IRRIGATION REFORMS IN PUNJAB PAKISTAN: REVIEW OF IMT MODEL AND FRAMEWORK

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ABSTRACT

The new demands and challenges for food production and security combined with the persistent poor performance of the agency-managed irrigation system in Pakistan has led the Government of Pakistan to transfer the management of irrigation systems from provincial irrigation agencies to Farmer Organizations through the Provincial Irrigation and Drainage Authorities (PIDAs). In the Punjab, pilot Area Water Board (AWB) has been established and irrigation management has been transferred to 85 Farmers organizations (FOs). This paper reviews and evaluates the existing institutional and legal framework, implementation model & methods as well as the roles & responsibilities of the stakeholders by taking the Punjab province as a case study with a purpose to analyze the existing reform structure and process in terms of providing opportunities for establishing and strengthening autonomous sustainable institutions at all levels of the reform process. The institutional & legal framework as well as the structure and functions of stakeholders are well defined and the reforms have taken off but yet there are certain doubts and fears about its sustainability. The on-going reforms is influence by a number of internal and external factors; like the opposition from stakeholders themselves, changes in leadership, influence of personalities, lack of political commitment, lack of consistency & continuity and the change in the strategy and implementation model. What is needed for successful sustainable reforms is a strong commitment of all the stakeholders, devoted leadership and collective actions of the farming community under existing socio-political and environmental realities of Pakistani system.

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INTRODUCTION

The Indus Basin Irrigation System (IBIS) of Pakistan serves as a lifeline for sustainable irrigated agriculture and is of central importance to the economy of the country. Since eighties, it was widely recognized that the irrigation system has not been performing productively, mainly due to improper/inadequate maintenance of the huge hydraulic infrastructure as well as the declining level of irrigation management services. This resulted into inadequate, unreliable and inequitable water supplies that further lead to physical and financial non-sustainability of the system and consequent stagnating productivity of irrigated agriculture in the Indus Basin.

Keeping in view the new demands and challenges for food production and the persistent poor performance of the agency-managed irrigation system, the Government of Pakistan (GoP) opted for fundamental institutional reforms, coupled with investment to improve the efficiency and performance of the physical system. The World Bank proposed to implement broad-based institutional reforms in 1994 and a reform program was prepared by a task force group including policy makers and water experts. All the four provincial assemblies passed Provincial Irrigation and Drainage Authority Bills. Under the on-going reforms, the Provincial Irrigation Departments (PIDs) have been transformed into financially autonomous entities, as Provincial Irrigation and Drainage Authorities (PIDAs), for their respective provinces. The PIDAs will comprise of a number of Area Water Boards (AWBs) and each AWB controlling a canal command area. There are 43 canal commands in the IBIS, divided as 24 in the Punjab, 14 in Sindhh, 3 in NWFP, and 2 in the Baluchistan province. Under each AWB, Farmers' Organizations (FOs) will be establishing to take over the responsibilities of distributary (secondary channel) management. So far, the PIDAs have been established in all the four provinces while pilot AWBs and FOs have setup in Nara canal in Sind, LCC (East) in Punjab, and Upper Swat Canal in NWFP.

About six years have passed since the irrigation reforms started – PIDAs and pilot AWBs have been established and management has been transferred to a number of FOs formed in the pilot areas, however, the reform process is still controversial with very unclear understanding among the stakeholders with a number of questions in mind about its sustainability. The present paper reviews the existing structure of the irrigation reform process in the Punjab province of Pakistan by synthesizing the available literature and data. The main objective of the paper is to review and evaluate the existing institutional & legal frameworks, implementation model & methodology as well as the roles & responsibilities of the stakeholders (PIDA, AWB, and FOs) by taking the Punjab province as a case study. The purpose of this endeavor is to analyze the existing reform structure and process in terms of providing opportunities for establishing and strengthening autonomous sustainable institutions at all levels of the reform process. This will help to understand the strengths & weaknesses of the reform process for improved irrigation management and a better reform process.

