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DESIGN FOR WATER USER ASSOCIATIONS: ORGANIZATIONAL CHARACTERISTICS*

*Michael M. Cernea and Ruth Meinzen-Dick***

This paper analyzes how Bank-financed irrigation projects deal with the basic organizational characteristics of water user associations (WUAs) in their design and approach. It assesses whether these organizational characteristics are taken into account and what projects must do to increase the support provided to their establishment or strengthening. It also discusses the relative benefits of relying on organizations that already function among water users or attempting to establish new ones. While the research and conclusions presented in this paper are developed from irrigation systems, many of the organizational principles apply also to other types of resource management projects in which local resource users are expected to work with an outside government or private agency (see Cernea, 1989; Ostrom, 1990).¹

The contextual and organizational characteristics examined in this section of our review are:

- pre-existence of water user organizations;
- new organizations;
- membership criteria;
- size of the base unit;
- federating base units;
- role specialization;
- accountability;
- linkages with irrigation agency.

* The present paper is a chapter from a forthcoming broader study about the World Bank's lending for irrigation over a period of 16 years (FY 1975-1990) and its experience with water user groups. The full study is entitled: "Building Organizational Capacity for Irrigation and Water User Associations in World Bank Projects".

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Investing or Disinvesting in Existing Organizations

WUA development under irrigation projects varies, depending on whether the project seeks to strengthen existing organizations or to help create new ones. Three types of situations have been encountered: those in which projects (1) work with existing irrigation associations, (2) build upon other types of local organizations to which water-related functions are added, or (3) attempt to create new WUAs.

The present review covers 16 years of Bank lending for irrigation, from FY 1975 to FY 1990. Table 1 indicates that nine appraisal reports from 1975, sixteen from 1984-86 and five from 1990 (representing 39, 36, and 55 percent of total projects, respectively) mentioned the preexistence of WUAs in the project areas and thus had, in theory, the opportunity to build on established organizations. The use of pre-project existing WUAs, however, should not be an automatic step. The adequacy and capacity of the area's existing traditional organizations need to be assessed before deciding whether to rely on them, whether they are in need of re-adaptation or strengthening, or whether to encourage the establishment of new WUAs.

Sociologists and anthropologists, when consulted, generally tend to recommend that designers of new projects build upon existing organizations, provided that equity goals are not seriously compromised by maintaining the traditional setup (Uphoff 1986). Indeed, where water users' associations are already functioning, they can be expected to have legitimacy and a certain level of expertise in irrigation system management. Nevertheless, seven of the nine projects approved in 1975 for areas in which WUAs predated the project did not include them in the new programs (one of these seven projects planned for the establishment of new WUAs, and six staff appraisal reports (SARs) made no provisions for involving WUAs in the project effort).

Table 1. Building upon Preexisting WUAs

	FY75	FY84	FY85	FY86	Total FY84-86	FY90
Total projects	23	13	18	14	45	9
SARs reporting existing WUAs % of total cases	9 (39)	3 (23)	8 (44)	5 (36)	16 (35)	5 (55)
If WUAs exist, SARs building on WUAs	2	3	5	5	13	4
Building new WUAs	1	0	0	0	0	3
No plans for WUAs	6	0	3	0	3	2

Greater recognition of the potential value of preexisting WUAs is apparent in 1984-86 projects, where only three out of sixteen projects with preexisting WUAs made no provision for their

inclusion. In 1987, all four projects with preexisting WUAs reincluded them, and in 1990 four out of five SARs did so.

If there are no valid reasons to avoid existing users' organizations, then neglecting them--either by giving them no role in the new development or by bypassing them to create new associations--amounts to disinvestment in valuable institutions. Given the time, expense, and risks involved in establishing new local organizations, failure to build upon existing WUAs where feasible is a self-defeating weakness in project resource allocation, equal to losing available organizational capacity and "solidified" human capital. In past years, unfortunately, many development projects have bypassed or even helped disrupt such long-standing organizations (Coward 1991). Such neglect has even been more evident in the practice of domestic water agencies in various developing countries and has been resisted by Bank specialists.

