

GOVERNMENT INTERVENTION IN FARMER-MANAGED IRRIGATION SYSTEMS IN THE PHILIPPINES: HOW RESEARCH CONTRIBUTED TO IMPROVING THE PROCESS

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INTRODUCTION

Irrigation systems in the Philippines cover about 1.35 million hectares (ha) of land. Of this, about 500,000 ha are in national systems managed by the government's National Irrigation Administration (NIA), 600,000 ha are in communal systems managed by farmers' irrigation associations, and 250,000 ha are in private systems managed by individual farmers. Thus, 63 percent of the total irrigated area is served by irrigation systems managed by farmers either individually or through their irrigation associations. Furthermore, in the national irrigation systems, the tertiary level system following NIA policy has to be managed by farmer associations or groups while the main system is managed by the NIA. From 1983, NIA has been turning over the management of small national systems and substantial parts above the tertiary level in medium-sized national systems to organized irrigation associations. This further increases the area of farmer-managed irrigation systems.

Construction and management of irrigation systems by farmers in the Philippines antedate Spanish colonization. Government activities to develop irrigation started in 1910 under the Americans. These activities included the construction of new irrigation systems that were eventually managed by the government as national systems which charged irrigation fees to users. Before 1950, government intervention on existing farmer-managed systems was negligible except for the Irrigation Act of 1912 which prescribed a system for claiming prescriptive water rights for existing systems.

GOVERNMENT INTERVENTIONS AND PROBLEMS EXPERIENCED

In the early 1950s, a nationwide irrigation development plan was launched to enhance food production and resulted in two types of intervention in farmer-managed systems. With Type 1, groups of small farmer-managed (communal) systems were improved, consolidated, and expanded into government-managed (national) systems. With Type 2, other communal systems were improved and expanded by the government without any obligation on the part of the farmers to pay for construction costs but with the responsibility for management of the system remaining with the farmer irrigation association.

Type 1 Interventions

The first form of intervention was usually employed whenever a communal system or group of such systems could be expanded to cover a contiguous irrigable area of at least

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1,000 ha. Where such a scheme was considered economically feasible and politically desirable the government posted notices in public places within the proposed service area informing the public that an irrigation system would be built by the government to serve the locality, for which irrigation fees would be charged to the landowners within the service area. The notice further advised people to file their opposition to the project with the government on or before a specified date. When there was no opposition (or no more opposition), construction was started.

Construction always featured permanent concrete structures to replace the temporary ones reconstructed or repaired by farmers every irrigation season. The new structures were usually not located in sites where the temporary ones were situated. When several small communal systems were consolidated into one and expanded to cover a larger area, a single permanent diversion weir usually replaced several temporary weirs and a new canal network was constructed which, depending on the judgment of the design engineer, did or did not utilize the existing distribution system. The government constructed the irrigation system down to the turnout or structure that delivered water to an area of about 20-50 ha. All construction was undertaken without participation of the farmer beneficiaries. The land that was used as sites for the facilities was paid for by the government according to prescribed rules.

Beyond the turnout the farmers were expected to construct farm ditches and apportion the water among themselves. When after many years it was observed that the farmers did not undertake farm ditch construction to the desired standards, the government changed its policy and decided to undertake such construction with farmer participation in the form of giving the ditch right-of-way without payment. In all cases the farmers were expected to operate and maintain the farm level system.

Upon completion of construction, the government posted another notice in public places informing that:

1. The irrigation system would be formally opened on a specified date.
2. The operation and maintenance (O&M) of the main system would be undertaken by the government, and at the farm level by the farmers' groups.
3. Farmers should organize an irrigation association to coordinate with the government in matters pertaining to system O&M.
4. Irrigation fees would be charged at the rate of a certain amount per hectare on the landowners served by the system.
5. Irrigation fees would be levied first on the land irrigated and then on the crops raised, and in case of failure to pay the charges thereon, the land, upon judgment of a court of law, would be seized by the government and sold for satisfaction of the amount due.

Foremost among the many problems with Type 1 interventions was the disintegration of the organizations that maintained farmer-constructed systems. These organizations were structured around the network of canals and changes in canal locations in the new systems destroyed the existing organizational arrangements. Efforts to start new organizations failed. When the government took over responsibility for O&M, farmers lost their initiative and began to depend on the government to maintain the irrigation system.

