

# EMERGING ISSUES IN THE IMPLEMENTATION OF IRRIGATION AND DRAINAGE SECTOR REFORMS IN SINDH PROVINCE OF PAKISTAN

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## Abstract

This study analyzed the implementation of institutional reforms seeking a paradigm shift from the state to a farmer-managed irrigation and drainage system in Sindh Province of Pakistan. Required information was extracted from the one-page profile of Farmer Organizations (FOs) obtained from Sindh Irrigation and Drainage Authority. Findings revealed that the reform package that required the formation of 14 Area Water Boards (AWBs) and irrigation and drainage management transfer to 1400 FOs in Sindh Province, has so far established only three AWBs and 359 FOs. About 94% FOs of Nara Canal AWB (NC-AWB), 38% FOs of Ghotki Canal AWB (GC-AWB) and 60% FOs of Left Bank Canal AWB (LBC-AWB) had been transferred the irrigation management responsibility of their respective minors and distributaries. On average, a FO of NC-AWB had 280 farmers (n = 161 FOs and SD = 231 farmers), GC-AWB had 347 farmers (n = 72 FOs and SD = 400 farmers), and LBC-AWB had 347 farmers (n = 78 FOs and SD = 383 farmers). All of these farmers were members of their respective FO General Body by virtue of their land titles. The average landholding of the largest and smallest landholder in a FO of NC-AWB was 98 and 2.76 hectares (n = 160 FOs, SD = 84.54 and 2.45 hectares), in GC-AWB was 84.33 and 2.45 hectares (n = 84 FOs, SD = 106.38 and 2.70 hectares), and in LBC-AWB was 176.32 and 4.77 hectares (n = 91, SD = 230.28 and 21.96 hectares), respectively. This indicates unequal land distribution among member farmers and thereby their differential social and political power in the agrarian society having implication for the participatory irrigation management. Although, the available information did not permit a rigorous analysis of the large landholders' capture of FO Management Committees (MCs), but the statistics are somewhat indicative. In NC-AWB about 40% (n = 161), in GC-AWB about 36 (n = 84) and LBC-AWB about 33% (n = 92) of the largest landholders were the office bearers of FO Management Committees. Most of them were Chairmen, followed by Vice Chairmen, General Secretaries, Treasurers and only a few of them as the members of FO management committees. Nevertheless, the smallest landholders were also office bearers but mostly as Members. Anecdotal evidences suggest that the magnitude FO capture by large landholders could be much higher than the data in hand suggests and thereby requires a more in-depth analysis. Finally, despite a substantial number of female landholders were member in FO by virtue of their land titles, their participation in FOs management was negligible. Only four women in all three AWBs could be identified as FO office bearers but none of them as a Chairwoman. The findings of this study suggest that although the overall progress in implementation of reforms was unsatisfactory, it could be taken as a learning opportunity that can provide valuable lesson for extending the farmer-managed irrigation model to the remaining canals and distributaries. These lessons could also be translated into more inclusive policies for marginalized farmer groups.

## 1. Introduction

Ever increasing demand for food, electricity and domestic water use due to rapid population growth has remained a key challenge for Pakistan since the 1950s. The country has heavily invested in water engineering projects to establish the world's largest gravity-driven irrigation network on the Indus River System (Bandaragoda, 2006; Bengali, 2009). Besides fulfilling a significant proportion of the country's energy demand from hydropower installations, the system irrigates about 14 million hectares of farmlands and supports the agriculture sector to contribute about 21 percent of the GDP, 60 percent of the exports and employ 45 percent of the labor force (Bhutta, 2006; Government of Pakistan, 2012). Amidst its development, the elaborated irrigation facility impressed a deep footprint on the productivity and environment of the basin itself due to the rising levels of water-logging and

salinity and the degradation of deltaic ecology (Briscoe & Qamar, 2009; Memon & Thapa, 2011). By the 1960s, about 40000 ha/year of fertile farmlands were turning into unproductive wastelands because of water-logging and salinity caused by the elaborated irrigation facility (Bhutta, 2006; Mulk, 2009; Qureshi et al., 2008). The country had no option but to develop a remedial network comprising thousands of kilometers drains and numerous tube wells and add it into the existing canal network.