IRRIGATION REFORM PROCESS IN THE PUNJAB: A CASE STUDY

AN OVERVIEW

Irrigation system in the Punjab province of Pakistan is a part of IBIS and serves an area of 20.8 million acres (PIDA, 2005a). It is now widely accepted that the financial constraints coupled with the management deficiencies are central to the poor irrigation performance of the Punjab irrigation system and IBIS as well. The major problems include low cost recovery, inadequate maintenance funding & unsatisfactory maintenance, low level of services with general lack of agency responsiveness, unauthorized irrigation, low irrigation efficiencies, and inadequate, unreliable & inequitable water supplies. Realizing the deepening crises in water management and the irrigated agriculture, irrigation reforms in the Punjab province of Pakistan were started in 1997 after the PIDA Bill 1997 was passed by the provincial assembly of the Punjab on June 1997. The initial negotiation process was lengthy having two negotiation arenas, in which different actors negotiate over the scope, the intensity and implementation schedule of the reforms and it took about two years to come up to the present model from the original World Bank proposal (Nakashima, 1998; Rinaudo and Tahir, 1999; Dinar, et. al., 2004; Sarwar, 2006).

The initial documentation, legal frameworks and establishment of pilot AWB at Lower Chenab Canal (LCC), East Circle, Faisalabad in the province was carried out by the year 2000 (PIDA, 2005b). In 2002, the PIDA in Punjab rationalized its strategy differing from the original FO model and new rules for pilot FOs were approved which provided farmers' participation in irrigation management through a joint management phase (PIDA 2005a). On acquiring capability to operate and manage the irrigation system independently by these FOs during joint management phase, transfer of irrigation management was made operative. For the purpose, farmers based organizations at watercourse level i.e., Khal Punchayats (KPs), and distributary/minor level i.e., Nehri Punchayats (NPs) were established which will assist FO (at major distributary level) in its work.

IRRIGATION REFORM MODEL

The concept of original reform model (of privatization of irrigation system) proposed by the World Bank, including the introduction of water markets and individual water rights was not accepted by the GoP. After a long policy debate the government adopted the concept of decentralization and participatory irrigation management. The strategy evolved by the GoP incorporated most of the elements proposed by the World Bank, however the Public Utilities (PU) organized at the canal command level (proposed by the World Bank) were renamed AWBs and a regular authority, named as the PIDA to be established at the provincial level. The GoP did not explicitly ruled out the possibility of privatization, neither did it exclude the possibility to create tradable water rights that would be de-linked from the land property (Rinaudo and Tahir, 1999). Thus, the on-going irrigation reform model is based on three key elements of decentralization, participation, and management transfer.

INSTITUTIONAL FRAMEWORK

The new institutional frame, under irrigation reforms, is based on three-tiered management system, including mainly three entities of PIDA, AWBs and FOs. At provincial level, the PID is acting as the Irrigation and Drainage Management agency and in the process of being transferred into autonomous PIDA. The PIDA has been established with an equal representation of government's and farmers' representation and would have the complete autonomy of' revenue collection and spending with proper accountability. Under the new set-up Minister for Irrigation would be the chairman of the authority, with six farmer members nominated by the government and five non-farmer members including the Chairman Planning & Development (P&D) Board, Secretary Irrigation & Power Department, Secretary Agriculture Department, Secretary Finance Department and Managing Director PIDA.

Under PIDA, there would be a number of AWBs operated at canal command level as provided in the PIDA Act, 1997. Pilot AWB at LCC (East) Canal has been setup and includes a representation of farmer and non-farmer (government) members. The Chairman and Vice-chairman of AWB would be elected out of farmer members while in total there are 10 farmer members (elected out of FOs) and nine non-farmer members who are the representatives of allied government departments and technical experts.

Under the participatory model of on-going reforms, Farmers Organizations (FOs), Nehri Punchayats (NPs), Khal Punchayats (KPs) have been formed through a comprehensive legal framework. KPs are comprised of a chairman and four executive members elected out of farmers of a watercourse. Chairmen of all watercourses located on a major distributary constitutes the general body of the FO while a management committee elected from FO general body consists of a president, vice president, secretary, treasurer and five executive members (three from tail reaches of the distributary).

