

2. SYNTHESIS PAPER

“CONTRIBUTION OF INSTITUTIONS ON COORDINATED SERVICES FOR IRRIGATED AGRICULTURE IN PAKISTAN”

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2.1 Introduction

This paper is a synthesis of two detailed case studies: one, on the Agriculture Department, Government of Punjab, prepared by Mr. Mushtaq Gill and Mr. Khurram Rana, and the other on the Irrigation Department of the Punjab Province, by Mr. Asrar-ul-Haq. Both case studies have presented a wealth of information on the activities of these institutions. This paper attempts to place information in the context of the need to promote coordinated services for irrigated agriculture in the Punjab Province, and to raise issues that will contribute towards the promotion of coordinated services for irrigated agriculture development in the Punjab Province.

A tremendous potential to develop irrigated agriculture in Pakistan exists, particularly in the Indus Basin. The richness of the Indus Valley's natural resources, which encompass climate, land, water, minerals and people, and the varieties of crops that can be grown, are factors for potential increased agriculture productivity in the Punjab Province of Pakistan. Research institutions have identified the potential for higher yields of the major crops. However, this potential has not been fully exploited.

The physical infrastructure for irrigated agriculture has been developed in order to exploit the agriculture potential of the country for nearly one-and-a-half centuries. The irrigation system of the Punjab Province serves as the lifeline for sustainable agriculture in the province. The irrigation network comprises irrigation channels, drains, tubewells and small dams, and flood protection infrastructure. There are 14 major barrages on the five rivers flowing in the heart of this valley, with a total off-take canal capacity of about 1.2 hundred thousand cusecs of irrigation supplies, and another 1.1 hundred thousand cusecs of inter-river links. The elaborate network of over 23,000 miles of irrigation canals and 4,800 miles of seepage-cum-storm drains, providing irrigation facilities to 23 million acres of land in the Punjab Province, is maintained by the Punjab Irrigation Department.

A multitude of state agencies and departments share the responsibility of managing irrigated agriculture in Pakistan. The division of responsibilities between irrigation and agriculture starts at the federal level with two separate ministries, and runs through the sectors up to the farm level. Irrigated agriculture management in Pakistan follows a segregated organizational structure, which comprise of the Irrigation Department and the Agriculture Department. Each department takes care of respective sets of activities.

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The major responsibility for irrigation management rests with the Provincial Irrigation Department (PID), and some elements are with the Provincial Agriculture Department. (PAD), particularly at the watercourse level for on-farm water management. The PID undertakes some construction works, but primarily attends to the O&M of irrigation facilities extending from barrages and main canals to outlets, and the upkeep and maintenance of drainage and flood works. This department also assesses water charges from farmers for the use of irrigation water, and resolves conflicts among water users regarding *warabandi*. The On-farm Water Management (OFWM) Directorate takes the responsibility of water conservation and utilization at the watercourse level by way of lining watercourses, and on-farm water management. The overall responsibility of the Punjab Agriculture Department includes agriculture research, extension, and crop productivity enhancement programs. At the farm level, the decision for the application of water and other agriculture inputs are by individual farmers. At this level, there are many factors that influence the farmers' decisions and performance in their agricultural activities.

2.2 Initial Constraints: Shortage of Human Resources for Program Implementation

The emergence of Pakistan in 1947 as an independent state was also accompanied by many problems, and of the depletion of human resources, especially in the agriculture sector. The following details are some of the major problems faced during the early period of Pakistan's statehood:

- (a) While in the Sindh and NWF Provinces the farming community comprised mainly Muslims, in the Punjab Province, the majority was Sikhs, who left Pakistan during mass population migration to India.
- (b) Government servants were given an option to serve in either, Pakistan or India. Muslims decided to serve in Pakistan. Most non-Muslims decided to migrate to India. This situation created a serious gap and shortage of technical manpower. In those days, agriculture administration, research and training institutes were largely centered in India.
- (c) Many professors, teachers and research workers also left universities, colleges and research institutes. This affected Agriculture and Animal Husbandry, and Cooperative programs. Similarly, extension services were depleted, and valuable records were lost. Multitudes of problems were to be tackled, but resource availability was quite meager.
- (d) The irrigation systems of the Indus Basin were well developed during independence. Waters from various rivers were allocated among different provinces and states before Partition. However, India cut off the supply of water to Pakistan in 1948 with the argument that the upper riparian was entitled to use all water passing through its territory. This led to a water dispute between the two countries, which remained unresolved until 1952. During this period, agriculture suffered considerably, which was a great setback to the newly created state.

2.3 Establishment of Agriculture and Irrigation Institutions after 1947

2.3.1 Agriculture Research Institutions:

The development of the agriculture sector, within the background of problems stated above, was a great challenge for the new Government of Pakistan. During independent Pakistan's initial years, the Ministry and Departments have been endeavoring to fill vacancies with competent manpower. A considerable proportion of manpower has eventually obtained training abroad with the help of the UN and its specialized agencies, and through bilateral aid from friendly countries. Four Agriculture Colleges became organized, and an Animal Husbandry College was established. The Food and Agriculture Ministry was established by the Federal Government. Cotton and Jute Research Committees were formed. By 1960, several agriculture research institutes had been established. Extension services were extended and expanded. However, the investment in the agriculture sector, when compared to the industrial sector, was not encouraging, which resulted into stagnated agriculture production.