Disinvestment in existing WUAs may sometimes even backfire by causing active opposition to the project from local WUAs. In the 1975 Philippines Tarlac Irrigation Project, for example, the existing communal irrigation systems already irrigated over 2,600 hectares within the area to be covered by the new project. The project appraisal report made no provisions for involving these existing communal irrigators' societies in the project. A few years later, the project completion report (PCR) found that, because of the neglect of their societies, farmers within the communal irrigation systems had refused to join the irrigation project. Thus, this obvious disinvestment in, and rejection of, existing WUAs led to a shortfall of almost 10 percent of the area the Tarlac project intended to cover and to a loss of potential benefits. The lesson learned from the PCR and from the country agency from this and similar cases, is:²

...to make fuller use of Irrigator Associations and [to]...work on a program which would develop the capability of water management technicians to interface successfully with Irrigator Associations (PCR, para 17).

The principle of working with existing WUAs may seem obvious. Its implementation, however, is not necessarily easy. First, traditional WUAs may often be informal groupings, without legal status or official recognition. A second problem arises if existing WUAs are not functioning well (e.g., if they are inactive, conflict-ridden, or dominated by a few wealthy landholders). In two projects in West Africa (Niger Irrigation and Senegal River Polders projects), the traditional forms of social organizations were deemed at appraisal to be inappropriate: they were dominated by chieftains using them for personal gains and were unsuitable for efficient agricultural production.

Where there have been no preexisting irrigation associations, Bank planners have sometimes looked for other active local organizations able to take on irrigation functions. Such examples have occurred in Bank projects in Mauritania and Turkey. Bank projects have also relied on, for example, ejidos (type of local cooperative association) in Mexico (Chiapas); panchayats (local government councils) for small-scale systems in India and Nepal; multipurpose cooperatives in Bangladesh; and tribal-based groupings in the Republic of Yemen.

This approach may require some assistance/training for members in water and system management, but it avoids many of the delays and ground-breaking problems of establishing new organizations with local legitimacy. The major precaution in such cases is to ensure that the organization's capacity is not overloaded. Experience has shown that consultations with leaders and members should ascertain their agreement on the proposed tasks under the new project and assess whether the leaders will have time, interest, and resources to devote to irrigation activities.

Investing in New Organizations

In situations where no appropriate farmer organizations can be identified "on the ground," irrigation projects must initiate the creation of WUAs. This occurs primarily, but not exclusively, in new irrigation systems: often, WUAs are also needed in previously irrigated areas, in which users have not organized themselves.

The last year of the period under review, FY 1990, perhaps best illustrates the various ways in which Bank development investments trigger the establishment of new WUAs in a kind of hands-on method, with explicit provisions for organization building. The Brazil Irrigation I Project (SAR January 1990) will create, in new settlements, six irrigation districts described as "private associations" under Brazilian law, encompassing all beneficiary farmers and thus supporting the simultaneous formation of both administrative structures and farmers' groups on the new lands. The Bangladesh Water Systems (BWDB) Rehabilitation Project (February 1990) will help establish a similar kind of grouping, called inlet committees. Additional irrigation inlets would be constructed only after inlet committees have been formed and beneficiaries have agreed to make land available and to undertake all earthworks for the inlets and field canals. The same project will promote the creation of associations of landless laborers, helping them enter the water market and purchase (through NGOs) low-level pumps and minor irrigation equipment. Comparable features are contained in projects approved in 1990 in Somalia (Farahaane Irrigation Rehabilitation Project), Mauritania (Gorgol Irrigation Rehabilitation Project), China (Hebei Agricultural Development Project), and Nepal (Bhairawa Lumbini Groundwater Irrigation III Project).

The projects under which substantial investments in grassroots organizations have been made and in which the formation of new WUAs has occurred on the largest scale are the two On-Farm Water Management projects (OFWM) in Pakistan: OFWM Stage I, started in FY 1981, and OFWM stage II started in 1985. These projects will be continued under Stage III, approved in FY 1991. The establishment of a water user association for each individual chak (watercourse) covered by the project was made a condition of starting civil works on the watercourse. Because users have a strong interest in getting the canals lined, the response was prompt and on a mass scale. Over 15,000 WUAs were organized in Pakistan during the 1980s, a performance unequaled by any other projects (for details, see Byrnes [1993, forthcoming]; and Cernea and Meinzen-Dick [forthcoming, 1992]. This, of course, required important investments in organization building. The investments paid off to a great extent during the construction works themselves, as the new WUAs mobilized considerable labor by their membership and thus assumed part of the capital construction costs.³