The personnel operating and maintaining the irrigation system were responsible not to the farmers but to the government irrigation agency. Whether or not farmers paid irrigation fees, the system's personnel received their pay. The absence of an organization that could effectively represent the farmers and the non-responsibility of the system's personnel to its clientele resulted in a situation where farmers had no voice in important decision making processes. Consequently, many turnouts constructed by the government were not used by the farmers. Instead, farmers often installed small pipes underneath canal embankments to draw water in violation of NIA schedules. Maldistribution of water was often prevalent; farmers in the upstream part of the canal received much more water than those downstream.

Farmers in the defunct communal systems maintained their temporary weirs and canals through labor contributions of members in accordance with the rules of their association. The government-managed system that absorbed the communal systems required payment of irrigation fees. Farmers were not accustomed to this as they did not pay irrigation fees earlier. Moreover, the government could not impose swift sanctions on violators of the system's rules as the procedures prescribed were long and tedious. As a result, the majority of the farmers did not pay irrigation fees.

Whatever fees were collected went to the central government treasury and the requirements for system O&M were provided by annual appropriations authorized by the Philippine legislative body. Invariably the appropriations were insufficient to provide an adequate level of O&M. The result was progressive deterioration of the national systems.

Type 2 Interventions

The second type of intervention was usually employed when the service area of the communal irrigation system, including its expansion, was less than 1,000 ha. It started with an appropriation in the annual Public Works Act of the Philippine Congress for improving a specific communal irrigation system. The practice was a "reward" in appreciation of votes cast in favor of a member of congress or to fulfil an election promise made by him. As such there was no repayment from the farmers and management remained with the farmers. Project implementors were required to have an irrigation association duly organized and registered with the Securities and Exchange Commission (SEC) before starting any construction.

As in the communal systems that were converted or absorbed into national systems, these irrigation schemes had temporary diversion works and earthen canals that were repaired and maintained by farmers every cropping season. Farmers' organizations were

informal and unregistered with the government. To facilitate compliance with construction prerequisites, a standard set of articles of incorporation and by-laws for irrigation associations were framed by the government irrigation agency. To expedite the start of construction, engineers enlisted the municipal or village heads to complete the documents necessary for expeditious registration rather than organize an association that would effectively manage the irrigation system after its improvement.

The appropriation for these projects was usually small as it would not be repaid. Consequently, only piecemeal improvements could be made in any one year and it usually took several appropriations over a number of years to improve a system fully. The improvements often consisted of permanent diversion weirs and other structures replacing temporary ones and some canals for expanding the irrigable area. Sometimes additional diversion weirs were constructed on other sources to increase the water supply of an existing system. In most cases, new structures and additional canals were built that required substantial maintenance efforts from the farmers. But as the improvements were free and the government did all the work without farmer participation, dependency on the government was fostered. The irrigation agency expected that the farmers would maintain the new facilities, but farmers sensed that the government would repair what farmers failed to maintain. Hence, many of these irrigation systems fell into disrepair and the government had to appropriate funds again and undertake restoration.

Modifying the Mode of Intervention

The two types of intervention were carried over into the NIA after it was created in 1964 to take over the responsibility of irrigation development from the Bureau of Public Works. During the NIA's first 10 years these types remained unchanged and problems increased. In the early 1970s, the NIA gave attention to research showing that indigenous Philippine irrigation systems continued to function satisfactorily over many decades with little or no government assistance. The research suggested that ownership of a system and investment of labor and time in its construction developed commitment to its continued maintenance.

In 1974 the mode of intervention for communal systems was modified by an amendment to the NIA charter. Influenced partly by research on indigenous irrigation systems, a policy requiring repayment of construction or improvement costs was promulgated, the repayment to accrue to a fund for communal irrigation development. The new policy was adopted to instill a sense of ownership among beneficiaries, and to provide supplemental funding that would show farmer commitment and help justify increased government appropriations for expanding communal irrigation development. To implement the policy, agreements between NIA and the irrigation associations stipulated the repayment of construction costs without interest over a period not to exceed 50 years. In addition, the farmer beneficiaries pledged 10 percent of the project's direct costs in the form of labor, materials, and land for canal right-of-way. The implementation of the new policy added repayment and farmers' participation to problems already facing the NIA. The need to develop strong communal irrigation associations became increasingly urgent.

In its search for better irrigation associations the NIA contracted with the Farm Systems Development Corporation (FSDC) to organize farmers in communal irrigation systems that were being constructed or improved. In the resulting arrangement, the NIA undertook to plan and construct the projects and the FSDC organized the farmers. This did not work as expected. The institutional organizers were directed by FSDC officials and the agreement with NIA to organize farmers was only one of their many activities. NIA engineers constantly complained that FSDC organizers were always taking credit for the projects and were telling farmers that these were FSDC projects contracted out to NIA for planning and construction. Poor field coordination resulted in many irrigation associations refusing to accept the system improvements because of misunderstandings over the amount to be repaid by the association and claims that the new facilities were not functional.

