ACHIEVEMENT OF GOALS THROUGH EFFICIENCY
IN WATER RESOURCES PROJECT MANAGEMENT
AND USE OF WATER

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of paper prepared by ECAFE Secretariat

To introduce Agenda Item 6

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It is my sincere pleasure at the request of Mr. P.T. Tan, Chief of the Division of Water Resources Development, Economic Commission for Asia and the Far East, to introduce the next topic on the agenda. This topic is identified as agenda item 6 and entitled "Achievement of goals subsequent to project construction: Efficiency in water resources project management and water use."

Two background papers were prepared by the ECAFE secretariat related to this agenda item. I hope that each of you received copies and have had an opportunity to review them.

Prior to the presentations of the supplementary papers let us review the subject and some of the major factors which cumulatively affect efficiency in water resources project management and water use.
I. INTRODUCTION

The history of water resources development is studded with projects that have not reached the goals envisaged by project planners or were unduly slow to reach them. A project goal is defined as the quantification of a project objective or purpose in concrete terms.

Water resources projects are initiated for one or more specific purposes and may include the production of hydroelectric energy; increased agricultural production; the provision of domestic and industrial water supplies; protection against floods and sea-water intrusion; improved navigation; the improvement of fishery production; and the control of erosion. The goals to be reached under each of these headings are usually laid down in feasibility reports in quantitative terms. The extent to which project goals are achieved within a specified period is a measure of the benefits attributable to the project, the economic feasibility of the project.

Major water resources projects are costly and place a heavy burden on national financial resources until they recover a substantial share of their cost. The financial resources of developing countries are usually strained to the utmost. It is imperative therefore that goals be reached with a minimum of delay so that projects may contribute towards the
improvement of the economy of the country instead of being a drag on the economy.

Efficient management and use of water is essential in reaching project goals according to schedules envisaged by planners, the economic feasibility of the project depending very largely on strict adherence to prescribed schedules.

II. WATER MANAGEMENT AND USE PROCEDURES APPLICABLE TO ALL PROJECTS

Some procedures leading to efficiency in water management and use are of a general nature and applicable to all projects regardless of their specific project purposes. Such procedures must be governed by prevailing economic, social, institutional, and political conditions.

A. Leadership

Organizations entrusted with the management of water resources projects must provide the leadership needed to ensure that once a project is initiated the facilities provided will function properly and project goals will be met as scheduled. Without good leadership, even soundly-conceived and promising projects may fail to attain their stated goals.

B. Organization

A sound organization is one of the prerequisites of good management. Such an organization must be large enough to undertake the various operation
and maintenance tasks without superfluous personnel. Responsibilities and duties should be clear-cut and meet a recognizable functional need. Personnel policies should encourage loyalty to the organization and efficient workmanship while also providing incentives and avenues for advancement.

C. **Budgets for management**

Most projects operate on an annual budget that must be prepared and approved well in advance of the fiscal year. Budgets are usually based on the expenditure of the previous year's operation, adjusted to reflect anticipated changes. Since the budget controls to a considerable degree the operation of a project, the preparation and presentation of the annual budget is an important element in project administration.

D. **Standard operating procedures**

The day-to-day operation of a water resources project is a routine matter. All project organizations should develop standard operating procedures and in time formalize them in operating manuals. Care must be exercised to ensure that in the course of time the procedures drawn up do not become so restrictive and detailed that they become burdensome. Standard operating procedures cannot cover all possible contingencies and are not expected to replace initiative on the part of project personnel in dealing with unforeseen eventualities.
E. Reports and records

Reports and records are essential in the operation of any water resources project. They should be carefully prepared to fit the needs of each project and limited to those elements needs for efficient operation. The format of most reports and records and instructions are usually included in standard operating procedures.

Some of the more important records and reports pertain to the supply of water. Measurements must be made and recorded of the amount of water entering the project area, its storage, diversion and delivery, and of the amount leaving the project area.

Records must be kept of the cost of operation and maintenance including the costs associated with personnel, equipment and supplies.

Annual reports summarizing each year's operation are useful in the continuing operation of a project.

F. Education, training and information

A well-balanced education, training and information programme will often go far in increasing the efficiency of project employees and the acceptance of the project by water users and the general public alike.
Programmes of this kind are particularly necessary where a project affects users other than project beneficiaries and in particular where the project changes the regime of the river and alters the available water supply.

