

State of the Art on Water User Associations for Improved Farm Water Management

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Introduction and Purpose

The purpose of this brief paper is to highlight some of the key findings related to Water User Associations (WUAs) and to raise several key issues for those who design and review irrigation project proposals. There is a current concern that the direct and indirect involvement of farmers in the design, implementation, and continued maintenance of the farm system is far less than adequate. With increasing investments in irrigation development and especially the rehabilitation of farm irrigation systems, there is concern that these investments can be made more cost effective by direct and indirect farmer participation. Government concerns include local resource mobilization in terms of paying for some of the costs of operation and maintenance and payment of a share of the costs of improvement. These resources can be mobilized in the form of cash and kind, labor for construction and regular maintenance, contributions of land for right of ways, or a combination of all these. In addition, several non-economic resources are important which include: farmers' knowledge of the local situation for field studies and planning; farmer involvement in trials, experiments, and demonstrations, farmers' learning basic skills for improving local organizational capabilities for regular operation and maintenance of the system; and helping farmers gain a collective voice to express their needs to irrigation and other government authorities.

Government officials and donors are beginning to realize the high economic, social and even political costs which often result when farmers are not involved in the projects and programs which affect them directly. With increased understanding of the problem, officials are more aware of the economic benefits of farmer involvement which can be viewed as a type of organizational substitute for capital. The magnitude of this institution building task and its importance should not be underestimated. For example, some of the disincentives to involving farmers in irrigation projects include: a long paternalistic bureaucratic philosophy and policies in dealing with farmers; the traditional and inordinate

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engineering focus which results in more and more hardware investments; the lack of skilled staff who know how to work closely and effectively with farmer groups; the pressure on governments and donor organizations to produce results (water) quickly, whatever the means; the propensity of some international agencies to stress quantity of funding over quality of projects; and the higher perceived status of hardware versus software approaches to irrigation development and design and construction versus operation and maintenance.

As the cost of traditional ways of irrigation development continue to escalate, and the awareness of the potential contributions farmer users can make increase, more attention will be given to farmer organizations for both short and long term improvements of farm irrigation systems.

B. Past and Present Findings:

Historically, farmers have developed their own informal organizations for the operation of the farm system. In some countries where the irrigation systems are small, communal run-of-the river types as in areas of Indonesia, Thailand, and the Philippines,* these informal arrangements often work well. In South Asia, especially Sri Lanka and India, the tanks used for irrigation were typically constructed, operated, and maintained by farmers under the leadership of local elites. Prior to independence, these systems worked fairly well, but after independence with increased government intervention and the demise of local elites, farmer control was greatly weakened.

Research on large public gravity irrigation systems in Asia show that farmers usually evolve informal arrangements for the operation and maintenance of the farm system. These ad hoc organizations, however, have usually been found to be inadequate in terms of regular maintenance and in providing the local cooperation needed for successful improvement programs.

Until recently with the exception of Japan, Taiwan, and South Korea, governments and irrigation authorities have done little to provide incentives and means for farmers to develop strong local organizations.

*The National Irrigation Administration and the Farming Systems Development Corporation, with support from Ford Foundation, IRRI, and others have been involved over a number of years in developing workable irrigators associations. They have evolved some promising approaches which combining both technical and institution building skills in an effort to involve farmers in the design, implementation, of improvements and the on-going operation and maintenance of small communal systems. See in list of references Bagadion, Benjamin U. and Kortzen, Francis F., October 1979.

Usually, government commitment in the form of legal frameworks and backing, technical services to farmers, and training was lacking or completely ignored. With the rising interest in improved water management, however, irrigation authorities are learning that the costs of neglect in not involving farmers more is very high indeed. Presently in most countries, governments are examining new approaches for mobilizing more local resources for irrigation improvement. For example, in Pakistan in one AID project, 16 percent of the total project costs of \$42 million was in the form of farm contributed labor. In a proposed World Bank Project in Pakistan, it is estimated that 30 percent of the project costs will come from farmer labor in rehabilitation of the system and cost recoveries for improvements. In India, Pakistan, and elsewhere both direct and indirect cost recovery takes place through increased water fees, repayment of loans, direct cost payments for improvements, and manipulation of farm product prices.

The usual pattern of mobilizing these resources has been top-down forms of coercion. Irrigation authorities usually feel that more stringent laws and codes or improved technologies will result in increased farmer involvement. The paternalistic approaches of government alone have resulted in only limited success.

