

WATER USERS ASSOCIATION GOVERNANCE IN DEVELOPING COUNTRIES: FRAGILITY AND FUNCTION

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ABSTRACT

Transfer of irrigation system management from government to water users has been taking place in developing countries for at least three decades. Various methods and degrees of transfer have been employed. Overall, the concept of transfer has been good, with benefits both to the central government and to the water users, who generally receive the transfer as members of organized water users associations (WUAs). Indeed, organizing water users into associations holds out much hope for farmers in developing countries. Similarly, modernizing agricultural technology is a must for these WUAs in order to produce competitively for global markets. However, technological modernization cannot be effective without robust water users association governance.

Many WUAs start out well, but some of them lose strength and/or become embroiled in debilitating problems later. This paper focuses on lessons learned in WUA organization and growth in developing countries, particularly those in which the International Irrigation Center of Utah State University has been involved during the last three decades. Underlying problems in irrigation system management transfer and in WUA organization and function are examined, along with post-project difficulties that can occur. Ways to make WUAs robust, effective in meeting production and community needs, efficient in management of water resources, and sustainable as functioning representative entities are discussed.

INTRODUCTION

Irrigation has long been viewed as the flagship of the rural agricultural sector in many developing countries because of its great adaptability and tremendous potential for increasing agricultural yield. In the first two-thirds of the twentieth century, a more structural approach to promoting agricultural production through irrigation took place through the construction of dams and irrigation systems; however, it was observed that building more and more systems finally began to yield diminishing results. A nonstructural, managerial approach, focusing on more effective use of the systems and limited water resources already available, was called for (Yap-Salinas 1983, Ostrom 1992). In many developing countries,

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irrigation traditionally had been the responsibility of the central, or national, government. By the latter half of the twentieth century, however, many of these governments, facing increasing debt loads, began to view transfer to water users of irrigation system management, including the financial responsibilities involved, as one way to lighten their economic burdens. Although often conceived for this purpose, water users associations (WUAs) have turned out in fact to be important tools for development of the rural sector in these countries because they address one of the weak factors for national growth: development of human capital. Now, however, with globalization, developing countries exporting agricultural products need to have agricultural production systems that are technologically and managerially efficient and competitive, ready to supply products when trade agreements open doors (Yap-Salinas 2003a, 2004). This means that WUAs need to become as efficient as possible in their management of irrigation and production.

Irrigation system management transfer has taken place in developing countries under a variety of internal and external conditions and often at points along continua. Such transfer has taken place at various speeds: “big bang;” very gradual, and even “de facto” previous to the present “wave.” Transfer, similarly, has taken place under varying degrees of political will: governments in favor, governments reluctant, and governments of mixed interest and desire for the process depending on the level of bureaucracy. In addition, transfer has involved varying levels of development of human capital: some water users have very little real experience or even no knowledge of irrigation principles, and, at the other end of the continuum, some are agricultural entrepreneurs with a high level of education and irrigation and marketing experience. Accordingly, transfer has been seen under varying conditions of technological development: systems with a large quantity of available equipment and others with none.

Thus a variety of factors are involved in the unique form that irrigation system management transfer takes in each developing country. Furthermore, once transfer of irrigation system management has taken place, the WUAs in each developing country face a variety of similar factors that either promote or debilitate their growth and development. Such factors determine whether they will be robust or fragile, and whether they will be effective or not in meeting production and community needs, in managing their systems and water resources, and in achieving sustainability as functioning representative entities. External factors, such as internationally-financed projects, also enter into the equation. Because of these many factors, even though transfer and the formation of WUAs may start off magnificently, the associations and the process may later lose strength and/or become bogged down in complex problems.

There is a need to make WUAs robust, efficient, and competitive in agricultural production. This paper will examine the factors that contribute to this robustness and sustainability and will discuss underlying problems in the irrigation system

management transfer process and water users organization formation and function, along with irrigation project and post-project difficulties, that can influence the achievement of optimal WUA objectives and function.