Rapid profits in commerce and industry detracted capital from agriculture development. There was no encouraging trend to invest money to equip the farmers, and their farms. Only a few people invested capital into land development. As a result of the prevailing economic conditions, agriculture was in serious danger of becoming a depressed industry. The macro policy of the government, encouraging larger investments for commerce and industry had an adverse impact on the development of the agriculture sector.

2.3.2 Establishment of Agriculture-related Organizations

At present, the Agriculture Department of the Government of Punjab comprises one Secretariat of Agriculture at the provincial level, along with four main units, i.e.:

- a) Research Wing, Agriculture, headed by a Director General (DG);
- (b) Field Wing, headed by the DG, Agriculture;
- (c) Extension Wing (Extension and Adaptive Research), headed by the DG, Agriculture;
and
- (d) Water Management Wing, headed by the DG.

The Agriculture Department also serves as the administrative department for the following institutions:

- University of Agriculture, Faisalabad;
- University of Arid Agriculture, Islamabad;
- Punjab Agriculture Development and Supplies Corporation; and
- Punjab Land Utilization Authority.

Most units mentioned above have field units providing services to the farmers. The oldest among them is the Agriculture Extension Wing, which provides linkages for improved agriculture practices developed in the research farms to the farmers' field. Among these wings, the OFWM Wing is the newcomer. This directorate is to provide services related to better water management and land improvement within the watercourse command.

2.4 Establishment of Irrigation-related Organizations

The Punjab Irrigation Department went through several changes over a period of time. At present, the Irrigation Department is accorded a unique and privileged position among all provincial departments. That the constant, close and highly technical attention warranted by this department was beyond the span of control of one single person was realized. Thus, quite contrary to the normal concept of one secretary as the head of one department, a unique arrangement of providing four secretaries-cum-Chief Engineers to head the Irrigation Department was adopted.

Imperatives to quickly process and issue timely financial matters for the Irrigation Department were also fully realized. In pursuance of this requirement, another innovation of bringing the Finance Department to the Irrigation Department's doorstep was adopted. A Deputy Secretary of the Finance Department, along with the allied staff, was housed in the Irrigation Secretariat. The organizational setup for irrigation management has recently experienced a fundamental change, in that it is now been transferred as an autonomous body known as the Provincial Irrigation and Drainage Authority (PIDA). The second level of the PIDA will be an Area Water Board (AWB) composed of representatives from Farmer Organizations, which will be formed at the distributary level, according to the PIDA Act.

The Irrigation Department undertakes the following activities:

- (a) River survey and hydrologic data;
- (b) Operation and maintenance of barrages;
- (c) Operation and maintenance of canals;
- (d) Distribution of irrigation water;
- (e) Tubewell management for salinity control and waterlogging;
- (f) Flood protection works;
- (g) Drainage schemes;
- (h) Land reclamation;
- (i) Irrigation research;

- (j) Construction of small dams;
- (k) Administration of the Canal and Drainage Act; and
- (l) Assessment of water charges.

The Irrigation Department extends its delivery of water through five field level organizations, i.e., Zones headed by Chief Engineers. A Zone consists of several circles, which are headed by Superintending Engineers; A Circle is divided into two to three Divisions, headed by Executive Engineers. A Division is divided into 2 to 3 Sub-divisions, headed by Sub-divisional Officers. The in-charge of the distributary, or minor, is the Sub-engineer. The responsibility of the Irrigation Department extends up to Distributary management and the allocation of water up to the *mogha* along the distributary. Below the *mogha*, it is the responsibility of OFWM in relation to water management and other activities. The link with the Irrigation Department within the *mogha* command area is related to *abiana* assessment (water charges assessment through *Tehsildars* and *Patwaris*) and conflict resolution for *pucca warabandi*. The Irrigation Department's organizational levels are presented in Chart 1.

