

## Community based water management: challenges and opportunities

Shirin G.

*in*

Hamdy A. (ed.), Monti R. (ed.).

Food security under water scarcity in the Middle East: Problems and solutions

Bari : CIHEAM

Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 65

2005

pages 391-398

Article available on line / Article disponible en ligne à l'adresse :

<http://om.ciheam.org/article.php?IDPDF=5002236>

To cite this article / Pour citer cet article

Shirin G. **Community based water management: challenges and opportunities**. In : Hamdy A. (ed.), Monti R. (ed.). *Food security under water scarcity in the Middle East: Problems and solutions*. Bari : CIHEAM, 2005. p. 391-398 (Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 65)



<http://www.ciheam.org/>  
<http://om.ciheam.org/>

# COMMUNITY BASED WATER MANAGEMENT: CHALLENGES AND OPPORTUNITIES

Gul Shirin\*

\* LEAD Pakistan, Islamabad, Pakistan.

**SUMMARY** – The present account is based on a seven weeks' ethnographic fieldwork in Faisalabad Irrigation zone in Punjab Pakistan, conducted as part of degree requirement for MSc. in Anthropology and Ecology of Development at University College London. The focus of the study is on the introduction of 'Farmer Organization' on the Dabbanwala distributary as part of a three-tiered devolution plan under the 'institutional reforms' component of the National Drainage Program (NDP). Due to the nature of the study, which was ethnographic, the Farmer Organization was not studied in isolation but as part of the larger cultural milieu. The people in my locale had, in their cognitive mapping, a certain place for the irrigation department and the field officers of the irrigation department, which was analyzed as such. Studying the role and perception of the irrigation department in the present devolution exercise provided a further dimension to the study, as they were also the ones responsible for on the ground implementation of the institutional reforms under the NDP. *"Aspects such as social differentiation, political influence, and changing socioeconomic factors escape the attention of many who generally prefer to focus on what can be easily observed and measured. Perhaps for this reason, studies on water allocation practices at the tertiary level have been relatively rare."* (Bandaragoda 1998).

**Keywords:** water management, Pakistan, social capital, Biradari

## 1. INTRODUCTION

Water management has been crucial to civilizations since ancient times. Indeed ancient civilizations had irrigation management regimes, which took into account their environmental and geographical peculiarities. Thus whereas the Egyptian civilization came up with 'Nilometers' to manage a rainless but water abundant (predictable 100days cycle Nile floods) ecosystem, the Mesopotamians had to contend with a flat land, two furiously flooding rivers and generally poorer quality of soil (Cowen under publication) In fact it is sometimes argued that the reason for the fall of the Mesopotamians was their inability to effectively drain their crop thus resulting in salinity so damaging for agriculture (Boyd 2001).

During the present times, water management is still as important an issue as it was two thousand years ago. Especially in agrarian economies such as Pakistan, water becomes a critical issue. In Pakistan an overwhelming majority, an estimated 81%, of the population is directly or indirectly dependent on agriculture as a source of livelihood. The present undertaking is to examine the community based water management through the study of the irrigation management transfer exercise currently underway in the Faisalabad Irrigation Zone or Lower Chenab Canal (East) (LCC (E)) on a pilot basis as part of the institutional reforms proposed under the National Drainage Program (NDP), a World Bank and Asian Development Bank funded project.

In the context of development projects such as the NDP, the need for decentralization was felt as a necessary option for reforming irrigation management when studies showed that farmer's attitude towards the State or centralized agency's regulations is less than favourable (Bagadion and Korten, 1985) In the mid-1970s through to the 80s setting up of "farmer organizations at the bottom of a three-tiered structure, the so-called Water Users Associations (WUAs) became the main focus of government policy in irrigation development"(Suhardiman 2001) The present strategy of decentralization is still the one in which the department remains in charge of the system level management, while farmers are responsible for irrigation management at secondary, tertiary and field level, as is the case in the irrigation management transfer scheme being implemented under the NDP.

## 2. WATER AND FOOD SECURITY IN AN AGRARIAN PAKISTANI ECONOMY

As outlined, water today defines and confines development aspirations of individuals and societies. Water availability and sanitation have, consequently, become major development indicators having strong bearing on the quality of life of people. In a country where 90% of the national food production is through irrigated agriculture, with the agriculture sector providing 23% of the GDP and employing 51% of the labour force water's importance as a resource cannot be denied (World Bank 1994).