Experience with the OFWM projects, however, has also revealed unexpected difficulties and setbacks with WUAs: during civil works, WUA members are enthusiastic, and WUAs function at their peak. Subsequently, however, many WUAs become inactive and fail to maintain the installed works, although this causes members to lose some of the benefits for which they worked so hard. This may be a consequence of uneven roles given to WUAs, particularly their insufficient involvement in the decisions about water allocation and distribution.⁴

Generally, the evidence from many projects shows that WUAs can be built:

1. either on the organizational foundation offered by preexisting forms of farmer organizations; or
2. as new forms of association, created by technologically induced institutional needs.

In many, though by far not all Bank-assisted projects, investing in farmer organizations has been coordinated with investing in the technical and physical infrastructure. Project designs often specify that tertiary system construction should only take place where WUAs have been established. This allows farmers to participate constructively in the design and development of the system. However, this requires considerable advance preparation, for community organizers need lead time to help WUAs form and develop if they are to usefully contribute to the construction or rehabilitation project.

Indeed, to properly design and create such organizations, sound social engineering is as necessary in these projects as good technical engineering. The use of institutional organizers is an effective tool for developing new WUAs, as demonstrated by programs in the Philippines (see de los Reyes and Jopillo, 1989; and Illo, 1989) and Sri Lanka (Uphoff, 1986). With adequate guidance, these agents act as catalysts in bringing farmers together for WUAs, without imposing a particular structure or type of leadership on the groups. Organizers have also been useful for strengthening existing farmers' organizations in projects working with community irrigation systems (see Manor, Patamatamkul and Olin, eds., 1990).

Membership Recruitment

There are four alternative principles that may govern how water users arrange themselves into organized groups:

1. hydrological: field neighbors sharing water from a common facility, such as a turnout or watercourse;
2. residential: village neighbors, such as those from a given settlement;
3. social unit: membership in user groups based on primary ties, such as kinship;
4. ownership: membership based on joint investment.

The present review has found that the hydrological principle has been predominant in Bank projects with WUAs. Table 2 indicates that over 70 percent of all SARs that specified the type of membership in WUAs mentioned the users grouped around a certain type of irrigation facility. There is also a visible increase in the prevalence of this principle from 1975 to 1984-86 and to 1990. Only six cases specified residential neighborhood, and three cases were organizations based on other membership criteria, including kinship-based tribes (e.g., Wadi Al Jawf project in the Republic of Yemen) and investment-based cooperatives (e.g., Bangladesh Barisal Irrigation Project).

When WUAs are composed of adjacent field cultivators, the users have a common interest in the operation and maintenance of that section of the irrigation system. The benefits of collective action and the settlement of local disputes over water can thus be largely contained within the group. For these reasons, this constructive principle has been recommended both in the sociological literature on WUAs (see Coward 1980) and in most Bank-assisted projects.

Membership based on residential neighborhood or kinship is sometimes appropriate if forms of multipurpose social organization (e.g., tribes, local government, or functional cooperatives) also become involved in irrigation management. Such arrangements do lack the directness and focus of a water-specialized organization and often may not include all the irrigators along a watercourse, thus having a somewhat limited mobilization capacity. But there are tradeoffs. Multipurpose

Table 2. Definition of Membership in Project-Related WUAs

	FY75	FY84-86	FY90	Total
Total number of projects	23	45	9	77
Projects with WUAs	11	35	7	53
Projects specifying membership	7	22	7	36
Membership defined by				
Field neighborhood	4	16	6	26
Residential neighborhood	1	5	1	7
Other	2	1	0	3

organizations may have the advantage of preexisting on the ground and of established authority lines, roles, and rules. They may also link water management to other agricultural activities, marketing, tree planting, etc., or may provide a voice in system management to members of the community who depend on the irrigation system in other ways, such as for domestic water supply or employment.