G. Miscellaneous programmes

Amongst other items that contribute to the efficient management and water use of a project are the co-ordination of programmes with other agencies involved in water resources development; a continuing safety programme; provisions to meet emergencies arising during the operation of facilities; inspections designed to ensure operational adequacy; and the provision of an efficient communications networks for the timely operation of facilities.

In the majority of countries in the ECAFE region, the construction and operation of irrigation projects are under government agencies that have no direct responsibility for agricultural development. Farm credit may be under one agency, marketing under another. Services required by the project in respect of meteorological and hydrological conditions, flood warning, communication and transportation, may be under other agencies. A programme co-ordinating the activities of all these agencies in the interest of a particular project is necessary but is neither easy to institute nor easy to administer.
Most project organizations recognize the need for an active safety programme during construction but few pay much attention to safety thereafter. Personnel operating facilities and equipment should never be allowed to ignore safety precautions. As many employees and water users are unfamiliar with the operation of new facilities and equipment and unaware of the potential dangers involved, an active safety programme is required at all times.
There is a tendency for operating personnel to ignore or accept the gradual deterioration of facilities until they seriously impair project operation. At that point, corrective action may be costly and the operation of the project still further impaired. A formal periodic inspection of facilities by senior officers together with technical and operating personnel will often reveal deficiencies in time for early corrective action. A periodic inspection also provides an opportunity for operating personnel to discuss problems with technical personnel, generally to their mutual benefit. Such a periodic inspection loses much of its effectiveness, however, if not followed by a maintenance programme to remedy any deficiencies noted.

An effective communication network is needed to carry out efficient operation, to meet emergencies, to reduce the travel time of maintenance crews and to aid the marketing of agricultural products. Weather reports, flood warnings, market prices and farming information, disseminated regularly by communication media, contribute materially to the efficiency of project operation.

III. WATER MANAGEMENT AND USE PROCEDURES APPLICABLE TO SPECIFIC PROJECT PURPOSES

The following suggested practices apply to specific project purposes, more especially under the social and economic conditions prevailing in the developing countries of Asia and the Far East.
Sufficient time has now elapsed, since the construction of some projects, to establish that they are falling well behind planned goals and accordingly much thought is now being given to the underlying causes of delay and to ways of eliminating them.

The practices presented are of a general nature and may serve as a guide when considering individual projects.

A. Power Projects

A well-conceived hydro-power project lends itself well to efficient management. The components of storage dam, power plant and transmission line system are similar the world over. Methods and procedures of operation have been extensively studied and standard operating procedures have been devised and tested. A power project, while requiring certain operational skills, is comparatively simple in function and has a readily-marketable product that is easy to measure.

Even so, hydro production is subject to the vagaries of the weather. Streamflow is seldom completely controlled by storage and projects must sometimes share or compete with other water users for the available supply. During droughts competition for the use of the reduced flow is heightened and planned production is difficult to maintain. There are several well-documented means of coping with problems arising from water shortage and agreements and procedures may be worked out to meet abnormal situations in many parts of the world. Management must take advantage of all available means of forecasting streamflow.
Special problems are encountered in developing countries in addition to those common to hydroelectric power projects in developed countries. Some of these are referred to below, along with the action required to minimize their effect on operation and maintenance.

1. **Inadequate access**

Poor and inadequate access roads restrict efficient operation and maintenance, particularly during the wet season when emergencies are most likely to occur and prompt remedial action is necessary.

Programmes for the gradual improvement of access to all facilities and the upgrading of equipment should be included in maintenance budgets. At the same time, government agencies responsible for transportation should be contacted and encouraged to expand their construction and maintenance programmes within the project area. Arrangements should be made for the use of communication media during emergencies.

2. **Shortage of skilled personnel**

Shortages of skilled personnel for power plant operation and maintenance may be overcome by recruiting skilled personnel in the first instance, then by training construction personnel to replace them through mandatory and effective on-the-job training programmes.
3. **Difficulty in obtaining spare parts**

Spare parts for power project facilities generally have to be imported. Consequently, power projects in developing countries must keep a larger stock of parts than is normally found on projects in developed countries. Good maintenance and frequent inspection will minimize the need for emergency procurement of parts. When breakdowns occur and spare parts must be obtained on an emergency basis, every effort must be made to obtain them quickly, regardless of relatively higher cost. The prolonged shutdown of a unit may severely restrict production and cost the project many times more than the cost of the replacement parts in lost revenue. Alternative sources of power supply to tide over the emergency should be explored.