2.5 Water-sharing Crisis between India and Pakistan after 1947

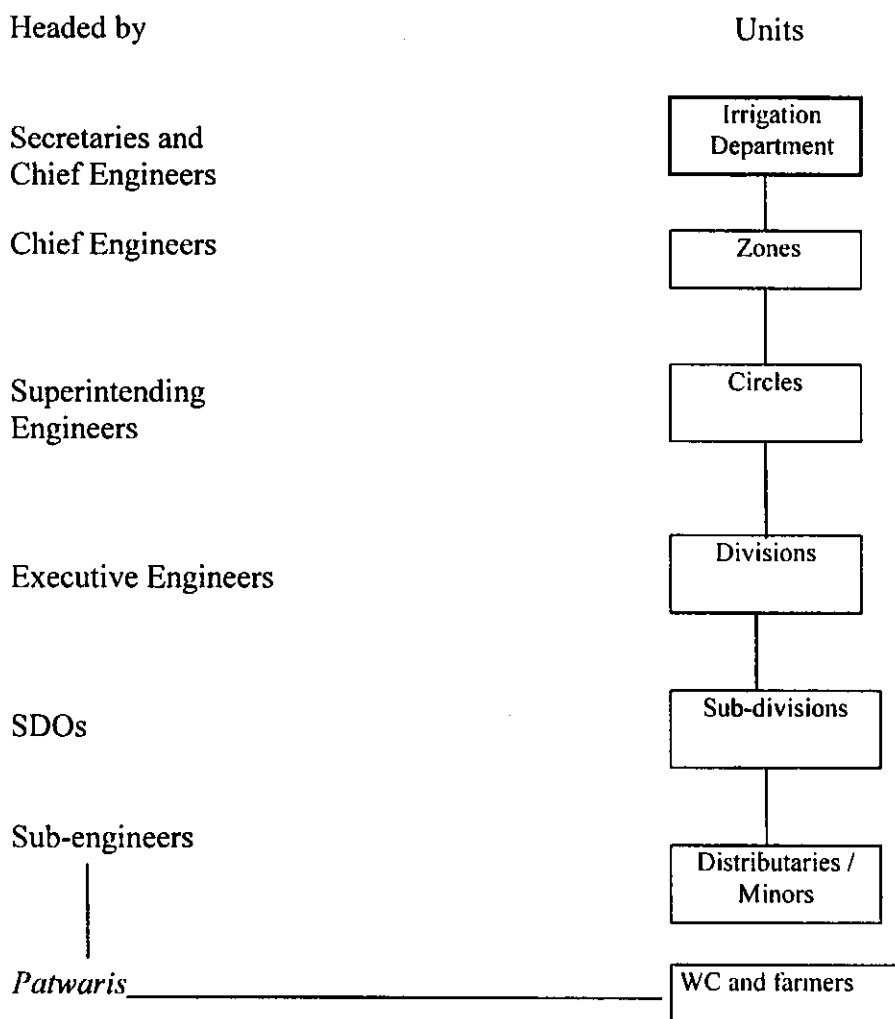
The farmers' difficulties in Pakistan were further aggravated by the shortage of irrigation water caused by water-related disputes with India. The headworks of the major systems were located outside Pakistan. Uncertainties in planning irrigated agriculture became prominent. This problem resulted in the intensification of the menace of salinity due to the reduction of water supplies. Water is so vital to expand irrigated agriculture, and to prevent the spread of salinity.

The water dispute with India was settled after long negotiations under the auspices of the World Bank. An agreement called the "Indus Water Treaty" was signed in September 1960, and ratified by the two governments in 1961. This treaty provided India the right to use water from three eastern rivers (Ravi, Beas and Sutlej) equivalent to a total annual flow of 33 million-acre feet. Pakistan secured the right to use water from the western rivers (Indus, Jhelum and Chenab) with a total mean annual flow of 140 million-acre feet.

The treaty also provided for inter-river water transfers to develop infrastructure in order to exploit additional water use potential to compensate the deficiency of water resources caused by the separation between India and Pakistan.

The entire effort of bringing more water resources and ensuring a steady supply was to increase agriculture production, and not merely to meet regular food requirements, but also to raise the overall standard of living in the newly established nations. The twin objectives of food self-sufficiency and increased export earnings aimed at achievement through the development of new infrastructure to improve irrigation facilities. Infrastructure development includes the construction of two storage dams, eight inter-river link canals and six barrages as replacement works under the treaty to transfer water from the western to the eastern river canal systems.

Chart 1. Organizational Levels of the Irrigation Department



2.6 Efforts for the Promotion of Irrigated Agriculture in Pakistan

In 1960, the Food and Agriculture Commission (FAC) made a number of observations and recommendations in relation to the promotion of irrigated agriculture in Pakistan, which apply equally in the case of the Punjab Province.

(a) One observation pertaining to the improved utilization of water for irrigation is:

“The Irrigation Department has a much higher status and is relatively well equipped to carry out the engineering aspects of its work. Unfortunately, its work largely ceases at canal outlet points, and little is done to ensure the best use of water by seeing that efficient distribution systems are upheld by leveling the land to ensure uniform water

distribution, or by advising the amounts and timings of water application for various crops. *The result is that crop yields dropped far below what they should be and much water is wasted. There is great need for an organization that can help farmers, and the country, to make the maximum use of irrigation water and such an organization should be set up early because of salinity to alter water use and cropping patterns*"

(b) The FAC has observed the role of the Government as follows:

"The Government has to be *the initiator and controller of development*. There are, unfortunately, some aspects of the government service that are at variance with a development need. The government's outlook is that of a matter of planning, finance, supplies and staff. The present systems of government working are designed to avoid mistakes, rather than to assist progress. As a result, there is over-centralization and delays in decision-making".

