

Institutional Reforms in Irrigation Sector of Punjab, Pakistan

**Proceedings of Workshop
Held at Faisalabad Screna
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Compiled by

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**Punjab Irrigation And Drainage Authority
International Water Management Institute**

CONTENTS

FOREWORD.....	II
PREFACE.....	V
11CTORIAL VIEW OF THE WORKSHOP.....	VIII
INAUGURAL SESSION:	
Addresses.....	1
Mr. Suleman Ghani Secretary Irrigation/Managing Director PIDA.....	1
Mr. Usman Qamar, Representative World Bank.....	5
Dr. S.A. Prathapar Director HMI.....	7
Mr. Safdar Ali Farmer Member PIDA.....	9
Lt. General (Retd) Muhammad Safdar Governor Punjab.....	11
Mr. Allah Buksh Baloch Coordinator, National Drainage Program, NWFP.....	13
Mr. Usman Babai Coordinator, National Drainage Program, Baluchistan.....	15
Mr. Allah Waraio Channa Coordinator, National Drainage Program, Sindh.....	17
Mr. A.N.G. Abbasi Minister for Irrigation, Sindh.....	19
ORIENTATION CUM CAPACITY BUILDING SESSION:	
Concept and Role of NDP in Irrigated Agriculture and Annual Review	
M. Aslam Mahboob.....	21
Restructuring of PID into PIDA/AWB	
Syed Mubashir Hussain And Asrar-ul-Haq.....	29
Need for Participatory Irrigation Management	
Zafar Iqbal Mirza.....	39
Experience of On Farm Water Management in Social Mobilization for Irrigated Agriculture	
Mushtaq Ahmad Gill And Rana Khurram Mushtaq.....	45
Social Organization Process for Farmers Organizations: Experiences From Hakra 4-R Distributary in Eastern Sadiqia Canal of Pakistan's Punjab	
Mehmood ul Hassan And Abdul Hamid.....	49
Achievements of FO From Punjab (Hakra -4-R Distributary)	
Miaa Abdul Wahid.....	55
Enhancing Capacity of Farmer Organizations in Sindh, Pakistan	
Yameen Memon And Bakhshal Lashari.....	61
Institutional Development of Farmers' at Grass Root Level	
Yameen Memon And Mustafa Talpur.....	65

Lower Chanab Canal (Fast) Pilot Area Water Board: A Step Toward Devolution of Power Ziaullah Warriach	69
Farmers Organization's (FOs) Formation, Registration, Functions and Authority Under the New Legal Framework Prof. Dr. Dil Mohammad	73
Participatory Reforms: Impacts From Other Countries of the World Waheed-U-Zaman	77
ANNEXES	85
List of Participants	85
Program of the Workshop	90

FOREWORD

You find before you the proceedings of the inaugural workshop held on 10 and 11 February 2000 to mark the establishment of the first pilot Area Water Board in the Lower Chenab Canal (East) command area. PIDA was honoured that the Honorable Governor of the Punjab, Lt. Gen. (Retd.) Muhammad Safdar made the effort to come to Faisalabad to inaugurate this first pilot Area Water Board in his province. PIDA was also delighted to welcome colleagues involved in the ongoing institutional reforms from all over Pakistan, headed by the Minister of Irrigation, Sindh province, Mr. A.N.G. Abbasi.

The Government of the Punjab decided to reform the irrigation sector by adopting the PIDA-Act in 1997. Key to the proposed institutional changes is the participation of beneficiaries in the operation and maintenance of the irrigation infrastructure, which will lead to a more economical and effective management of the irrigation system. Since the adoption of the PIDA-Act in 1997, senior officials of the Irrigation Department have been engaged in the implementation of the institutional reforms. Yet, the degree of awareness amongst farmers and the irrigation staff working in the field formations about the essence of the reforms has remained low. Therefore, the purpose of the two-day meeting in Faisalabad was not only to officially inaugurate the LCC (East) AWB, but also to raise the awareness of the ongoing institutional reforms in the irrigation sector of the Punjab and the other provinces of Pakistan.

Implementing the institutional reforms is a gradual process, in which farmers, government officials, NGOs, researchers and donors all play a role. Regularly coming together to inform, discuss and share experiences is essential in order to make the institutional reforms a success. This was another reason why PIDA, assisted by IWMI, combined the official inauguration of the first pilot AWB with an orientation workshop on the institutional reforms.

PIDA gratefully acknowledges the efforts taken by IWMI in helping to organize the two-day workshop and compiling its proceedings.

I trust that going through these proceedings will be informative and will help you participate in improving irrigated agriculture in Pakistan.

Suleman Ghani
Managing Director
Punjab Irrigation and Drainage Authority (PIDA)

PREFACE

The surface irrigation system of Pakistan is one of the biggest integrated systems in the world. The complexity of the physical system poses many challenges for its management as well. By mid 1990's, it had become evident that major reforms were needed to make the system sustainable in terms of financing and management. Thus, the target was to make various components of the system self-managing, self-supporting, and self-sufficient. Therefore, 1994 witnessed debates and discussions on the modus operandi for reforming the management. The current institutional reforms have evolved through the countrywide discussions and debates. The attempts during the initial years have yielded an enabling legal and institutional framework. The practical implementation has begun now with the launching of the first pilot Area Water Board in the Lower Chenab Canal (East). Attempts are also underway to establish Farmers' Organizations for distributary management.

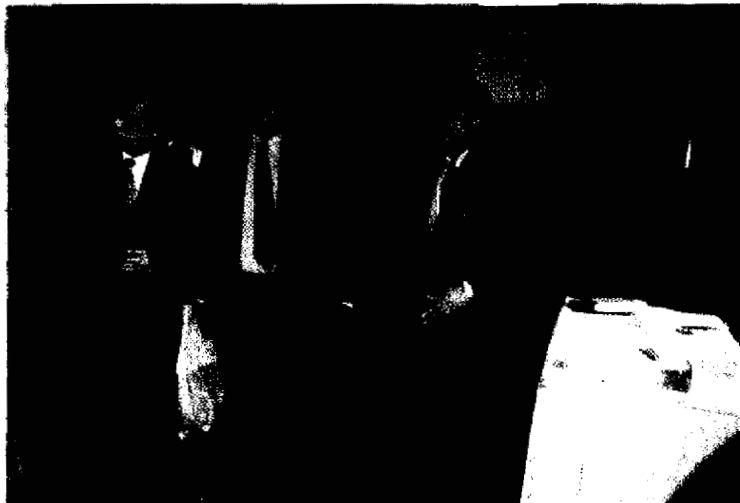
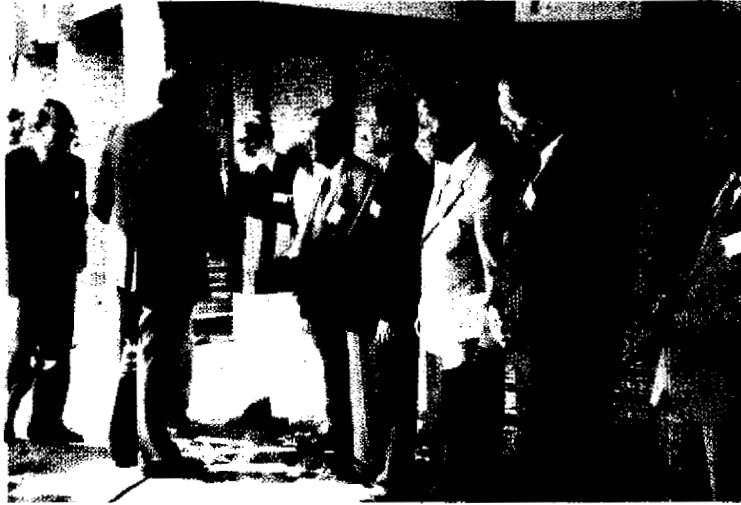
International Irrigation Management Institute (IIMI) has tried to organize farmers in the Hakra 4-R Distributary in Haroonabad in southern Punjab, 3 small dams in northern Punjab, and 13 distributaries in Sindh. Our work has shown that the farmers want to be organized and are keen to takeover the management of the distributaries. However, the financial viability of the farmers' organizations can only be established after entrusting the responsibilities to the farmers.

IIMI feels honored to help PIDA in arranging the orientation workshop and imparting training to the PIDA staff as well as the farmers. This workshop also served as a forum to address the concerns and apprehensions of the stakeholders about the reforms. Most importantly, the forum was an important attempt to create trust between the two key players' i.e., the PIDA and the farmers.

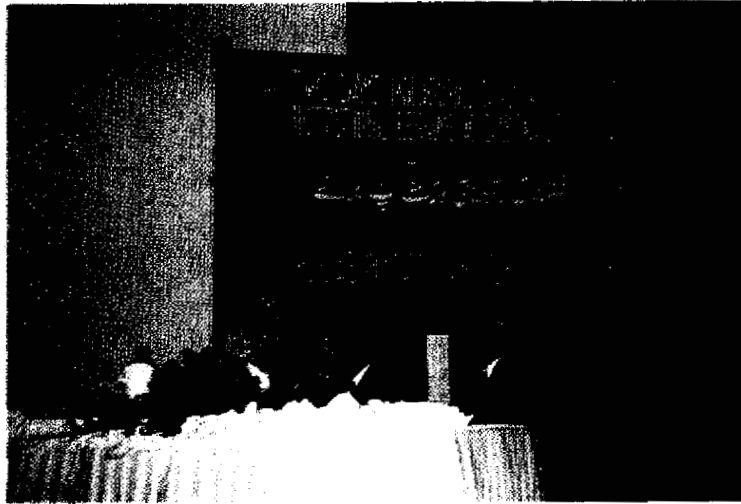
The proceedings of the workshop will demonstrate the high degree of interest among both the partners to know more about the reforms. Therefore, further awareness building would lead to greater chances of success for the reforms.

S.A. Prathapar
Director
International Irrigation Management Institute

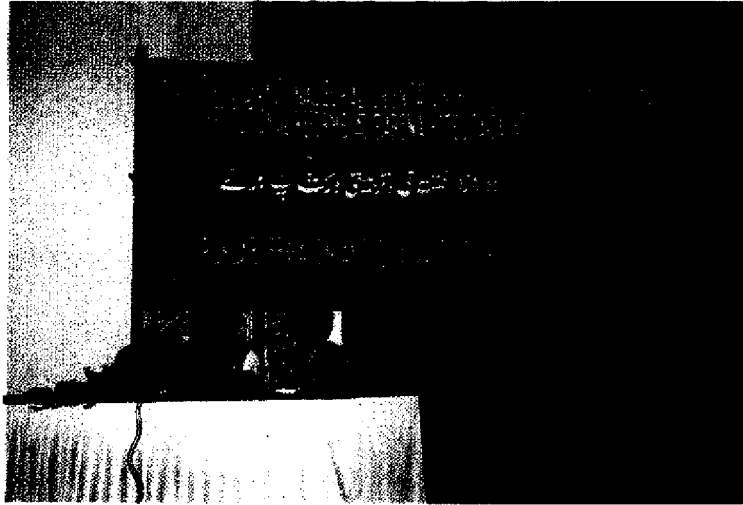
PICTORIAL VIEW OF THE WORKSHOP



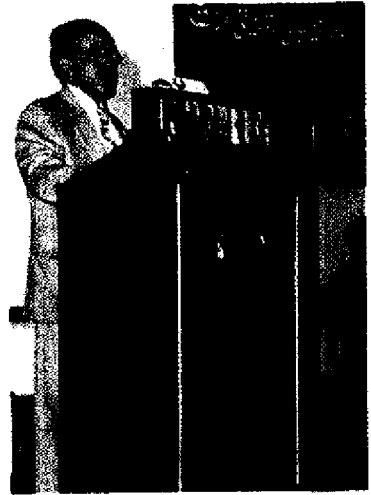
Arrival of Chief Guest



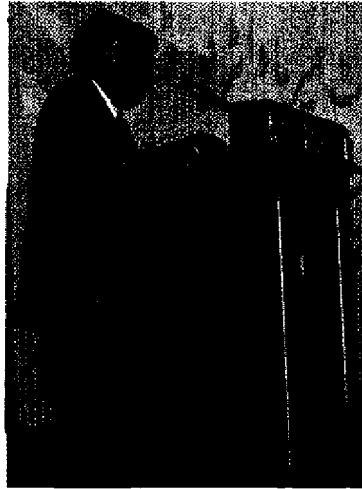
Some Distinguished Participants.



Some Distinguished Participants.



Notable Speakers.



Notable Speakers.

ADDRESSES

MR. SULEMAN GHANI SECRETARY IRRIGATION/MANAGING DIRECTOR PIDA

Honorable Muhammad Safdar Sahib, Governor Punjab, Honorable Minister and audience.

Aslam-o-Alaikam!

On behalf of the Punjab Irrigation and Drainage Authority (PIDA), I welcome you and all the other audiences in this workshop. It is a matter of great pleasure and satisfaction for us that you have participated in the inaugural ceremony of the Area Water Board (AWB). Your participation in this ceremony is, on the one hand an indication of the government policy for decentralization of powers and transferring responsibilities at the local levels, and on the other hand, it shows the Government's commitment to solve problems of irrigated agriculture.

Respected Sir, as you know that agriculture is the backbone of the economy of our country. 25 percent of our Gross Domestic Product GDP and 60 percent of the manpower is directly or indirectly associated with agriculture. Allah Almighty has bestowed this country with uncountable bounties. Among them, the waters, fertile land, favorable weather and dedicated manpower is worth mentioning here.

Respected Sir, if agriculture is a body of our economy then irrigation is like its arterial system. The importance of water has increased because this precious resource is gradually depleting.

Secondly, it is inevitable to increase the production of agriculture to meet the needs of growing population. The current economic condition of the country demand for increasing agriculture production to the maximum limit, so that we should become self-sufficient in wheat production. Earn foreign exchange from crops such as cotton, rice and sugarcane and contribute in improving economic conditions of the country.

Respected sir, our irrigation system is the world's largest connected irrigation system. It has 14 barrages. The length of irrigation canals and distributaries is 3993 and 19191 miles, respectively. The system irrigates 21m acres through 50,000 outlets in the Punjab province. After independence till early 1970s the irrigation system was performing satisfactorily. Our cropping intensity has risen from 70 percent to 120 percent. But, in the later years, it gradually deteriorated. The reasons for deterioration were our financial and administrative weaknesses and the rising need of repair and maintenance of the dilapidated and old system. Due to lack of funding and rising inflation some of the necessary works were delayed or postponed. Resultantly, the need for deferred maintenance increased. The revenue of the department also declined over time, which led to increased gap between revenue and expenditures.

The ever increasing waterlogging and salinity problem have been destroying our lands. The problems of poor farmers have been mounting and their say and participation in the hierarchical bureaucratic system has been tantamount to none.

The efforts of previous governments and the international donor agencies to save the deteriorated system have been in vain. Finally the national and international experts have formulated an extensive National Drainage Program (NDP). The main objectives of this program are mitigating waterlogging and salinity and increasing agriculture production. The existing irrigation and drainage system will be rehabilitated to increase the production. Institutional reforms will be introduced to overcome the financial and administrative weaknesses. Reorientation of the system on modern lines will help to strengthen the department and overcome the difficulties of the farmers. Farmer's participation is the focus of these reforms.

For the reorientation of the irrigation and drainage system, the Punjab Assembly passed a bill in June 1997, which resulted in the enactment of the Irrigation and Drainage Act of 1997. Under this Act, the Punjab Irrigation and Drainage Authority (PIDA) was formed to operate the system on modern lines. Under this new set up, the authority at province level, AWB at canal command level and FOs at distributary level, will be formed.

Respected Sir, it is not an untested system. Many countries of the world, which earlier emphasized Government's role in the irrigation management, are now introducing participatory approaches. The countries, which are adopting this policy, include; America, Japan, India, China, Philippine, Egypt and Mexico. Under the new system the government manages the dams, barrages and main canals but the administrative affairs are handled through farmers' participation and consultation. The management, repair and maintenance of lower-tier system and the assessment and collection of charges are the responsibility of FOs. We are also setting up the system on the same lines. Democratically elected FOs are being formed. These FOs will enjoy the powers of Executive Engineer at distributary level. It will be a completely decentralized, participatory and democratic system.

It is my strong hope that this system will yield good results.

Respected Sir; it is a matter of great pleasure for us that you are inaugurating the first Area Water Board created at one part of the Lower Chenab Canal (East) LCC. The inflow at the head of the LCC is 11700 cusecs. It irrigates 1.60m acres in the districts of Faisalabad, Toba Tek Singh, Hafizabad and Sheikhupura.

Encouraging farmer's participation in all irrigation related matters and overseeing FO's affairs are the prime responsibilities of the Area Water Board. Supplying proportionate share of water to the FOs at the head of the distributary, advising on repair and maintenance activities, and overseeing the assessment and collection of abiana, are the other responsibilities of the AWR.

Respected Sir, improved service delivery, swift and better solution of farmer's day to day irrigation related problems, are the chief objectives of these experimental reforms. Considering the importance of farmer's participation, according to PIDA Act, the chairman of the AWB will definitely be from farmers. There will be at least 8 farmer members in the AWR. The number of non-farmers will not exceed the farmers'. In this way the opinions and views of farmers will be protected and safeguarded. Similarly, to provide voice to the tail end farmers, provision has been made in the law that at least 3 farmer members will be from the tail end.

Respected Sir; this experimental project of participatory irrigation management **is** very different from **the old** system. The project aims at making the irrigation system financially self-reliant. **This** will, considerably, reduce the burden on the government exchequer. **Th** farmers **will** prosper **and** the national income will increase.

Respected Sir; I, once gain, thank **all** of you on behalf of the **PIDA** for your participation in **the workshop**. **I** hope that you will provide us continuous support and cooperation. Let us together pray to **Allah** Almighty that the tree of reforms that is being planted **today**, remains protected. May **Allah** **give** us the courage and ability to raise this small tree to a gigantic **tree?**. May our nation reap the fruits and benefits of this tree.

MR. USMAN QAMAR,
REPRESENTATIVE WORLD BANK

Honorable and respected Governor Punjab, Lt. General Rtd. Muhammad Safdar, Minister Irrigation Sindh Mr. ANG Abbassi, Sec. Irrigation Punjab, Mr. Suleman Ghani, Managing Director PIDA, Mr. Ziaullah Warraich, Chief Executive AWB and respected guests Asalm-o-Alaikum.

It is a great honor and pleasure for me that you have given me the opportunity to express my views by inviting me on this memorable occasion. I express my thanks to all the organizers.

Although I have been invited here as **the** representative of the World Bank, I feel proud to be participating in this event as a Pakistani citizen. Today can be considered a milestone in the history of Punjab's great irrigation and drainage system. It marks the beginning of a new and prosperous era. The formation of AWB is not just the inception of a great department. Mr. Suleman Ghani has already given a detailed introduction of AWB; therefore I will highlight a few important features. First of all I will briefly talk about the significance of this day. The formation of **AWB** indicates the recognition of the golden principle of decentralization and the decision to implement it. Establishing AWB is recognizing the basic principle that participation of beneficiaries is an important factor in the management of any organization. The Government by forming AWBs recognizes that our hardworking and intelligent farmers have the abilities to manage the irrigation system.

In my view the most important and inspiring aspect of today is the establishment of AWB. It is a step toward keeping the promise of the Government to form departments at grass root level, which is the true spirit of democracy.