The analysis presented here derives from lessons learned by the International Irrigation Center/Utah State University (IIC/USU) irrigation projects in irrigation system management transfer and WUA formation and building in various developing countries during the past three decades, as well as from research in these areas in other countries in which USU has been indirectly involved.

BUILDING ROBUSTNESS IN WATER USERS ASSOCIATIONS

A Holistic View and Approach

A WUA project in the irrigated agricultural subsector may be implemented by a government by itself or with international funding, and it may or may not involve irrigation consultants from other nations. Nevertheless, traditionally, and generally still, the stated aim of an irrigation project focuses on one or two main objectives. Such objectives may, for example, include bringing in advanced technology to improve agricultural production, or training water users in irrigation management at field and system levels, or guiding WUAs in institutional changes to promote true representation and a democratic process. However, while there may be only one or two objectives of a project, the approach must, because of the many factors involved in assuring sustainability, be an integrated, holistic approach that addresses these factors. A departmentalized, parochial approach that focuses only upon the desired main objective, ignoring contextual factors, will ultimately be hampered in its efforts to achieve a sustainable outcome and therefore be limited in its success.

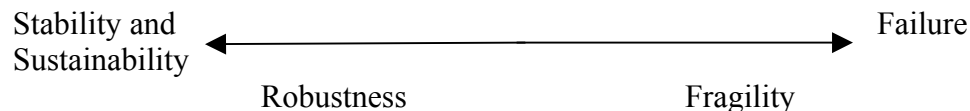
Thus it is imperative that the factors that limit or promote success of irrigation system management transfer and the success of WUA formation and building be identified, examined, and taken into account in any irrigation project that involves any objective that is part of irrigation system management transfer or part of WUA formation and building. In other words, in approaching a transfer or WUA project, we must realize that a “simple” nonstructural irrigation development project with a limited objective is really more complex than it appears. For example, a WUA project that aims to bring in new technology for improved agricultural efficiency and production is really not only about water management and technology. Rather, such a project also involves institutional transformation in three aspects—i.e., really three “hidden” objectives—first, achieving effective acceptance by water users and by their WUA of the new technological modernization so that this technology will indeed be utilized; secondly, preparing water users and their WUA to understand and confront the fierce competitiveness of the global market and to see this technology as a tool to meet that goal; and thirdly, making water users and their WUA aware of the need to preserve the

natural resources involved in their agricultural production and to see technology as part of this whole framework of production. Furthermore, institutional change in perception and commitment is necessary at other levels besides those of the individual water user and of the WUA entity; government district officials and top government ministry leaders also need to be made aware of and become committed to achievement of these so-called “hidden” objectives that affect the successful outcome of the technology that the project is importing (USU 2001). Thus a holistic, integrated perspective on any project objective is necessary, and a multilevel approach—at the individual water user level, at the WUA entity level, at the government district level, and at the top ministry level—is required.

A Conceptual Model and Equation for WUA Robustness

Through our experience, we have observed that WUAs generally follow the same evolutionary path as the society in which they are immersed. This is because a WUA, in the actions and functions required to form itself as an institutional, legal entity, confronts many of the same advantages and problems in its evolution and development that the society or country faces in its pursuit of development and growth. Thus it can be said that a WUA is often a microcosm of a country’s evolution toward development.

The robustness, or strength, of a given WUA as an institution exists as a continuum:



Various factors have been mentioned as affecting the irrigation system management transfer process and the formation and building of WUAs as part of that process. In the traditional perception of development, key factors are considered to include (1) human resources, (2) technological resources, (3) economic and financial resources, and (4) natural resources. This conceptual model includes an additional contemporaneous factor attached to the factor of economic resources: the need for agricultural production to be competitive in the new world order of international market conditions brought about by globalization.