Role of Irrigation Authorities

In the past, the farm system was a virtual "No man's land" in terms of services for farmers and incentives for them to organize. Increasingly, field studies in Asia have shown that the "Achilles Heel" to irrigation improvements at the farm level is the lack of farmer involvement in improvement activities and in the protection and maintenance of the system.

Where WUAs have been most successful as in Japan, Taiwan, South Korea and other countries of Asia, the following factors have been found to be important: technical services to farmers which provide visible improvements in water predictability, increased water supplies, and improved water control; top-level government commitment in the form of legal frameworks with incentives and services for farmers to organize; training of farmers in the new roles expected; regular monitoring and evaluation of the system with feedback from the farm level to planners and managers; swift but fair enforcement of water laws for all offenders; provision of a mechanism where farmers views can be heard about system operations at the local, minor canal and major canal levels.

Recently (1981) the provinces in Pakistan have enacted far-reaching water user association ordinances to achieve more farmer involvement. In Thailand, a provision is being implemented into a Revised National Water Code for WUAs. It is hoped that other countries will follow this initiative.

*A recent Agricultural Development Council workshop on "Mobilizing Local Resources for Irrigation" held August 11-15, 1980 in Colombo, Sri Lanka documents these problems. Annex I provides some of the most important current references for those who may wish to examine the issue of farmer involvement in greater depth.

Major Functions of Water User Associations

While in each country WUAs take different forms, the major functions of WUAs include the following: mobilization of local resources to reduce the costs to government of improvement programs; regular cleaning and maintenance of main watercourse channels to protect soil and water resources; distribution of water between users and resolution of conflicts at the farm level; taking loans for structures land shaping, and other watercourse improvements; and provision of an organized means for extension services and farmer training.

In some countries WUAs also collect irrigation fees at the outlet level, participate in the operation and maintenance of the minor canals, and provide input for water allocation policy decisions. Farmers on communal systems and areas where farmers own cooperative tubewells and lifts they usually provide the capital costs, expenses for operation and maintenance and control all operations without government intervention. These smaller face-to-face local private groups have been relatively successful in mobilizing local resources for long-term operation of their own system.

Key Hypotheses about Local Involvement

Studies of farmer involvement in Irrigation Water Management improvement are relatively new. Studies to date while providing some insights suggest that experimentations are needed in all countries to evolve the form and types of WUAs which fit local conditions. Key hypotheses from recent studies suggest some of the principles which require further testing and experimentation. Unfortunately, both host governments and international donor organizations do not yet understand the value of building such trials and experiments into projects. There is a dangerous propensity of both host and donor organizations to freeze into one approach and attempt to duplicate it across local regions and projects. Unlike some irrigation technologies, WUAs need to be based on the best of local organizational principles and should fit with both local conditions and the particular objectives of the project.

Several of the major hypotheses related to local WUAs are provided below:

1. Project areas where villages are governed by a council either elected or appointed, show greater potential for equitable decision making about water use than areas where villages are dominated by a small number of large landlords.
2. Rotation systems of water distribution such as the warabundi are more likely to lead to equitable water supply for farmers at tail ends of irrigation systems.
3. The shift from volunteer to paid labor for construction works and shifts in responsibility for construction from local groups to official, regional, or national bodies increases local awareness of nationhood at the cost of weakening local social structures.

4. Where there is technical assistance to farm-builders with no payment for construction. The labor contribution is more likely to install a sense of ownership and incentives for system maintenance than does payment in kind or cash.
5. The capacity of communities to open-up land for irrigation and to construct delivery systems is likely to be higher in those locations where rudimentary systems exist than in locations attempting irrigation for the first time.
6. Projects introducing one factor of production at a time in sequence generate a faster return to small farmers than those introducing a complex array of components.
7. Recovery of construction and/or operation and maintenance costs of irrigation systems through taxes or water charges inhibits waste and strengthens farmers responsibility for the system.
8. Where visible water control is made available with other improved production possibilities, additional water charges to be used by a local WUA for improved O and M operates as an incentive for farmers to organize for regular maintenance.
9. Locally managed irrigation systems are generally better maintained and more efficient in water control than state operated systems.
10. Benefits such as increased crop production and more effective water control from irrigation systems are enhanced where continuing and adequate extension services provide farmer training in improved water management and cropping practices.
11. Irrigation technologies and water user associations are more successful in those areas where extension creditability is good.
12. Legal, formal WUAs with clearly defined authorities, roles and responsibilities are an essential prerequisite to efficient operation and maintenance of an irrigation system at the farm level.
13. Organization of WUA around hydrological units of irrigation systems rather than on a village or community, wide basis improves the performance of routine operation and maintenance.
14. Given the varying demands of farmers for water on a given command area, closures for canal maintenance, imperfections in design of systems, areas in commands best serviced by lift pumps and tubewells, and other circumstances water rights and distribution methods should allow for sale or trade of water by farmers and local WUAs.
15. Farmer involvement in rehabilitation of watercourses is more cost effective in the long-run and increases the chances of a self sustaining project than rehabilitation projects which utilize private contractors.
16. Farmers are more willing to commit money and labor to an improvement