On this occasion I briefly present certain features that have been observed all over the world. Pakistan's biggest asset is her hardworking people. Her second biggest asset is the large irrigation system, which is recognized as the food-producing machine of River Indus. This machine is the backbone of our economy. To maintain this machine the participation of farmers is very essential. Without their participation it will not be possible to operate it sustainably. The experiments to date have revealed that decentralization or in our language participatory irrigation management does not only have experimental status. It is being managed successfully in all the irrigation systems of the world. Mr. Suleman Ghani has also pointed out this fact. The countries where it is being practiced are Mexico, Dominican Republic, Argentina, and Chile. I have not named the highly developed countries here. I am talking about countries that are in the process of development or have not become developed as yet. Apart from these countries, in Europe Spain and Turkey, South Africa, and in our neighbouring countries India, Andhra Pradesh, Nepal and the Eastern Pacific countries are included in the list. Another discovery is that whenever this system was practiced, the will and firm decision of the Government was behind it. Without which its success would not have been possible. We are pleased that we are getting full cooperation of our government.

Finally once again I heartily congratulate all the farmers and organizations gathered here. I pay tributes to Mr. Suleman Ghani, PIDA, Mr. Mehtar, Mr. Dil Muhammad, Mr. Israr, and Mr. Mehboob whose hard work and drive made this program successful.

Respected Governor I also thank you **and** the prominent officials **who approved the program and assured us of their support.**

DR. S.A. PRATHAPAR
DIRECTOR IIMI

Good Morning Governor of Punjab, Minister for Irrigation Sindh, Secretary Irrigation Punjab and Mr. Usman Qamar, Ladies and Gentlemen:

I would like to take this opportunity to briefly introduce our institute. IIMI operates under an Agreement with the Government of Pakistan. Our head office is based in Colombo, Sri Lanka. In addition to these two main offices, currently IIMI is working in at least 14 countries around the world. In Pakistan our head office is in Lahore. We have activities in Haroonabad of Punjab, and five small offices in Sindh from which we operate. For the last 4-5 years we have been initiating and testing whether farmers organizations at distributary level can be formed and whether there is enough capacity among the farmers to undertake the tasks the current reforms require. We have worked in about 15 distributaries and our finding is that they are in a position to take over the responsibilities and contribute the better management of the irrigation resources.

I will briefly say few words about why the reforms in irrigation sector have been necessitated and then say what kind of conditions are required for successful reform in irrigation sector.

When we talk about reforms in irrigation sector essentially in Pakistani context we are talking about involving farmers in participatory management process. So the key here is participatory management. In other words there has to be input from the beneficiaries as much as the input from irrigation department and newly formed PIDAs. So the key word is the devolution of responsibilities and participation in management.

The key reasons why these reforms have been initiated in any part of the world in any country including countries like Australia and the Netherlands is the financial viability of irrigation institution. The irrigation infrastructure is worth several billion of dollars, but they have to be maintained properly. Otherwise they cannot deliver the water they are destined for. Almost all countries including developed countries have difficulties in maintaining their infrastructure. So far, the evidence is that by involving the farmers the financial viability of irrigated agriculture has been improving. One of the studies show that in Australia after devolution there is hardly any rise in the price of water but overall revenue has been increased in the water sector.

The second reason why it is important in the Pakistani context is that equity in terms of water distribution has improved. Equity has improved because the farmers took initiative in terms of operating and maintaining the distributaries and the level of water theft has considerably reduced.

There are **few** precondition required from more studies around the world for reforms.

The first one is “a firm consistent long term political commitment”. Fortunately in Pakistan we have it. Our experience of working with provinces and irrigation department we see the genuine commitment politically and in the irrigation department to ensure that the reforms process gets through. So we **have** this condition in place.

The next requirement is “clear water rights compatible with water delivery systems”. The warabandi principles ensure clear water rights. **So** that also exists here in Pakistan.

The next is “legal and political recognition of Farmers Organizations including the right to raise revenues, apply sanctions and enter into contracts”. Currently we are **at this stage**. By inaugurating the Area Water Board, legal and political recognition is being given. By establishing FOs and when transfer takes place they will get legal and political recognition.

Finally, “financially autonomy” is required. The major task that FOs are required is abiana assessment and collection. It is our view the structure of the abiana by which **water fee is** collected should be reconsidered. It should be made **as simple as possible** for the **FOs to assess**, collect it and share their resources between PIDA and the FOs. **We hope that initiative will** be approved by **the** provincial Governments.

Once the transfer takes place it does not mean that is end of the story. That is where story **really** starts, **All** the FOs will require some support services after **taking** over the responsibilities. **This** could come from **PIDA** staff. The other requirement would **be** to monitor whether their **assets** are maintained whether the water is delivered at equitably.

Transferring the responsibility is the first stage, but then **we** need to **make** sure that the post conditions required are in place. Fortunately there is expertise to facilitate the process **of** transfer exists in Pakistan. IIMI has worked **in** different countries in the past and we bring **expertise** from outside. There are guidelines for irrigation management transfer being published by IIMI **and** FAO jointly.

On-Farm Water Management Directorate has tremendous **expertise** in formulating water users associations at watercourse level and also formulating FOs at distributary level. **They have** worked in Punjab at Sirajwah, Bukhan distributary. We know that NRSP also have the expertise in mobilizing the farmers and to train them to bring a level so that they can take over the responsibilities. **So**, despite the fact that expertise are limited, the expertise **does exist** in Pakistan.

I appeal to **all of** us that **we work** together with PIDA to **make this** reform a success.

Thank you very much.

MR. SAFDAR ALI
FARMER MEMBER AWE

The advantages of this new irrigation management system are no secret. We **pray** to God for its success so that agricultural economy would progress and prosper. I **am** grateful to my friend and partner Mr. Suleman Ghani, who has worked hard to introduce this system.

We are not only partners in this new irrigation system but are also willing *to* give sacrifices for its success. The present Government has also shown commitment to the agricultural department of Pakistan. I would also like to mention the following points that can help bring a green revolution in Pakistan.

- **Effective solution to water theft** is possible only after an appropriate amendment in section 10 of Canal and Drainage Act. This amendment would stop the thief and the helper.
- **Inappropriate division of canal water:** The share of water of Faisalabad irrigation zone is 2.84 cusec/thousand Acre whereas it is much greater in other zones of the country. For instance Dera Ghazi Khan has 8.50 cusec and Muzaffargarh has 7.50 cusec, Sargodha has 5.5 cusec whereas in the entire Sindh this share is 7.5 cusec/1000 acres. **If** Faisalabad is provided more water I can claim that Faisalabad zone alone can **fulfill** the food shortage in Pakistan.
- **Exploitation of the Farmer:** The farmer has lost interest in agriculture because he does not receive appropriate returns from the produce. It is important to cull this tendency otherwise the consequences can be very negative.

Your honor I belong to **Toba** Tck Singh. The misfortune of the residents of Toba Tek Singh is that their farms are located on the plateaus of Jhang Branch, Burala Branch and Lower Gogera Branch where groundwater is mostly brackish and unfit for use. Canal water was not available from 1974-96 because of which this poor community has faced a great deal of suffering and hardship. Thanks to the tireless efforts of Mr. Suleman Ghani and his colleagues Mr. Abdul Ghaffar, Chief Engineer, Faisalabad, Mr. Ziaullah Warraich, SE LCC (East), Mr. Bashir Ahmad Zahid, XEN Lower Gogera and Mr. Anaitullah Cheema, XEN Burala, this system has survived.

Due to the shortage of time I would wrap up my comments and pray to God for the success of the system.

LT. GENERAL (RETD) MUHAMMAD SAFDAR
GOVERNOR PUNJAB

Mr. Suleman Ghani, Managing Director, Punjab Irrigation and Drainage Authority, Mr. Ziaullah Warraich, Director Area Water Board, Farmers Member, PIDA, distinguished guests, ladies and gentlemen!!

Assalam-o-Alaikum!

I would first like to thank the organizers who provided me with an opportunity to participate in and inaugurate the Pilot Area Water Board of the Punjab Irrigation and Drainage Authority. This is an important forum where the delegates will exchange views on the empowerment of the farmers at grass root level in the management of an important resource, the water.

All of us are aware that the Government of Pakistan intends to devolve authority and power to the people to whom it belongs. We feel very strongly about decentralization of power and authority to the water users who actually own it. However, it is only possible unless they also take initiative and come forward to assume the responsibilities tied to the authority.

Ours is an agrarian society but the state of agriculture in Pakistan has still to go a long way in terms of reforms and development. Compared to the population growth in Pakistan, which keeps on growing at one of the highest rates in the world, the productivity of most crops is either stagnant or declining. The gap between agricultural production and demand has impelled the country to spend precious foreign exchange on food imports rather than on social services causing serious repercussions for the overall growth and development of the country.

For achieving the required level of productivity in agriculture, we need to address the constraints that this sector is facing.

Ladies and Gentlemen, the linkage between agriculture and irrigation is that of life and blood. Most agricultural production in Pakistan comes from the irrigated areas. We may boast of our gigantic and contiguous Indus Basin Irrigation System, which is rightly called Indus Food Machine. However, this system would have generated much more if well managed. Presently, our irrigation management is in crises. The irrigation system is deteriorating day by day. If we do not operate and maintain it properly, we may have to pay the cost of losing it 30 years from now. The reasons for its decline may be attributed to financial, social and managerial limitations in the system.

Insufficient cost recovery and unavailability of appropriate funds for system's operation and maintenance has caused quicker aging of the system than otherwise. Farmers' apathy has led to frequent operational violations and damaged the systems' physical condition. It is the small and the poor farmers, a vast majority of the users, who are the most affected by the unreliability and inequity of water supply. The concerns voiced by these helpless farmers are ignored. The alliance between canal managers, influential and political classes have impaired the sustainability of the irrigation system.

The challenge we face today is how to reverse the situation to a state of financial viability of irrigation system where reliable and equitable water supplies become the norm rather than

exception, The reforms being introduced by the Government in irrigation and drainage aim at restructuring management functions in a way that the water users are considered **partners and** not recipients of the service.

Through these reforms, financially autonomous Punjab Irrigation and Drainage Authority has been made responsible for all matters pertaining to the management of water at the provincial level. There will be Area Water Boards at the canal command level responsible for operation, maintenance, and management of the irrigation facilities. Initially, the government has decided to pilot test this structure and learn from the experience for future replication.

The Distributary Level Farmers' Organizations will manage the secondary system and also participate in the decision making upstream. The necessary powers and authority will be devolved to them. The success in the reform efforts will be determined by the extent to which farmers genuinely participate in irrigation management. Extensive mobilization of farmers and enhancement of their awareness and capacity is required, at this stage, to ensure the farmers' contribution in irrigation management. We also need to let the farmers know very honestly and frankly that the State can not manage the irrigation system sustainably without their support and ownership.

Unless farmers can reward the Area Water Boards for good performance and hold them accountable for bad performance, the reforms would remain meaningless. The service standards, therefore, also need to be defined and agreed between the Area Water Board and the Farmers Organizations and adhered to.

Much effort would be needed to incorporate the concerns and fears of the poor and the small farmers. It is our duty to make sure that each one of the stakeholders is aware of the changes taking place and their participation is ensured. Our efforts have to be enabling not disabling, transparent not opaque, and facilitating not prohibiting.

I now formally announce the inauguration of the Area Water Board. I wish all of you good luck in your endeavors to reform the management of a very crucial resource.

Pakistan Paienda Bad.

MR. ALLAH BUKSH BALOCH
COORDINATOR, NATIONAL DRAINAGE PROGRAM, NWFP

My friends from Balochistan have already talked about things that I wanted to say. I am thankful to them. **We have** a tradition that whenever there **is** a problem or **a** dispute **all** the people collect at one Hujra and resolve the problem through dialogue. The private channel or civil canal system also runs in line with this system. Any problem that comes up is sorted out by dialogue, Since this system is run collectively by **a** committee (Jirga) with representation of farmers, no one has the courage to defy the decision of the Committee and take advantage to steal water. In the same manner the farmers will have to run this new system. You have been apprised of its organizational laws **and** your rights. We are also bringing these amendments in our province,

A little while ago someone talked about increase in the amount of abiana. I want to say that the same has been applied in NWFP as in the Punjab. From now on this system will be in your hands. You will be in control of all the expenses incurred on irrigation management. **So** there will be no reason for increase in abiana. You should dispel the fear that abiana will continue to rise in coming times. If you control your revenues and expenses it can even reduce.

Finally I congratulate my brothers from Punjab who inaugurated their **AWB** in such an organized **way**. We are also planning to inaugurate our AWB in Mardan at the end of February.

Thank you.

MR. USMAN BABAI
COORDINATOR, NATIONAL DRAINAGE PROGRAM, BALUCHISTAN

The bread that reaches our dining table with Allah's grace involves the hard work of seventy-three persons. The hard work of NDP is one of that hard works. The targets of NDP are applicable in these areas. Ninety percent of our land area is non-canal irrigated or barani, or it is irrigated by small irrigation schemes, which are dependent on barani water. The new irrigation system being launched by NDP is not new for the people of Balochistan as our system of Karez is in practice for years now. Under this system all farmers on mutual consent select a member and find solutions to their problems collectively and irrigate their fields. The new irrigation system is very similar to the Karez system. That is why it is not something new for Balochistan.

I would like to say to my brothers from Punjab that NDP has given you a platform. When all of you will gather under this platform your problems will be solved too. I would like to mention here the saying of our holy Prophet Muhammad (saaww) that when two Muslims join hands for Allah's blessings then before they disengage their hands Allah forgives them for most of their sins. We should also think on these lines.

The farmers should collect under this platform given by NDP and together manage their irrigation system and take a step toward prosperity.

BIDA has been formulated. The laws formulated for PIDA and AWB are similar all over the country. There is not much difference between them. However for areas outside Indus Basin Irrigation System we are formulating laws. These will be different from other provinces. Thank you.

MR. ALLAH WARAIQ CHANNA
COORDINATOR, NATIONAL DRAINAGE PROGRAM, SINDH

The irrigation network of Pakistan, presented by Mehmood Aslam has 3 of its barrages, 14 **canals** and approximately 1200 minors in Sindh. There are 44 thousand Mogas. Through this new system 126 million acres of land will benefit in Sindh. In the rest of 6.5 million-acre area there is a need for drainage facilities. Since Sindh is at the lowest level from the sea, drainage is required the most and people need to be made aware and need to be involved in the system. That is why the NDP has been accepted and laws of SIDA have been formulated. The laws of SIDA were passed in September 1997. Unfortunately we have not done much to introduce this new system in the four provinces although two years and a half have passed.

Unless the farmers participate in the NDP it can not make any progress. The main objective of the program is the participation of farmers in irrigation management so that they can decide for themselves how to manage it and take decisions at FOs level so that the burden of management does not fall on country's economy.

We have formulated an AWB in December in Sindh and also registered 8 FOs. In a few days time we will enter into agreement with them. The canals will be handed over to them. Then we will see what they do and how they manage it so that this system progresses. We need unity to continue the process of progress.

Till now all provinces are following their own system. It might be that each province has its own situation but a few major principals should be similar e.g. in Sindh MD, PIDA is independent but in other provinces it is not so. In Sindh the GM Irrigation PIDA has been appointed on regular basis but in other provinces I do not know what is the situation. What I mean is that there should be uniformity in all provinces and it should be clear on which level we are and in which direction we are moving.

In my personal opinion we are facing a lot of problems in formulating the FOs. These problems are because some people have their own interests. I have also discussed it with people from HML. They also feel that it depends on how aware/educated people are. But there are certain things that we hide even if we see them. For instance there are three types of farmers. Those farmers who own land up to 10 acres. They readily agree. Those farmers who own up to 100 acres sometimes agree and sometimes disagree. Those who own more than 100 acres are putting up strong resistance to discourage the new system. The solution to this problem needs to be tackled cautiously where all parties reach agreement. We should try to find ways to make the big land owners concede because they are influential and can influence others. If these big landowners are made to agree then it is not difficult to formulate FOs. We need to solve this problem collectively. If we decide to do any work ethically then nothing is impossible. If you do not understand any thing in this new program then ask and move forward. If this participatory program is successful then the process of water drainage will also be successful. It is certain that unless farmers participate in this program no finances will be sanctioned for other works. Make this program a success collectively so that the drainage plan reaches completion. Thank you.

MR. A.N.G. ABBASI
MINISTER FOR IRRIGATION, SINDH

I am very grateful to you for providing me with the opportunity to participate in this program. I congratulate Secretary Irrigation Punjab, Mr. Suleman Ghani, PIDA and LCCE and all program organizers on the inaugural of AWB. I will not repeat what has been said so far. I will propose a few suggestions that might help us in our future planning.

Whatever happened in the past can not be changed. But whatever we did well in the past can be taken forward and whatever mistakes we made can be left behind. It is a very big challenge. Just by changing the name **of** the department will not solve the problems. We will have to emphasize on two things, sincerity of purpose and good will. Without these we cannot achieve anything.

We should accept that our irrigation system is in a very bad shape. We received it in good condition and we managed it well till 1965. Later it became the target of politics.

An important factor of this new system is the participation of farmers. The Government, the farmers and we together will run this program. Another factor is capacity building. The engineers of our irrigation department (I am an engineer by profession but I have become a minister by chance. I will consider myself an engineer for as long as I live) have not been able to keep the standard required from them. There can be any reason for this. Either they are victims of politics or of their own habits. Capacity building is very necessary so that organizations being formed under the new system can manage it efficiently.

There are two aspects to it, social **and** engineering. If the quality of engineering is not maintained then it will not operate effectively. To move forward it is necessary to highlight the previous mistakes so that lessons *can be learnt*. It does not matter if you do *not* get appreciation for the good work you do since **work** is its own reward. I present my congratulations and on my cabinet's behalf *and* from people of Sindh. Thank *you*.

CONCEPT AND ROLE OF NDP IN IRRIGATED AGRICULTURE AND ANNUAL REVIEW

M. Aslam Mahboob¹

Pakistan Irrigation System was established in 19th, 20th Century. It is the biggest integrated Irrigation System of the World. It consists of 3 Water Reservoirs, 19 Barrages, 12 Link Canals, **43 Canal Commands and** approximately 4,000 Distributaries. The total length of our canal system is 61,000 Kilometers.

Water logging & salinity is the negative effect of Indus Basin Plan. To control water logging & salinity, efforts were made during 1960 to 1995. Till 1995, fifteen million acres of land had the drainage facility and projects were under construction for seven million acres **land**. The performance **of** these Drainage Projects was low because of many problems e.g. inadequate O&M funds, weaknesses in planning & management etc.

Respectable audience, there are many reasons for launching NDP Project. Few of them with reference to water logging & salinity projects are:

Too many run-down Projects in need of Rehabilitation;

- A growing portfolio of incomplete Projects;
- Continued incidence of water logging and salinity;
- Accumulation of in-coming salts within the basin; and
- Chronic shortage of funds for O&M of completed Projects.

Similarly few reasons from institutional point of view are:

- Overall deterioration of system management.
- Agency's unresponsiveness.
- Inequitable distribution of water.
- Inadequate maintenance of canals.
- Escalating gap between revenue & expenditure.
- Environmental degradation.
- Lack of Farmers participation in decision making and implementation process

Respectable friends the NDP has the following goals:

- Restoring the sustainability of environmentally sound irrigated agriculture through :
- Minimizing Saline Drainable Surplus; and
- Facilitating the eventual evacuation of all Saline Drainage Surplus from the Indus Basin to the Arabian Sea.