4. **Labour-intensive practices**

Standard operating procedures for power projects in developed countries generally involve a limited number of highly-skilled personnel combined with labour-saving machines and equipment. In developing countries these procedures should be modified wherever possible in favour of labour-intensive practices which minimize the use of machines and equipment and require nothing in the way of foreign exchange. A training programme to improve the skill and effectiveness of the labour force is desirable on all projects.

5. **Interconnexion of power plants**

A power project can usually be operated most effectively when it is connected with other projects to form a power grid. This is especially true
of hydro plants which can be used to provide peaking capacity for limited periods and secondary energy during sustained periods of high flow. In the initial stages of development hydra plants often function in isolation; power is wasted in wet years and is short in dry years. It is the responsibility of management to ensure that power projects, both hydra and thermal, are linked together as soon as it is feasible to do so.

6. **Limited hydrological data**

Limited hydrological data may impair the accuracy of run-off and power production forecasts. To remedy this deficiency, project management may authorize the installation of more gauging stations and adopt a conservative attitude in the use of project water to ensure continued production. As more hydrological data become available and the characteristics of the watershed become better known, a more liberal policy can be adopted in the interests of increased production and release for other uses.

B. **Irrigation and drainage**

The efficient control of water in the field, that is to say, the provision of water and the removal of excess water in the right amount and at the right time, are the essence of successful irrigation and drainage. Water control is simply a means to an end. Before the goal of increased agricultural production can be reached, the water supplied must be used wisely and effectively in conjunction with other farm inputs.
The concepts of planning, execution and management evolved in developed countries normally limit irrigation facilities to the provision of water for sizable farming tracts, with drainage canals to remove excess water.

The planning, construction and operation of irrigation and drainage projects in developing countries have at times been based on western concepts without full consideration of prevailing local conditions. Where the water authority retains full control of the resource, from inception of the project to the attainment of project goals, as in hydro and water supply project, the managerial practices evolved in developed countries are generally applicable in developing countries. On irrigation projects, however, where the water delivered must be utilized effectively by individuals or by groups of farmers before project goals can be achieved, managerial practices must usually be modified or supplemented to suit local conditions. The smallness of farms operated by subsistence farmers in developing countries, following traditional practices unchanged for hundreds of years, presents managerial problems no longer found in developed countries.

Many of these problems are outside the control of the irrigation authority. This makes their resolution all the more difficult. A long view must be taken of agricultural development and plans must be prepared for progressive advancement. It is unrealistic to expect the immediate
attainment of goals, for change comes slowly. Some of the problems and the steps management may take to resolve them are discussed below.

1. **Building up an effective water users Organization**

   The basic units of an effective water users organization should preferably include representatives of existing organizations such as village councils and similar political or administrative bodies. Initially, the village councils or other bodies comprising the association should be made responsible for the operation of water control facilities within their respective areas and for the maintenance of facilities. This arrangement can be initiated by requiring each council or other body to designate one of its members to represent it on the association and to take charge of the delivery of water to various areas. From this modest beginning, the activities of each unit and the embracing association can be expanded.

   As soon as it is capable of doing so, the association should handle the various activities stemming from other government agencies active in the agricultural field, particularly those responsible for farm inputs such as improved seeds, fertilizer and insecticides. The association might well sponsor co-operative marketing and purchasing. It must be recognized, though, that water users organizations grow quite slowly in effectiveness because they are composed mainly of subsistence farmers who are unused to acting collectively much beyond the borders of their own farms except for the trading of labour during planting and harvesting.
In the long run, the attainment of irrigation and drainage goals rests with the water user. The water authority must first ensure that its facilities are properly operated and maintained, then seek the active participation of water users within the project area. The water users, in turn, need a co-operative organization to speak and act for them.

2. Providing water control at the farm level

Projects in many Asian countries have followed the accepted practice of the more developed countries in delivering water to tracts of land varying from 50 to 100 hectares, in anticipation that farmers within the tracts supplied would provide their own means of delivery of water from project turnouts to individual farms. In many instances, it has been found that farmers of small holdings were not receiving the water as anticipated, nor were they utilizing it to the maximum advantage. They were not prepared to act collectively or organized in such a way that they could; and many failed to understand how irrigation could improve their production. Frequently, they lacked the resources needed to control the water delivered to their farms.