Major concern here is that agricultural production of the country is suffering due mainly to a deteriorating irrigation system. Uncertain and variable water supplies adversely affect agriculture. The majority of irrigated lands suffer from some degree of water logging and salinity, which causes a loss of about 40,000 hectares of irrigated lands each year which are salt affected by salinity. (Gizewski and Homer-Dixon, 1997) As a result Pakistan is not producing its optimum yield levels, thus posing a major potential threat to food security. As the following table shows the gap between the actual and the potential yield is quite significant for almost all the major crop.

Table 1. Potential and average crop yields in Pakistan

Commodity	Potential Yield	Average Yield	Yield Gap	Unachieved Potential
	(Kilograms per Hectare)			(Percent)
Wheat	6,425	1,695	4,730	74
Paddy	9,489	1,703	7,786	82
Maze	6,944	1,272	5,672	82
Sugar Cane	256,000	35,672	220,328	86
Rape & Mustard	2,743	641	2,102	77
Potato	38,128	10,403	27,725	73

Source: G.R. Sandhu, Sustainable Agriculture: A Pakistan National Conservation Strategy Sector Paper (Karachi: IUCN-World Conservation Union, 1993), 3. In op.cit

When we take into consideration the fact that 90% of all agricultural production in Pakistan is from irrigated agriculture; we realize the potential food security as well as economic uplift Pakistan can experience by increasing efficiency of its irrigation system that, at present, is 35-40% of optimum performance level. The World Bank figures show that salinity alone is robbing Pakistan of \$ 2.5 billion annually in unrealized potential crop production (World Bank 1997) In a nutshell, Pakistan's irrigation sector is at the moment facing infra structural problems. *'The origins of the crisis are irrigation without drainage, over-irrigation, and low-delivery efficiency of the irrigation and drainage system. These are rooted, in turn, in the lack of appropriate policies and the poor performance of key irrigation and drainage institutions'* (op.cit) Therefore, the \$785 million NDP currently underway in Pakistan has the institutional reforms as one of its priority areas. Joe Wambia, a Senior Financial Analyst in the South Asia Rural Development Unit at the World Bank explains the program in the following words whereby the centrality of the institutional reforms to the NDP is evident, *'The Government of Pakistan and its four Provinces have embarked on a long-term process of institutional reforms and investment to secure the environmental and financial sustainability of the irrigation and drainage system. Widespread consultations with various groups of stakeholders have built substantial support for the reform program and the design of the National Drainage Program,'*(World Bank, 1997).

## 3. THE FAISALABAD IRRIGATION ZONE AND THE DABBANWALA DISTRIBUTARY

The larger setting of the research is the Indus Basin in Pakistan. The present research was in Faisalabad Irrigation zone, which is the zone selected for piloting the Institutional Reforms under the National Drainage Programme (NDP) by setting up the Pilot Area Water Board and Farmer Organizations thereof. The selected area has 112 distributaries consist about 4000 watercourses. This area falls in five districts namely Hafizabad, Sheikhpura, Faisalabad, Toba Tek Singh and Jhang (Directorate General Agriculture 2001).

The district census report 2000, explains Faisalabad district as “A vast tract of desert lying between Chenab and Ravi rivers was brought under plough in the last decade of nineteenth century. With the digging of Lower Chenab Canal it became possible to irrigate this waterless waste.” The Dabbanwala distributary flows out from the Gugera Branch of the Lower Chenab Canal (East). With a design discharge of 76 cusecs, Dabbanwala has 43 moghas (water outlets) supplying water to the 16 chaks (villages) on the distributary, with 18833 acres of Cultivable Command Area (CCA). In July 2001, Dabbanwala distributary became the first distributary to be handed over to the Farmer Organisation to take over the management of its water.