Similarly, the main objectives of the project are:

- Establishing appropriate Policy Environment, Institutional Frame-work & Strengthening capacity of Sector Institutions;
- Improving Sector Policies and Planning;
- Strengthening the knowledge base of Irrigation and Drainage; and
- Improving the Irrigation and Drainage Infrastructure.

¹ Provincial Coordinator, NDP (Punjab)

For the implementation, the NDP is divided into four main components, which are:

- Sector Planning & Research;
- Institutional Reforms;
- Investment and
- Coordination & Supervision.

The departments responsible for Implementation are as:

Sector Planning & Research	WAPDA - FFC
Institutional Reforms	WAPDA - PIDAs
Investment	WAPDA, PIDAs,
Coordination & Supervision	WAPDA, FFC & PCC

The NDP is funded by The World Bank, ADB and JBIC with counter part funds by Govt. of Pakistan, Provinces and Beneficiaries as reflected below:

Agency	Pak Rs. Million	US\$ Million	%age of Total
Foreign Funding:			
World Bank /IDA	11400	285	36.31%
ADB	5600	140	17.63%
JBIC (Japan)	4000	100	12.74%
Total	21000	525	66.68%
Local Funding:			
GO Pakistan	5440	136.00	17.32%
GO Punjab	1416	35.40	4.51%
GO Sindh	1668	41.70	5.31%
GO NWFP	488	12.20	1.55%
GO Balochistan	300	7.50	0.96%
Beneficiaries	1088	27.20	3.46%
Total	31400	785.00	100%

re

Province/Agency	Amount (Million Rs)
Total Cost of Program	31400.00
F.E.C	6473.00
Share of Provmces	
Punjab	11123.02
Sindh	12613.82
WAPDA	835.38
Research Studies	1003.35
Others (Federal)	589.35

The NDP has four components but the investment component will be reflected in detail, which will be given by G.M. (TM):

- Autonomy & Decentralization
- Sustainability
- Participatory Management

The progress for the Investment Component is as under.

Desilting of Drains (1997-98):

During 1907-OX, 111 Drains were desilted on Crash Program basis. These drains were located in Lahore, Faisalabad & Sargodha area. The length of these drains is 746 miles. The quantity of desilting was 133 million cubic feet with a cost of 111 million rupees. In Faisalabad, Marh Chiniot, Jaranwala & many other drains were desilted. These were 21 drains with a total length of 166 miles, 22 million cubic feet silt was excavated at a cost of 29 million rupees. The details are reflected in table below:

Drainage Circle/ Package No.	Drainage Systems	No. of Drains (Nos.)	Drain's Length (Miles)	Estimated -work (M. Cft)	Total Cost (Rs. M)
Lahore-I	Raiwind & Tandoki	17	102.40	27.10	24.80
Rechna-I	Mangoki, Isherke & Fatehpuri	11	122.51	23.70	20.00
Rechna-II	Sangowal, Gujranwala, Dilawar Cheema, Plangpur & Warn	20	125.03	19.60	14.30
Rechna-III	Nikki Dcg, Chichoki Mallian and Tributaries of Dug	16	121.08	13.80	10.82
Faisalabad-I	Marh Chiniot, Jaranwala and Allied Drains	21	2165.62	31.80	29.15
Sargodha-I	Mona Turtipur and Allied Drains	26	109.75	17.20	11.53
	Total:	111	740.39	133.20	111.20

MODERNIZATION OF SELECTED CANAL COMMAND:

(ij) Modernization of Communication System:

The present telegraph system will be converted into modern tele-communication system for which the Consultants have proposed a plan for PIDA. The line **plan** for this modern tele-communication system is placed at Annexure-I. The present mobile telephone companies have also been requested to come-forward with their proposals.

(ii) Repaid Rehabilitation of Canals:

The rehabilitation of main canals was planned to be accomplished in two phases.

Phase - I:

812 Canals were desilted for a length of 5845 miles and 347 Cubic feet silt was excavated with a cost of 135 million rupees. In Faisalabad area 110 Canals were taken **up** with a length of 942 miles and 50 million cubic feet silt was excavated at a cost of 19 million. The details of the program are reflected in table below:

Name of Zone	Channels (Nos.)	Total Length (Miles)	Quantity of Desiltation (Cft M)	Total Cost (Rs. M)
Lahore	87	519.67	74	13.46
Faisalabad	110	942.47	50	19.04
Sargodha	256	1218.80	46	30.35
Multan	188	2104.33	74	25.99
Bahawalpur	81	494.74	38	16.55
D.G. Khan	90	565.07	65	29.93
Total:	812	5845.08	347	135.32

Phase - II:

76 Hydraulic Structures were repaired at a cost of 408 million rupees. In Faisalabad area 14 such structures were repaired at a cost of 26 million rupees. The details of the program are reflected in table below:

Name of Zone	Structures (Nos.)	Total Cost (Rs. M)
Lahore	14	260.82
Sargodha	03	14.28
Multan	29	72.14
Bahawalpur	05	9.08
D.G. Khan	11	25.59
Total:	76	408.10

Plan far 1999 - 2002:

A Rolling Plan has been prepared for three years 1999-2002 and its summary is reflected in table below:

(Rs. in Million)

Sr. #	Description	Total Estimated cost	Financial Year		
			1999-2000	2000-2001	2001-2002
A.	Sector Planning & Research Component	0.00	0.00	0.00	0.00
B.	Institutional Reforms Component	966.95	58.48	403.50	465.50
C.	Investment Component:				
C-1	New Projects / Scheme	5636.77	0.00	1897.84	3638.56
C-2	Off-Farm Drainage and O&M	6315.81	244.28	1590.87	4462.83
C-3	On-Farm Drainage	1022.50	0.00	177.00	845.50
C-4	Modernization of Selected Canal Command	1495.59	648.59	642.00	205.00
C-5	Other Drainage Scheme	11.00	0.00	4.00	7.00
	Sub Total C:	14581.51	892.87	4351.71	9218.90
D.	Program Coordination & Supervision	294.44	95.66	103.32	95.46
	Total:	15842.90	1047.01	4858.53	9779.86

New Sub-Projects:

14 - New Drainage Projects have been identified by PIDA and the PDC is currently working on formulation and submission of the appraisal reports. The ranks of the Sub-Projects are reflected in the table below. There is one Sub-Project for Faisalabad (Drainage IV Phase-11) and is spread over 26000 acres with 630,000 feet length of Tile-Drains.

Sr #	Sub-Project	Estimated Cost (Rs. M)
1	Drainage-IV (Phase-11)	312.00
2	DG Khan integrated Drainage & Irrigation Project	1400.00
3	Channelization of Deg Nallah	200.00
4	Remedial Measure SC'ARP VT-Evaporation Ponds	52.00
5	Interceptor Drains along Eastern Saddiqia Canal	50.00
6	Muzaffargarh Canal Command Project	490.00
7	Khushab SC'ARP Phase-II	165.00
8	Rehabilitation of Nikki Deg	355.00
9	Sukhai Drainage System	500.00
12	Construction of Harripur & Dhudian Surface Drain	138.90
13	Construction of Garh Main Drain, Chanpur Main Drain	243.00
14	Construction of Drainage System. in Bhakkar & Khushab Areas	214.50
	Total	4363.90

Off-Farm Drainage Sub-Projects:

14 - Off-farm Drainage Projects have been planned by PIDA as detailed in the table below:

Name of Zone	Drains (No.)	Estimated Cost (Rs. M)
Lahore	15	1730.00
Faisalabad	08	1043.00
Sargodha	11	1547.00
Bahawalpur	04	124.60
O&M through Performance Contracts	3	400.00
Total	41	4845.49

On-Farm Component:

The work proposal for On-farm Drainage Component is reflected in table below and will be taken up after the formulation of Farmers Organizations:

SGWT/Wells	193.65
Tile Drains	25.00
Mobile Pumping Stations	43.00
Drains (<15Cs)	192.50
Biological Control of Waterlogging	100.00
Water Course Improvement! Lining in SGW Area	500.00
This component awaits formation of FOs through Social Mobilization	

Rapid Rehabilitation of Canals - Phase - III:

14 - Main Canals have been proposed for rehabilitation. **An** allocation of Rs.64 Million has been made for Lower Chenab Canal Command and the appraisal report is in the process of approval by Donors.

Let me now present you the benefits of the NDP Project in brief. These benefit are about Fanners **and** Canal Systems.

Sector Planning and Research:

NDP **will** enhance the Technical Foundation of Drainage. We **will** be able to manage our water resources better than previous. It will facilitate long term Sector & Project Planning.

Institutional Reforms:

- Transforming the present Institutional Structure into **PIDA, AWBs, FOs will improve** the efficiency of system.
- Enhance the effectiveness of the service delivery.
- Promote participatory Management.
- Ensure **self** sustainability of Imgated Agriculture.
- Generate annual saving to provinces at Rs.25 **19** millions.

Benefits due to Projects Investments:

- It will minimize water-logging and salinity.
- Generate efficiency gains in water delivery and drainage.
- The tails will get their due share.
- Improve the crop yield by 2% of the total canal command and 20% increase in tails reaches.
- We **will** be saving 5% of water due to canal lining.
- Selection criteria will be in favour of small land holders and **tail enders**.

Revenue Impacts:

- NDP **will** benefit to **an** area of 13.5 million acre.
- Improvement in land revenue.
- Improvement in Abiana Collection.

Employment Impacts:

- Reclamation of land will help benefit 17000 Farmers. Those who were to loose **income** due to waterlog and salinity will also be **saved**.
- **Apart** from farmers other non-fanners will also **be** benefited.

Poverty impacts:

- There would be decrease in poverty due to increase in agriculture income.
- There will be improvement in social life standards, hence **Law** and Order situation **will** also improve.

- For every 1% increase in farm income there will be 1.5% increase in non farm income

Poverty Impacts:

- Improvement of water logged lands, soil salinity, flood protection and afforestation.

Respectable colleagues and guests, if you have any question about the presentation. Please contact me in person and have your questions cleared.

RESTRUCTURING OF PID INTO PIDA/AWB

Syed Mubashir Hussain² and Asrar-ul-Haq³

1 INTRODUCTION

Pakistan has the distinction of having the largest contiguous gravity flow irrigation system in the world. The irrigation system serves as a lifeline for sustaining the agriculture in this part of the world, having arid to semi-arid climate. Irrigated lands supply more than 90 percent of agricultural production, account for 25 percent of GDP, and employ 54 percent of labour force. They supply most of the country's needed food-grain and also are source of raw materials for major domestic industries, particularly cotton products, which contribute overwhelmingly to Pakistan's exports.

Irrigation in Indus Basin has a long history dating back to the Indus Civilisation. Irrigation development on a scale unknown in history however started about the middle of 19th century under British rule. The inundation canals were first improved, and then gradually converted to properly-regulated perennial channels by means of weirs and barrages constructed across the rivers. Large inter-basin link canals and storages were subsequently constructed as a consequence of Indus Water Treaty in 1960s and the first half of 1970s. The construction of these storages and link canals allow operation of the Indus Basin Irrigation System in a more integrated manner with greater control, although requiring more technical skills.

The Punjab Irrigation network was designed with *the* objective of bringing as much land under canal command as possible. The designed annual cropping intensities were generally kept low, at 60 to 80 percent, and the diversion capacity of canals aimed at spreading the water thinly over a large area equitably with minimum O&M costs. This policy was considered suitable for the requirement of a small population at that time. However over decades of canal system operation and as a consequence of population growth it increased way beyond the designed capacities.

2 IRRIGATION INFRASTRUCTURE

The Punjab Irrigation network comprises irrigation canals, drains, tubewells, 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 1.2 lac. Cusecs of irrigation supplies, and another, about 1.1 lac. Cusec capacity of inter river links. The colossal network of over 23,000 miles of irrigation canals provides irrigation facilities to fertile lands in the Punjab. The salient data of the Punjab Irrigation system is exhibited in Table 1.

3 MAJOR ISSUES

The apparently declining irrigation performance in the country has been drawing the attention of many national and international agencies. The under-performance appears more conspicuous when viewed in the context of the high performance standards of the past. The irrigation management issues are multi-faceted and multi-dimensional in nature. The present performance

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³ Director, Punjab Irrigation & Power Department/PIIDA, Lahore, Pakistan.

problems and issues facing the Irrigation Department have been identified under the **following four** broad categories.

Table 1. Salient Features of Punjab Irrigation **System**.

1.	Headworks/Barrages	14 No.
2.	Main Canal Systems	21 No.
3.	Length of Main Canals and Branches	3993 Miles
4.	Distributaries and Minors	2794 No.
5.	Length of Distributaries and Minors	19291 Miles
6.	Total Off-take Capacity	1,20,000 Cfs.
7.	Total Off-take Outlets	50,000 No.
8.	Gross Command Area	23.35 Ma.
9.	Culturable Command Area	20.78 Ma.
10.	Overall Annual Permissible Irrigation	13.96 Ma.
11.	Overall Designed Annual Intensity of	67%
12.	Irrigation	25.50 Ma
13.	Actual Irrigation	122%
14.	Actual Intensity of Irrigation	528 Miles
15.	Length of Inter-river Links	1, 10,000 Cfs.
16.	Off-take Capacity of Links	7943 No.
17.	Public SCARP Tubewells	1135 No.
18.	Other Public Tubewells	4,50,000 No.
19.	Private Tubewells	4900 Miles
20.	Length of Surface Drain	1600 Miles
21.	Length of Flood Embankment	500 No.
22.	Spurs	31 No.
	Small Dams	

System and Supply Constraints

- Overall water scarcity
- Agricultural development beyond system design
- Outdated Canal capacities
- **Lack** of storages

Physical Constraints

- Wide river inflows and sediment load
- Overwhelming size
- Flat topography
- Poor natural drainage

Management Issues

- Lack of user participation in management
- Sub-optimal maintenance
- Unequitable distribution
- **Lack** of systematic Monitoring & Evaluation
- Inadequate communication and transport system
- External influences

Sustainability Concerns

- Health of the system
- Widening gap between revenue and expenditure
- Environmental degradation

4 NEED FOR REFORMS

The need for improving irrigation management has been figuring high in the agenda of most national and international agencies in the recent past. This was triggered by the declining irrigation performance despite sizeable investments in the rehabilitation of irrigation infrastructure. The international financing agencies, therefore, changed their strategy by arguing that institutional issues constrain the overall irrigation management in Pakistan. Initiated by a World Bank proposal in 1993 to privatize and commercialize the water service, the reform agenda has been the topic of **an** open, comprehensive and discrete public discussion. After extensive and thorough debate on the pattern, extent and feasibility of the Institutional Reforms in the irrigation sector, the following set of institutional changes was agreed upon in a high level meeting that was chaired by the President of Pakistan and attended by the Prime Minister and the four Provincial Chief Ministers in August 1995.

- The existing Provincial Irrigation Departments (PIDs) would be converted into autonomous authorities to be known as Provincial Irrigation and Drainage Authorities (PIDAs). The Provincial governments in January 1997 promulgated ordinances to **this** effect, which were subsequently legislated with some amendments as **Acts** by the Provincial Assemblies during mid-1997.
- One of the existing Circles of PIDA would be transitioned to financially self-accounting Area Water Board (AWB) on a pilot basis. Further transitioning of AWBs would be planned depending upon the performance of the pilot AWB. Developing AWBs on the canal command basis is expected to allow integrated management and flexibility as well as decentralization and a basis for comparison of cost of delivery services.
- Formation of Farmers' Organizations (FOs) would be promoted on a pilot basis. These organizations would play an increasing role in the operation and maintenance of distributaries **and** minors. Based upon results of such pilot projects, a workable model would be evolved for adoption on countrywide basis.

The institutional reforms are considered to be the most vital intervention in the water sector and therefore all the donors closely review the pace of implementation. The recent World Bank Mission while recognizing the good progress made by Punjab in carrying out *the* reforms has reiterated the need of ensuring full compliance with **PIDA** Act and legal documents including operationalization of PIDA, pilot AWB and FOs. It is added that all future foreign assistance in water sector is conditional to the satisfactory implementation of the reforms agenda.

5 SALIENT FEATURES OF INSTITUTIONAL REFORMS

The Punjab Irrigation and Drainage authority (PIDA) Bill 1997 was passed by the Provincial Assembly of the Punjab on June 27, 1997, and assented to by the Governor of the Punjab on June 29, 1997. The main objectives of the establishment of PIDA, as set out in the Preamble of the **Act**, are reproduced hereunder:

“Whereas, it is expedient to establish the Punjab Irrigation and Drainage Authority to implement the strategy of the Government of Punjab for streamlining the Irrigation and Drainage System; to replace the existing administrative set up and procedures with more responsive, efficient and transparent arrangements; to achieve economical and effective operation and maintenance of the irrigation, drainage and flood control system in the Province; to make the irrigation and drainage network sustainable on a long-term basis and introduce participation of beneficiaries in the operation and management thereof”

The main provisions of the PIDA Act are presented below:

- The Authority shall be a body corporate (Section 2(2)).
- The minister for Irrigation and Power **shall** be the chairman **of** the Authority. **The** Authority members will be notified by the Government, such that not less than **six** members shall be farmers **and** the number **of** non-farmer members **shall** not exceed the farmer members (Section 3).
- Subject to the control and guidance of the Authority, the management of the affairs **of** the Authority shall be carried out by the Board of Management appointed by the Authority with the prior approval of the Government. The Board would **comprise** a **Managing** Director (MD) and three General Managers (GMs). The MD **and** GMs shall have technical backgrounds and practical experience in the profession relevant to their job description (Section 4).
- The Authority shall carry out all functions of the Irrigation **Wing** of the Punjab Irrigation Department. The powers **and** duties of the PIDA have been set out in Section 5 of the Act.
- All employees of the Irrigation Wing of Irrigation and Power Department, except such employees as may be specified by the Government in this behalf, shall become the employees of the PIDA (Section 11).
- An Authority Fund shall be established for financing the activities **of** the **PIDA** (Section 12).
- The Government may establish Area Water Boards (AWBs) **and** Farmers Organizations (FOs) **and** assign to them such functions, as it may deem fit. The Authority shall, within one year of its establishment, devise and implement **pilot** programs and policies to **form** an **AWB** and FOs on a pilot basis in accordance with the relevant Bye-Laws **and** Regulations framed by the Authority (Section 14).
- The Rules shall be framed by the Government (Section 16).
- The Regulations shall be made by the Authority (Section 17).

6 MAJOR FUNCTIONS OF PIDA

The major functions of the Authority would include the following:

- To perform all duties and functions of the Irrigation Wing of the I&P Department.
- To plan, design, construct, operate and maintain the Irrigation, Drainage and **Flood** control infrastructure located within its territorial jurisdiction.
- To improve effective and efficient utilization of irrigation water and its disposal,
- To introduce the concept of participatory management through the pilot AWB **and** FOs, to adopt and implement policies aimed at promoting, growth and development **of** FOs and monitoring of their performance.

- To take measures for reducing O&M expenditure and improving maintenance planning.
- To **take** measures to improve assessment and collection of water rates and drainage costs.
- To make the Authority financially self-sustaining with regard to the O&M cost of canal irrigation and drainage within a period of 7 to 10 years.

