ISSN 2710-4761 (Print)
ISSN 2073-0969 (Online)
http://doi.org/10.52587/JEMS0402023
Journal of Economics and Management Sciences
Fall 2023, Volume 4, No.2, pp 35-55

INSTITUTIONALIZING USER'S PERSPECTIVE IN DECENTRALIZED IRRIGATION REFORMS IN PUNJAB

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ABSTRACT

Irrigation systems play an important role in the national economy from the food and water security perspectives. The chief objective of any such system is the provision of equitable, reliable, and timely supply of irrigation water to the farmers. Traditionally the water sector is managed by the centralized irrigation bureaucracy with marginal involvement of the water users in Punjab. There had been many efforts by the Government of Punjab, in collaboration with donor agencies, to reform the irrigation system. The first major reform, led by the World Bank, was the introduction of the Punjab Irrigation and Drainage Act 1997 (PIDA) to revamp irrigation networks, decentralization of decision-making, creation of water markets and inducting water-related public utilities. It promoted the internationally tested and trialled best model of Irrigation Participatory Management (IPM) that essentially involves the water users in the decision-making conduits. The users took this reform as a positive step towards an equitable and timely supply of water for agricultural purposes, however, the irrigation bureaucracy viewed it as a power-stripping intervention. For 22 years of the reform period, this reform gained some initial successes but failed to institutionalize the user's angle. Quoted as the reform is wrought with snags, it fell short of achieving its desired outcomes, and was finally replaced with the Punjab Khal Panchayat Authority Act 2019 (PKPA). With this new enactment, the role of the water users was merely reduced to helpers of the irrigation managers rather than partners in management, O&M and upkeep of distributaries and outlets. This research endeavour analyzes introduction of this reform, its uptake and failure that ultimately led to its reversal and recommends for re-introduction of such reforms by placing the user's perspective at the centerstage for ensuring the prospects of equitable and timely supply of water to the farmers.

Key Words: *Irrigation Reforms, Decentralization, Pakistan*

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1. BACKGROUND OF THE STUDY

Reforming irrigation system is directly linked with improvement in the prospects of food and water security in the country. Like other sectors, irrigation sector in Pakistan also witnessed a number of reforms ranging from building mega water reservoirs to Irrigation Participatory Management (IPM) for inclusion of users in decision-making. These reforms have met with a wider mix of successes and failures owing to their reform design and developing its ownership nexuses within the socio-political ecology of the province. There had been an intrinsic interplay of bureaucratic inertia, political interferences and socio-cultural habits of the society that proved to be the impeding factors in letting reforms to deliver intended and positive outcomes. Another important element is the reform pitch that explains whether the reform so introduced was imposed and donor-driven or evolved, as a necessity, to revamp the system for better and more efficient services delivery. In Punjab, on the advice of the World Bank, irrigation governance was decentralized through the IPM, with the promulgation of Punjab Irrigation and Drainage Act, 1997. Under this denomination, over a period of 22 years of reform period, a Punjab Irrigation and Drainage Authority (PIDA) at provincial level, 05 Area Water Boards (AWB) on main canals and 402 Farmer Organizations (FOs) at the distributary level were established. However, having invested huge funds, departmental energies and incitement of heavy hopes amongst the users, this reform was altogether and unilaterally reversed in 2019. It was replaced by an inert arrangement namely Punjab Khal Panchayat Authority (PKAP) which, like its predecessor PIDA, is still struggling to survive and making its headways to create an impact. This paper delves deeper into backward linkages of these reforms, examines the process of developing reform design and identifies the factors that led to the reversal of PIDA. It finally suggests measures to bring back the IPM reforms that includes re-designing the reform architecture on problem-driven iterative adaptation (PDIA) model, providing definitive role to the irrigation users, developing true political ownership, bureaucratic acceptability and integrating different key stakeholders for jointly working towards improving national economy with enhanced food and water security.

The irrigation system in Punjab, being a legacy of the colonial era, is not user friendly. Despite the fact that it is one of the largest contiguous irrigation systems in the world, it has not been made responsive to the needs of water consumers. Smallholders, subsistence farmers and tail-enders are suffering because of highly centralized irrigation bureaucracy, system inefficiencies, conveyance and application losses, deteriorated infrastructure, widespread rent-seeking, elite capture and illegal water distribution practices. It eclipses agriculture productivity, ushers local feuds and contributes towards the loss of users' trust in the government and increases province's vulnerability in terms of food and water security. Although many institutional reforms have been introduced to empower the users and ensure their involvement in the decision making yet flawed reform design and lack of ownership by the rural-cum-political elite and irrigation bureaucracy, the user's perspective could not be adequately incorporated in the IPM framework and rather the reform was eventually rolled back. Key questions of this research effort are as under:

i) Whether the user's perspective was objectively and adequately embedded in the institutional reform design for improving equitable and timely availability of irrigation water?

ii) What were the systematic barriers that hindered the user's perspective to find an appropriate place in the policy discourse of irrigation system and how to address those impediments effectively?