Investment in irrigation infrastructure had been rationalized based on the assumption that it will pave a path for social change in Pakistan (Haines, 2011). However, once the major phase irrigation development completed, the policy makers and The World Bank (with its crucial role in the Indus Water Treaty and subsequent financing of irrigation development) sensed the political economy of the agrarian society within which the irrigation facility was even unable to recover a small portion of its operation and maintenance (O&M) costs. The politically dominant feudal, who possessed the major proportion of farmlands, was not only interfering in the everyday affairs of the system (Mustafa, 2002a) but also influenced the legislature to avail the subsidized facility in the name of small landholders (Faisal 2009; Nabi et al., 1986). Add-ins were the ethos of the hydraulic bureaucracy that still maintained their colonial legacy and isolated themselves from the general public and had no option but to connive with the politically influential feudal and operate the system at their will (Mustafa, 2002a). Numerous policy and operational problems, such as unjustified irrigation subsidies, low crop assessment and cost recovery, inequitable irrigation distribution and widespread corruption in the water bureaucracy, begin to emerge and caused the gradual deterioration of system infrastructure (Bengali, 2009; Faisal 2009; Memon, 2006; Prathapar et al., 2001).

Concerning the situation, the World Bank stopped financing the river engineering projects of irrigation management and begun to explore the possibility of institutional reforms from a very bureaucratic to a farmer-managed irrigation and drainage (I&D) system. Years of action research and policy dialogue finally resulted in the promulgation of Provincial Irrigation & Drainage Authorities Act in the year 1997 (Bandaragoda, 2006; Dinar et al., 2004). The act facilitated the formation of autonomous institutions at the different levels of irrigation management. Under the umbrella of provincial authorities, Area Water Boards (AWBs) were to be established in order to carry out I&D management at the canal command level. Below this, farmers were to be organized into Water User Associations (WUA) and Drainage Beneficiary Groups (DBGs) to form Farmer Organizations (FOs) for managing the distributary/minor level I&D affairs (Memon, 2006; Prathapar et al., 2001).

Sindh Province of Pakistan has been one of the major beneficiaries of irrigation development on the Indus River. The provincial irrigation network itself is among the world's major irrigation networks (Figure 1). The system irrigates 95 percent or about 5.2 million hectares of farmlands through 14 canals, 1446 distributaries/minors and 45000 water courses (Memon, 2006). Besides, the system features about 3690 kilometers of drains. Since the last 15 years, the province has been implementing institutional reforms in its irrigation and drainage sector. The provincial cabinet approved Sindh Irrigation and Drainage Act in 1997 and replaced it with the Sindh Water Management Ordinance in the year 2002 in order to accelerate the pace of reform implementation (Sindh Governor House, 2002). This study evaluates the extent to which the reforms could be implemented and highlights some of the emerging issues in this process. The next section describes the sources of data and collection methods and is followed by the result section where major achievements in the implementation of reforms are elaborated. The final section discusses those findings in the broader theoretical context and draws conclusion and policy implications.