7 COMPOSITION OF AUTHORITY AND AWBS

The composition of Authority and the proposed Area Water Boards in the Punjab Province is reflected in Table 2 and 3. The constitution of the authority is primarily aimed at de-centralizing powers vested in the officers at the District and Provincial levels and to directly involve the irrigators through participatory management for operation and maintenance of irrigation and drainage infrastructure. The final management strategy is to transform Provincial Irrigation Department into an autonomous body under statutory arrangements with complete autonomy of revenue collection and its spending with proper accountability.

Designation	Status	Number	Description
Minister, I&P	Chairman	1	Ex-officio
Chairman P&D	Member	1	- do -
Secretary Finance	Member	1	- do -
Secretary I&P	Member	1	- do -
Secretary Agriculture	Member	1	- do -
Managing Director, PIDA	Member	1	- do -
Farmers Representatives	Member	3	Farmers

Table 3. Composition of Area Water Board.

Designation	Status	Number	Description
Farmer Representative	Chairman	1	Ex-officio
Representative of Authority	Member	1	- do -
Technocrat in Water Management	Member	1	- do -
Representative of Agriculture Department	Member	1	- do -
Representative of Civil Admn.	Member	1	- do -
Chief Executive of AWR	Member	1	- do -
Superintending Engineer, Drainage	Member	1	- do -
Executive Engineer of LCC (East)	Member by rotation	1	- do -
Representatives of FOs	Member	7*	Farmers

*At least three members from tail portions of distributaries and minors.

8 PARTICIPATORY IRRIGATION MANAGEMENT

Participatory Irrigation Management (PIM) refers to the association of farmers in the operation and management of irrigation systems. The intensity of participatory management may range from minimal user involvement to the transfer of nearly all management functions. The main objective of PIM is to improve irrigation management by providing a better irrigation service to

the farmers, ensure physical sustainability of the irrigation infrastructure, and to promote a sense of partnership between the farmers and Government Agencies. There are various aspects of PIM that include planning, design, construction, operation and maintenance, financing, **and policy** matters. Similarly, PIM can be implemented at various levels according to the environment, **technical** complexities of the irrigation system and needs of the society at large. These levels include quaternary, tertiary, secondary/main, **and** project/sector, where **PIM may** be practiced. The examples of project level participatory management can **be found** in the United States, France and Japan, where irrigation users have largely replaced the state management. **At** the lower end **of** the spectrum, the state continues to dominate most aspects of irrigation down to tertiary or even quaternary levels, as in the case of Morocco, India, **and** Pakistan, etc. (World **Bank**, 1997).

The farmers' participation in irrigation management **can** have a profound impact on irrigation management. The main reported advantages of PIM include: management efficiency, transparency, accountability, cost saving, higher fee collection rates, **and** a **sense** of ownership. On the other hand, the concerns about PIM include the difficulty **of** organizing **farmers**, particularly in the larger systems, lack of technical/professional expertise with farmers, **risk of** manipulation by influential farmers, and the issues related to development of new institutions and their sustainability.

In order to successfully implement participatory management, there **has** to be a conducive environment **and** enabling framework in position. The process of formulating a strategy **that** fits specific features **of** the country needs to be evolved in the context of the local environment. Towards this end, there are some common pre-requisites that include creating an **enabling** environment; the legal framework; and a gradual evolutionary process.

9 ESTABLISHMENT OF PILOT AWB

Section 14 of the Punjab Irrigation and Drainage Authority **Act**, 1997, provides that Government **may** establish Area Water Boards and Farmers Organizations **and** assign them such functions as it may deem fit. Section **14** of the said Act further provides that pilot **Programs** shall be launched by the Authority, whereunder it shall take steps for the formation **of** Area Water **Board and** Farmers Organizations which are to be vested with such powers and functions as would enable them to become financially self-sustaining **and** self-sufficient within seven years of **their** establishment.

In accordance with the provisions of the Act, LCC(East) Circle Faisalabad has been notified as Pilot Area Water Board. The Government has also nominated the members of the **said** Area Water Board, which have been notified separately.

The detailed Rules for the operationalization of the Pilot Area Water Board (AWB) including **its** functions and powers **will** be framed in due course of time after consultation with the Authority, members of the Area Water Board, Farmers and other stakeholders. The framework will **be** developed by the Institutional Reforms Consultants being hired under National Drainage Program.

Till such time that the comprehensive framework is developed for functioning of the pilot **AWB**, it has been proposed that Pilot **AWB** may start performing a supervisory role in the interim

phase. Thereafter in the next phase, the Area Water Board will be given more comprehensive functions and vested with powers compatible with the enhanced functions. It has therefore been proposed that during the initial phase, the present legal, administrative, accounting and financial arrangements/powers may continue to remain in force till such time that an appropriate framework is evolved and approved by the Government. It is pointed out that this interim arrangement is in operation in case of PIDA also.

Subject to the supervision of the Authority, the Pilot Area Water Board has been proposed to perform the following functions in the interim phase:

Approve and monitor the O&M work plan;

- a Recommend the development schemes for Annual Development Program;
- Approve regulation/rotational program of water distribution in Pilot **AWB**;
- Monitor the operation of canal/branch systems in various divisions and review the water account;
- Plan/implement measures for checking water theft and other offences under irrigation laws to ensure equitable distribution of canal water and to address tail shortages;
- Review/supervise assessment of water rates;
- a Review/monitor expenditures vis-a-vis budget allocations;
- Encourage participation of the water users in the irrigation management;
- Assist the Authority and Government in the formation, promotion and development of the farmers Organizations;
- a Monitor the working of the Farmers Organizations;
- a Perform such functions and exercise such powers which are incidental to the functions mentioned above.

The functions of the Pilot **Area** Water Board and the Chief Executive **shall** be subject to the rules framed by the Government, from time to time, under the Act.

10 LEGAL FRAMEWORK FOR FARMERS ORGANIZATIONS

The concept of Farmers Organizations is the most crucial component of the agreed reforms package **as** it seeks to mobilize farmers participation at the grass root level for improving irrigation management. The Punjab Irrigation and Drainage Authority Act, provides for the framing of Rules by the Government of the Punjab to carry out the proposes of the Act, Section 14, of the said **Act** provides that the Farmers Organization under the pilot Program are to be vested with such powers and functions as would enable them to become financially self-sustaining and self sufficient within seven years of their establishment. In view of the importance of the FOs in implementing the reforms agenda, intensive and extensive deliberations and consultations have been held with all the major stakeholders regarding legal framework for registration and functioning of FOs.

The salient features of the Rules for FOs, approved by the Government, are as follows:

- a) Provisions have been made for constituting elected Farmers' Organizations at the distributary level.

- b) **The** Farmers' Organizations have been entrusted with functions **pertaining** to the management of the canal system at **the** distributary level. They will **be** exercising **the** powers of the Divisional Canal Officers (Executive **Engineers**) under the Canal **and** Drainage Act, **1873** **within** their respective jurisdictions.
- c) Provisions have **also** been made **for** the constitution of the Nehri Panchayat, Irrigation Tribunals **and** Irrigation Appellate Tribunal to deal with disputes **relating to irrigation** management.
- d) A Farmers' Organization shall comprise a **'General Body'** and a "Management Committee."
- i) The General Body of a Farmers Organization shall **comprise of the members of the** Farmers Organization;
 - ii) The Management Committee, of a Farmers Organization **shall** comprise of such office bearers of the Farmers Organization as may be prescribed **by** the Authority;
 - iii) The Management Committee shall perform the functions **and** exercise the powers **of a** Farmers Organization except such functions and **powers as are** exercisable by the General Body of the Farmers Organization;
 - iv) The Management Committee shall be elected for a **period** of three years by the General Body of the Farmers Organization **in** accordance **with** the Regulations.
- e) The Authority shall appoint a Registrar for **an** Area Water Board **and** a Registrar **at** its Head Office who shall perform all functions relating *to* the registration **of** the Farmers Organizations.
- f) Subject to the overall control of the Authority and, where an Area Water Board **has** been established, the Authority **and** the Area Water Board will form a Farmers **Organization** **and** register it. Under the rules it may perform all or **any of** the following functions:
- i) Manage, operate, **and** maintain the irrigation infrastructure including any hydraulic structures located on it, for which it has been established.
 - ii) Obtain irrigation water supplies from the Authority or concerned Area Water **Board** at its head regulator, and pay the agreed amount to the **Area Water Board** concerned **or** the Authority in the manner agreed between the Farmers **Organization** and the **Area** Water Board, or between the Farmers Organization **and** the Authority.
 - iii) Supply the irrigation water equitably **and** efficiently to the **Fanners and** other water users within its area.
 - iv) **Assess** the water rates **and** other irrigation related charges to **be** collected **from** the water users.
 - v) Collect the water rates and other dues, fees and charges from the **persons liable** to pay them.
 - vi) Levy and collect charges for additional services rendered by the Farmers' Organization.
 - vii) Collect surcharge from water **users** and drainage beneficiaries **in** case of default in payment of their dues.
 - viii) Settle water disputes relating to the Farmers or other water users **of** the area.
 - ix) Any other duty function or responsibility which **is** incidental to **or** implied in the duties, functions, and responsibilities **of** the Fanners Organization.

11 CURRENT IMPLEMENTATION STATUS

After promulgation of **PIDA** Act on July 2, 1997, the following actions have been taken for implementation of the institutional reforms:

- Authority has been established and is functional;
- Secretary Irrigation appointed as Managing Director PIDA during the initial interim period;
- General Manager (Transition Management) alongwith Deputy General Managers (NDP, Administration and Institutional Reforms) appointed;
- Notification issued for continuity of all the existing rules, regulations, procedures, and financial and legal arrangements till such time that the PIDA becomes operative and makes **its** own rules, regulations and financial and legal instruments;
- Lower Chenab Canal (East) Circle notified as first Area Water Board and the Board of Directors constituted. LBDC identified as the next **AWB**;
- Modalities for operationalization of AWB underway;
 - Services of Chartered Accountant **and** Legal Advisor for PIDA hired on contract basis;
- Process of appointment of institutional reforms consultants is being finalized;
- **PIDA** headquarter established and functional;
- Approval formalities for Punjab Farmers Managed Irrigated Project completed by **PIDA**;
- Legal framework for FOs approved. Regulations/By-laws being framed;
- Three Pilot FOs in Bahawalnagar Area established. Modalities for transfer of operational responsibilities underway; and
- Negotiations for engaging social mobilizers (NRSP) underway.

The implementation of institutional reforms and transitioning of the PID into the PIDA would involve a long and complex evolutionary process that would require a lot of input by the professionals and experts. For this purpose, services of Institutional Reforms Consultants are being hired. These consultants would be financed through the institutional reforms component of the National Drainage Program (NDP-I) and would formulate proposals for transforming the PIDA into a functional entity. The major areas/issues requiring attention/resolution include the following:

- The organizational structure of the PIDA and a pilot AWB;
- The rules, regulations and bye-laws of the **PIDA**, a pilot AWB and FOs;
- Establishment of Authority Fund and financial procedures of the PIDA, AWB and FOs;
- Business and financial plans;
- The transition arrangements;
- Change management; and
- The monitoring arrangements for evaluating the performance of the pilot AWB and FOs.

As mentioned above, the implementation of institutional reforms will be phased over a long time period and would, therefore, call for commitment by all the **key** players, close monitoring of implementation progress and course correction by drawing on the learning experience. That the process involves the creation of new institutions in the rural areas of Punjab needs to be appreciated along with the issues of sustainability and replicability that appear to pose **quite** a few challenges, which **will** have to be addressed in a professional dispassionate and efficient manner.

NEED FOR PARTICIPATORY IRRIGATION MANAGEMENT

Zafar Iqbal Mirza⁴

BACKGROUND

Agriculture is the major sector of Pakistan's economy. The fertile land resources of the Indus Basin System coupled with the water of the River Indus and its tributaries provided ideal conditions for the development of irrigated agriculture in the country. Pakistan has an enormous network of irrigation canals, which link with the Indus River system to irrigate about 42 million acres of land.

The system comprises of 3 major storage reservoirs, 19 barrages and 15 inter-river (link) canals. The system serves 45 canal commands and delivers water to about 90,000 villages through a canal system of about 30,000 miles in total length. There are nearly 4000 distributaries providing water to fields through a network of about one hundred thousand watercourses. Each watercourse is designed to carry 1 to 3 cusecs of water to irrigate about 300 to 400 acres of land. It is the World's largest contiguous irrigation system.

The land and water resources of the Indus Basin have the potential of increasing crop yields substantially. At present, per acre yields of various crops are far less than the international standards despite a very favorable combination of climate, temperature, soil and water resources. The results of many studies indicate a considerable amount of water wastage from the irrigation system. According to one estimate, against the 192 Million-Acre Feet (MAF) of water available in the rivers and from the groundwater resource, hardly 54 MAF is available for crop consumptive use requirements (Figure 1). The low efficiency of the irrigation system not only causes water shortage especially at tail reaches, but also gives rise to irrigation-induced environmental problems such as water-logging and salinity, whereby millions of acres of productive lands become agriculturally unproductive.

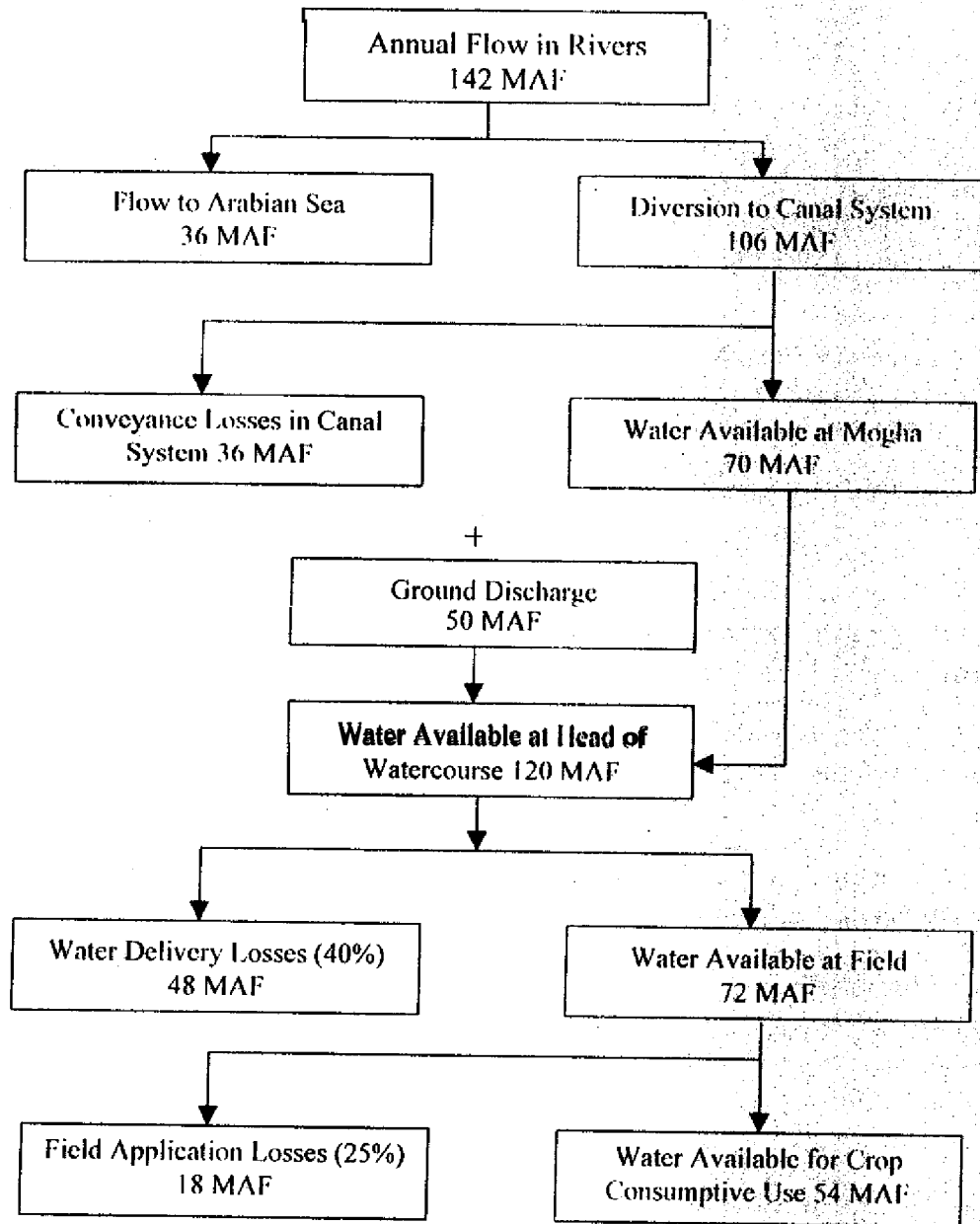
RECENT DEVELOPMENTS

In recent years however, there has been a growing awareness among Pakistan policy makers and academics regarding the necessity for organizing farmers at the level of minors and distributaries, as well as watercourses, so that farmers will have some control over the distribution of water to each watercourse and farm plot. Farmer's control over water is expected to improve tertiary level water management by way of increasing the compatibility between water deliveries and crop water requirements throughout the cropping season, both in terms of quantity, as well as timeliness.

Keeping in view the necessity for sustainable irrigated agriculture, there is now a felt need to try out some pilot projects on participatory irrigation management in selected canal command areas in all four provinces of Pakistan. The main aim to test the reform on pilot scale is to check its validity in the context of Pakistan's large canal system before its replication on wider scale.

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PAKISTAN IRRIGATION SYSTEM AN OVERVIEW



MAIN PROBLEMS OF EXISTING IRRIGATION SYSTEM

- irrigation system is not performing well due to poor operation and maintenance;
- frequent breaches due to weak banks;
- inequitable water distribution;
- unreliable water supply;
- increased cases of water theft;
- water disputes;
- delayed justice;
- financial mismanagement;
- political interference;
- more O&M expenditure as compared to income;
- poor accountability;
- lack of users participation in decision making.

OBJECTIVES OF PIM

The main objective of the institutional reforms in the irrigation sector of Pakistan is to shift the responsibility and authority for the management of irrigation system at the secondary and tertiary level from the government to non-government entities i.e. Farmers Organizations (FOs). Also to involve users in decision making at higher level of the system.

REASONS FOR INSTITUTIONAL REFORMS

- poor performance of government agency managed irrigation system;
- the failure of governments to finance, or recover from farmers, the cost of irrigation management;
- to reduce burden from government and reallocate revenues to improve O&M;
- enhanced trust in the capacity of water users to participate in management of the irrigation system.

IRRIGATION MANAGEMENT TRANSFER: EXPERIENCE FROM OTHER COUNTRIES

Irrigation management transfer has been practiced in many countries across the world such as USA, Mexico, Turkey, Indonesia, India, Sri Lanka, Nepal and Colombia etc. In some of these and other countries, reforms have successfully accomplished while in others; IMT has failed completely or partially.

RESULTS FROM SUCCESSFUL IMT

- better and more equitable water distribution
- better reliability in water supplies
- improved operation and maintenance of the system
- self financing

REASONS FOR PARTIAL SUCCESS OR COMPLETE FAILURE

- half-hearted approach (lack of will)
- lack of enabling laws
- lack of suitable staff for social mobilization
- poor coordination among different actors
- more focus on the engineering aspects than on formation and training of WUAs.