(c) The alternative organizational structure suggested in the FAC report was:

"As it is not possible to organize the existing services to the extent needed, a new service will have to be built up that can operate without these handicaps. Therefore, it is necessary that an Agriculture Development Corporation should be set up as an autonomous body outside the present government services. This corporation should be looked upon as body that creates, for farmers, the conditions that will enable them to fulfill their duty to the nation and raise their own standards of living. The work being done at present will be taken over by several different departments, and deal with each project under a comprehensive and coordinated plan".

The report recognizes the drawbacks and institutional shortcomings to promote irrigated agriculture, i.e.:

- Irrigation, of course, increases agriculture production. The functions of the Irrigation Department is that it is essentially the engineers' affairs, by supplying water at the field outlet (*mogha*) point and leaving the farmers to distribute and use it as they like.
- The engineers were not agriculturists, and agriculturists had not applied themselves sufficiently to the problem of irrigated agriculture.
- The question that arose during the early 1960's was where to draw the line between irrigation and agriculture.

The problems identified by the FAC in 1960 will be discussed again in subsequent sections in the context of the changing role of the Irrigation and Agriculture Departments in late 1990's. The important question to ask will be: Which changes have taken place over a period of 40 years in approach, role of the government, role of organized farmer groups, agriculture productivity and the irrigated agriculture program?

2.7 Research Results aimed at Improved Irrigated Agriculture

The importance of the reduction in water losses at the watercourse levels for increased agriculture production was investigated through various research studies in the early 1970's. These studies were undertaken at the Mona Research Station under WAPDA, with assistance from USAID. The objectives of the research were to measure and determine ways and means to reduce seepage losses from the estimated 110,000 watercourses in Pakistan, and to improve the efficiency of the irrigation systems. These early studies resulted in the diagnosis of huge water conveyance losses in the watercourses, which on an average, attributed 40-50 percent of the water delivered to the outlet. Huge water wastage from the watercourse commands, as diagnosed by these research studies, highlighted the need to look into alternatives to address the problem of water losses. Researchers, experts and donors were of the opinion that this problem can only be tackled through the active participation of water users. An amiable environment in which to talk about farmers' organization was nonexistent in the 1970's. There was no such example of organization in Pakistan except for civil canals managed by the farmers themselves, or by cooperatives undertaken by groups of farmers.

The improvement cost of watercourses through the traditional contractual system would be double the cost of improvements undertaken through the active participation of the farmers at the watercourse level. The assumption is that resource mobilization from the farmers and their participation in watercourse improvement would reduce the cost of lining. An alternative institutional arrangement was considered in view of how the watercourses would be maintained after renovation. A farmer-participated program was proposed by the USAID and a pilot project was financed. The pilot project implementation responsibility was offered to the Irrigation Department. On the other hand, the Irrigation Department did not have an Institutional Development Unit, so institutional reorganization and dealing with farmers' organizations were considered beyond the jurisdiction of the Irrigation Department. That the responsibility of the Irrigation Department is only up to *mogha* was felt, so the Irrigation Department decided not to take the responsibility of watercourse lining.

The Agriculture Department took the responsibility of the implementation of a pilot project for watercourse lining experimentation. The implementation of the pilot experimentation resulted in the planning and implementation of various OFWM projects. Ultimately, the OFWM Wing in the Agriculture Department was established with the broader objective of promoting irrigated agriculture. The Water Users Association Ordinance (1981) was promulgated to provide legal recognition to the users associations at the watercourse level.

2.8 Subsequent Institutional Arrangements in DOA and DOI

Scope of Activities and Jurisdiction:

The objective of the Agriculture Department is to evolve the socioeconomic improvement of the farming community by modernizing agriculture along scientific lines by developing and releasing high yielding crop varieties and farm technology suitable under local conditions through:

- Research back up;
- Education and training;
- Resource development;
- Management and conservation;
- Farm mechanization;
- Ensuring input supply; and
- Improving the marketing strategies of agriculture produce.

Source: Rules of Business, Guidebook, 1983

The goals and objectives of irrigation management in Pakistan have not explicitly been set out in any single document. The broader objectives, like “increasing agriculture production”, or the farm level objective of “improving application efficiency”, although quite relevant in the context of overall irrigation management, have not been included in the Irrigation Department’s scope of work because these objectives extend beyond the functional jurisdiction of the department.