Internal and external factors affect WUA governance and performance. Internal factors that determine the degree of robustness or fragility that a given WUA has can be represented by an equation of fragility in this conceptual model. External factors act upon the WUA and can be shown as a conceptual coefficient affecting the internal factors in the equation. Furthermore, this conceptual model equation behaves differently in each stage of development of the WUA, and the external factor coefficient affects the fragility function to different degrees.

Two key questions are (1) which factors, internal or external—and specifically, which ones—affect the fragility function for a WUA more, and (2) which one or ones of these factors can most easily be avoided or handled in the implementation strategy for WUA building.

Internal Factors Affecting WUA Development, Governance, and Performance:

The main internal factors that can determine the fragility or robustness of a WUA are (1) human resources, (2) technological resources, (3) economic and financial resources, including (3a) competitiveness of agricultural production in the new international market conditions brought about by globalization, and (4) natural resources. Most of these factors are rather self-explanatory as to their meaning. However, the factor of human resources deserves a further explanation at this point.

In addition to the water users themselves, the factor of human resources involves other protagonists at other levels in the irrigation system management transfer process: chieftains and community leaders/local decision makers, local technocratic personnel, and local government bureaucracy at the district level. Within each level there are subfactors of general education, knowledge of good irrigation and management practices, sensitivity to natural resource conservation, and commitment to the success of the irrigation system management transfer process (also called “political will.”) Similarly, subfactors of age and openness to ideas and new technology exist at each level. Furthermore, within the water users themselves, there are additional subfactors concerning generation gap and gender participation.

Thus the equation for robustness function of WUAs can be stated conceptually as:

$$R_0 = (w_0, x_0, y_0, z_0, \dots n) \quad (1)$$

with R representing the robustness of the WUA at any given stage, and w, x, y, and z each of the main internal factors that determine fragility. Within each main internal factor, there are subfactors, mentioned above, that determine the composition of each main internal factor.

Because each stage of development will show varying development in each of the internal factors, the robustness of a WUA at any given stage of development can be represented as a function of:

$$\text{Stage 1:} \quad R_1 = (w_1, x_1, y_1, z_1, \dots n) \quad (2)$$

$$\text{Stage 2:} \quad R_2 = (w_2, x_2, y_2, z_2, \dots n) \quad (3)$$

$$\text{Stage 3:} \quad R_3 = (w_3, x_3, y_3, z_3, \dots n) \quad (4)$$

External Factors Affecting WUA Development, Governance, and Performance:

This model of WUA robustness/fragility is incomplete without the external factors that affect a WUA's development. The WUA is immersed in a socio-political environment of underdevelopment, along with a natural environment.

This equation can be shown as existing within a "soup" of external factors that condition and ultimately affect the development of the WUA. While there are many such external factors, the most important include:

1. Political will and stratification of political will, as opposed to "state policy."
In a developing society, perception of the transfer process and the development of WUAs is often affected by social strata of the country's decision-making structure and the fear of change (and loss of position that may result from change) in the administrative structure governing irrigation. While government ministry officials may see the clear benefits of transfer and WUA development, the people "on the ground" may often have different perceptions, partially conditioned by age, degree of professional participation and awareness of trends, and openness to new ideas. District officials often feel threatened by WUAs taking over irrigation system management responsibilities; it is often difficult for them to perceive new roles for themselves as advisors and collaborators in the process. Consequently, this lack of political will is manifested by blocking the transfer/WUA development process at many steps. This is an extreme and perhaps is the greatest difficulty facing those directing a transfer project. Lack of political will is the most negative and constant factor that must be avoided and combated from project inception.
2. Political bias and paternalism. In a developing society, politicization of the WUA can occur, often starting in the leadership; WUA goals and resources may be diverted to support a given party's goals and financial needs. This can be a very serious factor leading to WUA fragility and failure (Yap-Salinas 1994b).
3. Political change as a result of elections. In a developing society, elections may cause temporary project discontinuity or project termination; often an incoming political party feels no obligation to continue programs and projects started by the government structure of the outgoing political party. Furthermore, personnel from top to bottom, from ministry to district level generally change if there is a change in governing party in an election. This means that every time a new administration comes in, the full cadre of professional personnel, including technical personnel, is changed. This is generally a serious setback due to several negative effects: (1) time lag in resuming activities due to the replacement of previous personnel with new and often inexperienced personnel (sometimes political appointees with no