RATIONALE FOR PROMOTION OF USER'S PARTICIPATION

The gradual deterioration of irrigation systems throughout the world has exposed serious institutional deficiencies, and resulting government failure to deliver the services in most water resources systems. In most developing countries financial crisis and inability of government to deliver services has become visible. This includes inadequate motivation and poor accountability process of agency staff, high level political interference and rent seeking, and inadequate concern for needs of users. On the other hand, without reliable and equitable supply of water, users are not ready to share the ever-increasing costs of Operation and Maintenance (O&M). The options left behind are either:

- 1) leave the system as such (agency managed) and bear the cost (declining or stagnant agricultural productivity, disastrous in the long run), or
- 2) government improves and manages the system efficiently, or
- 3) involve the beneficiaries (farmers) to share some of the responsibilities of O&M for sustained and improved agricultural production.



With every dawn about 11 thousand additional persons demand for food.

WHETHER PAKISTANI FARMERS CAN DO THAT?

The main question posed by the policy makers, experts and the concerned government agencies staff is whether our farmers can do that. Similarly some segments of farmers also worried about their capacity to handle the O&M activities. However, past experience of users participation in Warabandi, Watercourse improvement under On-farm Water Management program and providing help to the Irrigation agency staff in annual desilting of minors and distributaries shows farmers ability to take-over the responsibilities of irrigation system management.

Last three-four year experience of Farmers' Organizations in Pakistan also show that farmers can get organized, they are willing to take-over responsibilities at secondary level of the system and they can perform well in the operation and maintenance of the system in a cost-effective way. Nevertheless, there are few pre-requisites for an effective, socially, technically and financially viable Farmers Organization.

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KEY FOR SUCCESSFUL IMT

- clearly defined water rights
- high level support from the community/water users
- political will
- government support
- enabling rules and effective implementation
- well defined **roles** and responsibilities of all stakeholders
- transparency in organizational and financial matters
- effective accountability mechanism
- a capable, efficient management **and** staff; and
- effective support services after turn-over.

EXPERIENCE OF ON FARM WATER MANAGEMENT IN SOCIAL MOBILIZATION FOR IRRIGATED AGRICULTURE

Mushtaq Ahmad Gill⁵ and Rana Khurram Mushtaq⁶

BACKGROUND

Pakistan is a river born country and owns one of the world's largest irrigation networks **known** as "Indus Basin Irrigation System (IBIS)". The salient features of the system are three major storage reservoirs (Tarbela and Chashma on the river Indus, and Mangla on the river Jhelum), 19 barrages, 12 inter river link canals and 43 independent irrigation canal commands. About 135,000 community watercourses (54,000 in the Punjab) of the IBIS convey water from canal to the farmers' fields. Total length of the main canals alone is 58,500 **km.** and watercourses comprise of more than 1,621,000 **kms.** This irrigation network was installed more than hundred years **ago** and now its efficiency has reduced to such an extent that more than 50% of the irrigation water is lost in transit due to improper O&M and during application to the crops. This fact was pointed out for the first time during 1970s when field investigations were undertaken at the Mona Reclamation Experimental Project (MREP) under **WAPDA** with the assistance of United State Agency for International Development (USAID). The major reasons of water losses in tertiary network were found to be seepage, spillage, side leakage and operational losses, Other reasons were thin, distorted and silt load watercourse banks; elevated and blind reaches; zigzag sections with lot of kinks, trees, shrubs and vegetation growth; rodent holes; distorted sections due to animal crossings and bathing; and improper cleaning and maintenance.

Colossal amount of water wastage in watercourse system, its inequitable distribution among the shareholders, and inappropriate use of this scarce resource demanded a change in management of the irrigation system to make it more beneficial for the farming community. The improvement cost of watercourses through traditional contractual system was worked out to be double without participation of the farmers. The problems of alternate arrangements for continuing the water supply, conveying the material at site, and alignment of the watercourses were also big tasks.

Accordingly, a farmers' participated program was proposed by USAID which financed the pilot project during 1976-77. The farmers were organized into informal Water Users Associations, where they contributed skilled and unskilled labour for civil and non-civil works. The pilot project was successfully completed and its success, socio-political pressure from the farming community, and donor's interest led to the extension of OFWM Program countrywide. The Punjab Water Users Association Ordinance was promulgated in 1981 to provide a legal framework with an aim to clearly define roles, duties, rights, and responsibilities for these institutions. Since then, WUAs are organized on each watercourse and formally registered prior to commencement of the improvement process on a watercourse to achieve envisaged objectives. The major functions of WUAs are to:

- arrange and provide labour and to distribute the physical and financial involvement proportionately;

⁵ Director General Agriculture (Water Management) Punjab

⁶ Assistant Director, Directorate General Agriculture (Water Management) Punjab

- collect funds from the fanners in proportion to their land **holdings** for making **payments** to the masons;
- settle all matters of disputes amongst various water users in respect of alignment **of** the watercourse, fixation of water control structures **and** distribution of **work** etc.;
- make alternate arrangements for the conveyance of water **during** the **period of** watercourse reconstruction **and** improvement;
- carry out works according to standards and specifications under the **technical** supervisions of water management field staff;
- safeguard the watercourse materials supplied to them **and** maintain proper **record** regarding their receipt and utilization on the watercourse construction; **and**
- arrange periodic cleaning, maintenance and repair of the watercourse **after its** improvement.

PROGRAM ACHIEVEMENTS (1976-77 TO DECEMBER 1999)

(a) Physical

Sr.	Activities	Achievements
1.	Water Users Association organized (No.)	26,534
2.	Watercourses Improvement (No.) (out of 54,000 watercourses in the Punjab)	26,035
3.	Length of Watercourses Improved (km)	
	a. Earthen (Katcha)	102,336
	b. Brick lining (Pucca)	20,614
	c. Water control structures (No.)	990,235
4.	Water Management Demonstration Centres (Acres) (Zero tillage, Furrow-Bed Irrigation, Mechanical Rice Transplanting)	2,850
5.	Precision Land Levelling (Acres)	373,574
6.	LASER Land Levelling (Acres)	66,181
7.	Training of Water Users/Professionals (Nos.)	101,471
8.	Micro Irrigation Schemes (Nos.)	21
9.	Water Storage Tanks (Nos.)	156
10.	Community Tubewells (Nos.)	1,350
11.	On Farm Surface Drainage Schemes (Nos.)	30

Financial (Completed Project)

1.	Number of completed projects	18
2.	Total cost	Rs. 11.2 Billion
	Government's Share	Rs. 6.9 Billion
	Farmers' Contribution	Rs. 4.3 Billion

COST SHARING

In order to create a sense of participation, possession, and ownership **amongst the farmers**, various modes of recovery of cost of construction material under various OFWM works **have** been introduced. The percentage of recovery amounts were **not** only **gradually** increased but method of recovery on installation basis has been switched to upfront cost sharing **mechanism** (details given below). This shows the degree of involvement of **farmers/water** users in OFWM **works**.

1980-81

- Recovery of 20% costs of construction materials in addition to provision of all skilled and unskilled labor cost.
- Grace period of two years
- Recovery effected in ten equal six monthly installments over a period of five years.

1985-86

- Recovery of 25% cost of construction material in addition to provision of all skilled and unskilled labor cost.
- Grace period of two years.
- Recovery effected in ten equal six monthly installments over a period of five years.

1990-91

- Recovery of 30% cost of construction material in addition to provision of all skilled and unskilled labor cost.
- No grace period.
- Recovery effected in six equal six monthly installments over a period of three years.

1995-96

- Upfront contribution (advance sharing) of 30% cost of construction material in addition to provision of all skilled and unskilled labor cost.

IMPACT

(a) Direct Benefits

- Water saving improved up to 243 acre-feet per watercourse per annum.
- Increase in cropping intensity ranging between 6% to 20%.
- Waterlogging and salinity curtailed.
- Reduction in inequity between head and tail reaches of watercourses.

(b) Indirect Benefits

- Theft of water and water related disputes at the watercourse were reduced due to users' organized behavior.
- Demonstration effect of this organized behavior led to the installation and management of 1,400 community tubewells.
- Installation of 29 tertiary drains (20,500 ha catchment area) under OECF funded OFWM-III Project with the participation of beneficiaries is another example of users awareness and interest in organizations.

AREA WATER BOARD LOWER CHANAB CANAL (LCC)

Faisalabad district has a distinction that On Farm Water Management Pilot Project was launched in its three tehsils and first watercourse in the district was improved on LCC. So far, a number of watercourses have been rehabilitated on this canal command. Details of the same are as below:

Distributaries (Nos.)	90	
Total watercourses (Nos.)	3,200	
Water Users Association registered (Nos.)	2,080	
Improved watercourses (Nos.)	2,089	
Total improved length (Km.)	1,650	
Water control structures installed (pucca naccas, culverts etc.)	79,000	
Total cost of improvement (Rs.)	675 million	
Farmer's contribution		
335 million		

The OFWM Program is playing a significant role in inculcating a sense of community participation in an organized manner amongst the farmers/water users, which has created awareness among them to resolve their irrigation and social issues through dialogue and mutual understanding. From early 1990s, many multi disciplinary projects of participatory approaches (involving all stakeholders of participatory irrigation management) have been introduced into the irrigation management program at minor and distributary level of the existing schemes new scheme. The most important projects in Punjab are:

- Command Water Management Project.
- On Farm Water Management and Participatory Irrigation Management Component of Fordwah Eastern Sadiqia (South) Irrigation and Drainage Project, Bahawalnagar.
- Participatory On Farm Drainage Pilot Project.
- Second SCARP Transition Project (Participatory Groundwater Management).
- Punjab Private Sector Groundwater Development Project.
- Action Research on Social Organization at tflakra 4-R Distributary (IIMI-Pak).

The OFWM is implementing social mobilization program to organize water users on LCC East Canal. So far, organization of 25 Farmers Organizations (FOs) is under process. Out of which registration of 9 FOs is near to completion and registration of the remaining will be accomplished by the end of current fiscal year.

The Water Users Associations will be federated to form FOs under Punjab Irrigation and Drainage Authority (PIDA). This requires an intensive social mobilization of farming communities. The OFWM Program Punjab has over two decades of experience in organizing the farmers/ water users into formal Water Users Associations and has organized more than 26,000 such organizations. The expertise developed by OFWM in this particular field can help PIDA in federating WUAs into FOs.

It has, however, been experienced that sustainability of farmers organizations can not be ensured if these institutions are confined to water only. It is, therefore, required to explore the possibilities of developing these farmers institutions for all agricultural services such as training, technical assistance, input supply, credit facilities, agricultural machinery pools. Such arrangements will not only make these institutions viable but will also help in harnessing the positive impact of massive institutional reforms in the provinces and country as a whole.

SOCIAL ORGANIZATION PROCESS FOR FARMERS ORGANIZATIONS: EXPERIENCES FROM HAKRA 4-R DISTRIBUTARY IN EASTERN SADIQIA CANAL OF PAKISTAN'S PUNJAB⁷

Mehmood Ul Hassan⁸ and Abdul Hamid⁹

1 BACKGROUND

In 1995, as a part of its research project titled "Managing Irrigation for Sustainable Irrigated Agriculture in Pakistan", the International Irrigation Management Institute (IIMI) started its work on forming Water Users Organizations¹⁰. The objectives of the project were

- to learn how to organize farmers at the watercourse and distributary/ minor levels;
- to interface the **organized farmers** with the Provincial Irrigation Department (PID) through facilitating a dialogue for sharing Operation and Maintenance (O&M) responsibilities;
- to facilitate institutional **support** for organized farmers; and
- To test the social and economic viability of the organized farmers in undertaking O&M responsibilities at the distributary level.

The social organization work was carried out on the Hakra 4-R Distributary in the Hakra Branch Canal of the Eastern Sadiqia South Canal. This canal offtakes from Sulemanki Headworks at the Sutlej River.

The 4-K Distributary serves an area of **44,300** acres through its 124 outlets. Some 4,700 farm families are entitled *to* receive **water** from this distributary, which are located in 41 villages and many *deras*. The length of the distributary including its two minors is around 60 kilometers. The population is a mixture of local residents, migrants and settlers. Over 80% of the farmers own less than 10 acres *of* land. The area is characterized by high water tables and soil salinity. This further necessitates the importance of irrigation water. Beside irrigation, the canal water also meets other water uses, such as drinking, cooking, bathing, **and** livestock.

2 SPECIAL FEATURES OF THE SOCIAL ORGANIZATION PROCESS

Some important features of the social organization process are as under:

2.1 Baseline Surveys

The work was initiated with the help of socio-economic **and** hydraulic baseline surveys. These surveys were targeted at collecting relevant information that helped to understand the community. The socio-economic surveys (Cheema et.al. 1997) collected information regarding land tenure system, level of collective action, participation of the community in the O&M of the

⁷ The paper presented at "Inaugural/ Orientation Workshop on Institutional Reforms in Punjab" in Faisalabad on February 10-11, 2000

⁸ Senior Social Scientist, International Irrigation Management Institute, Pakistan

⁹ Social Scientist, International Irrigation Management Institute, Pakistan

¹⁰ The term Water Users Organization here is taken in its generic meanings

irrigation and other village infrastructure. Besides, information on cropping pattern and intensities, yields, water marketing, the situation of water availability and use, was also collected.

The hydraulic surveys focused on real time assessment of water supply situation, its distribution, and reliability. These surveys also helped to understand the hydraulic constraints and features of the irrigation system.

2.2 Organizational Structures as a Strategy for Maximizing Participation

It is generally noticed that once the organization is formed, the grassroots membership becomes less and less involved in the organizational activities. To maximize grassroots participation, the distributary was divided into 5 socio-technical subsystems (Mirza et. al. 1996). The two minors were treated as separate subsystems, The division of the distributary into head, middle and tail portions was based on availability of hydraulic structures, which enabled the organization to measure water inflows and outflows to the subsystems. Such divisions helped in organizational design as well as solving hydraulic problems of the users located between two hydraulic structures. Besides, the social traits of the communities in each sub-system varied from those of the others, and were uniform within the subsystems.

2.3 Assistance from Social Organization Volunteers

A very special feature of the methodology was the assistance from the Social Organization Volunteers (Hassan et. al. 1996). The basic philosophy behind the organizational models used in the project efforts was that it should lead to greater replicability. For this reason, a small field team was deployed to catalyze farmers' interests to organize themselves for distributary management. In this way, the model can be adopted easily by government agencies at a larger scale. However, organizing around 5000 farmers was a big task for a small field team comprising five persons. Therefore, the strategy to supplement the work of the team was to use community-based volunteers in social organization work. Using farmers as social organizers has been successfully tested in the Philippines and Thailand. The farmer-organizers, however, were paid for these efforts (Pradhan and Sharples, 1989; Cablayan, 1989). The strategy to use community-based volunteers is contrary to earlier experiences. In the recent approach, the farmers were used as social organizers and their services were voluntary. The volunteers were neither promised, nor given, any compensation for their efforts (Bandaragoda, 1995).

Initially, the project reference for these volunteers was "contact farmers" as their roles were pivotal for developing contacts between the software group and the community. Identifying suitable persons from among the water users' community as "contact farmers" was an important preliminary step in the social organization process along the Hakra 4-R Distributary. As this work progressed, the term "contact farmers" was discovered to be popularly associated with the "influentials", big land owners and farmer leaders of the Training and Visit (T&V) system adopted by the Agricultural Extension Department. Since the use of these contact farmers had not resulted in proper functioning of the T&V system, the term had an unfavorable connotation. The contact farmers used to be the bigger landlords who were deployed to disseminate agricultural knowledge gained from the agricultural extension agents. However, most of the contact farmers were never seen doing the job. Consequently, the common members of the farming community did not consider the contact farmers to be effective tools for dissemination.

To avoid mistrust between community and the farmer volunteers from the start, the term “contact farmers” was replaced by the term “Social Organization Volunteers” (SOVs).

Organizing people is a socially sensitive and politically vulnerable activity. This is not a task to be undertaken solely by an international institute like IIMI-Pakistan; rather, it should be the responsibility of the local people (i.e., local agencies and water users) themselves. An internally generated demand for social organization holds a greater chance of making these organizations productive and sustainable. IIMI-Pakistan, as an agent for change, or a catalyst, and with international experience could only play a facilitator’s role in the process by helping the organizers to proceed with a professional and a systematic attitude.

IIMI-Pakistan’s decision to seek assistance from among the community itself to approach the community at large was compatible with the participatory approach. IIMI-Pakistan did not exclusively rely on the water users alone, but identified members from the community, in general, who were adequately informed about the community and its needs, and were prepared to assist IIMI-Pakistan's field team. The members of this extended field team based in the community, knew the people fairly intimately, and shared their language, beliefs, traditions, rituals, needs and problems.

The credibility gap between **the** farmers and agency staff is prevalent in Pakistan because of mutual mistrust. This is because government agencies providing services usually behave like outsiders. They are more like “rulers” than “public servants”. There is a prevalence of an “uppers and lowers” syndrome, whereby public servants are the uppers and farmers are the lowers. Communities never *see* agency staff visiting farmers for community benefit. Consequently, mistrust between agencies and farmers have grown to such an extent that farmers mistrust **all** outsiders approaching them for services of community benefit. Community-based volunteers can bridge the communication **gap** easily, as colleague-farmers trust them more than the agency staff, or outsiders.

3 ORGANIZING FARMERS: THE FIVE DIALOGIC STEPS

3.1 Familiarization Meetings

Before entering the area for the organizational **work**, process of SOVs identification and selection was undertaken through a set of familiarization meetings. These meetings and training workshops for SOVs had generated interest and cast off many misconceptions and apprehensions about the program. Therefore, for entering into a socially sensitive arena, a step-wise approach that is cautious, slow but gradually built on trust and confidence was used.

3.2 Rapport-Building Meetings

SOs with active involvement and participation of Social Organizer Volunteers convened group meetings with water users at the village level for comprehensive farmer awareness covering clusters of watercourse commands. SOVs and SOs lead the discussion. The purpose of such meetings was rapport building with farmers, community, information sharing, concept clearing, and diffusing out misconceptions, doubts and rumors among the water users. Despite the invitation and rigorous contacts, the PIDA staff did not participate in these rapport-building meetings as observers or participants. The direct contact with masses in rural area helped in

diluting fears and misconceptions of the people. But the absence of agency personnel reflected the environment of mistrust among farmers and agency's staff.

3.3 Consultation Meetings

In these meetings the discussion was based on formation of WUOs, on decisions about the structure, membership, tenure, selection procedure, rules and by-laws for effective functioning of the WUOs at different levels of the system etc. The SOs held meetings in each village to consult water users on tentative plans for establishing water users organizations. Arrangements of meeting were usually made by the SOVs. All water users served by the system and residing in that village were invited by hand written messages, mosque announcements or through personal communication. After a brief overview of the program by SOV, the water users were consulted about organizational structure, membership pattern, selection procedure, and tenure of the executives and any other relevant issues they wanted to discuss or felt were important. SOs documented the process and noted down the suggestions made by the water users.

