LEGAL CONSIDERATIONS AND ALTERNATIVES FOR ORGANIZING WATER USERS[1]

George E. Radosevich[2]

The ability to apply water beneficially is subject to natural laws of the physical universe and the laws of human institutions. The greatest benefit from water is derived when it is used in combination with other natural resources (soil, mineral, or vegetable) and economic resources (labor and capital). The more efficiently it can be used in combination with other resources, the greater the benefit to the water user and society.

A review of water activities around the globe indicates that this resource has become critical in determining local, national and regional growth. In the past three decades, water has come to be regarded less as a free good and more as a capital commodity whose spatial and temporal availability dictates policy formulation and new directions in macro and micro planning and development.

This paper discusses two interrelated topics which are important for implementing public irrigation programs. The first topic is the role of water law, and concerns the substantive and procedural laws for government intervention in the user process of water resources. The second focuses on alternative structures and procedures for organizing water users to effectively use these resources. Consideration is also given to the private and public interests which are involved and to the legal factors of mobilizing water users into collaborative associations.

The success of any agricultural development program depends on the (1) increase of delivery and application

---

[1]Material in this paper is based on research and consulting experience with colleagues at Colorado State University, Utah State University, and Spain. Material also derives from the International Conference on Global Water Law Systems (ICGWIS), Valencia, Spain, September, 1975 and from the author's report to the U. S. Agency for International Development, Legal Aspects of Water User Associations, in press, 1977.

[2]Associate Professor of Water Law and Economics, Department of Economics, Colorado State University, Fort Collins, Colorado.

efficiencies, (2) encouragement of conjunctive use of surface and groundwaters and (3) integration of water quantity and quality control. These objectives can best be achieved through the active and well-structured collaboration of local water users among themselves, and with officials charged with administration, control and distribution of water.

Realizing these objectives also requires that government officials and policymakers be aware of the conditions and constraints to change which water users face within their localities. Also, the image of government officials and personnel by water users must be improved by demonstrating an appreciation and understanding of the problems of local farmers and in providing the water users with timely information on water availabilities.

Local water user associations can provide the infrastructure for improving irrigation efficiency and increasing agricultural production by:

(1) Getting farmers directly involved in the local decision-making process;

(2) Managing the water distribution system, thus improving the delivery, application, and removal of water throughout the system;

(3) Resolving disputes between water users as individuals, and problems arising between water users collectively and the central government;

(4) Serving as a communications link and forum for disseminating information and assistance on improved water use, agricultural practices and technologies, and methods for improving the quality of rural life;

(5) Channeling the needs and desires of farmers and rural communities to those government agencies best equipped to meet them through that level of the association hierarchy which has access to the appropriate level of government organization;

(6) Promoting the collective action of individual farmers by pooling their individual resources in actions which benefit the individual and the group;

(7) Establishing a formal mechanism for administering government aid with a higher level of accountability and permanence;

(8) Taking advantage of the economies of scale in committing scarce financial and technological resources to programs which are better integrated with national or regional goals and which will benefit greater numbers or individuals.

When introducing the concept of water users associations in a country, it is essential to select a pattern that will be acceptable to the users and perform the functions anticipated. Consideration should be given to the organizational patterns and experiences found in other countries as well as the local patterns. The new entity should be structured to coincide with the religious, social, political, economic, and legal system of the country in question. The water user association should begin as a simple organizational arrangement but should be flexible enough to allow for institutional maturation as intra-water course demands and developments take place. It is also important to distinguish between improving an existing system and developing an entirely new program.

Other issues to be considered are: (1) the purposes of the organization, i.e., single purpose (irrigation) or multiple purpose (irrigation, conservation, drainage, reclamation, etc.); (2) jurisdictional or territorial limitations of operation; (3) financial operations, including assessments, public borrowing, and membership dues; (4) internal decision-making, including voting and selection of officers; (5) the interrelationship of the association with similar groups and with agencies of the central government; (6) possible incentives for individual participation; (7) how the water user association will function in relation to broader government policies for water and agricultural development; and (8) the method for resolving disputes which arise.

These issues must be viewed against the background of factors such as the trade-offs between the scarcity or abundance of labor and capital, the physical abundance of water resources and the environmental quality of that resource, and how the resource use is influenced by the seasonal aspects of surface runoff or aquifer recharge.

WATER LAW

Water laws are the expression of basic policy and substantive provisions dealing with the use of water and the development of water resources; they are the basis for establishing the administrative rules and regulations.