The principle of ownership can be the basis for membership or can reinforce ties among WUAs. Joint investment and property rights are recognized as a powerful cohesive force (Coward, 1991). This ownership can be established either at the outset of irrigation development (e.g., pump groups under a tubewell) or by transferring ownership of existing facilities to WUAs, as in the turnover program for small scale irrigation systems in Indonesia (see Helmi and Vermillion, 1990).

The relative merits of the possible approaches, or of a combination of them, should be weighed for each irrigation project faced with developing a strategy for organization building.

Size of the Base Units

Size is an essential structural characteristic of any organization, and choices have to be made at appraisal time among various size options for the envisaged WUAs.

Size refers to two characteristics: number of members in a WUA and command area. How large the lowest-level water users' organization should be will depend on topography (e.g., the layout of the irrigation system), technology (the conveyance technology used), and socioeconomic variables (e.g., the average farm size in the system). The size of base units specified in the SARs reviewed ranged widely, from 8 hectares under the Gujarat Medium Irrigation II Project in India, to 1,000 hectares under the Madagascar Irrigation Rehabilitation Project; the median size was 40 hectares, which is the typical upper limit for base-level WUAs cited by Uphoff (1986, pp. 69-74). For some Latin American countries, Plusquellec reports in recent papers much larger sizes, up to

several thousand hectares, because the average size of the family farm, to begin with, is in the tens (or sometimes hundreds) of hectares.

If base WUAs are too large, it is difficult for farmers to meet, because their numbers are too great. Large size compounds the organizational and managerial tasks, sometimes beyond the capacity of the local leaders. The Bangladesh Barisal Irrigation PCR noted that in the interests of standardization, two cfs pumps were procured rather than one cfs as intended. However, because the potential command area of two cfs pumps was approximately twice that of the smaller pumps, it was more difficult to organize all the farmers who were to receive water:

Although this makes maintenance of project low-lift pumps easier for BADC, it is not in the best interests of the farmers and those trying to form farmer groups: large groups are difficult to form and the more suitable one cfs pumps have not been readily available (PCR 5.17).

A similar problem in which the technology did not provide for workable base units was dealt with in the command area of the Nepal Narayani Irrigation Project by extending the distribution network down to the 50-hectare level because the existing system had an "administratively impossible farmer grouping of 900 units" (SAR). The Tunisia Irrigation Management Improvement Project also planned to reduce the size of WUAs from 300 hectares to the size of small pumping schemes or the tertiary units in larger schemes.

Other adjustments of groups' size may be appropriate to make the boundaries of WUAs coterminous with other existing local organizations. The Morocco Souss Groundwater Project began with units of 16 hectares served by a single hydrant, but allowed for these groups to expand to 50 farmers to coincide with the service cooperatives.

Based on his review of the literature on collective action, Addison (1986, p. 46) concludes that the costs of maintaining an organization, particularly in terms of conflict resolution and information management, will increase with the size of an organization. There are no economies of scale to be expected in this respect. Groups should be large enough, however, to accomplish the designated tasks by collective action. The median size of approximately 40 hectares found in the examination of Bank-sponsored projects appears to offer a reasonable compromise between these two factors, as also suggested by Uphoff et al. (1985, p. 12; see also Coward 1980, pp. 206-8). Project planners may recommend a target size or range for base-level WUAs, but the farmers themselves are best able to determine the exact boundaries of actual units. Therefore, flexibility in the actual size of each unit must be allowed.

WUA Federations

The next step in the self-organization of water users, beyond the watercourse level, is to create associations of WUAs, on a territorial basis. Federations are organizational structures in which base-level irrigation groups are members of a higher-level association, itself encompassing a larger part of the same irrigation system. Again, Bank projects may either include such federations--when they already exist--in their strategy, or be instrumental in promoting their creation, when it appears ripe and necessary.

Is aggregate organization of WUAs desirable? Although small groups of irrigators who share water from a common source are optimal for carrying out many ongoing activities at the level of their section of irrigation system, other tasks arise that require a higher level of organization.

Examples include water acquisition or allocation decisions, maintenance of facilities that serve several groups, or resolution of water conflicts among base-level WUAs. In many systems these tasks are performed exclusively by government agencies. A federated organizational structure allows WUAs to become involved in many of these activities (see Freeman, 1990). Ostrom (1990:101-102) finds such a "nested enterprise" to be characteristic of enduring, complex institutions to deal with common property rights because it allows them to deal with the different problems arising at different levels (e.g., tertiary distributaries and main canals).