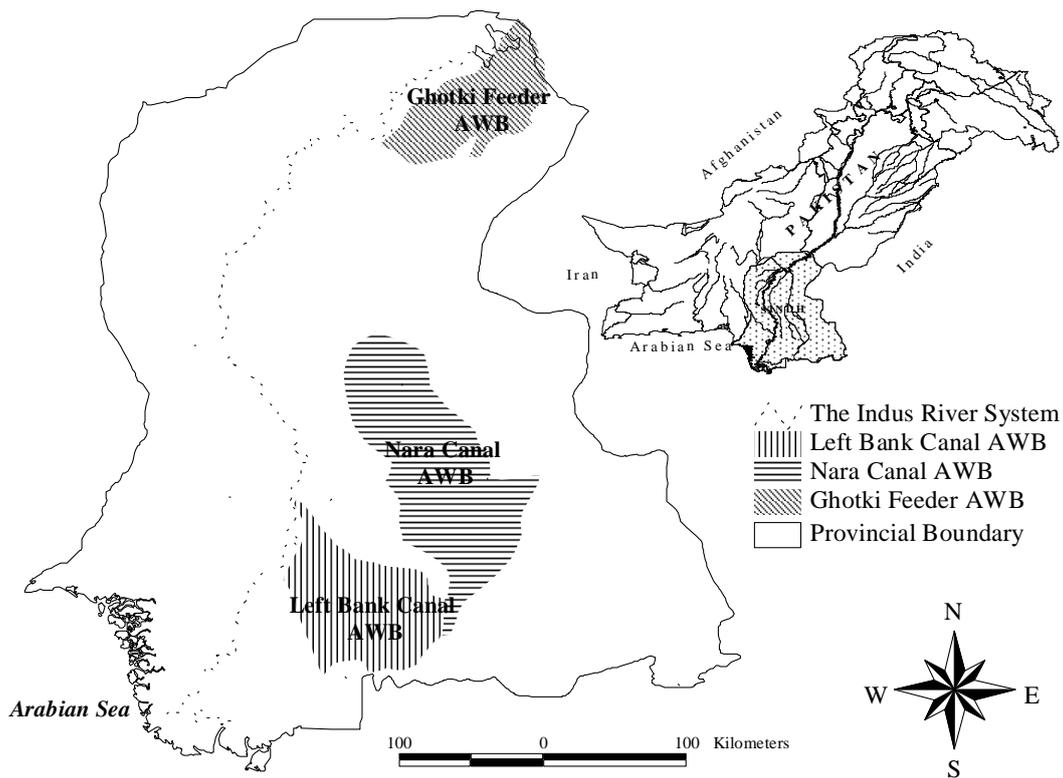


Figure 1: Irrigation Network of Sindh Province of Pakistan

## 2. Methodology

### 2.1 Study approach

At first, broad indicators of progress in the implementation of reforms in Sindh Province were qualitatively assessed. Subsequently, the analysis was focused more on three AWBs namely NC-AWB, GC-AWB and LBC-AWB because of the fact that so far the implementation of reforms in Sindh has been limited to these areas. Emerging trends in the implementation were highlighted through the descriptive analysis of the information extracted from FO profiles. The reasons for those trends were inquired through interviews conducted with the purposively selected respondents. Discussions were made based on the insights obtained through various sources of information about the implementation of reforms.

### 2.2 Data sources

SIDA is primarily responsible to implement the proposed institutional reforms in the I&D sector of Sindh Province. In the year 2009, the agency published a one-page profile of 359 FOs in Sindh province. Since then the profile has never been updated as there has been not much progress in the formation of FOs. Data on key variables was extracted from the profiles and was processed for descriptive statistical analysis. Face to face and telephonic interviews were conducted with SIDA, AWB and Water Sector Improvement Project (WISP) officials in order to explore the reasons behind the emerging trends in the implementation of reforms. Besides, informal discussions with some of the Management Committee members of FOs were also insightful in understanding the underlying factors responsible for the current pace of reform implementation.

### 3. Results

#### 3.1 Overall implementation of institutional reforms

Despite years of action research by International Water Management Institute (IWMI) and subsequent implementation by SIDA, institutional reforms in Sindh Province were still in the initial stage of implementation (Table 1). As a precondition for the takeover of reforms, SIDA has been made operational since 1998. It was pursuing its mission to decentralize the irrigation and drainage management at the canal and distributary/minor levels. SIDA was also functioning as the Regulatory Authority, as the establishment of such an institution has been pending since the promulgation of Sindh Water Management Ordinance 2002 (SWMO 2002). So far, three AWBs on each of the Nara Canal, Ghotki Feeder Canal and Left Bank Canal (Figure 1) could be established against the plan of establishing 14 AWBs on all canals throughout the Province. On account of FO formation, progress was conditional to the establishment of AWBs. Only one fourth of the total targets of FOs formations could be achieved while the progress in terms of actual Irrigation and Management Transfer to FOs was less than one fifth of the targets (Table 1). Most of the progress has been observed in the above-mentioned three AWBs. The NC-AWB was the only subsystem where the targets of management transfer were almost completed. It is worth mentioning that the Nara Canal had been the pilot AWB in Sindh where IWMI's action research concluded that the implementation of the farmer-managed irrigation system was viable in Sindh Province.