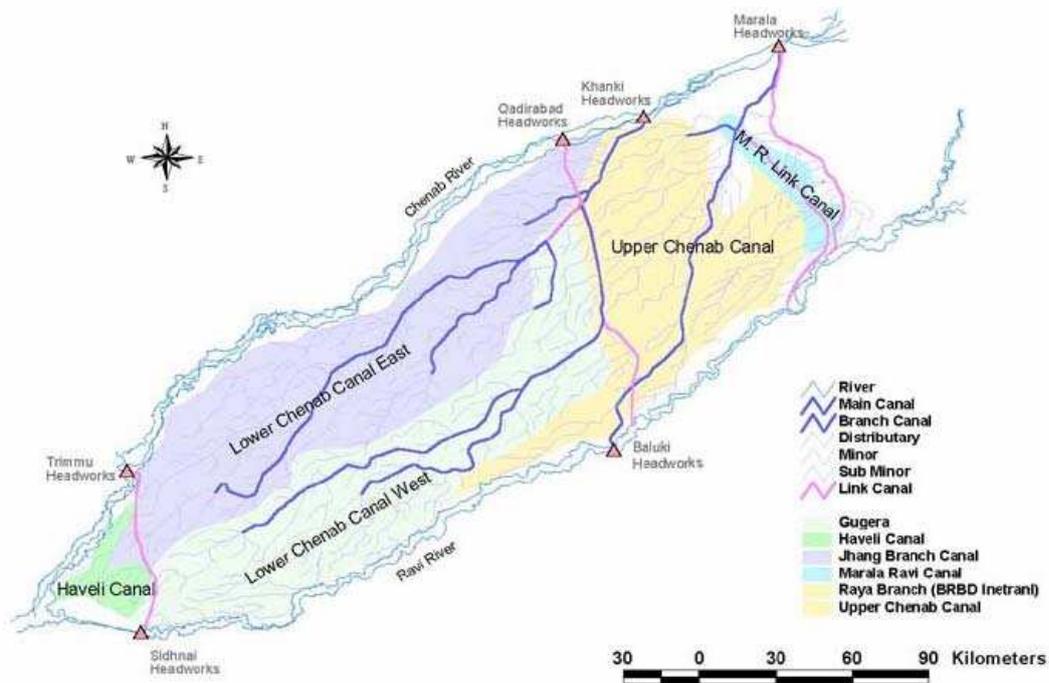


Figure 1. Map showing layout of the Lower Chenab Canal East (Source: International Water Management Institute)

### 3.1. Managing water for food security

In the Punjab province, there are two cropping seasons, Kharif (April to September) and Rabi (October to March) Thus the water in the canal has to provide for both these cropping seasons. The efforts to ensure this are dependent on the following.

#### 3.1.1. The system of irrigation

The basic principle in determining rights over canal water in Pakistan is as follows: the water rights form headwork to the distributary level is the government’s. Once it passes through the outlet (mogha) and onto the watercourse it becomes communal property till the time it enters the individual fields when it becomes individual property. In the case of Dabbanwala distributary, the FO has the rights over the water in the distributary since July 2001.

The system of irrigation in the area I worked in was almost singularly canal irrigation due to extremely brackish groundwater. It is only during water shortages that Tube well water is mixed with canal water. Otherwise, it is only near the head of a watercourse (near the distributary) that tube wells are installed. Thus utilizing the seepage from the canals.

#### 3.1.2. Farm-level distribution of water: Warabandi

*Warabandi is a rotational method for the equitable distribution of available water in an irrigation system by turns fixed according to a predetermined schedule specifying the day, time and duration of*

supply to each irrigator in proportion to the size of his landholding in the outlet command (Singh 1981 in Hussein and Haq 2000) The term literally means fixed turns, wara (turn) and Bandi (fixed).

The position along a water body is important. An average watercourse has 25-30 acres on it. Thus the distances from the outlet can vary considerably; this affects the flow of water, the amount of evaporation, the seepage etc. The warabandi system as explained does not account for these losses. Thus, the position of your fields also determines the amount of water that you get. It is more important where I was conducting the study, since as explained above the groundwater is extremely brackish (totally unsuitable for irrigation) tube wells are not much help unless they too are near the Canal water where they can pull up the canal water lost to seepage.

### 3.1.3. Water rates: Abiana

The Provincial Government for canal water supplied to the irrigators, charges Water Rates, known as abiana. This is not a tax, but a service charge recovered from the farmers in respect of matured crops. Section 36 of the Canal Drainage Act, 1873 'The rates to be charged for canal water supplied for the purposes of irrigation to the occupiers of land shall be determined by the rules made by the Provincial government and such occupiers as accept the water shall pay accordingly.' (Canal and Drainage Act, 1873).

In Punjab, different crops have different water rates levied on them per acre; it is the job of the zilladaar to determine the revenue for a particular tract of farmed land.

### 3.1.4. Water theft

In an environment of water scarcity, water theft is almost a way of life with the water users. The case of Dabbanwala distributary was no different. The popular and most widely used methods for were:

- Daf: a piece of wood is fixed into the canal next to one's own mogha to restrict the flow of water further down the canal.
- Ghurloo: a hole is made in the waterbed to divert the water to one's own mogha or waterway (Khal).
- Takki: the banks are broken to let the water to spill over to divert it to where one wants.
- Pipe: steel pipes are put into the canals; overnight, to divert the flow of water to one's own farm.