LEGAL FRAMEWORK

The Punjab Irrigation and Drainage Authority (PIDA) Act, 1997, legislated by the Provincial Assembly provides the legal framework for establishing PIDA, AWB and FO. The underlying principal of the Act is to decentralize the operation and maintenance functions and reduce government subsidies in particular for irrigation and drainage (Dinar et. al., 2004). The Act is mainly to provide for the participation of water users from Watercourse (tertiary to secondary/distributary) to main canal (primary) levels and even beyond at the Authority's level, for specified functions.

The main objectives of the PIDA Act includes; (i) to streamline irrigation and drainage system for more responsive, efficient and transparent arrangements; (ii) economical and effective irrigation and drainage system management in the Province; (iii) ensure sustainability of irrigation and drainage infrastructure; (iv) introduce and pursue the participation of beneficiaries in the operation and management of irrigation system (Qureshi, M.A. and Haq, A.U., 2006).

As the establishment process of reforms moved forward, the government of Punjab approved Area Water Board Rules, 2005, and the Farmer Organization Rules, 1999/2005, under the PIDA Act, while another set of five rules and regulations was approved by the authority, PIDA, including; (i) Farmers Organizations (elections)

Regulations, 1999, (ii) Farmers Organizations (Registration) Regulations, 1999, (iii) Farmers Organizations (Financial) Regulations, 2000, (iv) Farmers Organizations (Conduct of Business) Regulations, 2000, (v) Irrigation Management Transfer agreement between FO & AWB/PIDA

FUNCTIONS OF STAKEHOLDERS

In the on-going transition process there are three main stakeholders and expected to perform a well defined set of functions, while the PID has the role of overall policy regulation and overseeing. By implementing the present model, the management functions of PID are being transformed to the PIDA. The newly established PIDA, as an autonomous entity, representing the government as well as the farmers, is responsible for functions, like control on water delivery at provincial level, maintenance & development of the system, improving irrigation performance, optimizing water use efficiency, introducing the concept of participatory management, undertaking measures to improve assessment and collection of Aabiana (water charges), and sometimes sales of water beyond amounts contracted with AWBs.

The AWBs are responsible to perform, more or less, the same functions (like PIDA) at canal command level. The AWB would manage and distribute irrigation water, through formal volume based contracts with FOs, and trade water with other utilities. The main function of the AWB is to govern the operations and maintenance of Irrigation System, to assist the PIDA & government in the formation, promotion and development of FOs and monitor their functioning and performance.

The FOs are mainly responsible to obtain contracted amount of water from the main canal and supply it to the irrigators equally (on equal share basis), to operate and manage the distributaries, resolve the water disputes, and assessing & collection of water charges and making payments to AWBs as against their due share. In addition to the specific functions of the FOs, the major functions designed for NPs and KPs at the level of their own organizational framework, include; (i) Participate in the assessment of water rates, in deciding objections to the water rates, assessment remission of water rates, distribution of bills, and persuade the water users to pay the water charges; (ii) maintain the watercourse (through voluntary labor) and channel and undertake and supervise the maintenance, repair and development work of the channels; (iii) supervise the work and assist to the Canal Officer for necessary matters and assist the Irrigation Officers in the formulation of regulation plans; (iv) supervise and monitor the gauges and discharges of the channels and report tempering of outlets to the management committee; and (v) conflict/dispute resolution and assist the FO as directed by the FO or authority.

PRESENT STATUS OF REFORMS

Presently, reforms are in progress in the Pilot AWB of LCC East, where a total of 85 FOs have been established so far at distributary level and irrigation management has been transferred to them by December 2005 in three phases (20 in March 2005; 49 in June 2005; and 16 in December 2005) (PIDA, 2006). The pilot AWB established in February 2000 would start functioning as an autonomous body by December 2008. The reform process would be extended throughout the province in different phase/batches

whereas the whole reform process would be completed by the end of 2025 (Annex Table 1) in which 24 canal commands of the Punjab province would be accommodated in 18 AWBs. PIDA has already introduced grouping of FOs and has estimated feasible size for an IMT unit, which is ranged between 40,000 to 50,000 acres (average) of CCA. Based on this criterion, 32 IMT units have been identified for the management transformation of 85 FOs in the pilot AWB.