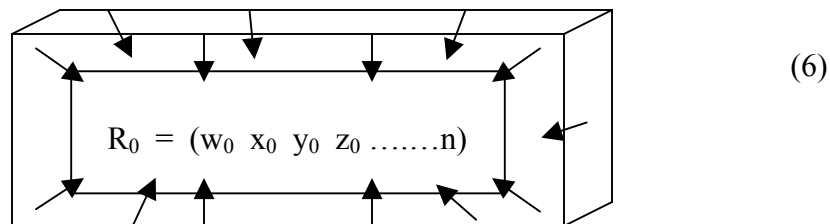
experience and little interest) who must be brought “up to speed.” Project consultants also often need to induce a positive political will toward the transfer/WUA development process and the goals of the project. (2) loss of “institutional memory” of what has worked and what has not during the life of the project.

4. Coordination and cooperation. In a developing society, there is often a lack of coordination and cooperation among local government units administering water resources. This situation can be improved when there is political will from the top downward.
5. Regulations and procedures. In a developing society, there is often a lack of efficient regulations, and burdensome regulations may exist. Cumbersome procedures often exist for obtaining legal status for the WUA, causing serious project delays and postponement of project objectives; unfortunately unorthodox payment methods (sometimes bribes) are sometimes necessary to accelerate this process. Again, political will can cut through red tape.
6. Definition of land ownership, property rights, and water laws. In a developing society, these are often weak and cause conflicts among users, inefficient property registration, and difficulty in trading and obtaining credit. Furthermore, the water laws of many countries are obsolete. New versions are being written, but few are being improved because of conflicts of interest among sectors.
7. Continuity factor. As mentioned above, elections may affect the continuity of a project. Furthermore, at the end of a project, which, simply for lack of sufficient time, generally never ends in a stage of complete stability and sustainability for the WUAs, the delay until a follow-up project is contracted and implemented can be a serious setback. In terms of progressive steps of building managerial, institutional, and technical skills, the development of WUAs is often incomplete. As a result, WUAs are not optimally strong, and are even more subject to some of the negative external factors resulting in fragility.

This “soup” of external factors has great bearing upon the success of the irrigation system management transfer process and development of the WUAs as strong, legal, representative institutional entities. These external factors can be shown as:

$$R_0 = (w_0, x_0, y_0, z_0, \dots, n) E_f \quad (5)$$

or, more visually, as a three-dimensional box around the fragility/robustness conceptual equation:



Ways to Promote Robustness of WUAs

Understanding the internal and external factors involved in development of WUAs, and understanding the fact that these factors each evolve according to stages of development of the WUAs are key to determining ways to promote strength of WUAs at each stage.

Some key actions are based on this analysis of internal and external factors.

1. Develop human resources: If water users do not evolve in their managerial, institutional, and technical abilities and skills, they cannot adequately assume the responsibilities of irrigation system management. Some developing countries used a “big bang” approach of transferring these responsibilities without providing the necessary training, and serious problems, including loss of agricultural production, resulted. Some governments used a gradual approach, incorporating training with gradual transfer of irrigation system management responsibilities. Other governments used a “big bang” approach, but they followed it immediately with projects providing training.