The underlying philosophy of each particular system of water law has a direct connection to the surrounding physical factors of its origin. Where water is plentiful, regulation is aimed at ameliorating the harmful effects of water (floods, salinization, etc.), but, where water is scarce, regulation is aimed at ensuring an adequate supply, for example, by providing that water is not owned by one individual but, rather, collectively so that all may use what is available.

Over time, distinct regional or national systems emerged which reflect particular physical conditions and social goals. Elaborate water laws and administrative systems evolved where the greatest needs and most serious natural constraints existed. Through adoption or imposition many of these systems have also influenced or directed water use and control in other countries or regions. Although retaining many of the basic characteristics of the original system, modifications have been incorporated to meet indigenous conditions.

Systems may be classified into three categories: customary, traditional, and modern.[3] Two customary systems (Islamic and Hindu Bali) reflect the philosophy of life in the areas where they are practiced. Traditional and modern systems blend with each other and will be discussed together. The traditional systems reflect the length and thoroughness of traditional codes. There is much variation in the modern codes and laws. They range from defining the theme of the code as set out in policy with emphasis either on public interest or economic forces of the marketplace, to an analytical approach with emphasis upon the dynamic nature or failure of the law and the changes that have or ought to occur.

Systems Based on Religious Custom

Two systems are discussed in light of their religious origin. They are the Islamic systems of water law and the

[3]This classification was adapted to analyze the eight major systems described at the International Conference on Global Water Law Systems, Valencies, Spain, Sept., 1975. For a thorough discussion on the various water law systems, see Proceedings of the International Conference and Global Water Law Systems, Vol. 1 to 4, Prepared by G. Radosevich, et. al., Colorado State University, Fort Collins, CO (1976).

Subak system for water administration in Bali, Indonesia. In both, water is treated as corporate property to be shared among all. In neither is water subject to private appropriation. Water is the object of a right to use, but not ownership. There are exceptions in which Islamic law recognizes private rights to water. This recognition is limited to small volumes of water contained in well-defined boundaries, like the water contained in a cistern.

Islamic water law is not a national system of water law; it is a system of religious and traditional doctrines and uses. It goes beyond country boundaries and pervades local customs. In turn, the religious element, which gives commonality to the system, is influenced by the particular uses of each place and locality. Islam respects local practices as long as they do not oppose the basic set of religious rules. The egalitarian foundation of Islam prevails throughout all aspects of Moslem water law. It is easily identified in the common water ownership and equitable proportionment principles of the law. In this way, for example, the policies of Yemen are to spread the water as much as possible, in order to irrigate the maximum possible area of land. Another reason is that taxes are based on the amount of land which is irrigated. In Medina there is a policy of fair distribution of the waters, and water rights are attached to the land. With the spread of Islam, the appurtenancy principle spread to Spain and to regions of North and South America. This principle held that water should be allocated to specific parcels of land and not freely transferable to other places and uses.

The trade centers of the desert developed concepts about public uses of the waters. These notions grew from the strategic location of these points of obligatory passage to all travelers. The tribes of the desert developed the notion of "harim," by which a territorial claim was made to land surrounding a water hole. Under the general concept that water should be freely available to all, each person had the right to use water for domestic and personal purposes. Wells were free for all travelers to use; endowments of water for public use were encouraged. Under the preaching of the Prophet, water was to be supplied also to beasts (domestic animals receiving preference). Also in the trade some concepts about preventing wasteful use of the water began to develop.

Great rivers are common property. Small natural rivers are predominantly for the use of the riparian, and artificial rivers are for the common use of those who dig

them. Surplus waters are to be always offered for the use of other persons.

Water for irrigation is allocated on the basis of: (1) the crops; (2) the season; and (3) the local customs and the quality of the water. It is allocated by time and volume according to the following priorities: (1) thirst; (2) domestic uses; (3) irrigation and commerce; and (4) industry. The most rational use of wells is restricted, however, because every person does have the right to drill a well on his land, even when it affects the rights of other water users.

Islamic principles on water administration are not very relevant at high levels of government concerned with centralization of water management. However, Islamic law has had a fundamental influence at local levels where it functions as a local authority controlling water rights. Thus, administration and organization result from local and ancient customs. Local water masters carry out water administration. Under the Islamic system there has been a breeding of conservatism and traditionalism even against technological change. Problems of abuses and corruption sometimes adversely affect the system. These problems, however, do not reside only with customary systems.

The other system of customary-religious based law that is important to examine is the Subak. The Subak is the traditional water management technique of Bali in the Indonesian Archipelago. It is based on the Hindu cosmogony. It survived the brief domination of Buddhist dynasties and was modified only slightly by Islamism, which reduced the unit for water administration to the level of the village. However, the Subak includes several villages for water administration.