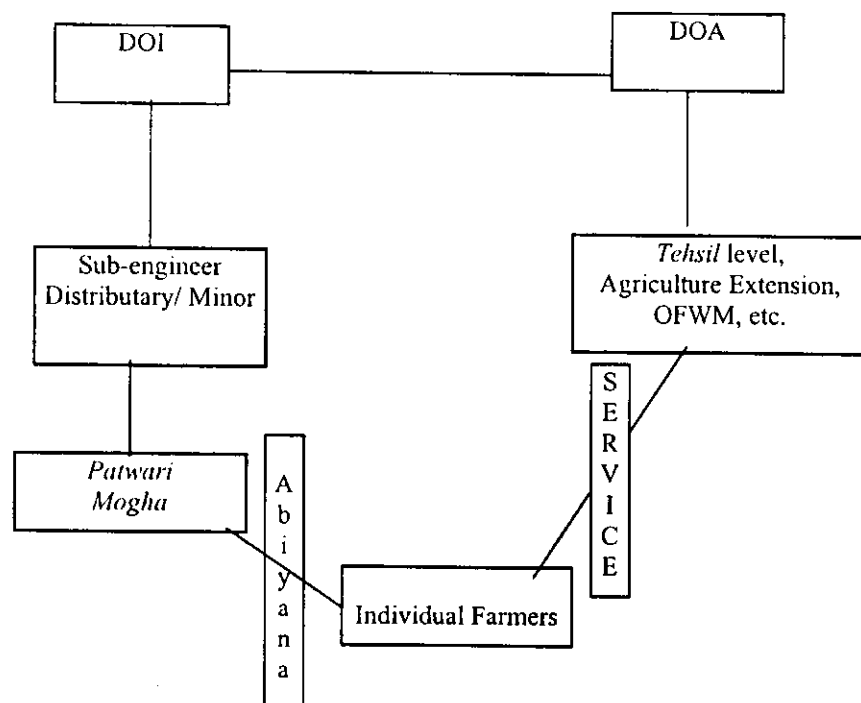
Irrigation water definitely helps to increase agriculture production, and is only one of the inputs for agriculture development. Other non-water inputs, like farming practices and marketing policies also impact the productivity of the system. Similarly, the jurisdiction of the Irrigation Department extends up to the outlet level. Beyond this, farmers are responsible for managing their watercourses and field applications. Downstream outlet activities have not been included, except in relation to assessment and water charges collection.

Organizational Setup of DOA and DOI in Serving the Farmers:

Among different wings of the agriculture department, all have field level offices established at the *Tehsil* level. The Agriculture Research Wing disseminates new technology through extension. The Field Wing provides bulldozer and tractor services to the farmers. Agriculture marketing services creates marketing facilities and training to the farmers. Agriculture Extension establishes contact with farmers through field assistants supervised at *Tehsil* level offices. The OFWM extends its service to the farmers through a field team stationed at *Tehsil* level offices.

The organizational role of the Irrigation Department is confined to the delivery of water up to the *mogha* level through distributaries/minors. Increased agriculture production was identified as a national goal in all the documents, excepting the Manual of Irrigation Practices (MIP) and the Revenue Manual (RM). The MIP and RM make no mention of any explicit agriculture goals at the irrigation system level. The assumption is that Irrigation Department activities do not extend to crop production at the field level. The direct contact between the Irrigation Department and the farmers is only in relation to *warabandi* and *abiana* (water charges assessment) through *Patwaris*.

Chart 2. Relation of DOI and DOA with Farmers



2.9 (a) Constraints of DOA in Promoting Higher Productivity in Irrigated Agriculture

The average yield/ha for different crops, as recorded in 1995, is given below. The yield figure indicates the scope of potentiality of the average per hectare yield increase.

Table 1. Average Yield/Ha for Different Major Crops for 1995/96.

Crops	Kg/ha
Wheat	1987
Rice	1169
Maize	427
Sugarcane	39000
Cotton	633

Source: Agriculture Statistics of Pakistan, 1995-96 The Government of Pakistan, Ministry of Food and Agriculture and Livestock (Economic Wing), Islamabad.

The yield figures beg the attention of the DOA and DOI towards improving the yield. The wheat yield/ha in Pakistan is reported to be only half that in the adjoining area of Pakistan's neighboring country. Even reported, is that the average yield in the farmers' fields is only about 40 percent of that recorded on the research farms.

Some factors identified responsible for the unsatisfactory performance of irrigated agriculture in the Punjab Province, are:

Motivation Question: A major problem being faced by the Agriculture Department is the poor incentive package for staff, which includes:

- low salary
- job insecurity
- political influence upon transfer, posting and disciplinary matters
- inappropriate training programs
- improper job descriptions and assignments, and
- overstaffing.

The other factors identified were:

- inadequate budget for development activities;
- poor inter-departmental and intra-departmental coordination; and
- lack of coordination with the farming community.

2.9 (b) Constraints of DOI in Promoting Higher Productivity in Irrigated Agriculture

As mentioned earlier, the DOI does not have any direct responsibility to increase the irrigated agriculture productivity. However, the activities undertaken by the DOI have a direct impact on irrigated agriculture.

Several constraints, which hinder the improved performance of the irrigation systems, have been identified. The sustainability of an irrigation system not only depends on economical, technological and ecological factors, but also on its interaction with the institutional framework. They are;

(a) System and Supply Constraint

Agriculture practices, and cropping intensities, have changed with the passage of time. High yielding varieties requiring more water have been introduced, thus, demanding an increased water supply in the system.