Table 1: Overview of the implementation of Institutional Reforms in Sindh Province

Progress indicator	Target and achievements	Remarks on completion
Formulation of Provincial Irrigation & Drainage Authority	- Sindh Irrigation and Drainage Authority has already been formed at the provincial level.	Completed
Formulation of Regulatory Authority (RA)	- Appropriate formation is still awaited. Currently, SIDA is functioning as RA.	Not completed. RA is operational through ad hoc arrangements
Formulation of AWBs	- Out of 13 AWBs, only three (Figure 1) could be formed as of 2009. No progress has been made thereafter.	23 % completed
Formulation of FOs in AWBs	- Out of about 1,400 FOs, about 338 have been formed in three AWBs namely: NC-AWB, GC-AWB and LBC-AWB. Beside some 16 FOs has also been formed in the canal commands where irrigation reforms are yet to be implemented and AWBs are to be established.	25 % completed
Irrigation & Drainage Management Transfer (IDMT) to FOs	- Out of 359, about 259 FOs have been transferred irrigation and drainage management responsibility. About 94% FOs of NC-AWB, 38% FOs of GC-AWB and 60% FOs of LBC-AWB had been transferred the irrigation management responsibility of their respective minors and distributaries.	For 3 AWBs, the target is 73 % completed. At the provincial level, only 18 % Completed

**Notes:** Calculations are based on FO Profile 2009. There is no substantial progress in FO formation thereafter

Most of the FOs of NC-AWB were formed during the years 2000-2003 and were legally handed over the management responsibility during the years 2001-2004 and 2008 (Table 2). In GC-AWB and LBC-AWB most of the FOs were formed during the years 2005-2008. However, the FOs in GC-AWB and LBC-AWB were bestowed with responsibility of managing their channels during the years 2007-2008 and 2006-2008, respectively (Table 2). Besides these three AWBs, some FOs were haphazardly formed in the Canal Commands of other AWBs which still not under the jurisdiction of SIDA. Among those 16 FOs formed outside AWBs, only one was transferred the management responsibility (Table 2).

Table 2: AWB wise details of FO formation and IDMTs

Year	FOs in NC-AWB		FOs in GC-AWB		FOs in LBC-AWB		FOs in other AWBs	
	Formed	IDMT	Formed	IDMT	Formed	IDMT	Formed	IDMT
1998	2	-	-	-	-	-	-	-
1999	5	-	-	-	-	-	-	-
2000	17	-	-	-	-	-	3	-
2001	12	24	-	-	1	-	4	-
2002	94	54	5	-	5	-	2	-
2003	25	48	6	-	7	11	-	-
2004	5	16	-	11	-	2	-	-
2005	-	-	3	-	7	-	-	-
2006	-	-	18	-	27	14	1	-
2007	1	-	46	5	38	19	5	-
2008	-	18	6	12	4	15	1	1
2009	-	-	-	-	3	-	-	-
Total	161+1 <sup>a</sup>	160	84	28	92	61	16	1

**Notes:**<sup>a</sup> Value for one case is missing

- Figures in the table are the numbers of FOs

So far, achievements in FO formation are the outcome of various projects implemented by SIDA and voluntary contributions of various government and non-government organizations (Table 3). The credit of FO formation up to the year 2000 goes to IWMI under the World Bank financed Left Bank Outfall Drain Project (LBOD) or the Directorate of OFWM (Agriculture Department of Sindh Government) for their voluntary contributions. However, most of the FO formation is attributed to SIDA and OFWM under the World Bank sponsored National Drainage Program (NDP) implemented during the years 2002-2007. Meanwhile, the World Bank also sponsored another project called: Sindh On-farm Water Management Project having a component on FO formation that was also implemented by the Directorate of On-farm Water Management. Besides those formal attempts, some local and international NGOs namely: OXFAM and SWAFCO also formed a few of the FOs in NC-AWB and outside AWBs (Table 3).