The Subak is basically a community of farmers. Irrigation is a common bond which encompasses several villages. The Subak limits are defined by the irrigated lands and are governmed by rules of customary law.

Administration is conducted through a Subak meeting (assembly) which has sovereign water jurisdiction and whose decisions are implemented by a chief water master. The chief water master is assisted by deputies, assistants and criers, which control each subunit of the water network, the end of the water network, and the distribution of water to individual users, respectively.

Water can never become an element of appropriation; it is subject only to rights of use, and distributed in proportion to crop needs.

Traditional and Modern Systems of Water Law in Europe

The traditional and modern system of water law in the United Kingdom, France, and Spain have global influence because of their unique and potentially transferable features.

United Kingdom

In the United Kingdom statutory regulations have been enacted in the public interest. England has placed a high premium on water and demands upon the resource have transformed this commodity to an item of scarcity.

For this reason, Common Law has been substituted by statutory law. The provisions which have evolved from traditional common to modern laws have been designed to: (1) secure an adequate supply of water both in quantity and quality; (2) satisfy all needs and prevent waste; (3) secure water quality and pollution control; (4) promote flood control and land drainage; (5) clean the rivers of the country; (6) assure recreational and wildlife and fisheries opportunities; and (7) protect the interests of affected water users.

Under common law, rivers are considered public property and cannot be owned. Ownership is significant only in relation to waterbeds. The beds of tidal rivers are owned by the crown. The use of water in riparian land is an incident of the right of ownership. The quality and quantity of the water cannot be diminished, unless authorized by grant, statute or prescription. Rights regarding artificial water courses are always required by grant or arrangement. Underground water can be freely used according to the English absolute ownership rule.

Many changes were made in the common law after the enactment of the Water Resources Act of 1963. It is now necessary to obtain a license for the use of inland underground water. Exceptions are given for small diversions, riparian domestic or agricultural uses, and withdrawals of underground water for household use. The Act has substituted for the common law rights of the riparians a system of compulsory licensing. Rights to

the use of water are legally protected and administered. Water authorities are given broad powers for the control of the use and abuse of water rights. Under the common law, water was not to be impaired in quality. Water pollution control laws have been enacted which strengthen and further define the common law concept in the context of new and projected uses.

Administration of water in the United Kingdom is most interesting in terms of how a system evolves. From the 1945 and 1963 Water Resources Acts to the present 1973 and 1974 Acts, the concept of the river basin authorities have developed and been tested under centralized to decentralized control. All functions associated with the water cycle are under the control of a single authority in any one region which attempts to closely correlate to a natural hydraulic unit. This leads to an integrated system of water management combining water quantity and quality control and conjunctive use of ground and surface waters. The guidelines of these control and management activities are set by water policies elaborated by the Secretary of State and by the Ministers of Agriculture, Fisheries and Food. The intent is to jointly promote a policy for water management in England and Wales, executed by regional authorities.

A National Water Resources Council assists and gives advice in water-related matters to the Ministers requiring such advice. The Council also assists and controls in the effective performance of duties of the water authorities and must elaborate a scheme for training and education in water-related functions. The Council consists of a chairman appointed by the Secretary of State, the chairman of the water authorities and other members appointed by the Secretary of State, and the Minister of Agriculture, Fisheries and Food.

There are nine regional water authorities in England and one in Wales. The area of a water authority may be different for the performance of different functions, but the intent is to organize around natural watersheds where possible, with, however, alternations in the boundaries where social and economic reasons prevail. Water authorities are presided over by a chairman appointed by the Secretary of State, and consist of two or four members appointed by the Ministry of Agriculture, and a variable number of representatives of the local population. The Water Authorities provide an integrated control system for water within the confines of national policy laid down by the ministries and can take every necessary action to insure the best use and administration of the water.

France

In France, water is considered a source of life and the legislature has admitted, with reluctance, the private appropriation. Common rights have been readily recognized in favor of the riparian owners of water courses. The need to legislate pollution control has produced a major change in the system of water law as well as in the system of water administration. France has abandoned the old system of water classification which deemed navigable waters to be public. Presently, water resources can be declared public when vital to the socioeconomic well-being of the population. Water can also be declared public for agricultural, industrial, domestic, and navigational uses, as well as controlled due to their damaging potential.

There are also "mixed" water courses in which the waters are public and the beds are private. Public and mixed water courses are part of the general category of public waters. Private waters are a residual category consisting of what is left after the former two categories have been determined. Flowing, nonpublic waters are subject to common use. Authorization is required, for the use of public waters and navigation always has preference.