The KPs, NPs and FOs are key starting point for introducing Participatory Irrigation Management (PIM). A total of 3666 KPs and 153 NPs in pilot AWB of the Punjab province were established up to 2004 while 233 NPs were formed outside pilot AWB, in other canal zones of the Province (PIDA, 2005a). These NPs were operationalized after necessary capacity building and training in different areas of irrigation management. Similarly, the FOs established under new PIDA rules of 2005, have started functioning after Transfer Agreement between PIDA (through Chief Executive AWB) and the management committee of the established FOs.

FO PERFORMANCE

Limited information is available on the performance of FOs established under the on-going institutional reforms and probably, no independent study has been carried out by a credible organization for assessing the performance of these organizations. However, the Monitoring & Evaluation Cell of PIDA has reported the major achievements of the 20 FOs (first batch of transformation) managed systems during the first 100 days of their operation after March 2005 (PIDA, 2005b). The key points were;

(a) Improvement in water distribution, as cases of theft of water were reported to control by about 80 to 90 percent as compared to previous years, (b) Silt clearance activities have been carried out by many FOs on self help basis, (c) A large number of disputes cases (146) mainly related to warabandi (water turn) were resolved by FOs, (d) Progress on crops assessment for the collection of water charges was about 70 percent in the respective canal commands.

While recently the results of a second round of performance evaluation, for the same first batch of 20 FOs, after completion of their one year functioning, shows the performance ranking in terms of FO success (PIDA, 2006). The results reveal that out of a total 20 FOs evaluated by the monitoring and evaluation cell of PIDA, nine (45%) were functioning ‘successfully’ followed by ‘adequate’ and ‘poor performer’ FOs counted as six (30%) and five (25%), respectively. Unfortunately, none of the 20 FOs was reported to perform well, as ‘good’. The key performance indicators and the criteria used for the evaluation of FO performance is presented in Annex Tables 2 and 3, respectively.

DISCUSSIONS AND CONCLUSIONS

The on-going reform process in the irrigation sector of Pakistan, which came in to existence after a long policy negotiation process, initially suggested by the international aid agencies and later adopted by the policy makers, has taken off successfully and on its way. However, the anticipated changes yet are not adequate enough to address the key issues faced by the irrigation sector of the country. Will the on-going reforms and

transition process, when completed after 15 years or so, be successful? If yes, to what extent it will solve the issues of deficient irrigation management and services; and if not, then what is next? Would the existing PID staff be able to transfer successfully the management to the farmers and would the farmers be trained sufficiently to manage the system independently? These are such common questions and perceptions, which are moving around since the negotiation round of the reform process started in 1993 and even existing today in the minds of all stakeholders, including reform managers, water experts, policy makers and most importantly the common man, particularly a small illiterate poor farmer. The irrigation reforms proposed by the World Bank in Pakistan pointed out by Dinar et al. (1998) if implemented fully, would significantly affect the existing economic interests and power relationships in the irrigation sector.

Since its inception there are varying reactions and objections to the reform in different agencies and organizations, and there is not a consensus yet among the organizations and stakeholders (Nakashima, 1998). The performance level of the reform process is yet unclear and pace is very slow, while there are number of factors that seems influencing the performance of the reform process with the doubt of making it unsustainable. These factors include; the opposition from stakeholders themselves, changes in leadership, influence of personalities, lack of political commitment, lack of consistency & continuity and the change in the strategy and implementation model (Sarwar, 2006). A strong institutional and political economy constraint in view of Ali (2005) is the major cause of lack of progress of institutional reforms in the country. Controversies regarding fixing and collecting water charges, farmers' participation in a water users organization, delegation of farmers' authority to the PIDA and the process of transformation of PID in to PIDA are difficult issues to find agreeable answers to all parties concerned.