Where control facilities are provided to farms, their operation and maintenance should be closely supervised by project personnel until a pattern is established; then it can be taken over by the farmers themselves. Wherever possible, control facilities should include a turnout to each farm and drain to remove excess water.
3. **Co-ordinating the supply of farm inputs and the marketing of products**

Once water control is instituted other farm inputs can be employed to maximize production. Improved seeds, fertilizer and insecticides, like water, are needed at the right place, at the right time and in the right quantities. These may come from the private sector, from government agencies or from both these sources. It is the responsibility of the water authority or the co-operative association connected therewith to co-ordinate the supply and application of these inputs.

4. **Educational and information service**

Management's most challenging task is to change the primitive, often mono-cultural practices of a low income, tradition-bound, under-employed farming community to the more-demanding and at the same time more-rewarding practices necessary to reap the benefits of modern irrigated agriculture. Project efforts in this regard must be supported by the efforts of allied agencies. One of the more effective means of improving production is to employ agents to instruct farmers in agricultural techniques, coupled with demonstration farms and plots through the medium of which farmers can see for themselves the results of improved farming practices. An educational programme directed towards farm consolidation can assist in the gradual elimination of non-contiguous plots through exchange and re-allocation programmes. This is of necessity a long-range task. It may take a great deal of effort to consolidate holdings in the majority of project areas. Education and information services should start long before a project is ready to go into operation, to enable farmers to make the maximum use of it from the moment of delivering water.
5. Improvement of access roads

The development of infrastructure within an irrigation area is normally the responsibility of agencies other than the one responsible for water. Outside agencies must be encouraged to maintain and improve infrastructure as the agricultural productivity and economy of the project area rises. The operation and maintenance programme can be greatly improved by constructing feeder roads along canal banks and bridges across canals, making possible the timely delivery of equipment and supplies required during periods of emergency. The gradual upgrading of access roads to all-weather standard is the ultimate objective of this effort.

C. Flood control

Flood control projects utilize embankments or storage reservoirs to minimize flood damage. Projects utilizing reservoirs for control are almost always multipurpose in function and are accordingly treated under the heading of multipurpose projects.

Flood control projects afford protection to the public over more or less extensive areas and are usually financed by the Government. Their operation is normally the responsibility of a Government agency which in turn delegates this authority to an organization established for the management of the project.
1. Forecasting flood discharge and stages

The ability to forecast flood levels far enough in advance to carry our emergency preparations is an essential element in flood control. It is moreover the basis for important decisions involved in the operation of multipurpose storage reservoirs. Where physical conditions and/or costs prevent the installation of flood control works, the need for flood forecasting is even more important. Flood forecasts and warnings must be timely, complete and accurate if they are to serve their purpose.

An adequate hydrometeorological network is required to permit the preparation of timely, complete and accurate forecasts. It is essential too that an effective system for disseminating flood warnings be organized.

2. Communications

Many areas have limited telegraph, telephone and radio networks and meteorological and hydrological stations in remote areas are sometimes without means of rapid communication. During critical flood periods the water management authority may have to supplement the permanent system with portable radio sets and automatic transmitters; and the warning network may have to be extended over the area protected by embankments. Arrangements should be made to use police and army communication networks during emergencies.

3. Planning for emergencies

The authority must be prepared to meet emergencies during periods of high flow. The authority must plan to meet emergencies in the safeguarding of embankments and to undertake rescue operations once a breach
has occurred. An item in the form of a reserve should be included regularly in the annual budget for the purpose of meeting emergency demands.

D. Water supply

Water supply projects vary from large complexes serving municipal and industrial needs to very small ones serving villages and rural areas. Treatment of supplies may range from the simple chlorination of well water to the full treatment of polluted surface water. Each project normally includes a source of supply, a treatment plant and a distribution system. Efficient management and use of M&I water should include consideration of the following.

1. Water consumption

Trends in consumption must be watched carefully and the water supply must be adjusted accordingly. Additional pumping facilities may be needed to maintain pressure. Many cities are expanding much more rapidly than anticipated when planning water supplies. The trend must be determined as early as possible and a construction programme worked out to meet the prospective needs.

