of successful end products (e.g., weirs) is the main concern. Several million dollars are spent annually. The government cannot afford to continue this kind of investment. At present, the Budget Bureau is already criticizing the program.

The lack of enthusiasm by farmers for O&M reflects their attitude toward the government-constructed headworks. Given the existing conditions, non-government weir

construction programs have indicated that the percentage of successful weirs could be much higher with less construction cost. This is in sharp contrast to the government program. This difference can be attributed to three factors: design of a weir (hardware), approach (software), and cooperation among agencies.

Design of a weir. The aspects involved in weir construction are location and dimension. Location refers to the exact place where the weir is to be built. Government weirs are often built without consulting farmers, which is unfortunate because, in most cases, farmers have better knowledge of flow in that vicinity than government designers. Farmers usually want a weir built on the stream at a particular place. Building a weir usually implies that the weir will not be larger than the width of the stream, and hence does not occupy agricultural land nearby. Thus there is no land ownership problem to settle. However, such a weir will not be able to pass the maximum flow during flood. This does not mean that the weir will be washed away with flood water. With proper design, the weir will be inundated during flood but not damaged. Government designers are too conservative to accept such design concepts. This results in a much larger weir than necessary and at a location further away from the stream, hence requiring an extra channel connecting the weir to the original stream. It is normal to find that government weirs cost about 10 times more than what is required. In many cases government agencies build weirs further upstream in order to store more water. This is contrary to the farmers' requirement that, to be beneficial, the water must be available at a particular location.

The crest level of a weir is another important aspect since it determines the water level. Too high a level will cause adjacent land to be inundated. Weirs with crests too low will not enable water to flow to desired locations. During the preliminary site investigation, it is always difficult to determine proper weir crest level. Variable weir crest level is therefore justified. Design measures such as provision for "stoplogs" is simple and serves the purpose satisfactorily. It took an incredibly long time for government designers to accept such a simple change.

Approach. Approach refers to the way agencies interact with farmers before weir construction. A suitable approach is a prerequisite to successful weir projects and increases the chance that the weir will meet the needs of the users. In Thailand, it also creates the sense of belonging that is crucial to voluntary O&M. Weir projects are joint ventures between two parties: the government and the farmers. It is therefore reasonable to have both parties informed of all conditions that exist (e.g., cost, location). In the past, at least for the RID, a respectable effort has been made to try such approaches in the agency's weir construction. However, constraints on time, personnel, budget, and lack of coordination with the design section prevent translation to fruitful results.

Cooperation among agencies. The procedure described earlier requires government agencies to cooperate. For example, once the RID completes weir constructions, it will hand over the weirs to district officers under DOLA to organize water users' groups. It is clear that lack of interest and enthusiasm by DOLA personnel exists. One explanation for this is that DOLA does not like what it is expected to do. The procedure outlining the

responsibility of various agencies is like a conveyor belt manufacturing process where each agency performs a particular task. Some like it and some do not. For example, if works in earlier steps are done improperly then the task assigned to DOLA is made more difficult or impossible, and the responsibility assigned to DOLA does not enable it to command a large budget. Nevertheless, the blame for the failure of the program is usually focused on RID even if it is due to poor performance by DOLA. This explanation is reinforced by the recent effort by DOLA to experiment with its own weir construction program.

RECOMMENDATIONS

Technically the solutions to the problems above already exist. The question is whether these solutions will be acceptable to government policy making bodies and practicable to implementing agencies. In this respect the recommendations must be based on practicality rather than ideology. Recommendations should also be accompanied by lobbying and persuasion, and contain sufficiently detailed procedures.

Because the research work is ongoing, the following recommendations should be taken as preliminary rather than final. The recommendations are based on the assumption that the procedure presently followed by all government agencies is here to stay. Drastic change of the procedure is likely to cause confusion rather than improvement, and hence only modifications are recommended.

Short Term Measures

These focus on RID's weir design practices and the approach used to interact with farmers when the KCC 4 list is released. The aim is to help RID prepare projects before construction, to increase the chance of building weirs that meet users' needs, and to promote voluntary O&M by users.

One suggestion is to have a community organizer stationed in a village where a weir will be built from the project inception (i.e., when the KCC 4 list is released) until construction is complete. This community organizer is expected to facilitate communication between farmers and the RID.

Stationing community organizers in villages will add to the cost of the project. It is therefore necessary to assess the marginal increase in benefit against additional cost. Analysis based on risk assessment and expected value is ongoing.

Long Term Measures

Long term measures focus on attacking inefficiency due to lack of cooperation among agencies. It is suggested to charge an agency with responsibility for the whole stream of events from the release of KCC 4 to the end product. More than one agency will be assigned such tasks in parallel. In this way, the end product of each agency can be compared and used to create competition leading to better results.