By and large, the present review found that federated WUAs are still not common among Bank-assisted projects. Some increase in the use of this organizational pattern is shown in Table 3. In 1975 only two projects, or 18 percent of those with WUAs, specified such an arrangement as already existing or to be developed during the course of the project. In 1984-86, 12 projects, or 34 percent of those with WUAs, had some form of federation. For example, in the Sri Lankan Major Irrigation Rehabilitation Project, field channel committees send representatives to distributary channel committees, which in turn are represented on a project management committee.

Table 3. Provisions for WUA Federations in Project Appraisal Reports

	FY75	FY84-86	FY90	Total
Total number of projects	23	45	9	77
Projects with WUAs	11	35	7	53
Cases specifying federations	2	12	3	17
As % of projects with WUAs	(18)	(34)	(43)	(32)

WUA federations offer advantages to both agencies and farmers. Federated WUAs enable farmers to exercise their rights and responsibilities in system management and conflict resolution to a greater degree. Representatives are clearly designated, and linkages between agency staff and farmers can be more easily established at several levels. The government agency can rely firmly on an apex organization to devolve some of its excessive responsibilities, and farmers receive a more powerful voice in negotiating with the state's service agencies. In large-scale systems in the Philippines, Bellekens reports: "[S]ome of the [Irrigation Associations] federated among themselves and formed apex organizations to improve their status with the NIA management and obtain contracts for maintenance of laterals" (1986, p. 20) Organizations that include representatives of each lower-level unit (e.g., distributary or lateral channel councils, in which every field channel is represented) may even be able to address some head-tail distribution problems within the organization, as intended in the Maharashtra Composite Irrigation III Project.

One reason for the low frequency of WUA federations is that federating WUAs entails additional transaction costs. Such costs limit the ability to establish multilevel farmer organizations. Furthermore, the empowerment of farmers through such bodies can present a perceived or actual threat to agencies' control of the main system. The establishment of users' federations is not actively

pursued by state agencies. For farmers, the costs in terms of time and other resources required to assume higher-level organizational and irrigation management activities are not insignificant. The extent to which higher-level WUAs will become active will depend on the balance of advantages and costs, as well as of the level of conscious understanding by users that stronger organization is in their own interest.

A realistic way of building a federated WUA structure within the project framework is to plan for phases of organizational development, beginning with base-level groups. Starting with grand federation plans when there are not yet stable watercourse-level WUAs is premature and ill-advised. New levels of organization should be added only after farmers and agencies have gained some experience in working together, with a clear commitment to building higher orders of WUAs. Furthermore, establishing mixed system management committees (essentially similar to those existing in Chinese irrigation systems) that would include both agency representatives and representatives of the irrigators' apex organizations will provide powerful organizational tools for improving system performance.

Role Specialization

The activities of WUAs may be performed either by the entire membership or by a set of leaders and specialists. Some tasks (e.g., clearing channels) are best done by an entire group effort; others (e.g., operating a pump) are more efficiently done by a selected and specialized individual. Technology and local custom are major factors in selecting the mode of operation. Where role differentiation occurs (president, treasurer, water masters, etc.), the specific definition of needed leadership roles depends on the size of organizations and the range of functions WUAs are to perform.

For structural purposes, it is possible to distinguish two broad categories of local leaders and roles: organizational and technical. Organizational leaders are those who are primarily concerned with organizational tasks such as decision-making, communication, conflict management, and resource mobilization. Their ranks may include hereditary chieftains, traditional village elders, or elected officers and representatives chosen by the farmers.⁵ This category of leadership provides coordination within the local organizations and contact with the outside, including government agencies and other farmer groups.

Those in technical roles within the structure of WUAs are directly involved in the manipulation of the physical facilities or water in an irrigation system. These people can be either farmers who are responsible for irrigation tasks, or employees of the WUAs. Examples of such roles include pump operators and common irrigators who open and close the water gates to each field, such as the traditional sarrafs in the Wadi Al Jawf Project.

In some instances there may be overlap between organizational and technical roles, with the same individuals fulfilling both. The technical leadership discussed here includes only those who are chosen and/or employed by the farmer organizations (not the technical roles of agency staff).