project if they have been involved in the planning and design of the project.

17. The smaller the face to face groups as in smaller 40 or 8 hectare command areas, the easier it is for farmers to organize the regular maintenance and solve the problems.
18. Except in small communal systems or private lift pump operations, WUAs need to have strong legal backing and clear incentives to remain viable.
15. Where irrigation and agricultural authorities have overcome their paternalistic views about farmers and have received training in special technical skills and procedures in improved water management and working relationships with farmers, farmers will respond by more effective involvement.

Issues of Single Versus Multi Purpose Associations of Water Users

To date, it has been found that single purpose WUAs are more successful than attaching multi purpose activities to them for the following reasons: WUAs are new and functions dealing directly with water are complex; the burden of too many activities and linkages with several different departments is usually too great for a WUA; leadership and participation of farmers requires time to successfully evolve.

The tendency of some governments just "discovering" the importance of farmer involvement is to move too fast and to overload emerging WUAs. The track record in ASIA of multi purpose cooperatives is poor. Those cooperatives which have evolved successfully have usually been those with a single focus on one commodity or one major function. The ideology of advocates of a cooperative movement often blinds officials to both the practical economics and the complexities of building viable local organizations. In terms of leadership development and equity of participation, the model of Taiwan seems to be appropriate for many countries. In Taiwan, there are many single purpose cooperative organizations in which farmers have membership, therefore, membership and leadership is dispersed among many individuals.

Given a primary level of current knowledge about WUAs and the complexities involved in functions dealing with water alone, the rational approach tends to favor single function organizations.

Key Principles and Strategies for Involving Farmers

Annex I contains a brief overview of several key principles and strategies which have worked in a number of countries in Asia, Africa, and Latin America. These are described in a Planning Guide No.2. Farmer Involvement- A Key to Improving Farm Irrigation Systems. This is by the Water Management Synthesis Project funded by DSB/Agriculture.

Selected Sources

- Agricultural Development Council, "Mobilizing Local Resources for Irrigation", Editors: Levine, Gilbert and Hort Henry C., Report No. 22 of Seminar held in Colombo, Sri Lanka, August 11-15, 1980, dated June 1981.
- Bagadion, Benjamin U. and Korten, Francis F., "Developing Viable Irrigator's Associations: Lessons from Small Scale Irrigation Development in the Philippines" (memographed paper available from Ford Foundation, Manila, dated October 1979)
- Coward, E.W., Jr., ed. Irrigation and Agricultural Development in Asia. Ithaca: Cornell University Press, 1980.
- Doppler, W. "Towards a General Guideline of Irrigation Water Charging Policy." Agricultural Administration 4:2 (1977): 121-219.
- Freeman, D.M., and Lowdermilk, M.K. "Sociological Analysis of Irrigation Water Management-A Perspective and Approach to Assistant Decision-Making." C. Russell, ed. Application of Public Choice Theory in Rural Development Planning. Johns Hopkins and Resources for the Future, Forthcoming.
- Hayami, Y., Benagen, E., and Barker, R. "Price Incentive Versus Irrigation Investment to Achieve Food Self-Sufficiency in the Philippines." American Journal of Agricultural Economics 59 (1977): 717-21.
- Hunt, R.C., and Hunt, E. "Canal Irrigation and Local Social Organization." Current Anthropology 17:3 (1976) 389-412.
- Lowdermilk, Max, Lattimore, Dan Freeman, Date et al., Farmer Involvement: A Key to Improving Farm Irrigation Systems, Planning Guide No.2, Water Management Synthesis Project, Colorado State University, Ft. Collins, Colorado, 1981.
- Nickum, J. "Local Irrigation Management Organization in the People's Republic of China." China Geography 5 (1977): 1-12.
- Taylor, D.C., and Wickham, P.H., eds. "Irrigation Policy and the Management of Irrigation Systems in Southeast Asia." New York: The Agricultural Development Council, 1979.
- United Nations Water Conference. Water for Agriculture. New York: E/Conf. 70/11, 1977.
- Wade, R. "Administration and Distribution of Irrigation Benefits." Economic and Political Weekly 10:44 and 45 (1975): 1743-7.