Table 3: Different agencies involved in FO Formation during the years 1998-2009

FO forming agency	NC- AWB	GC-AWB	LBC-WB	Other AWBs	Total
SIDA	47	48	44	8	147
On-farm Water Management (OFWM)	79	36	48	5	168
SIDA and OFWM jointly	23	-	-	-	23
International Water Management Institute	11	-	-	1	12
Other NGOs such as OXFAM, SWAFCO	1	-	-	2	3
Total	161 <sup>a</sup>	84	92	16	353+1 <sup>a</sup>

**Notes:**<sup>a</sup> Value for one case is missing

### 3.2 Composition of farmer organizations

Since irrigation rights in Pakistan are proxy to farmland ownership, all those who have possessed or leased any farmland in the command area of a FO are by default its members. Thus the number of members in any FO or its constituting WUAs depends on the command area it serves. On average, a FO of NC-AWB had 280 farmers/members out of which about 24 were women farmers. In GC-AWB and LBC-AWB, although the average number of farmers/members was substantially higher than that of NC-AWB, but the number of women farmers/members were considerably less or even negligible. The average farm size in a FO of three AWB ranged between nine and 13 hectares but the distribution of farm size was quite

skewed. The average landholding of the smallest farmer in a FO of any AWB was not more than five hectares while the average landholding of the largest landholder in a FO was nearly 100 hectares in NC-AWB, about 85 hectares in GC-AWB and about 175 hectares in LBC-AWB.

Table 4: Characteristics of FO membership in three AWBs of Sindh Province

FOs membership aggregates	NC-AWB			GC-AWB			LBC-AWB		
	$\bar{x}$	S D	n*	$\bar{x}$	S D	n*	$\bar{x}$	S D	n*
Farmers/members (person)	280	231	161	347	400	72	347	383	78
Women farmers/members (person)	24	36	100	5	5	20	9	11	26
Land holding per farmer (ha)	13.0	10.7	159	9.4	7.5	70	11.9	7.4	77
Land of the smallest land holder (ha)	2.8	2.5	160	2.5	2.7	84	4.7	22	91
Land of the largest land holder (ha)	97.8	84.5	160	84.3	106	84	176	230	91

**Notes:**

- \* The number of cases valid in the calculation of  $\bar{x}(s)$ ;  $\bar{x}$  is the arithmetic mean and SD is standard deviation
- Calculations are based on FO Profile 2009. There is no substantial progress in FO formation thereafter

### 3.3 Institutional attributes of farmer organizations

It can be observed from Table 5 that the complete coverage of institutional reforms could only be seen in the case of NC-AWB. Most of the FOs of NC-AWB were near to complete the second tenure of their MCs while a few had already stepped into the third tenure. The majority of the FOs in GC-AWB and LBC-AWB were still going through the first tenure of their management committees (Table 5). It is mainly because, the FO formation started in these two AWBs few years late compared to NC-AWB. Despite that most of the FOs in GC-AWB and LBC-AWB were formed during the same time period (Table 2), the percentage of FOs in their second tenure was much higher in GC-AWB compared to LBC-AWB. This defect appears to be a function of unknown status of MC tenures of 14% FO profiles of LBC-AWB (Table 5).

Table 5: Organizational feature of FOs in three AWBs in Sindh Province

Organizational details	NC-AWB (n=162)	GC-AWB (n=84)	LBC-AWB (n=92)
FOs signed IDMT agreement	98.8	45.2	65.2
Tenure of FO management committees			
- 1 <sup>st</sup> tenure	-	79.8	75.0
- 2 <sup>nd</sup> tenure	92.6	19.0	10.9
- 3 <sup>rd</sup> tenure	0.6	-	-
- Status unknown	6.8	1.2	14.1
The largest landholder of a FO in MC	39.8	35.7	32.6
The Smallest landholder of a FO in MC	17.4	20.2	20.7
Women farmers in MC	1.2	1.2	-

**Notes:**

- Figures in the table are percentages
- Calculations are based on FO Profile 2009. There is no substantial progress in FO formation thereafter