After two years of the NIA-FSDC arrangement NIA decided to develop its own method of organizing irrigation associations. The search involved a learning process anchored on action research. To promote further the growth of irrigation associations, appropriate provisions were included in a Philippine Water Code that consolidated and improved all water laws.

USING RESEARCH FOR PLANNING IMPROVED INTERVENTIONS

NIA's search for a more effective way to organize irrigation associations started with a series of research reports on Philippine indigenous irrigation systems that caught the attention of NIA top management. The research showed the following:

1. The irrigation systems were constructed by farmers with very little help (and often, none at all) from the government. The systems were small-scale, with earthen canals, and temporary diversion weirs of logs, rocks, and brush.
2. The systems were operated and maintained by the farmers. They had rules for allocating and distributing water, maintaining canals and repairing the temporary weir, penalizing violators, and settling conflicts.
3. The associations were strong. Leadership was dedicated and knowledgeable about their irrigation systems. Each member knew his obligations, did the work expected of him under the rules of the association, and was penalized for failure to do so.
4. In contrast with the irrigation systems constructed solely by the government, the farmers who constructed their own irrigation systems continued to maintain the systems.

Nevertheless, it was evident to the NIA that farmers' resources alone were insufficient to build communal irrigation systems with permanent facilities and it would be necessary for the government to intervene to assist in construction or improvement. On the other hand, drawing from the research, it was equally necessary to emphasize farmer ownership of the system and maximize farmer participation in the planning and construction, in anticipation of the problems of O&M of the improved irrigation system. The problem,

however, was that while a policy was already established on farmer ownership of communal irrigation systems, there was no process within the NIA for maximizing farmers' participation in the planning and construction of irrigation systems. The process had to be developed through action research.

USING ACTION RESEARCH FOR IMPROVING INTERVENTIONS

NIA top management wanted answers to the following questions: 1) How can farmer participation be maximized in planning, constructing, and managing an irrigation system? And, 2) does farmer participation result in more viable irrigation associations with greater capability for system O&M? If so, how can the processes be developed for broad application throughout the NIA?

To find the answers, NIA decided to use two pilot communal irrigation improvement projects with conditions and resources that could be foreseeably sustained as "learning laboratories" for developing an appropriate participatory approach for involving farmer beneficiaries. The pilot projects were in Laur, Nueva Ecija. Six community organizers (COs) trained in the social sciences and experienced in working with rural and urban poor were hired under an experienced coordinator. The COs were carefully selected on the basis of their ability to communicate and long term commitment to organizing farmers through maximized farmer participation. The COs lived in the villages, interacted with the farming communities, and mobilized the farmers to participate in planning and construction. An interdisciplinary committee was established with membership from NIA, Institute of Philippine Culture (IPC), Asian Institute of Management (AIM), Ford Foundation, International Rice Research Institute (IRRI), and the University of the Philippines at Los Banos (UPLB). The committee, known as the Communal Irrigation Committee (CIC) had expertise in irrigation engineering, agriculture, institutional management, sociology, anthropology, economics, and training. Flexible funding assistance was made available by a grant from the Ford Foundation.

The COs stayed with the projects for about 3 years, at least 10 months of which were spent interacting with the communities, and organizing the irrigation associations and guiding their activities prior to construction. The objective was to develop grass-roots capability for: 1) decision making within an association, 2) planning improvements and expansion of the irrigation system, 3) securing water rights and right-of-way for new canals, 4) constructing irrigation facilities, and 5) controlling construction costs.

Committees were organized by the farmers, with guidance from the COs, for surveys, right-of-way acquisition, revision of by-laws, registration with the SEC, labor mobilization, materials checking, water permit, and repayment of construction costs. With assistance from the COs and NIA technical staff these committees successfully undertook the tasks they were organized for. Before construction, farmers prepared a map of the proposed service area and indicated where they would like the canals to pass. They subdivided the area into sectors and conducted sectoral meetings for revising and ratifying their by-laws. During construction, the sectors mobilized labor, much of which was volunteered as the

contribution of the association. Various committees checked the use of construction equipment, the consumption of fuel, the quality and quantity of construction materials, and the procurement costs of the materials. Farmer committees assisted in locating canals and negotiated for canal and road right-of-way.