3.4 Selection Meetings

After the agreements on organizational designs and selection procedures, the leadership was selected at the watercourse level by convening watercourse level meetings. Out of 124 watercourses, the farmers from two watercourses abstained to join the organization. Rest of 122 watercourses selected one person each for their subsystem. Each subsystem selected its leadership as well as five nominees for the water users' federation (WUF) at distributary level. On 5 March 1997, the WUF met and selected its five office bearers,

3.5 Federation Meetings

The WUF as well as the Subsystem Organizations decided to hold monthly meetings. Largely, these meetings were organized each month to discuss various issues. Since the legal framework was not in place, the Irrigation Management Transfer (IMT) could not take place. However, the WUF tried to solve a number of problems encountering the community. The WUF was able to form its bylaws at all levels of the organization. They opened a joint account and were running the business of the organization.

4 CONSTRAINTS IN SOCIAL ORGANIZATION PROCESSES

The Social Organization Field Team and the SOVs had faced many constraints during the process. These were:

- Mistrust and credibility gap between farmers and operating agencies;
- Negative propaganda by the lower tier staff of PIDA;
- Punishing and defaming efforts by PIDA staff against FO leaders;
- inadequate awareness about the reforms among PIDA staff;
- disinterest among farmers as well as PIDA staff;
- Unavailability of appropriate enabling legal framework for IMT; and
- Efforts by a few members to politicize the organizations.

5 RECOMMENDATIONS FOR THE FUTURE

In order to make the reform efforts successful following steps need to be taken:

- Better coordination between **PIDA** staff, social organizers, and farmers;
- Broad awareness about the reforms among various stakeholders;
- Base selection of the leadership on democratic principles;
- Avoid party-politics and biradri dynamics during the process;
- Effective legislative framework;
- Enabling attitudes of the line agencies, especially PIDA staff; and
- Manageable group of communities with the social organizers.

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ACHIEVEMENTS OF FO FROM PUNJAB (HAKRA 4-R DISTRTBUTARY)

Mian Abdul Wahid¹¹

The performance of any organization can be monitored only if the responsibility is transferred to that organization. The Hakra 4R water user federation has been established since March 5, 1997 but no responsibility is transferred to the organization as yet. For the transfer of the responsibility, negotiations are underway with the irrigation department but due to lack of legislation, the process is being prolonged.

PID is willing to transfer the system to federation in every way. The MOU draft was prepared under the existing irrigation and drainage law (1873). The secretary irrigation asked the federation's opinion on its willingness to takeover the complete system. The federation agreed to take the complete system but the process has been delayed. Hopefully, at the end of the year, the system would be transferred to the federation.

Despite non-transfer of power, federation is undertaking its activities. These are:

Meetings

Meetings are an important factor in the sustainability of an organization. That's why the high tiers organize their meetings on monthly basis. The lower tier also plans regular meetings. At the moment, 44% WUAs have scheduled their monthly meetings and hopefully this percentage will increase.

The high tier WUF also organizes its annual general meeting. Two annual meetings were held and about one thousand farmers attended each meeting. Each meeting lasted for about five hours. The chief guests, the Minister and the DC remarked " We have never seen such a disciplined gathering of farmers in our life", the disciplined gathering of farmers showed strength and viability of the organization.

Maintenance and Repairing of the Distributary

The WUF launched the annual maintenance campaign twice on self-help basis. A total of 800 farmers and 677 farmers participated in these activities respectively. According to PID assessment, farmers accomplished worth of Rs. 250,000-400,000 work in each year.

Establishing of the Offices

All the five WUOs and WUF have established their offices on self-help basis. The offices are properly maintained.

Opening of Bank Account

All three tiers of organizations have opened their bank accounts and these accounts are being operated. In this way a total of 130 accounts have been opened.

¹¹ President Farmer Organization (FO) Hakra 4-R Distributary, Bahawalnagar, Punjab.

Fund Raising

The WUOs are regularly raising funds to meet the organizational requirements, Whenever **there** is an activity the expenditure on that activity is estimated and **then** collected equally **from** each member. It also happens that some members give more than **their** due **share** voluntarily,

Bye-Laws

Bylaws are essential for the smooth running of **any** organization. The Federation established a committee to frame the bylaws. The sub-committee frames the bylaws **and then gets their** approval from the general body.

Resolving Water Related Disputes

The WUF resolves water-related disputes. Only a few cases remained unresolved in the last 10 years. The Federation resolved the rest amicably. Now people **use** this platform ~~or~~ the solution of their problems. Whenever any issue is raised people prefer to bring it to **the** Federation.

Equitable Water Distribution

The Federation is achieving equitable water distribution. The Federation established a water court that did the survey of the distributary. The watercourses, which **are** drawing **more than their** authorized discharge, convince their shareholders morally. If they do not agree **then outlets are** adjusted legally. The Federation does not spare water stealers if a **case is registered against them**. The water stealers repair their outlets accordingly.

Collaboration with the Department

IWMI is strengthening its collaboration with other departments. It is **arranging** lectures **at** the village level for the transfer of improved technology. These **lectures** benefit farmers at **grass root** level. The lectures are based on improved irrigation and agriculture **methods, animal husbandry,** and health etc. NRSP **and** Action aid are also launching their activity in the area. **These are** micro credit schemes **and** adult literacy centers respectively.

Different fertilizer and pesticide companies sponsor the logistics of the annual meeting arranged by IIMI.

Health Camps

We regularly organize free health camps. Doctors contact us for launching **these** free health camps. To date, hundreds of patients have benefited from these camps.

Investment Group

WUF established **an** investment group. A total of seven members make **up** the group. **Each** member invested **Rs.30,000- 100,000** in the group. The total amount invested is **Rs. 630,000**, **The** investment group acquired the dealership of **Engro** chemical limited. The group purchased 1100 bags of fertilizer and stored it at three different Chaks of the Zone to **make** it accessible to the farmers. The investment group framed its **own** bylaws for smooth running. It introduced **shares**. The cost **of** each share is **Rs. 500**. It is essential for the membership of the group **to** purchase the share certificate in the range of **Rs.5000-100, 000**. The investment **group** also **announced to**

donate one rupee per bag of fertilizer to the Organization, from which 25 paisas would be given to Federation and 75 paisas would be kept by the organization. The WUO is launching awareness activity in the area to expand the program.

Study Tour

The Federation launches study tours for exposure. These study tours are at national and overseas level. The federation mostly provides finances for inland tours while the overseas trips are financed by the NGO. The purpose of the overseas trips **is** to see how farmers managed system works in other countries.

Self- Evaluation of Wakra 4-R WUOs

The WUOs of Hakra 4-R distributary established a seven-member Inspection Committee. The purpose of the committee is to evaluate the performance of WUOs of record keeping of organizational and financial aspects, and prepare a critical report. The committee held three meetings to complete the task. in the first meeting, committee selected its president and developed nineteen parameters for the performance assessment.

The committee inspected the record of all six WUOs, and evaluated them. The report indicates that the performance of the WUOs except WUO2, related to organizational management was satisfactory. Those WUOs which meet frequently, scored better points as their office bearers had become more trained. The WUO2's poor performance in the organizational management is due to less work, i.e., comparatively less number of meetings. The performance of all WUOs, related to financial management was, however, regarded to be poor.

The committee decided to submit the detailed report in the next round of WUO meetings. The committee was of the view that performance of WUOs may improve further if the committee is authorized to check the record at any time, for which approval will be sought from the WUOs general body.

Newsletter

Federation is going to publish a newsletter on monthly basis. Action aid, an NGO has agreed to sponsor it. The purpose of the newsletter is to give information about the federation's activity to farmers at grass root level **and** to other relevant agencies

Training

The federation of Hakra 4R undertook **series** of capacity building activities and training with active support from IIMI Pakistan.

Flow measurement

12 training sessions spanning on four months were undertaken for department staff. The purpose of the training was to discuss water supply with the department and to monitor the equity of water distribution.

Financial management

One day training session for **23** members of the WUOs and WUF was undertaken. The purpose was to provide a basic understanding on accounting procedures **to** various WUOs tiers.

Organizational management

One **day** training session of 23 members of WUOs and WUF **was** conducted to improve **the skills of** the WUO leaders in organizational development activities.

Animal husbandry

Three training sessions on animal husbandry were undertaken **at** village level. **A** total of 144 farmers benefited by becoming aware of the **causes** and treatment of common livestock diseases.

Improved irrigation and agriculture technology

Four training sessions were conducted for **333** farmers. The purpose was to introduce **improved** irrigation and agriculture practices (rate, timing, **and** input frequency). The **federation has** three **sets** of bed shapers for growing cotton on bed-and-furrow technology. The federation also formulated the bylaws for the smooth running of the implements.

Record keeping

Informal training activities were conducted, especially for general secretaries on maintenance **of** register of periodic meetings.

Restoring of Confidence

Major achievement **of** the Federation is restoring **the** confidence of **the** farmers. Now **Federation** meets with the government officials more confidently. The Federation also launches **and** conducts large farmers' gatherings.

RECOMMENDATIONS FOR FUTURE

Training on social and technical aspects of organization

Training is a very important factor in capacity building **of** an organization. Therefore, government should launch necessary training programs.

Transfer the responsibility to FO

After the formation of FO, transfer the responsibility to FO so that it **has a** sense of ownership **to** **the** organization. **At** initial stages the spirits are high among the FO members so they work with great enthusiasm

Effective cooperation from the concerning departments after the transfer of the system

The joint management is a new experience therefore the concerned departments should cooperate with FOs effectively for the sustainability of the system.

Legal protection

For effective organization, **legal** protection is essential. The FO should have the power to implement its own decisions.

Keep the FO free from politics

Try to keep the organization away from politics so that its focus remains on irrigation and agriculture activities.

Monthly meetings of general body should be encouraged

Meetings are **an** important factor in the sustainability **of an** organization. Meetings should be encouraged at every level to increase interaction and to dispel doubts among members.

ENHANCING CAPACITY OF FARMER ORGANIZATIONS IN SINDH, PAKISTAN

Yameen Memon and Bakhshal Lashari¹²

SUMMARY

The farmer organizations (FOs) formed at eight distributaries are registered with Sindh Irrigation Drainage Authority (SIDA) under the institutional reforms in irrigation system. The FOs aim to organize water users for operation and maintenance (O&M) of a distributary, conserve water and assess and collect abiyana (water charges) in the distributary command area. To develop the capacity of the FOs for carrying out their tasks, various training events were organized for the FO members. These included: discharge measurement, organization management, operation and maintenance, and financial management. The discharge measurement training was also imparted to the officials of Irrigation and Power Department (IPD) comprising of Executive Engineers, Assistant Executive Engineers, Sub-Engineers and Daroghas. The participants were actively involved in group discussions and they carried out exercises. The participants highly appreciated the field/practical work. They informed that they had learnt more through hands on experience in the field. They also suggested such training for their fellow members. They recommended that the number of participants in such training should not exceed to more than 20.

INTRODUCTION

Under the institutional reforms in irrigation sector in the National Drainage Program, the water users/farmers are involved in operation and maintenance of distributary, in effective use of irrigation water, in equitable distribution of water, in abiyana assessment and in collection and conflict resolution. In the past farmers were limited to watercourse level (tertiary level) for its operation and maintenance, whereas above the watercourse, responsibility was of the IPD staff.

Management of irrigation system at watercourse level is not complicated because it involves a small number of water users. The distribution of water is well scheduled under "Warabandi system". The desilting of watercourse does not require much efforts and techniques. While taking responsibility of a distributary with a command area of 8,000-30,000 acres and dealing with large number of water users the task becomes complex and requires capacity building. The farmers are involved informally in irrigation management and social organization, but they need information, knowledge and skills to work in an institutional framework and at high level. For example, specific knowledge is required for how water should be monitored at head? How it should be distributed equitably among watercourses? How head-middle-tail gauges be maintained at proper levels?; How to run the FO and maintain its record? How to build effective communication between members of FO?

IIMI started its action research in Sindh Province of Pakistan to organize water users under the FO for the above mentioned tasks. It also organized training events for members of FOs to build their capacity in performing such tasks.

¹² The authors are working with International Irrigation Management Institute

METHODOLOGY

Water users require information, knowledge **and** skills in different aspects to manage the activities of the FO. Its members are of various **categories** such as office bearers **and** management committee leaders. They were educated through different trainings. In some **cases** the trainings were imparted for agency staff as well. During training **different** techniques such as lectures, deliberations, hands on practice, field measurements, group discussion, and simple calculations of water flow were used, depending on the requirement of the training. **Written** material and lecture notes were provided to its participants. Drawings in **some cases** were **shown so** that they could understand easily. Over-head projector was also **used**. Different groups **were** formed to discuss training material jointly. Leader of each group formed in **the training was** responsible to present results and recommendations of the group.

AREAS OF TRAINING

Through discussions with farmers on their capacity building the following training needs **were** identified:

- Discharge measurement;
- Operation and maintenance of distributary channel;
- Organizational management;
- Financial record keeping;
- Crop assessment and abiana collection;
- Communication;
- Conflict resolution.

CONTENTS OF TRAINING

The contents of each training are given below:

Discharge Measurement

- Basic concept of discharge;
- Discharge measurement methods:
 - Cutthroat Flume;
 - Current meter;
 - Gauge calibration;
 - Module calibration;
 - Float method;
- Types and Dimensions of the Outlet Structures

Operation and Maintenance of the Distributary

- **Maintenance** of gates;
- Inspection Path and Non-Inspection Path;
- Bed Scouring;
- Bank Erosion;
- Sediment deposition and its removal;

- Berm Cutting;
- Buffalo Wallows;
- Bank Strengthening;
- Maintenance of gauges;
- Maintenance of outlets;
- Hands-on Practice.

Organizational Management

- Roles & Responsibilities of Office Bearers;
 - Bylaws;
 - Conducting meetings;
 - Record meeting minutes;
 - Decision Making;
 - Follow-up of Decisions;
 - Exercises.

Financial Record Keeping

- Maintaining Financial Record which include:
 - Ledgers;
 - Cash Books;
 - Vouchers;
 - Receipts;
 - Bank receipts.
- Exercises.

Crop Assessment and Abiana Collection

- Crop Survey;
- Calculation of Abiana Charges;
- Collection Methodology;
- Mapping;
- Assessment Procedure;
- Exercises.

Communication

- Methods of Communications;
- Role of Different Actors in communication;
- Barriers in Communication;
- Exercises.

Conflict Resolution

- Identification of Issues;
- Selection of Mediator(s);
- Settlement of Issues;

- Group Discussions; and
- Exercises.

DETAILS OF THE TRAININGS

Field teams organized trainings for **the** members **of the** FOs, which are registered under SIDA **Act**. The **details** of the trainings organized **are** presented in Table 1.

The trainings on crop assessment **and** abiana collection, **conflict** resolution **and** communication are planned for the near future. For these action plan including their methodology **and** time schedule has been prepared. These trainings **will** be for **those FOs**, responsible **to take over the** O&M of distributaries.

Training	No. of Participants	Level of Participant	
			8
Discharge Measurement	332	FO Management Committee Members	2
	80	IPD staff	7
Operation and maintenance	175	FO Management Committee Members	10
organizational management	229	FOs Office Bearers	24
Finance record keeping	180	Treasurers of WCAs/ FOs	2
SIDA Awareness	120	IPD staff	4
Action plan	74	FO Management Committee Members	4
Business plan	45	FO Management Committee Members	

The preliminary business plan **has also** been prepared.

Discussions have been made with FOs in **their** management meetings **and** workshops, The resource persons in these training/ workshops were mostly IIMI officials, whereas in **some cases** officials of Irrigation Department were also involved.

CONCLUSION

The farmers were keen to learn during **the** training workshops. After the training FO members at some **places took** discharge measurement through the gauges installed at the head, middle **and** tail distributaries. Organizational record is also maintained properly at watercourse **and** farmer organization levels specially the **cash books**, minute books and membership registers.

Because of the training on maintenance **of** distributaries particularly during **the** canal **closure** period the FOs **desilted their** distributaries **properly**.

INSTITUTIONAL DEVELOPMENT OF FARMERS' AT GRASS ROOT LEVEL

Yameen Memon and Mustafa Talpur¹³

INTRODUCTION

Farmers' community is playing a pivotal role in agricultural economy in the country. They are instrumental in producing food and fiber for a rapidly growing population. Despite their significance in irrigated agriculture dominated economy, farming community has been neglected in the decision making process at various levels.

Irrigation is a major input in agriculture production, The officials at all levels have always taken the decisions for irrigation development, whereas no farmers' participation was realized. Due to this several problems in the irrigation system developed. These are problems of water distribution, operation and maintenance (O&M) cost, irrigation water theft, maintenance of distributaries and canals and revenue collection. In order to overcome these problems the Government of Pakistan has initiated process of reforms in the irrigation sector.

These reforms include the transfer of irrigation department to autonomous bodies called Provincial Irrigation and Drainage Authorities (PIDAs) in each province of Pakistan through Acts passed by respective provincial assemblies during 1997. The authorities would be responsible for the whole system of irrigation in the provinces. Whereas at the canal level Area Water Board would be established and at distributary level, farmer organizations would be established to operate and maintain the distributaries in their command area. The participation of members of farming community at all levels has been ensured through these reforms.

In Sindh Province, Sindh Irrigation & Drainage Authority (SIDA) has been established. As a pilot, the Nara Canal Area Water Board has been established and it is functional since July 1998. As a pilot initiative, the International Irrigation Management Institute (IIMI) through its action research program has formed 8 farmer organizations (FOs).

PURPOSE OF FORMATION OF FOS

The motivation factor in the development of farmer institutions at grass root level is rooted in the participation of stakeholders' in irrigation system management. Thus conceptual framework focuses on:

- Organizing farmers at grass-root level to take active part in management of distributary channel.
- Involving farmers in decision making process.
- Resolving conflicts related to irrigation at local level.
- Mobilizing resources (cash, labor and kinds) for self-sustainability of irrigation system.
- Optimum use of available irrigation water and enhance agriculture production and yield.
- Increasing farmers' access to innovative knowledge/information.

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- o Creating sense of unity, responsibility and ownership among **farmers by** using the **local** institute.

Approach Adopted

The participatory approach with the idea of “learning by doing” **has** been adopted to develop a model institution. The actual idea of participation at gross-root level is based on lower unit **of** irrigation system i.e. water course. The watercourse **is** the last conveyance system in the delivery **of** water to the field, and farmers feel convenient to work as a group and **manage** it properly. Therefore, same approach has been used. The new farmer institute at watercourse level **is** then grouped at distributary level.

The first step of the new institution is to motivate farmers at watercourse level, pursue them **to** become organized **at** watercourse level and form watercourse association. Then all the watercourses of single system make a higher level institute as the next step.

Structure of the Organization

At each level, “General Body” that is a higher level decision-making body is **formulated**. All farmers with a right of water utilization **can** become its members. **The** number may vary **depending** on landowners at each watercourse. After filling the membership form, they became members and elect a management committee from among themselves. **The** management committee consists of office bearers including Chairman, Secretary, Treasurer and four other members of the committee. The committee functions with the consensus of general **body**.

Having complete organizational structure, watercourse association (**WCA**) elects one **of its** members, preferably, from office bearers to represent WCA at Farmers organization at distributary level. Thus all the representative of WCAs will constitute general body of FO which will be formed at distributary level. Similarly the general body of FO **for its** smooth functioning **and** day to **day** business will elect seven members management committee including three office bearers titled chairman, secretary and treasurer.