## 4. THE POLITICS OF WATER MANAGEMENT

While studying the water management practices in the context of the Dabbanwala distributary and its CCA, there were four issues which were deemed to be centrifugal in shaping the momentum of any/all management regimes.

### 4.1. Transparency and accountability between water users (farmers) and the management committee of the FO

Transparency is dependent on accountability. Only when the management committee of the FO would be accountable for their decisions to the farmers would there be transparency. Another way of understanding this is through the assumption that the Irrigation Department was not transparent in its dealings with the farmers because it was not answerable to the farmers. However, the situation for the farmer, as far as transparency is concerned, would remain the same if the current institutional reforms were implemented in their present form. The reason being that the Institutional reforms in their present form fail to recognize the power and influence of the Biradari system. In FO Dabbanwala, the power relations in the local culture are being translated into power relations in water management in the form of the FO. Thus an atmosphere conducive to transparency between irrigation managers and water users could not be achieved in the FO Dabbanwala. For development to be successful we need to acknowledge local politics, we need to recognize that the actors in the local political milieu can use development implements such as the FO politically. Thus we need to concede that social capital itself is political in nature as in being susceptible to political manoeuvring by the pre-existing holders of local social capital and power.

In Chak 304, there was a dispute regarding the takki of a Khal that was brought to the FO. The Khal in question was the one that was specified for the Diggi. Chak 304 is a Jat majority village and both the president of the FO as well as the member FO on that particular watercourse is Jats.

During the night some men from among the Jat biradari were seen breaking the banks of the Khal to the diggi, by the some men of an artisan biradari patrolling the watercourse. Yasein, the member FO on that particular mogha and its watercourse, had assigned those men. The duty patrol reported the Takki to Yaseen who approached the management committee of the FO. The stance of the Jats who had allegedly broken the Bank was that they were innocent and the Mashqis were taking this opportunity to get even for an earlier dispute.

For four weeks after the dispute that I was in the filed, a place for the hearing could not be decided. At first the local primary school of chak 304 was decided. The meeting was to be attended by the President of the FO and the manager technical , a retired SDO hired by the FO, of the FO. A night before the hearing was scheduled, the Jats refused to go to the Primary school. It was then suggested that the meeting be held at the house of the village lambardar. This time the mashqis refused since the lambardaar was a Jat. Yaseen , then suggested the Canal Bungalow, thus using the symbol of power of the old system for establishing FO authority.

The FO president is a Jat ( a dominant Briadari), the Finance Secretary is a Rajput ( a dominant biradari), and the General Secretary is a Jat. All the non office-holding members of the management committee are also Jats. Thus the power structure within the farmer managed or community based irrigation system is a reflection of the power relations present within in the culture of the area. The dominant Biradari by virtue of their economic, political and numerical strength have never been answerable to the non-dominant biradaris. The non-dominant Biradari farmers know better than to question those in power. If a person were not even directly in control of the power to exercise it, he would not go against the status quo since his loyalties are with his biradari and not with the FO or the Irrigation department or the Pakistan Government. The member FO chak 304, Yaseen, had appointed the patrol himself. Yet when it came to the issue of takki he was visibly not standing with the FO but with his biradari. Since FO is transient in his cognition, biradari is permanent.

Another aspect to the politics of the biradari that was observed was its role in regional and local level politics very visible in the canvassing for the elections of the local bodies occurring during the fieldwork was being undertaken. All the coalition making and constituency building, clearly took place around Biradari.

Similarly, reciprocity and trust are intra biradari<sup>1</sup>. It is also Biradari which provides the platform for forming political clouts through which conditions can be manoeuvred into a position favourable to one. Due to this, there is pressure for going with the Biradari as per Eglar<sup>2</sup> and Srinivas<sup>3</sup>. This also what Portes and Landlort<sup>4</sup> call downside of social capital. This pre-existing social capital with a definite downside to it cannot be ignored.