Private property rights are recognized in springs and underground waters, with some important limitations. For example, a landowner cannot make free use of spring water arising on his land when it is used by towns or for other domestic needs. The use of underground water is subject to health regulation and the right to underground water is only acquired for the withdrawn water. The consequences are quite similar to the application of the English Absolute Ownership Rule.

France has also developed an extensive system for protection of water against pollution. Water administration at the national level is spread among several ministries due to the public or nonpublic nature of the waters because of the uses to which they are dedicated. For concrete management, it is unified at basin level. Interministerial coordination is carried out by the Ministry of the Quality of the Human Life (Decrees of March 2, 1971, and June, 1975). The important decisions are taken by the "Interministerial Committee for the Action for Environment." Final decisions or arbitrations are taken up by the Prime Minister. At the basin level water administration is carried out by Basin Agencies in which local interests have representation.

Spain

Spanish water law proclaims that all water flowing in natural beds is public property. The category of flowing water is widely interpreted to include large and small rivers and arroyos. Spring water flowing in natural beds is also considered public. Also classified as public water, fluent or not, are waters located on lands of the public domain, or lands affected by public water works. Water which does not flow in natural water beds and is located on private land is private property. The Spanish water law thus combines two criteria: (1) water flowing in natural water beds is public; and (2) if the water does not flow in a natural water bed, its condition depends upon the legal conditions of the lands in which it is located.

The allocation of public water for individual or private uses is by concession from the Ministry of Public Works. These concessionsor permits are not required for limited domestic or natural uses such as water for thirst and washing, but are a necessary prerequisite to special uses and development. The priority in allocating water to these uses is set out in Article 160 of the Water Act of 1879, in the following order: towns, railways, irrigated agriculture, navigation channels, mills and other factories, and aquatic life and habitats. Public waters are totally administered by the Ministry of Public Works through the Directorate of Water Works. The country is divided into ten basin administration entities which provide logical management consistent with the natural flow regime.

The Agencies for Water Administration at basin level are: the Water Commissioner and the Hydrographic Confederation, integrated by the individual users; Communities of Irrigators; and Central Syndicator of the Basin. Through this system or organization, Spain has harmonized decision making at central levels with participation by local water users. Central decisions are conveyed in each river basin through the Water Commissioner. User and local institutional inputs are furnished through the Hydrographic Confederation. Disputes on water can be solved by Special Administrative Courts, by the Civil Courts, or by the Criminal Courts, depending on the kind of issue.

In spite of a very workable system of water allocation and management, it is important to note changes in the Spanish law. Conditions and demands have developed so significantly in the country that with technological advances

the law must evolve to a new plateau. Presently, a draft of a modern Spanish water code is being discussed. The discussions emphasize the two major deficiencies of the old law--conjunctive use of ground and surface water and integration of water quantity and quality control.

Water Law in the United States

Water law in the United States is a complex federated system. National and state water laws exist for both the water quantity and quality aspects of this resource. At the national level, jurisdiction over water originates with the Constitution. The Property, Commerce, General Welfare, Treaty and Compact Clauses provide the basis for national involvement in navigation, pollution abatement and allocation and management of water resources. Particular laws have been enacted to provide the substantive control and organizational structures to carry out national policies and programs.

State water laws are less cognizant of the hydrologic aspects of water resources. Each state, being an autonomous political entity, has the right to develop policies, laws and organizations according to local and state needs. Thus, there are 50 separate water law systems for quantity and quality control. The resulting lack of uniformity causes many conflicts.

The use of water depends upon the state systems of water law and ranges from common law rights under the riparian doctrine system, to a permit, license or decree under the prior appropriation system. Under the riparian doctrine, one has a right to a reasonable use of water by virtue of the location of his land adjacent to a stream or lake. In constrast, land location is immaterial under the prior appropriation doctrine; unappropriated water can be applied for and the water directed, transported and used within and outside the basin of supply. A specific quantity of water per time of case is granted along with other conditons of use to protect other vested rights. A form of contract water rights is also becoming increasingly popular.

The past decade has witnessed the emergence of national involvement in water management for national and regional interests. Our mobile society, industrialization, energy development, increased needs for food and fiber, the relationship between water use and the various economic sectors, and new technologies have brought about this involvement. States face the same issues at a more

concentrated and grass roots level. They have been experiencing a significant evolution in their quantity and quality control laws with an emphasis upon developing planning and management capabilities to make conscious decisions based upon an evaluation of alternatives, impacts and opportunity costs.

