

Performance Evaluation in a Farmer-Managed Irrigation System in the Philippines: A Case Study

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ABSTRACT

THIS PAPER IS about performance evaluation in a farmer-managed irrigation system (FMIS) in the Philippines that undertakes the following activities:

1. Management of the cropping calendar;
2. Irrigation water allocation and distribution, including conflict management;
3. Agricultural credit arrangements for its members;
4. Procurement and distribution of agricultural inputs; and
5. Marketing of production of its members.

Generally, FMIS in the Philippines do not undertake the last three activities mentioned above. Thus, this is not the usual FMIS.

The paper starts with a brief background of the FMIS situation in the Philippines and then discusses the subject of the study, Pinit Communal Irrigation System (Pinit CIS) and Pinit Irrigation Association (PIA) which owns and manages the system, focusing on the organizational structure and other matters related to the performance evaluation activities.

In the Pinit CIS, performance evaluation is a tool for (a) improving the management of the irrigation system and the PIA and (b) measuring the progress of the PIA towards its goals. The paper describes the monitoring and evaluation processes being used by the PIA along with its various activities to meet those two objectives. It also gives some examples of performance evaluation results.

Finally, the paper cites some lessons being learned by the Philippine government agency assisting FMIS on the enhancement of performance in irrigation systems.

INTRODUCTION

Farmer-managed irrigation systems (FMIS) in the Philippines, according to the most recent estimates, cover about 848,000 hectares (ha) constituting about 58 percent of the total irrigation service area in the country. There are two categories of FMIS. One is the communal irrigation

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system which is owned and managed by an irrigation association (IA) organized by the water users and vested with legal powers by the government. The other category is the private irrigation system owned and managed by a farmer who often makes water available to other farmers for some consideration. This case study is on a communal irrigation system (CIS). As a group, CIS serve about 696,000 ha nationwide. The average service area is about 100 ha. Most landholdings range from 1.0 to 1.5 ha with rice as the principal crop. Most of these CIS are run-of-the-river systems that draw water from low diversion weirs on streams with their maximum flows in the wet season and minimum flows in the dry season. Because of lower water supply in the dry season from the stream source and little or no rainfall, the hectareage of the dry season crop is often smaller than the wet season crop.

Many CIS have existed in the Philippines for more than a hundred years. They were originally built by farmers with stones, brush and earth for diversion weirs and earthen canals for bringing water to their fields. Since the early 1950s the Government of the Philippine has been assisting communal systems through the construction of permanent physical facilities and through farmer training. At present, the National Irrigation Administration (NIA) undertakes these activities as part of its mandate.

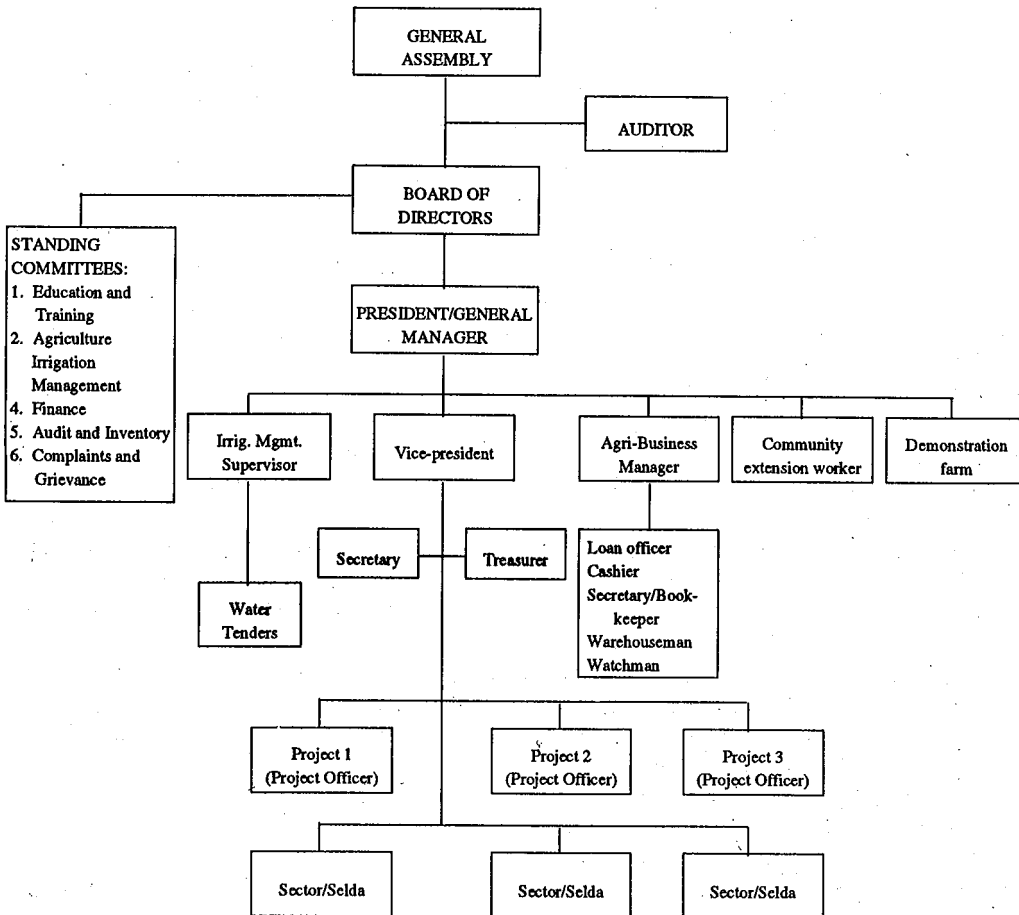
THE PINIT COMMUNAL IRRIGATION SYSTEM (PINIT CIS)