(b) Physical Constraints

Physical constraints are prominent in the Punjab Province due to its topography and an elaborate massive irrigation network.

(c) Operational Constraints

The size of the system imposes constraints on its operation.

(d) Unsatisfactory Maintenance

Pakistan's extensive irrigation system has progressively deteriorated because of inadequate maintenance funding, overstressing the channels to meet the increased water demand, and intrusions to the canal bank by human, animals and vehicular traffic.

(e) Low Irrigation Efficiency

The overall efficiency of Pakistan's irrigation system is estimated to be around 40 percent.

(f) Inequitable Distribution of Irrigation Water

This has been demonstrated through the differences in water distribution at the head and tail sections.

(g) Physical Deterioration

The physical deterioration of farming land caused by salinity and improper drainage maintenance has been prominent.

(h) Inadequate Financial Support

Inadequate financial support for O&M has rendered the structure unserviceable. In the 1970's, revenues were meeting the full O&M cost. In subsequent years, the situation has changed due to the gradual buildup in O&M costs for public tubewells, flood works and establishment, stagnation of water rates and declining collection. At present, revenue collection finances cover only 30-35 percent of O&M expenditure.

Besides these issues, problems relating to inter-agency coordination and staff motivation exist.

2.10 Perceived Role of the Farmers' Groups in Promoting Irrigated Agriculture

The actors in irrigated agriculture are the DOA, DOI and farmers. However, farmers are organized at the watercourse level for watercourse improvement and O&M of watercourse only. As of the present, the Agriculture Extension and Field Wing units provide services, more or less, on individual farmers' needs basis. The approach of these offices is to provide services to them, thus, is a supply-oriented relationship between the agency and the farmers. In the case of the DOI, water would also be delivered up to the *mogha*. The farmers receive water on the basis of supply, which is pre-determined. The water delivery is on the *warabandi* basis, which is usually registered at the Irrigation Department. The assessment of water charges is on an individual basis through the *Patwaris*, who are assigned to farming villages (Chart 3).

Chart 3. Agency-farmer Relationships

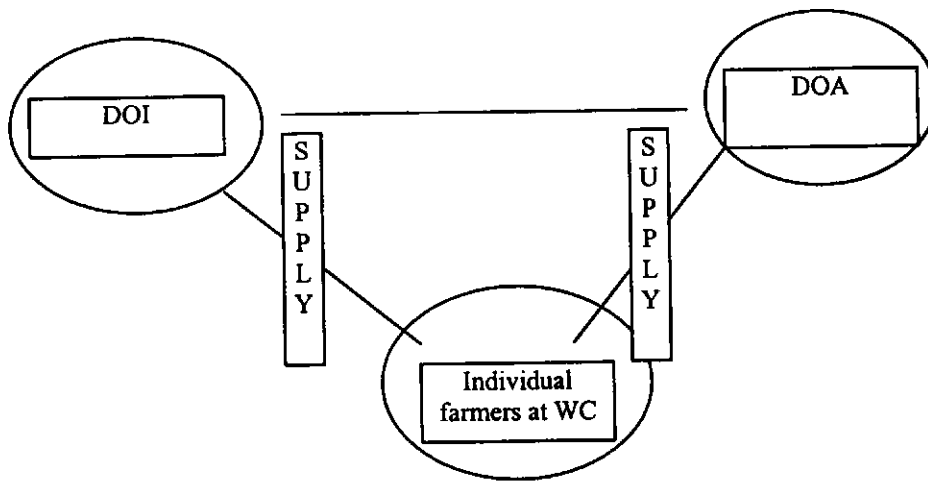
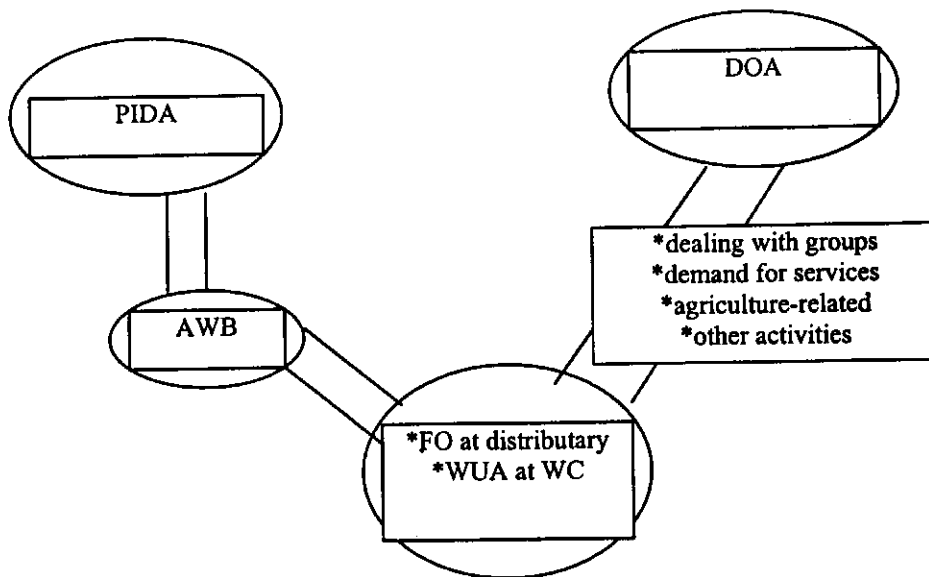