Water administration at the national level is under the jurisdiction of the Water Resources Council and a multitude of ministerial level departments and departmental agencies, bureaus, and authorities. State administration proceeds hierarchically from central control at the political jurisdictional level down to hydrologic units within the state. Normally water quantity and quality control is vested in different agencies. The water law systems in the United States are still a dynamic and evolving state the fate of rapidly changing conditions.

Asian Systems

There is great variation in the water law systems in Asia. This topic was discussed in 1967 at a meeting sponsored by the ECAFE. In a paper prepared for the International Conference on Global Water Law Systems[4], Professor Clark of Australia reported the following:

> Water legislation in Asia has been profoundly influenced by Common Law, Civilian and Roman-Dutch models. There is thus great diversity in the theoretical bases for water administration, but a common pattern of relying on administrative bodies to allocate and adjust private rights to use water. In this sense, systems of judicial apportionment of rights, through litigation, are most uncommon.
>
> There is remarkable similarity in the techniques used for granting and controlling rights to water, although the primary emphasis of the legislative schemes naturally differ with the hydrological problems encountered. There is increasing reliance on techniques of multi-objective planning, but care must be taken in adapting systems of environmental planning to the different economic and social goals of developing countries.

The range of features in water laws in Asia extend ownership from state to public to private; acquisition of

rights according to custom without administrative intervention to systems granting permits or concessions; allocations according to a nonpreference or to limited preference of user classes; and administration under centralized to decentralized systems. A major concern of many systems is with water removal as in flood and drainage programs rather than water allocation.

Summary

Global water law systems illustrate a wide range of approaches toward allocation, distribution and regulation of the resource under diverse conditions. Ownership of the resource extends from state ownership to public ownership in the vast majority of countries to some private ownership as found in Spain and other countries. Often lacking of a water policy ownership which provides the orientation of control and management for the government agency administering the laws. It is recommended that the "policy" be given serious attention in any attempt to stimulate water use efficiency and promote formation of collaborative efforts among water users[4] held in Valencia, Spain, September 1975. It is the water policy that reflects the position and direction of the government in the development and control of the resource and sets out guidelines for agency personnel in administering the law. Allocation of water likewise varies considerably, ranging from no evidence of a right, to customary rights, to government concessions in the form of customary rights, permits, concessions, licenses, titles, or court decrees.

The success of the public irrigation program depends partly upon the assurance of continued water availability to the water users. Without this assurance water users may be unwilling to invest time and money beyond their present practice. While the assurance or right or privilege should be definable and dependable, it must also be flexible to react to changing demands and technologies. Water laws, therefore, play an important role in improving water use through public irrigation improvement projects.

WATER USER ORGANIZATIONS

Organizational arrangements for water users commonly receive insufficient attention in government efforts to improve water management. More often, technical solutions are offered to solve water users' problems. Although these efforts often result in immediate and substantial benefits to the farmer, provided he can afford the capital investment

or is subsidized, they create a continual dependence upon technical solutions. The farmer as an individual has not fully explored the benefits of either natural or acquired forms of social interaction in the utilization of his scarce resources.

The formation of water user associations is an alternative to a purely technical solution in many countries. "Water user association" refers to any pattern of farmer-to-farmer or farmer-to-governmental agency entities, designed to facilitate water delivery, application and removal. These entitites have enabled farmers to optimize water use efficiency by adding flexibility to his application scheduling, sharing costs of an improved delivery system, and preventing unnecessary water removal problems. As with water law, not just any structural pattern should be adopted. There exists a wide variety of associations with varying degrees of success. The organization should be structured within the context of the existing legal, social, economic and cultural framework, rather than simply replicate an existing organizational pattern.

The discussion on water user associations is directed toward two topics. The first concerns certain legal aspects of such entities, and the second focuses upon suggested factors and guidelines to be included in their formation.

Legal Aspects

Three key legal features of water user organizations are legal status, organizational range, and assocation jurisdiction and government control.

Legal Status

The legal status of the water user associations depends on their conditions for formation. They can exist as either "de jure" or "de facto." "De jure" associations are allowed to contract, vested with legal rights, and are subject to legal aspects duties. In "de facto" associations, the rights and the duties, legally at least, pertain to each particular member of the association. Without "de jure" existence the association is then more a scheme for cooperation. Where these "de facto" associations exist, they should be formally recognized by law.

Most "de facto" associations are based on customary patterns resulting from man's efforts to control his environment. They are deeply rooted in their founding societies and are more real and important than any legally created body. Often they can be used as bases for successive and successful institution building. Two good examples are presented in the Paddy Lands Irrigation Ordinances that the British enacted for Sri Lanka in the last century and by the Indonesian Laws which recognized the customary "Subak" system of Bali.