From the information given in the FO Profiles 2009, three farmer groups namely, women farmer, the smallest and the largest farmer in a FO could be analyzed for their participation in the management committees of FOs. It could be observed that two fifth of the largest landlords of FOs in NC-AWB, one third of the largest landlords of FOs in GC-AWB and LBC-AWB were members of their FO MCs (Table 5). Most of the largest farmers in all AWBs, who were in the MCs of their respective FOs, were either Chairman or other important office bearers and only a few of them as just members (Table 6). Compared to the largest landholders, the participation of the smallest landholder in the MCs of FOs was in much lesser numbers. In all three AWBs, only about 20 FOs had the participation of the

smallest landholders in their MCs (Table 5). Most of the smallest landholders who were on the MC of their FOs were just members while a few of them were also important office bearers such as chairman, vice chairman, secretary and treasurers (Table 6). It can be further observed that the composition of FO management committees was quite masculine in nature. Compared to the percentage of women landholders in FOs across all AWBs (Table 4), their participation in the MCs of their respective FOs was negligible or wholesale. Only four women could be found in the MCs of more than 350 FOs formed by SIDA in various AWBs, three of whom were in the FOs of NC-AWB while only one in FO of GC-AWB. None of the women farmer was found to be the chairwomen in any FO (Table 6). In NC-AWB, three women were designated each as Vice Chairwoman, General Secretary and Treasurer of their FOs; while in GC-AWB only woman was a member of MC in her FO (Table 6).

Table 6: Participation of different farmer groups in FO Management Committees

Farmer groups	Not participating	Positions in FO management committees				
		Chair	V. Chair	G. Sec	Treasurer	Members
NC-AWB (n=161)						
- Women farmer	-	-	0.6	0.6	0.6	-
- Smallest farmer	79.5	0.6	3.7	3.1	3.1	9.9
- Largest farmer	57.8	23.0	8.1	4.3	3.1	3.7
GC-AWB (n=84)						
- Women	-	-	-	-	-	1.2
- Smallest farmer	78.6	3.6	2.4	3.6	1.2	10.7
- Largest farmer	64.3	22.6	6.0	1.2	1.2	4.8
LBC-AWB (n=92)						
- Women farmers	-	-	-	-	-	-
- Smallest farmer	79.3%	1.1	4.3	3.3	2.2	9.8
- Largest farmer	65.2	14.1	1.1	5.4	4.3	9.8

**Notes:**

- Figures in the table are percentages
- Calculations are based on FO Profile 2009. There is no substantial progress in FO formation thereafter

#### 4. Discussion and policy implications

Although the need for water sector reforms has been uniform across various countries, the underlying causes, cost of implementation and degree of success in achieving stated objectives varied across different socio-political and geographical contexts (Dinar et al., 2004). In case of Pakistan, improper O&M of irrigation infrastructure, low crop assessment and revenue collection, inequitable water distribution and corruption in water bureaucracy were compelling reasons for irrigation sector reforms (Memon, 2006). Nevertheless, like other South Asian countries, the design of reforms and push for its persuasion mainly came from the World Bank having a major role in the post-independence irrigation development in the country (Bandaragoda, 2006). Given the fact that the demand for reforms was not internally generated by its users and managers (Bandaragoda, 2006), the findings of this study carried out in Sindh Province of Pakistan revealed that the proposed reforms were implemented halfheartedly. The establishment of SIDA has been a cosmetic step that transformed the Provincial Irrigation Department into a new institution given the responsibility to implement the farmer-managed irrigation system in the province. After the initial hike, not much progress has been made. So far, the farmer-managed irrigation system is confined to the three AWBs namely NC-AWB, GC-AWB and LBC AWBs and could not be extended to the remaining 11 canals in Sindh Province. By the year 2000, the Government of Sindh had already notified five canals to be brought under the farmer-managed irrigation

system. Nevertheless, the Irrigation Department still operates the Begari Sindh and the Western Sindh canals and never transferred them to SIDA for the establishment of AWBs.

Even in the AWBs where SIDA was able to implement reforms, the process has been quite slow or grinding to halt as no major achievement has been made since the year 2009. Over the last 15 years, SIDA could not establish any mechanism to ensure the democratic selection of Area Water Board members in the three AWBs. The operations of three AWBs were in the hands of politically installed feudal without having any representativeness of the farmers at large. Besides the FO formation and management transfer was still incomplete in GC-AWB and LBC-AWBs and had a long way to complete the management transfer as envisaged by the design of reforms. Surprisingly, knowing that reforms were supply-driven (Bandaragoda, 2006) and a lengthy process, SIDA had not established any program level staff for social mobilization, FO formation or post transfer management support to juvenile FOs. So far, most of the FO formation was project-based and was done either by the project staff of SIDA or by the agencies outsourced under different projects financed by the World Bank and the Government of Sindh. Anecdotal evidences also suggest the large landholders, who were among one of the reasons of failure of the state irrigation management system, might have captured the management committees of FOs by implanting either themselves or their proxies on the key positions. Although such a tendency on the part of large landholders could have its roots in the skewed power distribution in rural Sindh, another reason, as narrated by some of the Social Mobilizers of SIDA and AWBs, could also be the project-based approach of FO formation. According to them, they were asked to complete the targets with compromises on the overall quality of social mobilization, capacity building and participation.