Among the project appraisal reports examined, seven from 1975 and 16 from 1984-86 specified some type of leadership role in WUAs' structures. Table 4 shows the breakdown of these cases across years and between organizational and technical roles. Somewhat surprisingly, organizational roles are discussed in appraisal reports more than twice as often as technical ones in each period.⁶ This was unexpected because Bank appraisal reports are written primarily by staff who are technical specialists.⁷ Also noticeable is the absence of any mention of the basic roles to be performed in over half of the projects that do involve WUAs (and in nearly 70 percent of all projects).

This reflects an insufficient depth of consideration of these structural issues in appraisal reports. Without some definition of the roles of WUA leaders and representatives, it is impossible to plan for precise activities and for operational linkages between farmer organizations and agency staff.

One conclusion from this analysis is that project planners should attempt to explicitly recognize leadership role needs to be included in the overall project design.

Accountability

Structured accountability of WUAs to their membership is the most crucial principle of organizational structure for the long-term viability of the organizations and should underlie all efforts for WUA development in projects. This principle has two dimensions: accountability to water users rather than to the agency, and accountability to all members, not just a subset such as large farmers or those in one part of the system. If accountability is not ensured, farmers cannot be expected to participate in the organizations by providing their time or other resources, and WUAs will be weak, without active support from their members.

Ensuring the accountability of WUAs to the farmers begins in project conceptualization of the role of local organizations. Water users' associations must be seen as belonging to the water users, not as an unpaid extension of the irrigation agency. They are to be a forum for farmer participation, not a means of extracting resources from farmers or forcing them to perform certain tasks. The attitude expressed in one appraisal report that "[t]he main purpose of WUAs is to organize farmers' contributions of labor and cash for OFWM (on-farm water management) on a watercourse basis" (Pakistan Left Bank Outfall Drain Stage I Project SAR 5.06) should be avoided.

Table 4. WUA Leadership Roles Defined in Project Appraisal Reports

	FY75	FY84-86	FY90	Total
Total number of projects	23	45	9	77
Projects with WUAs	11	35	7	53
Projects with leadership roles specified	7	16	3	26
As % of projects with WUAs	(64)	(46)	(43)	(50)
Organizational leaders mentioned	5	15	2	22
Technical leaders mentioned	2	7	1	9

Note: Six projects in 1984-86 specified both organizational and technical leadership roles.

Accountability to members should also be built into the organizational framework of WUAs. Definitions of membership and leadership are primary mechanisms for establishing this accountability (Coward 1980, pp. 205-10). Membership definitions affect whether all farmers served

by a facility are included in the organizations. Leaders should be selected by the farmers, not appointed by the agency. One of the clearest statements of this type of accountability is found in the appraisal report for the West Bengal Minor Irrigation Project in India:

Beneficiaries will have direct access to staff responsible for the various activities and, in particular, the (pump) operator can be checked by both his direct supervisor (the Panchayat Committee) and the farmers he serves (SAR 5.14).

Conversely, "progressive farmers" or others chosen by officials should not be made heads of the organizations. Neither should the organizations be dominated by officials. For example, the Maharashtra Composite Irrigation III Project in India included two government employees--a canal inspector and a village extension worker--as members of even the lowest-level outlet committees for each 24-hectare unit. The attendance of these government personnel at meetings of the base-level WUAs would both place a strain on their time, as well as limit the farmers' sense that the WUAs are their own, not an arm of the government. Where the required leadership skills are not available locally, projects should include training to strengthen them. The Niger Irrigation Rehabilitation Project provided perimeter directors on an interim basis, but ensured their accountability to the WUAs by making it clear that "[a]fter project completion, each cooperative would decide whether or not to hire its own manager, either the former perimeter director or someone else of the cooperative's choice" (SAR 3.15). Therefore, in the interest of job security, it behooved the directors to meet the interests of the farmers.

The specific mechanisms for selecting leaders can be left to the farmers; they may use formal elections, selection by consensus, or traditional hereditary roles. It is important that the decision be made locally and that leaders be in touch with other members to allow informal social sanctions to reinforce accountability.