The Pinit CIS, the subject of this study, is one of those assisted by the NIA. It is located in the province of Camarines Sur and is owned and managed by the Pinit Irrigation Association (PIA). It covers 103 ha and serves 90 farmers. The irrigated crop is rice, raised twice a year. The PIA is a corporate body with legal status registered under the Securities and Exchange Commission. It has two main operating units, one for irrigation water service and the other for agribusiness. These two units are under the supervision of its President who reports to a Board of Directors (BOD). The BOD is responsible to the General Assembly of members for running the business of the irrigation association (IA). The President of the IA is also the chairman of its BOD. The IA has two other operating units: a community extension program and a demonstration farm. As these are of relatively minor importance, they are not included in this study. Figure 1 shows the organization diagram of the Pinit IA.

The water service unit is headed by a BOD member who is also the irrigation management supervisor of the IA. Under him are water tenders of the three sectors of the service area. The agribusiness unit is headed by an agribusiness manager who has under him a cashier, a loan officer, a secretary-bookkeeper, a warehouseman and a watchman. The unit undertakes credit facilitation, procurement and distribution of agricultural inputs and marketing of unhusked rice on behalf of the members.

For representation in the BOD and for overall planning the service area is divided into three sectors. Each sector is subdivided into "seldas." Sector 1 has two seldas; sector 2 four seldas; and sector 3 three seldas.

Figure 1. Organization diagram of Pinit Communal Irrigation System.



PERFORMANCE EVALUATION

In the Pinit CIS, performance evaluation is a tool for: 1) improving the management of the irrigation system and the PIA, and 2) measuring the progress of the PIA towards its goals. Under the first

category, activities are evaluated regularly during the cropping season. Under the second, results are evaluated after the cropping season.

In the management of water resources the PIA does the following:

1. Plans its cropping calendar for two crops of rice in one year on its 103 ha service area to be raised from June to October as the wet-season crop, and from November to April as the dry-season crop.
2. When there is a shortage in supply, water delivery is rotated among the three sectors. The period of the rotation cycle is based on observing the hectarage that can be saturated in one day by the available water supply. Then the number of days in which one rotation cycle can be completed is calculated. Rotational distribution is implemented with the fields watered to saturation point only.

As Pinit CIS is a run-of-the-river system, the PIA is very concerned about timely implementation of its cropping calendar. A prolongation of farming activities that requires more irrigation water than is available in April and May when water supply is at the lowest, would greatly diminish the total rice production of the system and IA income. Thus, it monitors closely the farming operations at the sector and selda levels. For each lot, the water tender notes the area, rice variety, date of initial water delivery and the starting and ending dates of 1) land soaking and land preparation, 2) seedbed preparation or direct seeding, 3) transplanting, 4) crop maintenance, 5) terminal drainage and 6) harvesting. These data are reflected in the attached form 1 (Record of Farming Activities and ISF Collection Information). The irrigation supervisor summarizes the water tender's report into a sector report indicating the area of the sector, the area irrigated and the starting and ending dates of the farming activities that have taken place in the sector as a whole. On the basis of the existing situation in the sector he makes a forecast of succeeding activities focusing on a projected comparison with the planned cropping calendar and informs the BOD of the situation in this regard.

The PIA employs two water tenders under an irrigation supervisor who is a member of the BOD and who chairs its irrigation management committee. A water tender is required to make a circuit of the area of his assignment once a day to distribute water equitably and gather data on the status of farming activities for each lot.

Each day his presence in the area is certified by the sector leader; otherwise he is not allowed to collect his pay. Problems in his area are reported by the water tender in a log book at the IA office for action by the appropriate officer of the IA.