Water user associations which have "de jure" existence--i.e., when they have a legal status--can be private, civil, public, or administrative in nature. In Mendoze, Argentina, they are regulated by public law. The same solution applies to Chile, Peru, Mexico, and most European countries. In the United States, there is considerable variability; associations can be private, quasi-private, quasi-public, and public. In Spain, water users associations are regulated by administrative public law.

Organizational Range

Water user organizations range from private to public, simple to complex, and single to multipurpose entities which either maintain a distinct existence or function at a particular level in a hierarchy of associations.

The first category pertains to the legal status of the organizations as either private, quasi private/public or public entities. The significance may be minimal in most countries where governments are actively involved in the allocation and management of water resources. Usually, the private and quasi-private entities have only a minimal responsibility to the government water agency or the public, while the public entity would obviously be more publicly responsible and under more direct control by the government.

Private organizations exist in a few countries, most notably in the United States and Italy. At the local level in the US, there are three distinct private organizational entities designed to accomplish water resources development and management within a system. Ranging in degree of private sponsorship from highest to lowest, they are the commercial irrigation or ditch company, the mutual irrigation company and the voluntary association.

Commercial irrigation companies are organized by entrepreneurs for profitable conveyance of right holders'

water or for the conveyance and sale of water owned or controlled by the company. Mutual irrigation companies are operated by water users for their express benefit and may or may not be incorporated. One of the most striking attributes of mutual irrigation companies is the ease with which they can be created. As private organizations, they need only follow the general corporation law of the state in which they incorporate. Since they are private enterprises, they are not required to conduct public hearings, hold elections, or publish reports of feasibility studies. Membership is on a voluntary basis.

Voluntary associations have similar objectives to mutual irrigation companies but their foundation is less on legislative enactments and more on custom. Such organizations are groups of water users informally associated under written or verbal agreements. They are not organized under state corporation laws and normally do not issue stock. Despite their lack of formal standing, their simplicity in structure and flexibility in operation make their use highly desirable in many countries.

The most common form of water user associations are those which are governmental subdivisions. These associations can exercise only those powers which they have been legislatively delegated by the central government. Collectively, publicly formed water user associations cover a broad range of functions for public water resources management. Because there are so many varieties of public water user associations, and so many of them have been given combinations of functions unique to their country of origin, it is impossible to define a specific role that they play in the management of water resources. Some are simple, small organizations servicing the water needs of only a few people within a highly localized area. Others are as powerful and important as civil governmental units and affect the living and working conditions of many people.

The best way to examine an association's role in water resources management is to note their typically dichotomous position within the structure of government. They may be (1) independent units of local government and (2) operating units for intergovernmental programs on the local level. In the first capacity, water user associations function as autonomous units of government, subject to whatever role and limitations the parent government has imposed on them, within a specific geographical area. In their second role, public water user associations give local people an opportunity for self-government through varying degrees of supervision, control, and technological and

financial assistance while managing water resources as local operating units for national programs. This example of intergovernmental cooperation is typical of the spectrum of public water user associations.

Organizational patterns range from simple structures serving few users within a local area, as is the case for the communities of water users of Mendoza, Argentina, to complex organizations which manage water use within a river basin or national water system and supply water across the spectrum of water uses for agriculture, municipal and industrial use, as is the case in Taiwan, Mexico and West Germany. The complexity of the structure is a function of geographical size, number and type of water users, size of individual holdings, physical availability of water supply, and the intricacy of the legal system within which the organization must operate.

Water user associations are formed for a wide range of purposes. The most common is the delivery of water for seasonal application in the production of crops. In some systems, the association is concerned with cultural practices related to the application of the water in methods which reduce soil erosion and salinization. They may also concern themselves with cultivation practices, selection of seeds, and other areas of concern to agriculture.

Where the economic base of a country is more complex and the agricultural sector is not the major area of economic emphasis, water user associations are created for the purpose of protecting wildlife and fish habitats and distributing water to municipal and industrial users. Most commonly, these organizations focus on providing a stable supply to irrigators. However, it is not uncommon to find that water user associations also play a role in drainage, flood control and water quality.

Association Jurisdiction and Government Control

The position of the local water user association in a formal or informal hierarchy of water user associations often depends on whether the association has been formed voluntarily by the users in the area, or if the central government has created the subdivision by decree and membership is compulsory. In the former situation, the local group may operate autonomously and may organize itself without regard for political boundaries. It may form a loose confederation at higher levels of government to see that members' needs and interests are expressed to the appropriate government entities.