The Perceived Benefits of FOs

The following benefits have been perceived from the two organizational systems:

- All decisions taken by FO, will be easily implemented at watercourse level by the organization.
- o Farmers from watercourse level in organizational **set-up will** promote the idea of real participation.
- The sense of ownership among farmers will be developed.
- All the work *of* FO will be started **at** watercourse level, such **as** water distribution, assessment and collection of abiana.
- The resolution of conflicts on distribution of irrigation water, etc.

PROTECTION FOR SMALL LANDHOLDERS AND TAIL ENDERS

There was lot of apprehension on domination of big landlords' and influential on these institutions and no protection for small landholders and tail-enders that always suffer **in** the

system. For ensuring reasonable number of small landholders and tail-enders in the management committees of these organizations, the regulations under SIDA are quite clear. One small landholder with land of 10 or fewer acres and two members from the tail end portion of the watercourse or distributary would be included in the management committee of both WCAs and FO. In addition, the regulations prerequisite the inclusion of farmers either from tail portion or small landholders as office bearers.

FO REGISTRATION CRITERIA

For legal empowerment to FOs, registration with **SIDA** is of utmost importance. The FOs adopt the following procedure for registration:

- At least 80 per cent of landholders of particular watercourse become members of the association.
- Each member of **WCA** pays Rs. 100/- as a membership fee.
- At least 80 percent of WCAs of particular distributary are ready to form FO
- Each **WCA** contributes Rs.1,000/- to FO in their joint **bank** account in the bank.
- **At** both levels, the democratic process for electing management committee is adopted.
- Proper record of membership, accounts and meetings is maintained.
- FO office has to be established at an accessible place.

Progress Towards New System

The progress so far achieved towards new participatory irrigation management system is described below:

- **SIDA** was established in 1097. The first Area Water Board on the Nara Canal has been established in July 1999 and it has started functioning.
- Nine farmer organizations (eight on Nara Canal and one on Rohri Canal) have been registered with **SIDA**.
- Two FO members for the Nara Canal **Area** Water Board have been elected by the eight registered FOs themselves. The election was supervised by the General Manager (Transition)**SIDA**.
- For the transfer of irrigation system to farmers, the irrigation management transfer committee established earlier has prepared a draft agreement. The draft requires vetting by the by SIDA board.

Profile of Registered FOs

With the facilitation of International Irrigation Management Institute (IIMI), the FOs after fulfilling the criteria. were registered under SIDA Act. The profile of these distributaries is presented in Table I.

S#	Distributary/ Minor	Off-taking Channel	Cultural Command Area (Acres)	No. of Watercourse Associations formed	Total No. of Landowners	No. of FO Members	% age of Membership	Membership Fee Collected by FO (Rs.)
1	Heran	Nara canal	15,410	31	565	562	99	31,000
2	Rawtiani	Dim branch of Jamrao canal	9,036	19	352	329	93	19,000
	Ali	Jamrao canal					100	10,000
4	Bareji	Jamrao canal	14,318	24	346	288	83	24,000
5	Mirpur	Jamrao canal	16,218	50	440	418	95	50,000
6	Belharo	Jamrao west canal	17,077	34	469	418	89	34,000
7	Sanhro	Jamrao canal	15,367	24	325	290	89	24,000
8	Potho	Jamrao west canal	8,063	19	326	285	87	19,000
9	Dhoro Naro	Gajrah Branch of	13,382	24	457	400	87	24,000

The registered FOs are anticipating the transfer of irrigation **management** of **distributaries** very soon.

CONCLUSION

For sustainable institutional development, building of **an** institution at **grass root level** is inevitable. **If** the institutions are available at the very initial stage, **various** matters pertaining to field problems are decided at the very outset. The decision making **and** its implementation takes place at the site and it becomes workable in all conditions.

The research has proved that if the institution is built **and** strengthened at initial level, **then the** building of **the** institution at some higher stage becomes easy. In fact, the **farmers are** organized at grass root level, they decide the matters related to their interest, resolve local level conflicts especially related to irrigation by themselves. With the help of these institutions, they mobilize the resources (cash, labor and kinds) in an organized way for self-sustainability of irrigation system. Optimum use of available water is also ensured and **farmers' access** to innovative knowledge information increases manifold.

Hence, it is proved that if the farmers' institutions are established **and** strengthened as watercourse associations (WCAs), **and** farmer organizations (FOs) **at** the distributary level, and if they are provided with an opportunity to participate in the decision **making process these** primary institution **can** successfully bring institutional reforms.

LOWER CHANAB CANAL (EAST) PILOT AREA WATER BOARD: A STEP TOWARD DEVOLUTION OF POWER

Zia Ullah Warraich¹⁴

BACKGROUND

The Lower Chenab Canal (LCC) **takes off** from River Chenab **at** Khanki and was opened for irrigation during July, 1887. In the beginning it was a non-Perennial canal without weir control, Its discharge was 1800 Cs, designed to irrigate 5,63,840 Acre area. Later in 1890 it was switched over to weir control and its discharge was enhanced to 2350 Cs, to irrigate 6,40,000 Acres area. The whole area **was** divided into three categories.

Category A

Represented old established villages and its intensity of irrigation was fixed as **40%**.

Category B

Pertained to old villages of Jhang District which also comprised of crown waste land. The intensity of irrigation of this category was fixed as **50%**.

Category C

Category 'C' was entirely of crown waste land lying below or to the South East **of** the Chiniot Khurrianwala Road, Its intensity of irrigation was fixed as **66.6%**.

The Lower intensities in category **A** and **B** were fixed on the consideration of rains, wells in sweet water zone etc. while the area under category 'C' was placed entirely on canal supply.

Immediately after the commissioning of the canal in the year 1892 it was observed that the canal uses were much more than the designed limits **and** thus the demand of each channel was revised. The revised capacity of LCC was worked out as 10,325Cs. The capacity was further enhanced to 10,730 Cs during the year 1900.

Again **in** the year 1903 the capacity of the canal was revised keeping in view the supplies available. Subsequently in the year 1907 it was felt that the capacity of 1903 was insufficient and was revised on the basis of different full supply factors for different channels, and was re-adjusted according to the **status** of land varying from 40% to 75%. Accordingly discharge worked out was 11072 Cs for Kharif and 10591 Cs for Rabi **at** Head of LCC.

From the year 1907 to 1918 many changes **took** place in the field. Some distributaries had to be closed due to area being unfit for cultivation. The comparative studies of areas as they stood in 1907 and 1918 is given below:

	1907	1918
Gross Command Area	33,59,539	33,85,373
C.C.A.	27,04,173	25,70,960

¹⁴ Chief Executive/Superintendent Engineer, Lower Chanab Canal Circle (East) Faisalabad Division.

The Kharif Rabi ratio was fixed as 1:2 and F.S. Factor 250 at head of outlet. The intensities remained the same. The discharge at head was calculated as 10,974 Cs for kharif.

In the year 1921 a new distributary named Chaku was opened on Burala Branch and full supply factor was changed from 250 to 264 due to which discharge at head of L.C.C was raised from 10974 to 11042 Cs.

In the year 1925 on opening of Pirmahal, Mancher distributary and some other small minors, the discharge at head of LCC was further revised from 11042 Cs to 11206 Cs, Also some extension took place from the year 1928 to 1930 on the following channels.

- 1 Burala Branch
- 2 Gajar Gola Distributary
- 3 Khikhi Distributary

Practically all-possible culturable command areas were considered and in the year 1942 a detailed capacity statement of the LCC was formulated. The total C.C.A. worked out 28,85,172 acres, which gave a corresponding discharge of 11294 Cs at head LCC. This capacity is still in vogue and has not subsequently been revised although many more changes have taken place.

NECESSITY OF REVISION OF THE CAPACITY

- i) After partition of the Sub continent in 1947 there was great influx of refugees from India as a result of which the pressure on the land increased. The refugees were settled on the Government Land available at that times irrespective of canal supply being available or not. These areas brought under cultivation by the refugees were subsequently included in the C.C.A, provided they were under constant irrigation since or prior to 1950.
- ii) The displaced persons due to construction of two number storage dams namely Mangla and Terbela were settled mostly in Punjab and areas allotted to them were included in CCA of respective canals.
- iii) Jammu and Kashmir refugees were settled on available land in Punjab. The area allotted under this scheme was provided with canal supplies.
- iv) In addition, the following categories of land were also supplied canal water in accordance with the policy of the Government from time to time.
 - a) Recipients of Gallantry awards.
 - b) Retired/Retiring Government Servants.
 - c) Persons displaced from Islamabad.
 - d) Person displaced from Gujranwala Cantt.
 - e) Lands allotted on "Tubewells sinking schemes" where the sub-soil waters were brackish.

PRESENTLY REQUIRED CAPACITY OF LOWER CHENAB CANAL (LCC)

The inclusions in the C.C.A. made in the past were without allocation of the additional supply or revision of the capacities of the respective channels. As a result thereof the canals are forced to run with additional discharges with great risk of mishaps and at present the average discharge of the LCC run at head during kharifis 13275 Cs against 11294 Cs.

Consequent to the provision of canal supply to area under different schemes the total **CCA** for which water has been committed is 3260000 acres against 2885172 acres in 1942. **The** revised capacity has been worked out keeping in view the possible **CCA** which comes out to be 15700 Cs against **11294** Cs capacity approved in 1942.

PROPOSED PILOT AREA WATER BOARD

Lower Chenab Canal has been further divided into two commands namely LCC East and West commands. LCC East Command has been proposed as Area Water Board which comprises of upper Gugera Canal its off taking Branches i.e. Burala Branch and Lower Gugera Branch and large net **work** of Tertiaries and Minors in addition to Mian Ali Branch and system. The command caters to **an** area of **1.6** Million acres in Hafizabad, Sheikhpura, Faisalabad and Toba **Tek** Singh Districts (Table 1). The present CCA of the **east** command system is 0.20 Million acres more than previously approved capacity of 1942.

Gross Area	2.06 M. Acres	
Gross Command Area	1.911 M. Acres	
Culturable Command Area	1.636 M. Acres	
Description	NO.	Length (Miles)
Branches	4	251.06
distributaries	100	876.29
Minors/Sub Minors	90	335.77
Escape Channels	4	21.85
Proposed (FOs) at Disty Level	97	
Outlets	3300	

Due to above reasons the channels are running on rotational closure basis. Therefore, channels and other infrastructures are required to be remodeled for ensuring regular supply according to latest **CCA** for which water availability has already been committed.

PURPOSES OF THE AREA WATER BOARD (AWB)

It has been widely reported that Pakistan's irrigation sector is in difficulty, and in consequence the long term sustainability of food security is precarious. Observers have noted that the quality of irrigation service has declined over time. The condition of irrigation and drainage infrastructure is deteriorating. Charges recovered from farmers for irrigation services **are** inadequate to meet the expenses of operating **and** maintaining the irrigation and drainage network. **As** a result, productivity is far below potential, salinity and waterlogging are spreading, over-exploitation of fresh aquifers is widespread, and excessive use is being made of poor quality groundwater to the

detriment of the soils and the long term productivity of the sector. Therefore, present arrangements are not seen as sustainable.

To address some of the biggest threats to the sustainability of irrigated agriculture in Pakistan, the country's water sector is undergoing institutional reforms, whereby, the Provincial Irrigation Departments (PIDs) have been restructured into financially autonomous Provincial Irrigation and Drainage Authorities (PIDAs). Below PIDA Pilot Area Water Boards at **Canal Command** level and Farmers organizations at distributary/minor level will be established. The first **pilot area water Board** on LCC (East) Circle has been announced, whereby about 97 FOs will be established (Table 2), trained and irrigation management constitution of the Area Water Board will be transformed with necessary powers to conduct the business.

No.	Division	NO.
1	Upper Gugera	26
2	Lower Gugera	39
3	Burala	32

CONSTITUTION OF THE AREA WATER BOARD

i)	Chief Executive of Pilot Area Water Board/SE LCC (East)	Member
ii)	Superintending Engineer, Drainage Circle, Faisalabad	Member
iii)	One Canal XEN (by rotation)	Member
iv)	A representative of the PLDA	Member
v)	A representative of the Agriculture Department	Member
vi)	A technocrat nominated by PIDA	Member
vii)	A representative of the Civil Administration	Member
viii)	8 Farmers members from the LCC (East) area	Members

The Chairman of the AWB shall be elected by the Farmer Members **from amongst** themselves,

FUNCTIONS OF THE AWB

- i) Monitor the O&M work plan;
- ii) Recommend development schemes for the Development Program and review progress on such programs;
- iii) Approve regulation/rotational program of water distribution in Pilot AWB;
- iv) Monitor the operation of Canal/Brach systems in various Divisions and review the water account;
- v) Plan/implement measures for checking water **theft and other offences under** irrigation laws to ensure equitable distribution of canal water and to **address tail** shortages;
- vi) Review/supervise assessment of water rates;
- vii) Review/monitor expenditure vis-à-vis budget allocations;
- viii) Encourage participation of the water users in the irrigation management;
- ix)** Assist the **Authority and** Government in the formation, promotion and development of the Farmers Organizations;
- x)** Monitor the working of the Farmers Organizations.

FARMERS ORGANIZATION'S (FOS) FORMATION, REGISTRATION, FUNCTIONS AND AUTHORITY UNDER THE NEW LEGAL FRAMEWORK

Prof. Dr. Dil Mohammad¹⁵

In exercise of the powers under section 16 of the Punjab Irrigation and Drainage Authority Act, 1999, the Governor of the Punjab has made the following Ruler for the formation, registration, functions and authority of the Pilot Farmers Organization in the Punjab.

FORMATION

- A Farmers Organization may be formed on a distributary or a dam. Provided that in special cases, a Farmers Organization may be formed with the approval of the Authority on a part of a distributary.
- A Farmers Organization may form Sub-Farmers Organizations on a part of a distributary, a minor, a sub-minor, a group of water-courses or direct outlets within the area of a Farmers Organization established under sub rule.
- Farmers Organizations may be formed in such areas where an Area Water Board has been established, Provided the Farmers Organizations may be formed, with the approval of the Authority, in such areas where no Area Water Board has been established.
- A Farmers Organization shall comprise members equal to number of watercourses in the area constituting the Farmers Organization. The Farmers of each watercourse shall elect one member from amongst themselves to represent them in the General Body of a FO.

MEMBERSHIP

- The membership of a Farmers Organization shall be available to all Farmers without any discrimination on the basis of sex, cast, religion and place of birth.
- **Farmer** means a person who is directly engaged in agriculture and is paying Occupier's rate under the Canal & Drainage Act, 1873.

CONSTITUTION OF FARMERS ORGANIZATION

- A farmers Organization shall comprise a 'General Body' and a "Management Committee".
- The General Body of a farmers Organization shall comprise the members equal to number of watercourses in the command area of the distributary concerned.
- The Management Committee, of a FO shall comprise the following Office Bearers.
 - a) President
 - b) Vice President
 - c) Secretary
 - d) Treasurer
 - e) Three executive members from the tail reach of the distributary
 - f) One executive member each from the middle and head reach of the distributary.

¹⁵ Dean Punjab Law Colleges, Punjab University, Lahore and Legal Consultant to Punjab Irrigation and Drainage Authority.

- The Management Committee shall be elected for a period of three years by the General Body of the Farmers Organization in accordance with the Regulations.
- A person shall be disqualified to be elected as an office bearer of the Management Committee if he:
 - i) is below the age of 18 years on the date of his nomination;
 - ii) has not paid his Water Charges within a period of three months after these charges become due for payment;
 - iii) has been declared insolvent;
 - iv) has ceased to be a member of the Farmers Organization;
 - v) is of unsound mind;
 - vi) has been convicted of an offence which involves moral turpitude unless a period of 3 years has elapsed from the date of his conviction, or
 - vii) has been dismissed or removed from any public service unless a period of three years has elapsed since the said dismissal or removal.

REGISTRATION

A Farmers Organization shall be registered with the Registrar concerned. For this an application shall be made to the Registrar by the Management Committee of the FO and shall be presented by the President or Secretary of the FO along with following documents:

- the General Body of the Farmers Organization has been formed under these Rules;
- The resolution to form the Farmers Organization has been passed by the majority of the total members of the general Body;
- The Management Committee of the Farmers Organization has been duly elected; and
- The application is made by the Management Committee of the said Farmers Organization and is accompanied by the prescribed fee.

FUNCTIONS OF FARMERS ORGANIZATIONS

Subject to the overall control of the Authority and where an Area Water Board has been established, the Authority and the Area Water Board, a Farmers Organization formed and registered under these rules may perform all or any of the following functions:

- Manage, operate, and maintain the irrigation infrastructure including any hydraulic structures located on it, for which it has been established;
- Obtain irrigation water supplies from the Authority or concerned Area Water Board at its head regulator, and pay the agreed amount to the Area Water Board concerned or the Authority in the manner agreed between the Farmers Organization and the Area Water Board concerned, or between the Farmers Organization concerned and the Authority.
- Supply the irrigation water equitably and efficiently to the farmers and other water users within its area.
- Assess the water rates and other irrigation related charges to be collected from the water users.
- Collect the water rates and other dues, fees and charges from the persons liable to pay them.
- Levy and collect charges for additional services rendered by the Farmers Organization;

- Collect surcharge from water users and drainage beneficiaries in case of default in payment of their dues;
- Settle water disputes relating to the Farmers or other water users of the area; and
- Any other duty, function or responsibility which is incidental to or implied in the duties functions and responsibilities of the farmers Organization.

POWER OF FOS

Subject to Rules a Farmers Organization may exercise all powers which may be necessary and proper for the performance of functions entrusted to it. Without prejudice to the generality of the provisions of sub rule mentioned earlier, a Farmers Organization may exercise the powers and authority of a Divisional Canal Officer under the Canal and Drainage Act 1873 and any officer subordinate to him.

In the performance of its duties and functions entrusted to it under Rules, a Farmers Organization may:

Acquire, hold or dispose of movable property which is reasonably required for the carrying out of its functions;

- Enter into contracts in all matter relevant to its functions duties and responsibilities;
- Engage, hire or employ such experts, advisors, consultants and other personnel, as may be necessary for the performance of its functions.

RESOLUTION OF DISPUTES

- The General Body of a Farmers Organization shall constitute a *Nehri Panchayat* comprising 3 or 5 members of the Farmers Organization or other persons which shall deal with the disputes under the rules;
- All disputes arising among the Farmers or other water users shall be resolved preferably through mediation by the *Nehri Panchayat* of the farmers Organization concerned;
- Where the *Nehri Panchayat* is unable to settle the dispute through mediation, it may deem necessary to give its decision;
- The decision of the *Nehri Panchayat*, shall be by majority of the members present and voting. In case of a tie the case shall be referred to the President of the Farmers Organization.
- A person aggrieved by the decision of the *Nehri Panchayat* under the rule may appeal to the Irrigation Tribunal of the said area. The appeal shall be available in such matters in which an appeal has been provided under the Canal & Drainage Act 1873 and Rules framed under it.

PARTICIPATORY REFORMS: IMPACTS FROM OTHER COUNTRIES OF THE WORLD.

Waheed-u-Zaman¹⁶

BRIEF HISTORY OF PIM

Participatory Irrigation Management (PIM) is not a new thing. It **has** centuries old history. Rather, it tells us how the local groups developed the world's first irrigation schemes.