2. Collection of water charges

The collection of water charges is sometimes difficult, particularly in rural areas where public water supply outlets serve numerous consumers. The heavy expenditure involved in installing pipes and meters for individual consumers may necessitate flat-rate charges and this practice may be justified if water is readily available and cheap.
Water use charges in rural areas are seldom adequate to finance operation and maintenance. In consequence, maintenance is delayed and eventually the supply breaks down. Government subsidies will help to ease the situation but in the long run water supply projects must expect to collect sufficient revenue to pay for future expansion and improvement of supply.

3. Control of waste and pollution

Wastage of water and pollution of supplies are difficult to control, particularly at public outlets, other than by sound design, good construction and adequate maintenance. The best guarantee of performance is a well-organized and knowledgeable operation and maintenance team. To eliminate waste, the metering of individual consumers offers the best solution.

E. Sea-water intrusion control

Sea-water intrusion control dikes are usually constructed with gated sluice-ways at normal drainage channels to permit the discharge of accumulated surface water from protected areas. The gates of these structures are closed during high tide and opened during low tide.

Sea-water intrusion control dikes and to some extent their maintenance must be geared to a daily procedure matching the rise and fall of tides. Dikes must be patrolled continuously and maintenance must not be deferred or allowed to accumulate. Some of the problems associated with projects of this type are outlined below.
1. Evacuation of water from diked areas

During the wet season water may accumulate within diked areas from rainfall, irrigation or runoff from adjacent areas. A carefully co-ordinated plan for the use of water in the project area and its eventual evacuation will materially increase efficiency of the project in terms of agricultural productivity.

2. Communications

Communication is very important during emergencies. Information on imminent dike failure and abnormally-high storm surges must be communicated not only to operational and maintenance forces but also to everyone likely to be affected.

3. Waterborne access to diked areas

Waterways through areas subject to sea-water intrusion are generally used for transportation, sometimes by quite large ships. Locks are required to enable shipping to move freely through diked areas. Fees for the usage of locks are seldom enough to pay for their operation, necessitating a government subsidy. Lock operating schedules commensurate with traffic help to minimize costs, provide the requisite service and contribute to the efficiency of operation. Lock equipment should be as simple as possible to minimize maintenance and enhance reliability.

4. Funding operation and maintenance

Like flood control projects, sea-water intrusion projects have to be financed from Government sources and are subject to budget limitations that sometimes fail to provide for adequate management.
F. Multipurpose projects

Many projects, particularly those involving storage, are multi-purpose in function and scope. The maintenance of such projects is essentially the maintenance required for a set of single purpose projects performing the same functions, though on account of the size and complexity of most multipurpose projects it is usually possible to effect some savings by telescoping maintenance activities.

The main differences lie in the need for a strong central authority to co-ordinate the various project functions and in the control and allocation of water to satisfy diverse and sometimes conflicting needs.

The central authority must be competent not only to handle all these matters but also to take the lead in making the utmost use of the water available, whether it be for irrigation, power supply or domestic and industrial consumption.

The conflict of interest that may arise in the operation of multi-purpose projects usually concerns the releases of water from reservoirs to satisfy the diverse requirements of irrigation, power and flood control. The essence of operation for power production is to keep the reservoir at its maximum level; and to release water through the turbines in conformity with the system demand, which is liable to fluctuate considerably from hour to hour. So far as irrigation is concerned the central objective of operation is to use the stored water as and when it is required and to ensure that once the reservoir has been emptied it is replenished in the following wet season.
The essence of flood control is to maintain at all times a sufficient reserve to reduce flood peaks to acceptable levels in the lower reaches, which may mean quickly evacuating a reservoir that has been filled, in anticipation of a following flood. Operation for domestic and industrial water supply is less exacting in that the demand is normally steadier and relatively much higher.

The operation of storage facilities requires a high degree of managerial skill. In addition to the basic operating constraints just mentioned it may be necessary to release water to maintain a minimum depth of water for navigational purposes, or to maintain a minimum flow at the mouth of the river to combat the intrusion of sea-water.

In order to satisfy the conflicting interests of users it is essential to have a strong hydrology unit equipped with all the necessary facilities for forecasting stream flow and, when need be, for warning people of impending floods and water restrictions. This is all the more desirable when multipurpose projects operate in sequence in the same river basin, forming constituent components of an integrated system. In advanced systems of this type, operations are carried out with the aid of computers. Streamflow is predicted 10-30 days in advance; the available water is then allocated in accordance with predicted demands or stored for future use. Even so, there is a need for a good deal of flexibility in operation, for streamflow cannot yet be predicted precisely, even with the most modern and most elaborate equipment; and constant adjustment is need to satisfy everyone.
Above all, there is the need for periodic adjustment in the allocation of water for various purposes as economic conditions change. This may mean a reallocation of the resources available, a redetermination of the rights of users, in the interest of national development as a whole.