Projects should explicitly avoid interference from the agency or other project authorities in the management of WUAs. Decisions regarding what the associations are to do, and especially how they are to proceed, should be left to the farmers to the greatest extent possible. It is not enough to try to create a "sense of local ownership" in WUAs; the organizations must belong to the water users in fact. Only in this manner can we expect strong farmer support for irrigation associations to emerge and be sustained. Evidence from Bank-assisted projects confirms Ostrom's (1990:101) findings that "if external government officials presume that only they have the authority to set rules, then it will be very difficult for local appropriators to sustain a rule-governed CPR [common property resource] over the long run."

In some instances, independent WUAs will not produce the same results the agency would desire, or will not produce results at the desired time. Strong farmer organizations may even be perceived as a threat to agencies and to their staff's monopoly over the operation of the system. This was noted as a problem in the Colombia Irrigation Rehabilitation II Project, whose SAR stated that "at present most Water Users' associations function more as a body for voicing criticism or requests to HIMAT's district management, without showing much interest in the actual management of their district" (Annex 1.15).

Unfortunately, farmer involvement is still seen by some irrigation agencies as interference in the system, without recognition for the potential contributions, or for the validity of farmer concerns. Encouraging more constructive interaction between agencies and WUAs may require bureaucratic reorientation, as was carried out in the National Irrigation Administration in the Philippines (see Korten and Siy, eds., 1989). Moreover, WUAs cannot be expected to act uniformly throughout

the entire project. For this reason the Niger Irrigation Rehabilitation Project obtained assurances that the project agency would not start rehabilitation work on perimeters until the "cooperative has approved internal statutes consistent with the model satisfactory to IDA" (SAR 8.01d). Such provisions make the WUAs accountable to the agency and IDA, however, not strictly to their membership; this undermines their adaptability to local conditions or the needs of farmers. Some internal statutes may be necessary for the provision of credit to farmers, but the imposition of rules for other irrigation activities should be avoided. Although allowing WUAs to make decisions, with some resulting lack of uniformity throughout the project, is generally perceived as a problem for agency staff, it is also one of the strengths of involving WUAs: irrigation management can be tailored to local conditions far more effectively than by central agencies alone.

Conclusion

Two important conclusions emerge from this analysis of organizational structure in WUAs. On the one hand, project preparation and appraisals should pay more attention to the structural characteristics of WUAs. Greater efforts should be made to identify existing organizations and learn how they work. General parameters of organization such as membership recruitment, size of base units and federations, and type of leadership roles (particularly when agencies will need to interact with local leaders or representatives) should be carefully considered. However, to ensure accountability of the WUAs to the farmers and to allow organizations to be tailored to local conditions, flexibility also must be built into the project framework and agency dealings with WUAs. The process of tailoring to local conditions should begin by giving farmers themselves a voice in shaping the organizations.

NOTES

1. For an examination of the results of local participation in various USAID-assisted projects, see Finsterbush and Van Wicklin 1989.
2. Another telling case was the Rural Development Project in Mindoro Province, the Philippines, for which the SAR required a comprehensive plan for improving the existing, traditional WUAs in Mindoro, which managed and owned the communal irrigation systems.
3. For a well-documented description of the benefits and costs of WUA development in the Philippines, see Bagadion and Korten 1991.
4. This analysis is offered by Hervé Plusquellec, irrigation engineering adviser, World Bank. WUAs' decreased activity and organizational viability after completion of canal lining have puzzled many specialists and have been explored in several analyses. Little consensus, however, has been reached, and the SAR for the 1991 State III project, noting that this situation is "difficult to understand," incorporates provisions aimed at studying its causes and correcting prior weaknesses.
5. Advanced WUAs in Colombia even employ lawyers to represent them (Laeyendecker, personal communication), while some indigenous *zanjeras* in the Philippines include a cook as part of the WUA staff (Ostrom 1990).
6. Treasurers or accountants, such as those specified in the Niger Irrigation Rehabilitation Project, could be considered technical personnel because of their specialized skills. In this analysis, however, they are considered in the capacity of functional leadership because they deal with organizational management, especially resource mobilization, rather than with water or the physical facilities.
7. The frequency with which organizational roles are cited may be the result of an automatic assumption that any organization requires a president, vice president, secretary, and treasurer.

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