Chart 4. Anticipated Changing Role of Farmers' Organizations



In the proposed Farmers' Organizations (FO) at the distributary level, the FO will undertake a number of activities relating to water management and O&M of the distributary, resource mobilization, input procurement, marketing, and credit mobilization. Here, the FO is to take initiatives to acquire services from different agencies. Demand-driven services are to be provided by the agencies, as opposed to supply-oriented service delivery (Chart 4).

- Who will help the formation of FOs at the distributary level?
- Will it be the responsibility of the PIDA/AWB?
- Will it be the responsibility of the OFWM Wing of DOA?

With the anticipated changes, the role of the Department of Agriculture will have to experience reorientation, and appropriate responsibilities to its wings will have to be reassigned. One window approach might be an appropriate strategy to help promote the participatory management of agriculture resources at the grassroots level. This will provide organized farmers groups with an opportunity to play an active role with public sector agencies for irrigated agriculture development on a sustainable basis.

2.11 Reforms in Irrigation-related Institutions: PIDA

The need to improve irrigation management figures high on national and international agency agendas. This is compounded by the fact that irrigation performance has declined, despite continuous sizable investments in irrigation infrastructure improvement. That the deteriorating situation could be addressed by broad-based institutional reforms within the irrigation agencies has been maintained. The process of technical consultations and public debates, irrigation agency reforms, and the promotion of participatory irrigation management, was adopted by the Government of Pakistan in 1995. The following are the highlights of the reforms:

- (a) The existing Irrigation Departments (PIDs) would be converted into autonomous authorities to be known as Provincial Irrigation and Drainage Authorities (PIDAs). The Provincial Governments promulgated ordinances to this effect in January 1997, which were subsequently legislated with some amendments, as Acts, by the Provincial Assemblies in mid-1997.
- (b) The organization of the existing circle of each PID would be transformed into a financially self-accounting Area Water Board (AWB) on a pilot basis. Transitioning AWBs would be planned in view of the performance of the pilot AWB.
- (c) The formation of farmer-controlled FOs would be promoted on the pilot basis. These formations would play an increasing role in the O&M of distributaries and minors.

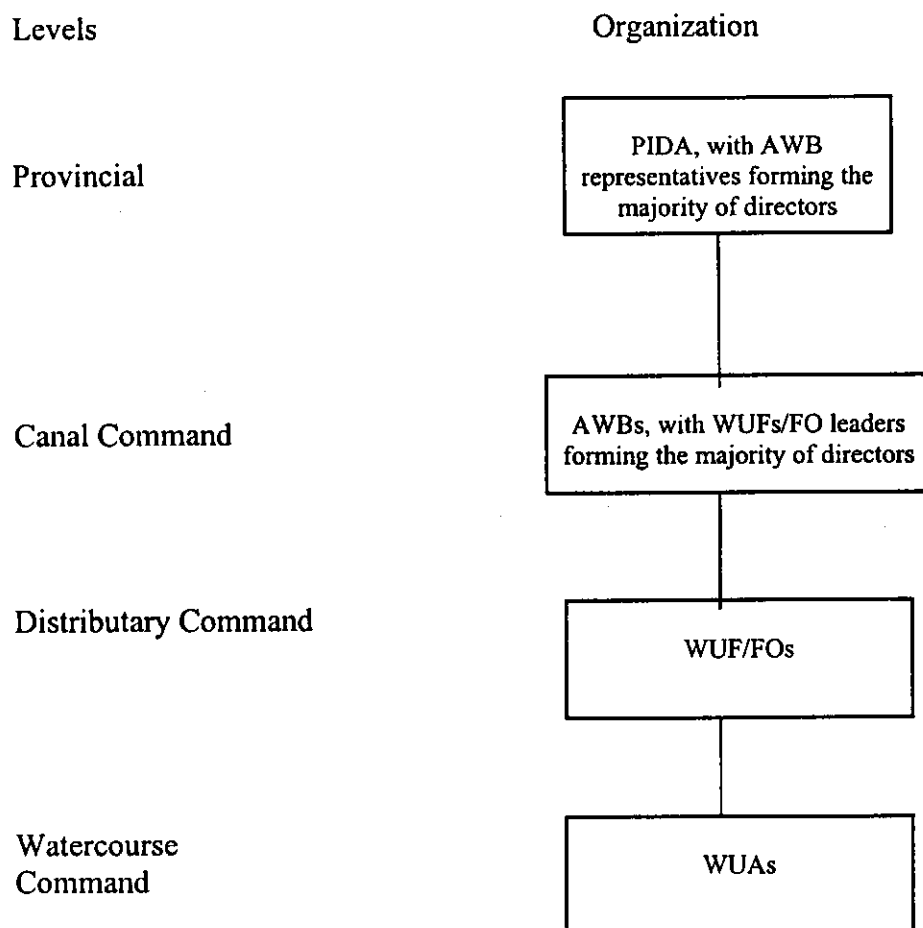
Proper planning of activities for both, the PIDA and AWB need to be considered carefully. In the meantime, these agencies have to chalk out the program to promote the role of FOs. Who is to take this responsibility for the FO at the distributary/minor level?