In the latter case, organization and control of local associations will follow stricter rules for operation. Structuring of the association often takes place "from the top down" and the hierarchy of associations often parallels the divisions of civil government. Operation of these groups is described by political boundaries and interdependency of the various levels of the association hierarchy. Although some flexibility is lost, communication, planning and implementation of government policy are improved. Diffusion of technical and financial assistance may also be facilitiated.

Under jurisdictional control, the association has authority over those lands which are served or benefited by the activities of the association, i.e., lands irrigated by the canals and ditches of the association. Final governmental approval of the area of jurisdiction is used in most countries to avoid overlap in areas controlled by two or more associations.

There are two common procedures for determining the spatial powers of the association. These are (1) the arbitrary establishment of an area of activity, or (2) a more flexible system in which the area of authority varies with the area affected or benefited by irrigation works, or in accord with the size of the areas in which the waters subject to the authority of the association are used.

Minimum size, rather than maximum is a criterion of the Philippine system. Unless the association will service an area of 25 hectares it cannot be formed. Other countries use the size of the area to be served to determine the level of the association in the total national hierarchy of water organizations. This is the case in France and Taiwan.

Government control of water user associations varies according to the stage of development of the association and the level of its operation, whether national, regional, or local. Control may be through statutory means or through initiative by government officials.

Government control should be present during the process of organizing water user associations. Enabling legislation can provide for the method and form of organization. These procedures must be complied with in order to give the force and effect of law to the later efforts of the association. In the later operation of the association, legal requirements must still be met and a different type of government control may now extend to the regular activities of the association. Such a practice is most common in countries which have recent

undergone agricultural reform programs and where association are promoted "from the top down" rather than developing from the grass roots on "bottoms-up" level. This control is typically applied to the budgetary operation of the association and to the annual repair work performed on the distribution system.

Issues and Guidelines

Several issues should be addressed when attempting to form water user associations. These include the following questions:

1. What are the water and other resource development policies of the country?

2. What types of organizational structures currently exist, if any?

3. If organizations exist, are they institutionalized or coincidental, de facto or de jure?

4. What incentive exists for creating or improving a water user association?

5. What are the land use and tenure systems?

A distinction must be made between improving upon an existing system or developing a new system of water user associations. The former requires:

1. A state-of-the-arts assessment of existing local water user organizations, and all entities related to water control, use, and agricultural activities. The rationale for this assessment is to acquire an understanding of the pragmatic operation and to identify potential impediments or complexities to improving water user associations.

2. Evaluating the goals and problems of coordination of existing or proposed methods.

3. Determination of the degree of flexibility in formulating a complete system of administration consistent with national or regional policies and development programs (from the "bottom-up grassroots form of organizational structure).

Introducing a new system of water user associations requires:

1. Evaluation of national and subnational water and related resources and socio-economic goals, policies and laws.

2. Determination of the degree of flexibility in formulating complete system of administration consistent with national or regional policies and development programs (from the "top-down" form of organizational structure).

Water user associations are formed by one of two methods. First, it is possible for water users to establish such an organization on their own initiative. Generally, this method is provided for by enabling legislation which creates the structure for, as well as the method of organizing the association. However, there are examples, such as that of voluntary association in the western United States, where collective action has developed without formal governmental approval. When an association is organized according to the provisions of an enabling act, the typical requirements are that at least a majority of the landowners or operators present a petition stating such things as the area of jurisdiction that the association will have, the membership roll, the purposes for which it is being organized, and the bylaws of the association for internal operation. The petition is submitted for approval to a court or administrative agency of the government. If approval is granted, the association begins operation and the information in the petition becomes binding for petitioners and nonpetitioners.

Secondly, the central government may wish to establish water user associations according to a general plan for the nation or region or in an area where water shortage require stricter controls on water use. In this case, the government may have authority to assume the initiative under the same enabling legislation which provides for individual action at the local level. However, the creation of water user associations, as management units in some countries, is entirely the province of the federal executive. In such state-created systems, membership is compulsory for all operators in the jurisdiction of the association.

Water user associations can be formed either by individuals or legal entities. Membership can be voluntary or compulsory. Often, a minimum number of water users is required. In some cases, special qualifications are required to be a member or officer of the executive body of the

association. Some countries require that membership be composed entirely of private land owners, while others permit non-landowners and government officials.

Upon formation of a water user association, membership in the association is generally compulsory for those who will benefit from association efforts. A few systems, such as those in Mendoza, Argentina, and the United States, provide methods for the minority who do not wish to participate financially in the association to seek judicial review of the formation of the association. Membership entails certain responsibilities as well as rights. Full participation in activities beyond payment of dues and other financial support may be conditioned upon literacy, land ownership, or age.