---

<sup>1</sup> As per Eglar, 'Loyalty and attachment belong to a man's own biraderi and to his own paternal village'(1964:47)

<sup>2</sup> ' In almost every village there is an on-going struggle for power among different biradaris of zamindars and often among members of one biradari as well. They have formed there own parties and have achieved some sort of balance of power in the village, and for this reason they feel that an outsider would take advantage of the struggle, would involve himself in village politics to gain power and prestige for himself, and thus would upset the existing balance' (Eglar 1964:47) The basic point out of this statement is that the custodians of power in a village would go to any possible length to try to politically manoeuvre a situation to keep that power. Thus, if we take the Farmer Organization as a potential power gaining entity, which it most surely is, the brokers of power would like to maintain the balance of power and hence if the FO be North Italy style or 'good' social capital' it would be incorporated into the Biradari politics and thus the other face or as Portes and Landlort put it the 'downside of social capital' would be staring right at us

<sup>3</sup> op.cit

<sup>4</sup> op.cit

#### **4.2. The impact of type of agents used to establish the FO**

The Irrigation Department was designated to establish the FOs in the pilot area. Thus as is the case with all social bodies, the FO Dabbanwala was not set-up in a vacuum, other than the biradari system there was the irrigation department and its hierarchy that it sought to replace. The power associated with the irrigation department that the FO is still trying to use to legitimize its own authority. The best example for this was the takki case in Chak 304. It was the Canal Bungalow, which was considered the suitable venue for the meeting to discuss the takki issue. Thus in the locals' cognition,

##### **Canal Bungalow= The Irrigation Department = Authority**

As for the role of the irrigation department in the implementation of the institutional reforms, it is evident that they were doing it because they were ordered to that. This had implications on the project since the people used or those who were responsible for the smooth setting up of the FOs were the ones who had the most to lose if the FO succeeded. It is a matter of logic to realize whether these FOs would be successful indeed. Why would an SDO who stands to lose his job or an XEN whose powers would be greatly curtailed want the system, responsible for this, to succeed? While they were not outright refusing to implement the project reforms, they were doing just the bare minimum and sometimes not even that. For, ironically they still wielded authority and commanded respect and could still order the farmers around. Thus though in July 2001, the FO Dabbanwala was up and about, its manner of coming about was not desirable and indeed envisioned that way. There was no social mobilization prior to the elections. There was no proper training of either the FO members or the management committee before the handing over of the FO to them.

#### **4.3. The impact of membership criteria on the working of the FO**

The FO Dabbanwala has only farmers as its member. It is so because the PIDA Act states categorically that only farmers can be members. However when the PIDA Act defines a farmer, it defines 'him' as 'one who pays occupier's rate as per the Canal and Drainage Act, 1893. In all the cases that I came across in my locale or even were told to me by way of explanation, it was the owner of the land whose name was on the warabandi list for paying the occupier's rate. It was only through internal agreement that this arrangement might change in cases of share cropping or tenancy agreements. Thus, the General Body of the FO is by default predetermined (the management committee being elected from within the General body), as only those people would be on the Warabandi list that own land. Even though people who do not own land are also farmers. The two most prominent groups among such 'landless' farmers are women and the tenant farmers. Thus, the social capital that is being increased is by default increased for people who already have a comparatively higher ranking in the socio-economic categorization within the area, due to the high premium on Landholding while rating prestige. Thus, a small landholder might be less prestigious than the bigger landholder yet he does enjoy a better status than the landless. Then, empowerment for the poor becomes an empty slogan when there is within the framework of institutional reforms a process of elimination of the lowest tier in the social hierarchy in the area.

The community participation is thus of people who are already involved in some aspect or the other of the existing social institutions in the area. For example, the panchayat in the two villages had members from the most highly ranked biradaris that of Arraen, Jats and Ranas in Chak 351 and Arraen, Jats and Pathans in Chak 303. In both cases the members and office holders of the FO in these villages were also members of the Panchayat.

#### **4.4. The implications of a top-down policy**

By and large though the irrigation department was feared it was also mistrusted. They were considered as most corrupt: free riders who were there to reap benefits from the farmers while the farmers toiled away honestly on their lands. At this level then, the farmers were not unhappy to get a system alternate to the present one. They were just not aware enough and in some cases even slightly aware as to what the new system was all about. They still thought the irrigation department was there despite the FO formation etc. Since they were not consulted at any point during or before

the implementation process. They were just 'told' to do this or that in order to arrive at the formation of an FO.

With the World Bank (WB) persuading the Pakistan government to implement the NDP and indeed designing the bulk of it. With the Pakistan government in consultancy with the WB and Asian Development Bank passing the PIDA ordinance, with the consultants at PIDA and elsewhere designing the finer details of the project, it can easily be said that it is a project based on a top down approach. For I did find not any leads to any participatory (or otherwise) interaction of the policy makers with the farmers: to find out what they thought of community based irrigation management and what were their ideas on it. Even though the success or failure of the project and NDP depends on the recipient's input into it.