Training for effective transfer involves at least three main areas: irrigation system management and technology, institutional innovation, agricultural production and marketing. Water users need to be “chaperoned” into a new way of managing their systems and water resources, gradually showing them the advantages of new methods and technology and building their confidence in their abilities. Similarly, the representative governance that WUAs entail is often new in countries where paternalistic governments previously were in charge of all aspects of irrigation. This involves training in institutional changes that involve representation, equity, and responsibility; as farmers see reduction in conflicts and fairness to all, not just to a few, they become convinced that indeed community cooperation through their WUA is worthwhile and effective. The third area of training that is essential for water users is that of increasing agricultural production and using effective marketing; in the end, if transfer and WUA formation does not result in increased farmer income and an improved standard of living, water users will view the whole concept as useless. WUAs gain greater strength as they function as their own middlemen in the marketplace (USU 1997-2001). The formation of national federations of WUAs, such as those now taking place in

Ecuador, Peru, El Salvador, Dominican Republic, and Mexico, increases the collective strength and bargaining power of water users, not only in marketing but in all areas. This area of training in production and marketing now gains even greater importance as globalization increases the need for competitiveness in the international marketplace (Yap-Salinas 2004).

2. Build political will: Because of the problems of lack of political will and interest, training must be provided to government administrative and technical personnel at all levels of transfer—not just the water users. A significant amount of time must be spent “converting” all those to be involved in transfer, up to the ministerial level, to a commitment to the goals of the irrigation transfer project so that decisions can be made smoothly, in a timely manner, with minimal encumbrances. In practice this has meant a great deal of time at the beginning of the project spent on educating people about the project; ongoing seminars and discussions throughout the project life are necessary to keep the project on task and accomplishing its objectives (USU 2001).
3. Build legal status of WUAs and land ownership of water users: One of the first steps in building strong WUAs is obtaining legal status for the WUAs for their operation as legal, negotiating entities (USU 1997-2001). Water users’ properties must also be clearly demarcated. Digitalized mapping of irrigation parcels through GPS has contributed to definition of property in the USU projects in the Dominican Republic. Accurate land tenure maps give WUAs a basic tool for management decisions for their irrigation systems.
4. Demonstrate results and reduce risks: Water users in developing countries tend to live marginally. The results of proposed actions must be shown in order for water users to take risks. It is important to reduce the risks involved (Yap-Salinas 1994a, 1994c). One example involved the use of a farmer’s land as a pilot area in the Dominican Republic to demonstrate rehabilitation and drainage; although farmers were reluctant at first, soon all were clamoring to have work done on their fields (Yap-Salinas 1994b). Another example is the use of artisan greenhouses that enabled tomato production at high altitudes in the Ecuadorian Andes; once a few had tried these and obtained astounding results, greenhouses began sprouting up all over, even in non-project areas (USU 1997-2001).

As farmers become convinced of the possibilities, their commitment to their WUAs strengthens, and they are willing to pay the water tariffs and learn to manage their water resources. As they begin to see that they can actually manage their own systems without a paternalistic government, they become willing to learn how to do so more efficiently and eagerly take the training classes. The idea of actually managing their own system is often a “eureka” revelation when it jumps off the paper and becomes a reality because it goes

against decades and even centuries of agricultural tradition of dependence upon the government for everything.

5. Build continuity: Because of delays within projects due to elections or changes of government leadership, and because of delays between projects, one way to ensure that water users and their WUAs are not just “dropped” is to build continuity through training in the WUAs and to build a technical cadre of engineers that in some types of delays can continue working. This was done in Ecuador (USU 2001).

CONCLUSION

Internal and external factors affect the development of WUAs and their progress toward the goal of stability and sustainability. The internal factors involve resources: (1) human, (2) technological, (3) economic and financial, and (4) natural. The robustness of a WUA will depend on development in each of these areas.

However, external factors in a country also affect this process of WUA strengthening and progress toward robust stability and sustainability. These effects can be positive or negative. To summarize, some of these external factors involve (1) political will, as opposed to “state policy,” (2) political bias and paternalism, (3) political change, (4) coordination and cooperation, (5) regulations and procedures, (6) definition of land ownership, property rights, and water laws, and (7) the continuity factor.

These internal and external factors have been described in this paper, and the conceptual model and equation presented enable visualization of the factors.

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