KEY PRINCIPLES AND STRATEGIES FOR
INVOLVING FARMERS*Principle 1

Government policy and incentives for a decentralized administrative approach should reward farmers for involvement.

Strategies

- Involve farmers in planning at the local level.
- Involve farmers in specific activities and adequately reward or recognize their activities.
- Encourage farmer organizations or water user organizations.
- Provide an effective means for farmers to voice their views to authorities so the farmers' suggestions can be heard and acted upon.
- Provide incentives such as realistic water and land revenue rates.
- Provide adequate improved production possibilities in the form of improved inputs and services.

Principle 2

Initiate projects in areas where farmers demonstrate an interest and commitment** to the project.

- Select areas where farmers are organized or willing to organize for project activities.
- Select areas with farmers who can agree to commit specific resources, i.e., time, labor, animal power, equipment, skills and money.
- Select areas with farmers who can resolve major conflicts among themselves.
- Select areas and farmer groups that have not had long-standing conflicts or feuds which will take years to resolve.

* Taken from Lowdermilk, et al, Farmer Involvement - A Key to Improving Farm Irrigation, Systems Planning Guide No. 2, Water Management Synthesis Project, Colorado State University, 1981

** Refers to substantial local resource commitment.

- Select project areas that are manageable in terms of size, staff resources, and logistics.

Principle 3

Have clear definitions of the roles and responsibilities of all parties -- farmers, extension agents, researchers, irrigation authorities, project managers and other development specialists involved in the project.

Strategies

- Provide definite program information before the project is begun.
- Distinguish clearly the functional roles of farmers and the roles of the members of the field team.
- Agree, in writing, on the specific responsibilities of farmers and team members.
- Provide specific training of selected farmers in skills related to the tasks they are to perform.

Principle 4

Use and develop local leadership.

Strategies

- Work within the cultural context in selecting leaders and help them improve their skills in organizing farmers, making decisions, and resolving conflicts.
- Do not bypass leaders whose support is essential.
- Allow leaders to organize committees and activities their way to manage or supervise labor, materials and equipment, to settle disputes, and to maintain the improved system.
- Allow group action to be started realistically so farmers understand and can adopt and adapt new procedures, new knowledge and new skills before moving to the next stage.

Principle 5

Work through and with local farmer organizations so that farmer participation is significant and the organizations are strengthened.

Strategies

- Identify and assess local, informal organizations and, where appropriate, build upon these organizations.

- Use caution in attempting to introduce new organizational forms: Where there is doubt about a particular organizational mode, try first to use the local form of organization.
- Use local organizations to reach individual farmers.
- Where possible, keep organizations small so members deal face to face with each other.
- Where possible, link local organizational units to other units creating a more effective voice to authorities, i.e., federations of local groups at a distributory or canal level.

Principle 6

Develop and maintain good two-way communications and information flows among all participants -- farmers, researchers, extension agents, government officials, etc.

Strategies

- Design and improve two-way communication between farmers and project personnel.
- Help improve the quantity and quality of information from irrigation authorities related to water deliveries, canal closures, irrigation rates and other important matters.

Principle 7

Mobilize local resources and skills for creating local infrastructures (credit, extension, markets) and for improving activities using appropriate technologies.

Strategies

- Identify and use local materials and available resources.
- Use local skilled labor and involve private industry or businesses when appropriate.
- Train selected local people for selected technical tasks.
- Adopt technologies so that repairs and maintenance can be made locally at low cost.

Principle 8

Develop means to recognize and reward local people.

Strategies

- Provide special recognition or achievement days.
- Provide special demonstration days.
- Provide special awards for all deserving workers and leaders.
- Provide special labor competitions.

Principle 9

Focus on selection, training, supervision, and evaluation of staff.

Strategies

- Develop a selection process to identify competent staff members who know and appreciate farmers.
- Provide special training for staff in technical skills and effective ways of working with farmers.
- Design a system of close supervision.
- Evaluate staff on a continuous basis to improve its capabilities.
- Provide adequate incentives and rewards for field staff members.