Here the problem then becomes that which Ferguson describes as that of complete disharmony between the intention and the affect. The intention of the NDP was to increase Farmer's participation in decision-making and management. All the rules for management were given in a manual called '*Scheme for the transfer of Irrigation management to Farmer Organizations in the Punjab*', prepared by the World Bank consultants. It was referred to as the 'neeli kitab' among the FO members. Of all the members of the FO management committee only the General Secretary (GS), a lawyer, could make sense out of the manual, which was given to the FO for consultation. In a country where the literacy rate is 26%, giving the essential literature in English is most (dis)empowering. Thus the intention was to empower through giving them the knowledge, ignoring the cultural matrix (as is so often the case in top down policies) the affect was that the GS was the elite among the management committee by having the ability to understand the (dis)empowering knowledge.

## 5. DISCUSSION AND CONCLUSIONS

The cultural *mélange* where the FO Dabbanwala is located is one where Biradarism is at the helm of the struggle for authority and power. The FO gets caught in that struggle, even used for it. On the other hand irrigation is also hierarchal in that there is always a head (the best), The middle (the not so bad) and the tail (the worst) reaches to any irrigation system. The hierarchy of the Irrigation department followed the hierarchy of the irrigation system. The Canal Bungalow, which housed the offices of the SDO and his subordinate staff, was at the head of the Dabbanwala Distributary.

The NDP's institutional reforms were supposed to make irrigation system equitable and non-hierarchical. However, this research concludes that at best these reforms shifted the hierarchy from the irrigation department elite to a different set of elite: the local elite. Since only the landed, the people from the dominant biradaries were part of the process of irrigation management transfer as members of the FO.

The most imperative problem was lack of any anthropological/sociological even socio-economic research in the recipient area before the design and implementation of the institutional reforms. In fact the state of affairs suggested that even the available literature on social life in the Punjab were either not consulted or got lost on the way down to the final social mobilizer, namely, the irrigation officers. There is a dire need evolve a strategy where cultural nuances are recognized and worked into the praxis is of the essence. The need therefore is to restructure the FO membership criteria so that the abuse of power inherent in the culture can be checked rather than endorsed and supported by the institutional reforms.

The other issue is that of using the irrigation officers who stand to lose their jobs as a result of these reforms as the implementing agents. As a researcher, I failed to see the method in this madness. I believe the strategy should be such where neutral social mobilizers work with the community in such a way that the community comes up with the FO on its own. I believe that the result would be so much different if the FO was not 'prescribed' to the community but build into their consciousness through concerted effort in the form of social mobilization. As for the situation in FO Dabbanwala, I was told that I was the first person other than the Patwari who made the rounds to inform about the elections to be talking at length about the FO or irrigation problems or the institutional reforms. Irrigation not being my subject, I was, by default, asking them about issues and problems and not giving them ready-made solutions; an approach they seemed to approve of.

The above two being the issues concerning over all strategies, coming to the finer details, there are other problems with the project that require redress. Some recommendations, mostly coming from my respondents are given below. These of course can be discussed at length at different forums for their practicality to be established.

- The offices of the FO should be at the tail of the Dabbanwala Distributary to break away from the hierarchical tradition of the Irrigation Department.
- The SDO should be the joint President with the farmer member as he is more aware of the technical aspects of the running of the distributary. (The Indian experience of similar irrigation reforms has the SDO heading the FOs).
- Women and the landless should be given equal representation in the FOs.
- The interaction between the PIDA and the FO should be more direct without the irrigation department playing the middleman.
- Regular evaluation studies in the pilot area, anthropologically inclined, to help understand the on the ground working of the proposed institutional reforms so that the necessary adjustments can be made.

The Faisalabad Irrigation zone being the pilot area, the NDP has still plenty of opportunities to learn from its mistakes and provide a better design and implementation of the reforms on other Distributaries within the pilot area as well as the rest of the Punjab. Right now the only purpose the pilot area is fulfilling is working as a showcase for the foreign consultants of the donor agencies who are taken to the Canal Bungalow, the FO members are rounded up to meet them. The translators, by and large, are the PIDA or the irrigation department officials. The consultants, apparently, are satisfied with the social capital enhancement exercise in relation to the setting up of the FO Dabbanwala. The social matrix with a potent stock of already existing social capital in the form of Biradari system, is all but ignored. Thus obliterating from view the political manoeuvring, the clientism, the sifting of lower biradaris from this process of empowerment through the introduction of community based irrigation management.