A number of the factors just related were illustrated in the background paper entitled "A Case Study of the Management of a Small Irrigation Project," which discusses various procedures open to managers seeking to improve operational efficiency.

I hope that this brief resume will provide a framework within which the supplementary papers for Agenda Item 6 may be related.

Thank You
Agenda item 6: ACHIEVEMENT OF GOALS SUBSEQUENT TO PROJECT CONSTRUCTION: EFFICIENCY IN WATER RESOURCES PROJECT MANAGEMENT AND WATER USE

1. Q - To what extent have the goals of project planners anticipated in feasibility reports been attained in your country? Where there have been delays in achieving the anticipated production, what have been the principal causes of delay?

A - In the United States most goals anticipated by the planners are achieved. In some instances benefits have been greater than expected. The lack, or delay, in achieving goals may be because of any of the following:

(a) Inadequate land classification

(b) Underestimating magnitude and cost of drainage requirements

(c) Farmers unwilling to change cropping patterns that involve purchase of new equipment.

(d) So much time lag between preparation of feasibility report and construction that conditions may change - such as a decrease in quantity and/or quality of water supplies covered by development of other types of water use programs.

2. Q - What managerial practices contribute most to the efficient use of water?

A - Efficient use of water is enhanced by the following:

(a) Well designed distribution systems and farm layouts (including land leveling). This reduces both labor costs and use of water.
(b) In some instances increased water rates for water in excess of specified allocations results in more efficient use.

(c) A distribution system designed to meet water requirements on demand, rather than on a rotation basis, makes more efficient use of the water supply, although this requires greater initial construction costs.

(d) Basin wide planning and operation of a river system enhances water use efficiency.

(e) Educational programs for water managers, such as Annual Irrigation Operation Workshop in Denver, assist in increasing efficiency in water management. Department of Agriculture and State College programs on irrigation practices also help.

(f) Quick and dependable telephone or radio communication throughout the system.

3. Q - What are the principal obstacles to efficient operation and maintenance and how are they overcome?

A - Obstacles to efficient operation and maintenance of water use facilities include the following:

(a) Water right laws that don't recognize all of present day needs. Studies are now underway by the United States National Water Commission to consider ways of changing such laws.

(b) Poor communication between water users and management. Frequent contacts between ditch rider and water users, newsletters, and meeting help overcome this.

(c) Undependable communication facilities such as good telephone or radio network. Added costs to improve communication pays
off in improved O & M.

(e) Inadequate review of maintenance schedules. Insist that water users keep management personnel who recognize this. Reclamation can take over project systems not maintained properly.

(f) Inadequate budget resulting in postponement of needed corrective measures. Board of directors are shown how they can be "penny wise but pound foolish!"

4. Q - To what extent do irrigation projects provide for the delivery of water to individual farms? Do farmers readily accept and utilize the water provided?

A - Most Reclamation projects are designed to deliver water to each 40-acre tract, although this may vary where costs are critical. In water service type contracts water users may have to build own distribution system and farm turnouts. Farmers usually make good use of water but expensive labor may result in some water wastes. Also senior water users sometimes are inclined to be less efficient in use of water.

5. Q - What types of farmers organization does your country have? What authority do they possess and how effective are they in improving agricultural production?

A - Water user organizations are formed under various State laws which enable them to levy taxes, construct and operate water control and distribution facilities, or to contract for such facilities and for water supplies. They usually work with State and Federal agencies to have demonstration farms built in the area and to conduct educational programs concerning latest technical achievements in the water use field.
These organizations often combine into larger State or Federal organizations to promote better educational programs and to influence lawmakers (State and Federal) to pass legislation favoring water resources developments. Sometimes they are quite effective in these endeavors.

6. Q - How is co-ordination effected between the various government agencies associated with irrigation and drainage projects?

A - Plans for all Reclamation projects must be cleared with all interested State and Federal agencies. This causes some delay in construction but results in a better overall program for providing multiple use benefits. States with common interests concerning specific areas may form "river basin" or other special interest groups (sometimes also sponsored by the Federal government - such as Missouri River Basin Commission or Pacific Southwest Interagency Commission) to provide coordinated development and operation of water use facilities.