The two pilot projects were established as learning laboratories to develop a process of maximizing farmers' participation. The smaller project, which was about 600 ha, proceeded smoothly. The larger one, which was over 1,000 ha but treated as a communal project, had slower progress due to internal conflicts which frustrated grass-roots participation for over a year. Both provided lessons to NIA, and the CIC arranged to document the activities. A documenter regularly visited the projects, and stayed for several days during each visit interviewing organizers, engineers, farmers, and leaders of the associations on the processes and procedures that were being followed, the problems that were being faced, and the solutions that were developed. Every month the documenter submitted a report which was discussed by the CIC for lessons to be learned, implications on future activities, and improvements on the procedures being employed with a view to using them in future projects. The documentation was studied to identify training needs of COs, engineers, technical staff, and the irrigation association leaders and members. Among the lessons learned were:

1. Enough lead time should be given the COs for organizing farmers prior to construction. In the 600-ha pilot project this required 10 months.
2. Engineers and other technical staff should be trained to develop flexibility in their attitude towards farmers and to gain a basic understanding of the processes being used by the COs.
3. Engineers and COs should work together closely and integrate the technical and organizing activities into one process.
4. Agency policies and procedures that inhibit farmers' participation should be revised.
5. Farmers participate extensively in planning and construction when given opportunities to participate in activities they find beneficial.
6. Farmers' participation when properly harnessed has potential for improving planning of the system and reducing costs of construction to the government.

The action research in the Laur pilot projects succeeded in developing the basic processes for inducing farmers' participation in planning and constructing NIA communal irrigation projects, but the CIC did not regard it as conclusive. Furthermore, it noted some weaknesses that had to be improved before replication on a larger scale.

In April 1979, NIA started two more pilot projects in the province of Camarines Sur where the general conditions and characteristics of the farmers were different from those

in Nueva Ecija. To avoid the problems experienced in the bigger Laur pilot system, a project selection process was introduced wherein technical and institutional information on several proposed projects was analyzed and discussed in a workshop attended by engineers, community organizers, and members of the CIC. Two projects were selected, one with about 400 ha and another with 200 ha. The project selection process was subsequently developed further and adopted as standard procedure in the communal irrigation program. Improvements made on the process during the implementation of the Camarines Sur pilot projects were:

1. To integrate technical and institutional activities, a flow chart was developed synchronizing the various elements of both over 8-9 months of organizing activities and technical preparation prior to construction.
2. Problem areas that needed improvement to promote farmers' participation were identified. Among these were procurement and contracting procedures, preparation of paddy elevation maps, and funding procedures that would enable better preparatory technical and institutional work.
3. A manual on financial management for the associations was developed in consultation with the farmers. A water management manual for the associations was likewise developed.

By the end of 1979 enough experience had been generated in the Camarines Sur pilot projects to expand the action research to the 12 regions of the country. The regional irrigation directors of the NIA were gathered in a conference initiated by the CIC. The program for establishing regional pilot projects based on maximum farmers' participation was discussed and agreed upon, and a pilot project for each region was launched. These projects were used as NIA learning laboratories for developing understanding and capability for promoting farmers' participation and were based on processes developed in the pilot projects in Nueva Ecija and Camarines Sur. The following year two more pilot projects were started in each region in provinces other than those of the first regional pilot project.

In mid-1981 a World Bank team appraised a proposed project for assistance to the Philippine Government on the development of communal irrigation systems. The team reviewed and evaluated the effectiveness of the farmers' participation program and recommended its adoption in all the communal irrigation projects to be funded with World Bank assistance. Since 1982 the participatory approach has been standard procedure in all communal irrigation projects of the NIA.

Action research for improving government intervention was also extended to the national irrigation systems, where for many years NIA had been organizing farmers with little success for operating and maintaining farm level facilities. Again, as in the communal systems, research studies were used in identifying solutions to be developed through action research. Research reports from various sources suggested that irrigation associations at the tertiary level in national systems could not become viable for lack of

motivation and incentive. An action research program was therefore designed to find a process that would generate sufficient motivation and incentive. In the implementation of the program the participatory approach developed in the communal systems was applied with modifications.

Community organizers were fielded in December 1980 in the Buhi-Lalo Irrigation Project in Camarines Sur, which was to be improved and expanded from 1,000 ha to 3,000 ha. The COs lived in the villages of the farming communities. For one month they interacted with the farmers and then began ground work on mobilization. In the existing portion of the system to be improved, farmers reviewed the proposed layout of terminal facilities, walked through the farm ditch locations with engineers, discussed changes in canal locations, and undertook construction of canals that were suitable for manual labor. The service area to be improved was divided into 12 zones, each zone was subdivided into small groups of farmers by turnout service area, and each small group constituted a construction unit with a group leader. Depending on their capabilities, these units were awarded construction contracts for canals and small structures by NIA. Thus the farmers worked together, developed cooperative and decision making skills, and identified capable leaders. As construction ended, the COs motivated the small groups to organize into associations by zones in order to negotiate with NIA the manner of sharing O&M responsibilities in the system and the consequent sharing of the proceeds of irrigation fee collections between NIA and the associations.