The data on rice variety and dates of seeding or transplanting are specially important when there is an extreme water shortage, and priorities on water distribution are adopted to reinforce the rotation system cited above. The data are used in determining the stage of the rice crop and the harvest dates of each lot in the irrigated area during periods of extreme water shortage. At such times the IA sets into motion the following system of priorities in water distribution:

First Priority : Crops which are in the milking stage or about three weeks before harvest time;

Second Priority: Crops which are in the flowering stage or about four weeks before harvest; and

Third Priority : Crops which are in the booting stage. Extreme water shortage occurs for one to two weeks near the end of the dry-season cropping in April.

To enable farmers to follow the cropping calendar, the agribusiness unit supplies cash needs and agricultural inputs at the same time to all members of a selda in accordance with the cropping schedule. Selda members help each other when necessary to meet the schedules of land preparation

and planting. As these cash needs and inputs are financed by the IA through relending from its credit line with the bank, the PIA monitors the preparation of loan papers of its members and the processing of its credit line so that the funds are available before the beginning of the cropping season. It also monitors the release of cash needs and agricultural inputs to its members. Information on these is furnished daily by the cashier who releases the cash and the warehouseman who releases the agricultural inputs.

As the irrigation and farming activities proceed, the data on farming activities are evaluated and compared by the BOD with the cropping calendar. If performance is not satisfactory steps are taken to improve it. For instance, if the preparation of loan papers is behind schedule, action is taken to speed them up. If land preparation in a selda is delayed due to the sickness of a member, selda and sector leaders mobilize other members of the selda to help meet the schedules.

As part of the evaluation of policies and procedures, members with complaints write them in a log book at the PIA office for action by the President. Resolution of complaints is given top priority by the President who also chairs the Complaints and Grievance Committee of the IA. Where the action requires amendments in the policies or procedures, the matter goes to the BOD and, if necessary, the General Assembly.

Other performance evaluation activities undertaken regularly pertain to Capital Build-up (CBU), Farm Management Take Over (FMTO) and marketing of unhusked rice.

1. CBU is a scheme which was agreed upon in the General Assembly to raise capital from members within 5 years. The General Assembly established policies and systems for its operation. Five percent of every loan taken by a member is deducted from the proceeds of the loan and contributed to the CBU in addition to other amounts he may contribute. Each member is allowed a maximum of 10,000 pesos (about US\$363) as contribution to CBU. No member is allowed to exceed this maximum. For monitoring, a separate record of members' contributions is kept. CBU is evaluated regularly for compliance with policies and comparing with targets.

2. Under lending policies approved by the General Assembly a production loan is a group loan of a selda. Failure of a member to pay his loan makes the whole selda ineligible for further loans. To forestall problems to the seldas, the General Assembly instituted FMTO whereby the delinquent farmer continues to work on the farm but voluntarily transfers management of the farm to the BOD on a temporary basis until the loan is repaid. As farming activities proceed in farms under FMTO, the BOD conducts regular monitoring and evaluation to ensure that the loan is repaid from the production of the farm.

3. For marketing operations, the PIA monitors the prices of wet unhusked rice and dry unhusked rice daily as well as the amount of unhusked rice it has bought, dried and sold. It sets its buying price from members at least ten centavos (about one third US cent) higher per kilogram than the local market price. It dries and stores the unhusked rice and sells it later at a profit that forms part of the IA income. Price monitoring guides decision making on the purchase and sale of unhusked rice to maximize IA income.

At the end of the cropping season, the PIA conducts an evaluation of the operation and maintenance (O & M) of the Pinit CIS, cropping calendar, production, loan operations, sales of agricultural inputs, palay trading and capital build-up. Each year it makes a comparison of its income and expenses.

1. O & M are evaluated in terms of water distribution, canal maintenance, collection of irrigation service fees, and incidence of conflicts.
2. The cropping calendar is evaluated in terms of how well it was followed for purposes of improving implementation of farming activities.
3. Production is evaluated from records of threshing operations. The PIA has a mechanical thresher which members use for more efficient threshing operations. In this way, the PIA is able to compile data on the harvest of its members.
4. For evaluating loan operations, the PIA looks at the hectareage covered by loans, the number of members who took loans, the amount of the loans and the percentage of repayment. Collections of loan repayment as well as irrigation service fees are in terms of unhusked rice after the member completes harvesting and threshing operations.
5. For the marketing operations, the daily data gathered on amount of unhusked rice bought are summarized to obtain the volume of unhusked rice marketed by the IA and the profit realized. Similarly, the volumes of agricultural inputs procured and distributed are obtained from records of the warehouseman for comparison with the previous cropping season.