Another major concern was the wholesale ignorance of drainage affairs during the implementation of reforms. Such an observation was valid, particularly in NC-AWB and LBC-AWB. Drainage being an integral part of the irrigation system was one the important component of reforms. It was gathered that almost half of the FOs in both of NC-AWB and GC-AWBs had some form of drainage structures. In most of the cases, the drainage structures were surface and tube well drains while tile drainage could also be found in rare cases. Virtually none of the FOs who has drainage structures in their commands had initiated the formation of DBGs for managing drainage structures. In Sanghar and Mipurkhas which are two districts constituting NC-AWB, it was the commonplace perception among farmers that drainage structures were crucial for the fertility and productivity of their farmlands. Despite that, the FOs were reluctant to assume the responsibility of managing drainage structures in purview of the payment of drainage levy (Official Correspondent Daily Dawn, 2004 ). Since the government was not generating any revenue from drainage structures, O&M has always been ignored until absolutely inevitable. As a result, the state of drainage structures was indeed miserable characterized by choked drains and nonfunctional tube-wells. The drainage facility was virtually in a state what the major theorist of Commons Pool Resources have explained as an open access resource (Berkes & Farvar, 1989; Schlager & Ostrom, 1992) or unmanaged commons (Hardin, 1968, 1994, 1998) where everyone is ready to get benefit but no one assumes the responsibility to manage.

To a neutral observer, the existing state of the implementation of institutional reforms in Sindh Province is quite unsurprising. Surprising however, is the fact that the policy makers ignored some of the major findings of the action research carried out by IWMI under the LBOD Project. For example, Murray-Rust et al (2001) found that FO formation was possible, but the sustainability of such institutions was unclear since none of the FOs were handed over the responsibility of O&M till the project ended. Besides warnings that the well-established

hydraulic bureaucracy could impede the success of FOs, Murray-Rust et al (2001) and Bandaragoda et al (1997) found it unrealistic to assume that the large farmers, who controlled the irrigation as a powerful weapon in the local power structure, could relinquish their powers in favor of the marginalized farmers. Similarly, other initial studies conducted by IWMI research team (Bandaragoda & Memon, 1997; Bandaragoda et al., 1997) and other researchers (Mustafa, 2002a; Mustafa, 2002b) also identified various caveats such as rivalries of line hydraulic bureaucrats against institutional reforms, the possibility of feudal capture and chances of corruption among FO leaders. Nevertheless, perhaps the donor push for reforms was strong enough to compel the policy makers to ignore those caveats and pick up only those conclusions which suggested that it was viable to organize farmers in the socio-political context of Sindh Province.

One of the SIDA officials who had been a very instrumental advocate of reforms expressed his frustration as: “the inception of reforms shook the roots of a century-old water bureaucracy in Sindh; however, it is the fact of today that the water bureaucracy has sustained those shocks and has reemerged as a major threat to the reforms.” It is a peak time for policy makers to revisit the design of reforms. Despite the unsatisfactory pace of reform implementation, the lessons learned could be guiding principles for setting the future directions of water management policies. Undoubtedly, it requires more research, particularly in evaluating the performance of FOs against the stated objectives of equitable irrigation distribution, channel maintenance and cost recovery. Besides, it is also necessary to reevaluate the prospect of participatory irrigation management in the context of local power structure, factors determining the willingness of water bureaucracy in supporting the institutional reforms and the capacity and willingness of farmers to manage the system. Understanding of such dimensions will provide more insights and subsequent policy input for the redesign of reforms and address some of the key obstacles in their implementation.

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