In July 1982, when the improvements in the existing systems were nearing completion, three zone associations covering over 1,000 ha negotiated with and entered into an agreement with NIA for O&M in their respective zones and collecting irrigation fees from the farmers. Pending completion of the expansion area of 2,000 ha where farmers were also being organized, NIA maintained and operated the diversion weir and the first 1.5 kilometers (km) of the main canal. A system of sharing the irrigation fee collections between NIA and the associations was agreed upon which proved to be beneficial to both. As in the communal systems, the processes in the Buhi-Lalo action research were documented and used for improving the processes for replication in other national systems.

The success of the Buhi-Lalo processes was of great significance to NIA. Therefore NIA staff had been organizing and exhorting farmers in national systems to undertake O&M of farm level facilities with negligible results. In the Buhi-Lalo, however, it was the farmers who proposed to NIA that they take over O&M responsibilities on three zones covering over 1,000 ha. This led to a decision in NIA to replicate the processes in some national irrigation systems which were under rehabilitation and improvement under a World Bank loan and in the pump irrigation systems which were eventually turned over by NIA to farmer irrigation associations. As of the middle of 1986, the program covered about 35,000 ha in 37 national irrigation systems. Nine of these systems have been fully turned over to farmers' irrigation associations. The rest are jointly operated by NIA and the farmers' associations with NIA undertaking the O&M of the diversion weir and part of the main canal, and the irrigation associations taking care of the rest of the system. Observations on the results of these arrangements were:

1. In terms of O&M the systems have become financially viable. Collections of irrigation fees have increased and the share of NIA now exceeds its expenses on O&M. The irrigation associations likewise have been able to accumulate funds from their share of the collections.

2. Canal maintenance greatly improved and the area irrigated increased.

3. Farm ditches constructed were not tampered with by farmers in contrast with previous projects (without farmers' participation) where farmers complained about farm ditch locations and eventually moved the ditches.

4. Relations between NIA and the farmers improved.

Soon after the participatory approach to organizing irrigation associations was developed in the first set of pilot projects, NIA began to look for appropriate ways to train irrigation associations in financial and irrigation systems management. Again research on indigenous systems was found helpful when designing the structure and contents of the training programs. The methods of recording used by indigenous systems, for example, were helpful for framing a simplified process of bookkeeping. Rather than give them ready-made plans, a training approach was adopted that allowed the associations to develop their own management plans. Areas where the associations developed their own plans included: 1) cropping calendar; 2) normal and crisis water distribution plans; 3) conflict management plan; 4) maintenance plan; 5) farm level facilities plan; and 6) duties and responsibilities of members, officers, and system personnel.

LESSONS FROM ACTION RESEARCH ON FARMERS' PARTICIPATION

Action research is still going on in the NIA. From time to time members of the CIC assist as needed, although not as intensively as during the first five years of the program, as NIA staff have gained much capability. Many more lessons from action research will be learnt, and much has already been learned -- for instance:

1. Farmers' participation in planning and construction or improvement of their irrigation system strengthens their irrigation association and increases the potential for successful O&M.

2. An effective way of organizing farmers for participation is through a catalyst (such as a community organizer) with a high degree of commitment who should live in the farming community, and furnish guidance and assistance, but leave the decision making to the farmers themselves.

3. For developing a participatory approach, irrigation agency policy should fully support farmers' participation. Any policy that tends to inhibit such participation should be discarded or amended. Strong support should be given from the highest level of the agency.

4. The irrigation agency should have the capability to respond positively to farmers' participation. Agency personnel should be properly trained to develop this capability.

5. In implementing projects with farmers' participation, engineers, technical staff, and community organizers should work together closely with a jointly prepared integrated work plan. Thus it is advisable that the organizers are also from the irrigation agency undertaking the project.

6. Lead time should be allowed for organizing work before construction. Depending on whether the project is rehabilitation or new construction, the lead time for organizing work is about 6-9 months.

Among the reasons for the success of action research in support of the farmers' participation program in the NIA are:

1. There were appropriate NIA policies and leadership.

2. The interdisciplinary committee was composed of researchers and specialists from various institutions and key NIA officials worked together for developing and improving the program.

3. The areas of action research were live problems meaningful to NIA.

4. Participants in the action research were strongly committed on a long-term basis to the program.

5. The action research used a learning process approach.