EXAMPLES OF PERFORMANCE EVALUATION RESULTS

The PIA in evaluating its performance cites the following:

1. Before 1987, the Pinit CIS operated as an informal group of water users with facilities that irrigated about 70 ha. In 1987 with technical, institutional and financial assistance from NIA, the farmers organized themselves into an irrigation association, registered with the government, legalized their water rights, and improved the irrigation facilities. By mid 1988 the service area had increased from about 70 ha to 103 ha.
2. Water distribution is now satisfactory as the whole service area is now irrigated in the dry season through a rotation system that enables equitable distribution in times of water crisis.
3. Maintenance of the 5.25 km. length of canals is satisfactory. All canals are maintained by farmers in each of the three sectors. Funds for canal maintenance are provided by the IA to each sector from its budget. Of the irrigation fee of 87 kg. of unhusked rice per ha per cropping, the IA appropriates 12 kg. per ha for canal maintenance to be done by the sectors.
4. Collection of irrigation service fees and repayment of loans are both 100 percent.
5. There are no serious internal conflicts that impair the O&M of the system or the management of the IA and its agribusiness.
6. The PIA is able to observe its cropping calendar in both the wet and dry seasons through timely delivery of farmers' cash needs and agricultural inputs. However, there is still scope for improving the cropping calendar through more mechanization that will shorten the period for land preparation.

7. In October 1989, the PIA obtained a loan of 311,500 pesos (US\$11,300) to finance relending and supply of agricultural inputs to members. It started these activities in the cropping period from November 1989 to April 1990. During that period, average production of the Pinit CIS increased to 4.0 tons per ha from the 3.3 tons per ha of the previous year. During that period, 83 percent of the irrigated area was serviced with loans and agricultural inputs by the IA. In the next cropping season, June to October 1990, 99.1 percent of the area was serviced with loans and inputs and average production further increased to 5.5 tons per ha.
8. In the crop season November 1989 to April 1990 when it first supplied agricultural inputs to members, total fertilizer sales of the PIA amounted to 260 bags. In the next crop season, June to October 1990, fertilizer sales increased to 1,100 bags and nearby farmers outside the Pinit CIS started buying from the PIA.
9. A marketing target of 30 cavans (1.5 tons) per ha of palay in the area serviced by its lending operations, was set by the IA. This amounted to 2,568 cavans (128.8 tons) for the period November 1989 to April 1990 and 3,068 cavans (154.3 tons) for the cropping of June to October 1990. In both cropping seasons these targets were exceeded.
10. A review of capital build-up of PIA showed that members' total contributions to CBU as of September 1990 were 54,779 pesos (US\$1,990) and 80,040 pesos (US\$2,910) as of April 1991. As the target of the PIA is to accumulate 1 Million pesos (US\$36,364) by 1995, progress so far has been slow. PIA officers say that this could have been much faster, but the General Assembly policy of limiting individual contributions to 10,000 pesos (US\$363) per member to prevent dominance by a person or a minority group of persons, has limited capital accumulation.
11. The PIA evaluates its yearly financial operations by comparing its total income with total expenses. In 1989 and 1990 the comparison was as follows:

	1989	1990
Total Income	128,116.85 (US\$4,568.79)	250,016.40 (US\$9,001.51)
Total Expenses	104,971.99 (US\$3,817.16)	156,937.88 (US\$5,706.83)
Savings	23,144.86 (US\$751.63)	93,078.52 (US\$3,384.68)

LESSONS FROM THE PIA

Studies on Philippine communal irrigation systems in the early 1980s indicated that irrigation associations that ventured into activities beyond water failed in those activities. Thus, the NIA in its program for assisting communal irrigation systems confined its program to developing the physical facilities and the capacity of the irrigation associations to operate and maintain the systems.

This NIA policy is now undergoing change. Using the Pinit CIS as an example, Region V of the NIA has, in two pilot projects, developed a process for building capacity in irrigation associations for increasing production and income through activities on facilitation of credit, supply of agricultural inputs, and marketing of produce. From the lessons drawn from the Pinit CIS this is expected to result in enhanced performance of farmer-managed irrigation systems as shown by:

- * Increased motivation of members;
- * Enhancement of IA vision resulting in the adoption of long-range plans;
- * Improved implementation of cropping calendars through effective synchronization of water and agricultural inputs;
- * Improved water use and O & M of the irrigation system;
- * Increased production in the irrigation system; and

Improved viability of the FMIS

The PIA evaluated its yearly financial operations by comparing its total income with total expenses. In 1989 and 1990 the comparison was as follows:

1990	1989	
1,500,000 (US\$1,500,000)	1,581,167 (US\$1,581,167)	Total Income
1,500,000 (US\$1,500,000)	1,491,167 (US\$1,491,167)	Total Expenses
0 (US\$0)	90,000 (US\$90,000)	Surplus

IRRIGATION SYSTEMS

During the early 1980s, irrigation systems in the Pinit region were in a state of decline. The NIA in Region V, in an effort to improve the situation, initiated a program for assisting community-based irrigation systems. The program for assisting community-based irrigation systems consisted of developing the physical facilities and the capacity of the irrigation associations to operate and maintain the systems.