Water user associations are conferred specific powers of varying scope and class to carry out their commitments. In some countries, they can enact regulations which are legally binding on their members. In other parts of the world, they administer the distribution of the waters but do not enact regulations. In Spain they can be recipients of water concessions from the central government. Spanish water user associations also have judicial functions.

In most countries associations can raise revenues, and generally have the necessary powers to assure continuity and unity of control over water distribution and maintenance and repair of water works. They might be given powers of eminent domain to condemn private property. They can also undertake the construction of new water works. In this respect their role is variable. For example, in Mendoza, Argentina, they are limited to minor improvement works, while in Germany they may construct reservoirs and hydroelectric stations.

The powers of a water user association are granted by the central government, although some examples exist in the western United States of associations exercising authority under contract and corporate law. Generally, associations are given the power to provide for the regulation of water delivery and the construction, repair and maintenance of the systems. Associations are given the authority to promulgate regulations for internal operation and to set tax or assessment rates for financial support of its activities. In both instances, approval by a higher level of government may be required before the association can enforce these actions upon its membership. Another standard feature is to empower the association to hire employees or other officials of the association to conduct the day-to-day business of the association.

The authority to resolve disputes between members has been granted to associations in some countries, notably Spain, and this power may be exercised in some judicial capacity or by having the association arbitrate the dispute. Another interesting power is the right of the association to exercise the power of eminent domain to condemn private property in the form of land or water rights. Some countries provide that compensation must be paid for the property taken, while other systems allow for expropriation without payment.

Where the authority of the association is derived from a grant of the central government's police powers, the association cannot go beyond those powers and those powers not given the association are reserved for the central government. In the exercise of its powers, the association is generally permitted to impose sanctions or penalties on members who refuse to comply with association regulations. These sanctions can take the form of fines or other means such as loss of water service or water rights. Where such sanctions are allowed, a rational system includes the right to appeal the ruling at a higher level of authority.

Exercise of the legal powers given to the association and other expressions of collectively made decisions require a system for polling the association's membership. The most common form of collective decision-making is for members to express approval or disapproval of proposed actions by voting.

The numbers of votes which a member can cast vary from system to system. It is not uncommon for voting to be in direct proportion to the number of acres or hectares which a member of the association has under irrigation or to the amount of water which a farmer has a right to receive. In Spain, for example, a person has as many votes as units of water right.

In other countries voting power has been regulated in order to avoid dominance by the big landowners. In some countries namely Japan and the U.S., a one-man one-vote rule is applied regardless of the water rights; in others, a maximum number of votes per capita is set and, yet, other systems try to balance by giving everybody a minimum number of votes to start with. For example in Mendoza, Argentina, voting rights are regressively proportional to the amount of irrigated land that each landowner has. There is a minimum amount and a maximum number of votes. The number of votes each irrigator has is proportionate to the number o hectares he has under irrigation on a graduated basis, r

a maximum of ten votes. The Austrian system equates voting power with the amount of financial contributions to the association.

Not all decisions need to be made by the collective action of the association. Purely administrative matters should be left to the discretion of officers or employees of the association with the opportunity to review them at the next regular meeting of the association.

The methods which water user associations can use to finance their operations is directly related to the sources from which revenue can be obtained. The most common practice is to place the entire burden on the members of the association in the form of charges for the amount of water used or to levy taxes on the assessed valuation of the land owned by the irrigator. Payment is generally in monetary form; however, some countries allow farmers to make payment in-kind by working at a set rate for the association. Although rates or levies may be set by the local association, government approval before revenue can be collected is a common feature with many systems. Loss of water or other sanctions can be imposed against those who do not meet thier obligations to the association.

CONCLUSION

The efficient and effective utilization of water resources is rapidly becoming a major topic in all nations due to increasing demands for food, fiber and energy. Agriculture is the largest diverter of water. It is consequently a potential candidate for governmental action programs designed to improve the use of water and thereby to either expand the irrigable acreages or reallocate the saved supplies to other sectors of the economy. To carry out such programs, however, requires the mobilization of agricultural water users into some organizational entity through which the government can implement and assist the desired changes. These entitites are best described as water user associations.

The prime objective is to enable the water users, individually and collectively, to improve themselves and provide the governing body with appropriate feedback so that realistic policies and programs can be formulated and implemented. Water user associations can function as the forum for farmers of any size land holding to realize and identify the importance of their role to their nation.