At government level, before 1950s in America, the local groups were involved in irrigation management. Between 1950s and 1990s PIM was initiated in France and Taiwan. In the developing countries PIM was promoted between 1980s and 1990s. Particularly, in mid 1980s, the international financial and donor agencies introduced the concept of PIM **all** over the world. In Pakistan, in mid 1990s, PIM was adopted in its national strategy.

PIM **is** a global movement now. Different governments are implementing PIM according to their own economic, social, cultural, and political circumstances. Therefore, PIM has different names in **different** countries of the world.

In Indonesia and Philippine it is called turnover, in Mexico "management transfer", in Senegal it **is** "disengagement", in China "**post** responsibility system" in Bangladesh "privatization" in Nigeria it is "commercialization" and in India and Sri Lanka it is called "participatory management" (Geijer, J. et al., 1995)

Areas of Impacts

The following section covers the impacts of irrigation management transfer around the world. The paper covers the following areas of impact.

- Abiana Recovery
- Income of Farmers
- O&M Expenditure of Canals
- Water Supply
- Production
- **Area** under Cultivation and Crops
- Maintenance Conditions of Canals
- Government Expenditure

Impacts on Abiana Recovery

A study on irrigation management transfer in Turkey Plusquellec (1995) reports that water charges are received from the water users in three installments for each irrigation season. The recovery of the first installment which was due in June 1995 varying between 75% to 90% was much greater than the past performance of the government agencies.

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Plusquellec (1995) reports that before the irrigation management transfer the Mexican government was recovering less than 30% of the O&M and energy cost. After the transfer the recovery of the O&M cost of irrigation system as a whole increased from 30% to 80%, and the recovery of the transferred systems is 100% in Mexico.

A study was conducted by Johnson III et al. (1995) to assess the institutional changes and management performance changes in two districts in China. Their report revealed that prior to reform the water fee collection rate was 100%. However as the reforms were introduced the collection rate dropped significantly. It fell from 100% to 85%. The reported reasons for this drop in collection rate were confusion within the irrigation system about the management responsibility coupled with the factor of increase in volumetric water fee. Collection rate was improved through the improved management services and extensive education programs.

Pant (1995) discusses the results of a case study on the Turnover of Public tube wells in Uttar Pradesh and examines the changes associated with irrigation management transfer IMT. These changes are water use efficiency, cropping intensity and productivity, cost of water to the beneficiaries, control of water to the water users and gain or losses to the government. He has mentioned that with regard to the collection of water charges the data shows mixed results. For 1992-93 the water charges collection for the tube well show increase in both Kharif and Rabi as compared to the collection before the Irrigation Management Transfer. In case of Rabi it was US\$ 382 before IMT and US\$ 433 after IMT. The average per year revenue collection from the tube well shows increase after IMT, which is from US\$ 611 to US\$ 620.

Musa (1995) examined financial sustainability for operation, maintenance and management on Kano River Irrigation Project KRIP after irrigation management transfer with the collaboration of the Federal Government of Nigeria and the International Irrigation Management Institute IIMI. He mentioned that the impact on cost recovery was also significant. Both the representatives of WUAs and the representatives of Hadejia-Jama'are River Basin Development Authority (HJRBDA) admitted that the WUA contributed in mobilizing the farmers to pay their collected water charges even before the water was released to them. Recovery of the water charges was below 50 percent before the turnover of an irrigation system. The author has not mentioned explicitly the amount of increase in recovery of water charges, however the reports show that there was distinct increase in the recovery of the water charges after the turnover of irrigation system

A paper presented at the Regional Workshop of the Farmer-managed Irrigation Network held at Khon Kaen, Thailand by U. Gautam (1990) describes the role of social organizers in improving the irrigation management in context of Nepal experience. In this paper the author says that after the formation of the user's tolis (associations) an overwhelming majority of farmers showed satisfaction about the assessment of the water cess. Before the water user's tolis the farmers were dissatisfied with the assessment.

Honorato L. Angeles reported that "the ability to collect irrigation fees in Philippines was well demonstrated by one system where fee collection reached a record 96 percent. Under government management, the rate of fee collection in that system was a little over 50 percent on the average."

Impacts on Income of Farmers

IIMI (1995) reported that "the transfer of mesqas in Egypt led to an increase in average annual farm income of US\$ 300 per hectare."

Norman Uphoff (1986) reported that "in Nepal, Production data gathered by the Agrarian Research and Training Institute (responsible for introducing the farmers' organizations), showed a net profit of 23 rupees per bushel from paddy production in that season. This figure was used to calculate the value of added production (rather than the gross sale price)."

Kolavalli and Raju (1995) conducted a study on the result of the turnover of public tube wells by Gujarat Water Resources Development Corporation. India reports that "three societies which had reported high profit ranging from Rs 8000 to Rs 18000 annually had broad based representation and appeared to be genuine cooperatives."

Impact on O&M Expenditure of Canals

Norman Uphoff (1986) stated that "in aggregated terms, Lowderliik (1985:2) reports that farmers contributed \$7.6 million worth of labor in the large (\$42 million) program to rehabilitate turnout areas (chaks) in Pakistan."

Musa (1995) examined financial sustainability for operation, maintenance and management on Kano River Irrigation Project KRIP after irrigation management transfer with the collaboration of the Federal Government of Nigeria and the International Irrigation Management Institute IIMI. He mentioned the impact of irrigation management transfer on government expenditures. The government expenses on Operation, Maintenance and Management OMM of irrigation systems in 1983 were close to US\$750/ha/ year. While the irrigation water fees were approximately US\$95/ha/year. After the turnover the expenditures of OMM chipped in by the government has dropped to about US\$10/ha/year while the irrigation water fee is US\$25/ha/year.

IIMI (1995) reported that "in southern Luzon, Philippines. within 4 years the system's budget deficit declined from an annual average 1982-85 of Ps. 268,500 to an average of Ps. 7750 during 1986-89, the first four year after turnover."

Waheed-uz-Zaman (1998) conducted a study on impacts of farmer participation in water resources management for the farmer organization of the Hakra 4-R Distributary belonging to the Fordwah Eastern Sadiqia Canal System in Southern Punjab, Pakistan. He reported that The farmer organizations of the Hakra 4-R Distributary under took a five days maintenance campaign. Its five sub-system level water users' organizations (WUOs), participated separately for one day each in the maintenance campaign. A total of 794 farmers, and their leaders, participated. Also, 120 tractors, mostly with rear-mounted-scrapers were mobilized.

The total cost of resources mobilized, including tractor traveling costs, man hours and tractor hours at the site, is equivalent to Rs 124,000/= (or US\$ 2,800/=). The estimated cost of the WUOs' maintenance activities was Rs 400,000/= (or US \$ 9,032/=). This comparative estimate of the maintenance work was provided by the Sub-divisional Officer (SDO) of Haroonabad Sub-division of the Punjab Irrigation Department in the presence of an Asian Development Bank

Consultant during his visit to the Haroonabad area. The farmers now believe that they can undertake cost-effective maintenance activities.

Impacts on Water Supply

A research conducted by Aziz (1995) on irrigation management turnover to private water users associations in Egypt provide the comparison after and before turnover of the mesqa system from a sample of an improved mesqa under the Irrigation improvement Project (IIP). The study shows that mesqa conveyance efficiencies increased from an average of about 70% to about 90 and 95%. The overall irrigation efficiencies (conveyance x field application efficiencies) for 26 observation of sample mesqas averaged about 40% before improvements and ranged from 70% to 80% after improvements. With regard to equity conditions data also shows that before the turnover of mesqas about one-third of 137 sample farmers interviewed reported serious problems of inequitable water distribution. After the turnover none of the 137 water users reported unequal water supplies between head-end and tail end. The report further points out that before the turnover, about 05% of the sample farmers reported that, in summer season, water supplies were insufficient for good crop production. After the turn over only 10% sample farmers reported problem of inadequate supplies. He also found that irrigation time per hectare for five main crops was decreased from an average of about 15 to 17.5 hours, to about 5 to 7.5 hours per hectare after the turnover of the new mesqas.

Musa (1995) studied financial sustainability for operation, maintenance and management on Kano River Irrigation Project KRIP after irrigation management transfer with the collaboration of the Federal Government of Nigeria and the International Irrigation Management Institute IIMI. He mentioned the impact of irrigation management transfer. The WUA for Aglose in 1991/92 cleaned 2.3 km length of distributary channel leading to a 12% increase in the discharge in middle and final sections of the channel.

IIMI (1995) reported that "in a post-facto design about turnover of a medium size pump scheme along the Red River in Vietnam there was an increase in irrigation efficiency from 50% to 81%. There was also a decrease in water consumption per ha from 8000 m³ to 5120 m³ (a 36% drop) over a four year period after turnover.

IIMI(1995) reported that "in another post-facto report, water delivery efficiency in the Azua system in the Dominican Republic increased between 25% and 30% after management transfer under the On Farm Water Management Project."

IIMI (1995) reported that "the turnover of a public tube well in Utter Pradesh, India increased water and electricity use efficiencies. Average pumping time per irrigation was reduced from 42.4 to 39.3 hours per ha in Kharif season to 13.4 and 22.8 hours per ha in Kharif season during the first two years after turnover (1992-94)."

Impacts on Production

Project studies in Malaysia indicate that after the Irrigation Management Transfer farmers were able to achieve higher paddy production and cropping intensity (Socon, 1995).

With regard to impact on production after the Irrigation management transfer, reports from Turkey indicate farmers' production has increased by 10-25% (Cagil,1995).

A research conducted by Aziz (1995) on irrigation management turnover to private water users associations related to three canal commands in Egypt shows that one to three seasons after the turnover farmers estimate about 10% increase in cotton, 14% in maize and about 16.5% in sugarcane yields per hectare.

The study on institutional management and performance changes in two irrigation districts in China indicates (Johnson 1995) that annual combined per ha production of wheat and maize has increased from 1125 kg in 1960 to 11905 kg in **1992** for Bayi ID. From 5250 kg in 1972 to 8500 kg in 1992 in Nanyao ID after the implementation of rural reforms.

IIMI (1995) reported that "in the Kano River irrigation Project in Northern Nigeria, taking over of management of distributary canals by farmers led to 12% increase in water volume reaching middle and tail ends of pilot canals, which resulted in an 80% increase in dry season cropped area."

IIMI (1995) reported that "in Uttar Pardesh, India, the average irrigated area in **Rabi** (winter) season was 103 ha during 1990-92 (before turnover) and 59.5 ha 1992-94 (after turnover). Cropping intensities were on average of 143% during two years before turnover and 162% afterwards."

Norman Uphoff (1986) reported that "in the Nong Wai scheme in Thailand, farmer organizations reportedly raised cropping intensity from 50 to 90 percent in two years' time."

Impacts on Area under Cultivation and Crops

In Bangladesh, after the irrigation management transfer, the irrigated area has increased due to the adaptation of the tube well technology. The cropping average intensity has also increased due to the vagaries of irrigation development where irrigation water is available. (Sarkar 1995).

Turn over of the irrigation system in Indonesia to Water User's Associations resulted in better water management, increase in crop during dry season and adoption of high economic value crops. There was also significant improvement in cropping intensity from 194% to **282%** and increase in crop yield during wet and dry season (Soenarno, 1995).

After turnover of state tube wells to farmers' cooperatives, Tushaar shah et al (1995) have reported experiences from Indian Gujrat. The increase in area under irrigation in district Petland, India was 30% but in district Anand the increase was 4 times. The report, however, also indicated **that** performance **of** the cooperative tube wells (turned over tube wells) is much less than the private tube wells. Generally the price of the private tube well water is higher but 20% more and irrigates 45% more area.

Impacts on Maintenance of Canals

Reports on Irrigation Management Transfer in Indonesia show that farmers participation in undertaking O&M operations have increased (Soenamo,1995).

The initial results of pilot test from Basut, Malaysia reports that after Irrigation Management Transfer the cooperation among farmers has increased **and** they have **started** adopting good water management and farming practices. Operation and maintenance efficiency has increased. (**Soon, 1995**).

Musa (1995) studied financial sustainability for operation, maintenance and **management** on **Kano River** Irrigation Project **KRIP** after irrigation management transfer with the collaboration of Federal Government of Nigeria and the International Irrigation Management Institute IIMI. He mentioned the impact of irrigation management transfer on Operation and **Maintenance** conditions of the distributary channels. There was a major improvement **in** maintenance of the **irrigation** infrastructure. The WUAs of Bangaza were able to clean 70% **of the** distributary channels and 60% of the field channels. Similarly the WUAs of Agolas **and** Karfi cleaned 80 **percent** and 100percent respectively.

Impacts on Government Expenditure

IIMI (1995) reported that "in the Columbia Basin Project in the **USA**, there **were 612** US Bureau of Reclamation (USBR) staff in 1969 -- the year of transfer. By 1985 only **83** **USBR** staff remained. Staff decline was even steeper in the Irrigation and Land Management Division, dropping from 297 in 1969 to only **22** in 1985."

IIMI (1995) reported that "in Coello and Saldana of Columbia, in 1975 **an average of 62 ha was served per** staff, whereas in 1993, 147 ha **was** served per staff.

IIMI (1995) reported that "turnover system in Southern Luzon, Philippines led **to** a decrease **in** staff from **24** in 1982 to only 6 in **1987**, which led to **a 60%** reduction in annual operating expenses.

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ANNEXES

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		21	Mr. Abdul Hamid IIMI Office, Haroonabad
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		23	Mian Noor Ahmad President FO Sirajwah Disty Bahawalnagar
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		27	Mr. Muhammad Arshad Member Farmer. PIDA 324 Model Town Khanpur Distt. Rahim Yar Khan

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50	Mr. Waheed Sultan Member AWB
51	Mr. Muhammad Ashraf Joia Member AWB
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53	Mr. Saeed Khan Farmer, Kamalia
54	Mr. Arafat Majeed NRSP, Mardan

55	Mr. M. Tariq SO NRSP, Mardan
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69	Mr. Habib Khan Farmer
70	Mr. Fateh Khan Farmer
71	Mr. Hayat Mohammad Farmer
72	Mr. Ashfaq Gill Farmer
73	Mr. Waheed Ahmad
74	Mr. Mohammad Amin Khan WMS
75	Mr. Mohammad Siddiq Shah Farmer
76	Mr. Mohammad Ibrahim Farmer
77	Mr. Bashir Ahmad Farmer
78	Mr. Mohammad Aslam Farmer

79	Mr. Zaheer Ahmad Qadri Farmer
80	Mr. Riaz Hussain Shah Farmer
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97	Ch. Nazir Hussain Farmer
98	Dr. Evan C'hristen Research Engineer CSIRO Australia
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103	Mr. Rana Shafiq G.C.O. Lahore
104	Mr. Khalid Mehmood G.C.O. Jaranwala
105	Ms. Fahmida G.C.O. Depalpur
106	Mr. M. Afzal G.C.O. Faisalabad
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123	Ch. Riazul Haq Farmer, Samundari
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133	Mr. Sibtain Farooq OFWM, Faisalabad
134	Mr. Amir Rehman OFWM, Jaranwala
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147	Mr. Kafayat Ullah Chaudhry Engineer, PDC
148	Mr. Parvez Mukhtar Engineer PDC
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150	Mr. Mohammad Ashraf Farmer
151	Mr. Amjad Ali Chaudhry SDO, Irrigation, Kamalia
152	Mr. Asghar Ali Farmer
153	Mr. Manzoor Ahmad Farmer
154	Mr. Mohammad Ashgar Farmer
155	Mr. Mushtaq Ahmad Farmer
156	Mr. Mohammad Yaqoob Farmer
157	Mr. Ghulam Mohayuddin Farmer
158	Mr. Mohammad Saleem PPSGDP Sargodha
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175	Mr. Latif Kana SDO I&P Lahore
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177	Sh. Abdullah SDO, I&P, Faisalabad
178	Mr. Raja M Iqbal Farmer
170	Mr. Arshad Ali Farmer
180	Mr. Haji Tufail Farmer

PROGRAM OF THE WORKSHOP

FIRST DAY

Chief Guest Lt. General (Retd) Muhammad Safdar, Governor Punjab

Inaugural Session :

09:30	10:30	Registration of participants	
10:55		Arrival of the Chief Guest	
11:00	11:05	Recitation of the Holy Quran	
11:05	11:15	Welcome address	Mr. Suleman Ghani, Secretary, PID/MD PIDA
11:15	11:25	Address by World Bank Representative	Mr. Usman Qamar
11:25	11:35	Address by the Director IIMI-Pakistan	Dr. S.A. Prathapar
11:35	11:45	Address by Farmers' Member AWB	
11:45	12:00	Inaugural address	Governor Punjab
12:00	12:20	Refreshments	

Orientation Session:

Chair: Mr. A.N.G. Abbassi, Minister Irrigation, Sindh

12:20	12:35	Concept and Role of NDP and Annual Review	Mr. M. Aslam Mahboob, NDP Coordinator, Punjab
12:35	12:50	Restructuring of PID into PIDA/AWB	S. Mubasher Hussain, PIDA
12:50	13:00	Status of Institutional Reforms in other Provinces	NDP Coordinators
13:00	13:15	Need for Participatory Irrigation Management	Mr. Zafar Iqbal Mirza, IIMI
13:15	13:30	Experience of OFWM in Social Mobilization for Irrigated Agriculture	Mr. Mushtaq Ahmad Gill, DG, OFWM
13:30	13:40	Formation Process of FO, Experience from Hakra 4-K Distributary	Mr. Mehmood ul Hassan, IIMI
13:40	13:50	Achievements of FO, Hakra 4-R Distributary	Mian Abdul Wahid, President FO Hakra C R
13:50	14:00	Institutional Reforms Experience from Sindh	Dr. Yameen Memon, IIMI
14:00	14:45	Lunch and Prayer Break	

Technical Session:

Chair: Mr. Suleman Ghani, Secretary Punjab Irrigation Department/MD PIDA

14:45	15:00	Structure and Main Features of AWB	Chief Executive AWB
15:00	15:15	Legal Framework for FOs	Dr. Dill Muhammad, PIDA
15:15	15:30	Role of Beneficiaries in Participatory Irrigation Management	Mr. Rashid Bajwa , NRSP
15:30	15:45	Institutional Reforms, Experience from other Countries	Waheed uz Zaman , IIMI
15:45	16:00	Vote of Thanks	MD/PIDA

SECOND DAY:

(Only for PIDA/AWB/NRSP/OFWM Staff & Selected FO Leaders)

Capacity Building Session:

Chair: Syed Mubbashir Hussain, G.M. Transition Management PIDA

09:00 – 09:05	Recitation of Holy Quran	
09:05 - 09:20	Formation of FOs in LCC (E) Area, Process and Status	Chief Executive AWB
09:20 – 09:50	FOs Function, Powers, And Registration	Dr. Dill Muhammad, PIDA
09:50 – 10:10	Sustainability of Institutional Reforms	Mr. Asrar ul Haq, PID
10:10 – 10:30	Social Organization Process; Experience of Hakra 4-R	Mr.Mehmood ul Hassan. IIMI
10:30 – 10:50	Tea Break	
10:50 – 11:10	Proposed Social Organization Process and Role of Different Stakeholders in LCC (E)	NRSP
11:10 - 11:30	Capacity Building Needs	Dr. Yameen Memon, IIMI
11:30 - 11:50	Farmers Perception about Management Change	FO Leaders
11 :50– 12:50	Discussion on Sustainable FOs	
12:50–13:00	Closing Remarks	
13:00	Lunch	