There were two primary institutional policy initiatives behind the irrigation reforms in the province of the Punjab, viz., the transformation of PID into PIDA and the participation of farmers through FOs and AWBs (Velde and Tirmzi, 2004). Commenting upon the present situation of the developing institution of PIDA, Sarwar (2006) reveals that the transition of PID to PIDA and the reforms call for a change in the whole institutional framework (top-down approach) to be changed into a multi-tier institutional set-up with users' participation. PIDA is still not having its own Managing Director while the Secretary Irrigation and Power is holding both the positions. The number of total PIDA employees reported till December 2005 in the LCC (East) circle were 1846 with only 15 permanent staff transferred from PID while another 521 PID officials were temporarily attached to assist FO (Sarwar, 2006). The policy regarding the transformation of PID staff to PIDA is yet not clear, raising the questions about the criteria (merit or willingness or any other) being used or would be the basis for the transformation of such staff as well as the number of staff transferred over a specific period of time is also unknown. On the other hand, it is also important to consider the commitment and capacities of PID staff (who will be PIDA staff) to contribute to the success of reform process. Another point of view discussed by Ali (2005) on the fear of the PID staff reveals that the engineers and staff of the PID could be against these reforms, fearing they would entail dissolution of their service, and breakdown in existing rent relationships

Though, PIDA is the successor agency of PID but currently it's only following the institutional reforms part whereas the infrastructure investment component is mainly

being conducted by PID yet. The organizational set-up of PIDA in the Punjab province is quite different from that of PID. PIDA is still in establishing phase where the different cells of PIDA, except the social mobilization cell started working from 2005. It is obvious that the reform process requires a series of actions and PIDA establishment would require time to input a number of functions, such as governance and strategic management, financial capacity building for revenue assessment and recovery, O&M functions, technical services and a host of water market learning curves to achieve steady reductions in transaction costs (Ali, 2005). Similarly, AWBs would be responsible for a number of functions and they need to operate as financially self-accounting entities, with sufficient technical capabilities to monitor water supplies and be able to provide technical support to FOs. In turn FO need to be strengthened and require major capacity building exercises since they will be responsible for collecting water charges for reaching volume based contractual agreement with AWBs for water supplies, for O&M of irrigation facilities, for resource mobilization and for dispute resolution (Ali, 2005).

The FOs are the basic unit of the reform process and their proper functioning and performance will lead to the successful reforms. At the initial stage of the transition these FOs are supposed to perform their functions with joint assistance of the PIDA officials and later will mange the system independently. Thus, in the on-going reforms, the performance of FOs has got critical importance which mostly depends upon their understanding of the system, their capacity to manage and the support provided by the government during the joint management phase or during the initial phase of the management transfer. Achieving equity in water distribution and level of Abiana (water charges) collection are considered as very important criteria for their evaluation.

Under the on-going reform process in the Punjab, though the performance of FOs is not so bad at this initial stage of the reform process but needs a serious commitment at both ends of the process; authorities/skillful professional managers who are going to transfer the system and the farmers who are new to take over the responsibility. However, the results show that farmers are still not on the driving seat and requires lot of assistance form the PID officials and particularly follow-up trainings through the well-trained social mobilization officers. On the other hand this performance is based on very basic indicators and needs to develop a comprehensive scale to evaluate the sustainable success over time. Also the present FO performance carried out by M&E ell of PIDA, reflects only one canal command area of the Punjab irrigation system, while 24 canal commands (accommodated into 18 AWBs) existing in the Punjab have quite diversified situation in terms of varying irrigation and agricultural issues, a variety of socio-political conditions and a large variation in landholding/distribution situation that would probably effect much to the reform process and FO performance. So the adoption of same model for all canal commands, may not work successfully, as also mentioned in the World Bank (2005) that the Punjab has developed a “Punjab model” which is consistent with the spirit and logic of the on-going reforms but is adapted to the varying conditions to the province. Thus, the sustainability of the reform process, in general, and of the FOs, in particular, would be very challenging, which would decide the sustainability of the irrigation system and the irrigated agriculture in the province.