The roles of the PIDA and AWB are as important for institutional reforms as that of farmers' organizations (FOs). Without effective FOs, the function of the AWB will be incomplete, as many members in the AWB are from farmer organizations within the AWB jurisdiction.

The present reform package has been designed in a typical top-down approach. The law specifies structures for the PIDA. The AWB and subsidiary legislation, through a system of by-laws, would define the structure and process for Farmers' Organizations. Having acknowledged the significance of users' involvement in irrigation management, the planners could have gained from a representative model that is likely to be more sustainable in terms of overall accountability. This is basically a bottoms-up institutional development approach, in which selected, or elected, representatives of each layer of user groups take progressively higher management responsibilities.

A similar concern is the readiness with which many individuals and groups tend to promote their own favorite models of social organization for the local farming community, without allowances for an evolutionary process. If the local people are encouraged to discover their own organizational needs and allowed to evolve their own organization, such efforts will be far more sustainable in the longer term.

Chart 5. A Representational Model



2.12 Incompatibility between Hydrological and Administrative Boundaries

In Pakistan, one major constraint related to coordination between irrigation and agriculture functions is the incongruity in their respective areas of jurisdiction. Agricultural services are administered in terms of divisions, districts and other local administrative units, whereas irrigation administration is effected in terms of canal commands and related administrative branches comprising a zone, circle, division and sub-division. Rarely are these two sets of areas coterminous. To compound this situation further, different functions have different areas of jurisdiction. For example, area boundaries for canal irrigation are different from tubewell and

drainage functions. Similar differences exist for agriculture extension, agriculture research and livestock support services. The resultant complexities in arrangements for related government functionaries are considered dysfunctional.

Although these geographical differences are not the primary factors related to the decline in the overall service delivery performance, they do play a part in determining the efficiency of individuals and groups involved in service delivery functions. Various layers of institutional inter-linkages are important when there is a need for performance linkages. For instance, in many contexts, support services related to agriculture inputs need to be closely coordinated with the delivery of adequate and reliable irrigation water. The choice of seed material and timing its delivery are essentially connected with the irrigation calendar and activities, such as land preparation.

Basically, the extent to which coordination between irrigation and agriculture services should be effected depends on the general context in which their interaction occurs. In a context where irrigation plays a significant role in agriculture production, as in Pakistan, the need for coordinated services is significantly felt.

2.13 Issues

- How can the role of the politicians and that of the administration be linked to the farming community's interest in the reform of irrigation-related institutions in Pakistan?
- How can the farmer's active role and interest be ensured in irrigation management at the distributary level?
- Who should play the role of facilitating the formation of FOs at the distributary level? What are the present organizational capacities to undertake this responsibility?
- Legal recognition of the organizational change is necessary. In the existing legal framework of Pakistan, how should this recognition be effected?
- Is it necessary to integrate irrigation and agriculture agencies into one agency?
- How can the required coordination between irrigation and agriculture functions be effected?
- What is the role of the private sector when providing coordinated services for irrigated agriculture?

2.14 Discussions: Questions and Answers

Question: Dr. Abdul Majid. Do we need to integrate PID and PAD? Will this ensure services? Should farmers be organized stronger than all these Farmer Organizations? Organized groups can have better services.

Answer: Mr. Bandaragoda. There is no need to integrate two agencies, but effective coordination at different levels is required.

Question: Dr. Waqar from PARC. Is two-way traffic required at the higher level as was suggested at the lower tier level, say, at the Farmer Organization?

Answer: There is a need to internalize common objectives at all levels.

Comment: Dr. Waqar. There is a need for administrative bindings to coordinate our regional activities. There is a need to establish an accountability mechanism. For example, at Cornell University, USA, separate entities work under one umbrella. In Pakistan, there is rigidity in departmental activities.

Question: Dr. Akhtar Bhatti. There are so many agencies, including the private sector, which are involved in agriculture development. Why has the role of the private sector in bringing coordinated services to irrigated agriculture not been mentioned?

Answer: The synthesis paper is based on two case studies on the PID and the PAD. However, the role of the private sector is raised as an issue for consideration.

Question: Abid Shah from Oxfam. Who is going to provide services? How will subsidies for services be provided?

Answer: In due course of time, the role of the government will change to that of facilitator, rather than provider. The cost for the services will be borne by the users. With the passage of time and the change in the paternalistic approach, the role of the government will change and subsidies will be minimized.