CONCLUSIONS

The continuous deteriorating performance of the irrigation system (coupled with the excessive use/exploitation of the groundwater resources) in the Indus Basin in general and province of the Punjab, in particular, is a big challenge for an agriculture-based country, like Pakistan. The emerging problems coupled with controversial issues regarding the on-going reforms are not only making the irrigation performance poorer but also slowing down the pace of the reform process. The opposition by the existing PID staff joint with the lack of commitment is the main cause of slow pace of the reforms. Irrespective of the uneven and slow progress with the reforms program, there is no alternative but to continue with the process and improve by drawing on lessons learnt, experience gained and coming to a better understanding on more effective implementation of the process. This is a big challenge and needs the strong commitment of all the stakeholders, devoted leadership and collective actions of the farming community under existing socio-political and environmental realities of Pakistani system.

In terms of the institutions, the PID is very important who are going to transformed in to PIDA, so the successful PIDA set-up and functioning depends upon a smooth and transparent transition process of the assets and human resources to this new organization. In-turn the transfer of technical and managerial skills from authorities (PIDA and AWB) as well as their committed attitude to enhance the capacities of the community and strengthen FO will lead to sustainable FO managed irrigation system.

On the other hand FOs who are going to take over the management system are the key player of the whole process. Therefore the future challenges for these FOs is not only to best manage the system (available water resources) and O&M of the system but also to best utilize the available water resources for increasing crop productivity. So in future ideally these would be the farmers (through FOs) who will decide what to grow (crop diversification) to increase crop and water productivity considering the growing population and increasing multi-sectoral use of the available water resources. The future sustainable FOs will not only manage surface but also the conjunctive water use rationally/productively for crop production (to grow crops with less water avoiding groundwater exploitation and maintaining water distribution equity of surface water). A strong commitment is needed on the part of those who are going to transfer the system (authority) to the hands of illiterate rural farmers that require intensive capacity building exercises. Since it has almost a decade passed, the reform process started, there is also a need to evaluate the performance of the on-going process at all levels of transformation (PIDA, AWB, FOs, other stakeholders), not only by the PIDA Monitoring and Evaluation Cell internally but also by the third party, including government representatives, consultants and research organizations.

ANNEXURES

Table 1. Scheme for Transfer of Irrigation Management in the Punjab Province

Implementation Schedule/Activity	Time Period
Establishment of PIDA	1997
Establishment of Pilot AWB	2000
Formation of KPs, NPs and FOs and Partial Management Transfer (PMT) to Ist Batch of 20 FOs	March 2005
Formation of KPs, NPs and FOs and PMT to 2nd Batch of 49 FOs	June 2005
Formation of KPs, NPs and FOs and PMT to 2nd Batch of 16 FOs	December 2005
Operationalization of FOs and AWB	NK
Testing of Functioning of FOs and AWB	NK
Continuation of Joint/partial management till complete Irrigation Management Transfer	NK
Continuation of capacity building/trainings/institutional support to FOs for their smooth and efficient operation	NK
Autonomous Pilot AWB	December 2008
Establishment of 05 AWBs of Ist Batch	2009 – 2013
Establishment of 05 AWBs of 2nd Batch	2014 – 2018
Establishment of 08 AWBs of 3rd Batch	2019 – 2023
PIDA as an autonomous entity	2024 – 2025

Source: Unpublished PIDA Report (2004) and PIDA (2006)

Table 2. Key Performance Indicators used for Evaluating FO Performance

Indicator	Weight/Score
Organizational development	15
Management of physical conditions of distributary	20
Irrigation service delivery	10
Regulation and equity in water delivery	20
Monitoring and water accounting	15
Dispute resolution & disposal of revenue cases	05
Water charges assessment and collection	15
Total Score	100

Source: PIDA 2006

Table 3. Success Criteria used for Evaluating FO Performance

Citeria	Description	Marks Rating
Poor	FOs not performing well and requires further support	Less than 50
Adequate	Minimum acceptable level and required performance monitoring	50 – 65
Satisfactory	FOs performing well and considered to be sustainable	65 – 85
Good	FOs performance is very good and fully sustainable	More than 85

Source: PIDA 2006

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