Reforming irrigation system from user's perspective has many dimensions and iterations. From a cyclical viewpoint, it deals with the sources of water to its usage for residential (4%), industrial (2%), agricultural (92%) and other (2%) purposes and then re-charging the natural aquafers for its reuse. This subject has remained a moot point in many studies in the shape of taking structural measures, management interventions, financial and institutional reforms, decentralization efforts and participatory irrigation management for improving efficiency of the irrigation water available for agricultural sector. Reforms introduced through the Punjab Irrigation and Drainage Act, 1997 and the formation of Area Water Boards (AWBs) and its constituent Farmers Organizations (FOs) with an aim to involve the key stakeholders i.e., users in the management and O&M of the main canals, branch canals and distribution networks has been tried, tested and rolled back. It has been replaced by the Punjab Khal Panchayat Act 2019; that shrinks the role of users as against the irrigation bureaucracy. Before the PIDA and PKPA, Water Users Associations (WUAs) were also established, under the Punjab Agricultural Department through the On Farm Water Management and Water Users' Associations Ordinance 1981 which provided a system for organizing the users for only rehabilitation and construction of water courses. This study will find the backward linkages for bringing the decentralization reforms in Punjab, interplay of users and irrigation bureaucracy, role of users at the reform and implementation stages, causes of its failure and subsequent reversal and explore various options for ensuring equitable and timely provision of water to the users. The universe of this study will be analysis of reform design, identification of systemic barriers and anti-reform mindset that plays an effective role in success or failure of any reform. The focus will essentially remain on the user's (especially the smallholders, subsistence farmers and tail-enders) perceptions and expectations from the irrigation managers for obtaining water for their agricultural needs.

2. LITERATURE REVIEW

Being the mother of irrigation systems and having a legacy of many centuries, there is a plethora of literature available related to the irrigation system in Punjab. The main focus of these reforms has mainly been addressing the need to revamp the irrigation agency and uplift old irrigation networks for reliable supply of water. Availability of water had always been considered directly linked with alleviation of poverty through food production and rural development so more emphasis was placed on ensuring food security through consistent water availability. An excellent discourse on historical development of canal irrigation systems in the sub-continent, its zenith and causes of downfall was provided by Asrar-ul-Haq in *'Case Study on the Punjab Irrigation Department'* (1998) which was commissioned by the International Irrigation Management Institute (IIMI). Where this

effort provides doable remedial measures to this declining system, it places the participation of users at the heart of any institutional reform agenda. Another cotemporary study *'Farmers Actions and Improvement in Irrigation Performance Below the Mogha'* (2001) by Robina Wahaj, intelligently, studies the collective and individual water management conduits to understand socio-cultural dynamics and their impact on improving water delivery to the end users. It propounds only by incorporating user's lens with appropriation of water delivery systems at the local level can guarantee the optimal returns from the agricultural toils. The linkage between agricultural water and rural poverty has been evidently established by Hussain et.al (2003) in a study namely *'Agricultural Water and Poverty Linkages: Case Studies on Large and Small Systems'*. It analyzes the impact of improved community and household access to irrigation on poverty in large-scale surface irrigation systems in Sri Lanka and Pakistan. It finds that effective rural poverty reduction requires that agricultural water and irrigation development be targeted at poor communities, areas and localities. Jacoby et al. (2016) find that water theft on channels whose management was taken over by locally elected farmer organizations (FOs) was increased compared to control channels that remained centrally managed under the authority of the PID. Sameen (2020) propounds that although participatory governance is a means of making the state more responsive and accountable to citizens, however, systematic attempts to involve end users in decision making often meet with considerable resistance not just from political elites but also from the bureaucracy. Bedock (2021) avers that in any reform, the outcome depends on the interaction between the nature of reform and the process chosen to conduct it. Review of the literature reveals that there is a wide gap in research that the user's perspective in Punjab has not either been properly understood or could not find an adequate place in the policy discourse and reform design. Although much literature is available on concepts of IPM, reasons of failures of reforms, performance of AWBs and FOs, its social linkages but no study has been attempted to delve deeper to understand the induction process of reform (from where the reform came and started), whether it was imposed or evolved within the irrigation system, did it succeed to win over the irrigation bureaucracy, was reform design structured through wider stakeholder's consultations, how did the systematic biases interacted with reform architecture, did the reform design address the prevailing socio-cultural fabric and the mindset, who were the champions and main proponents of the reforms and why it was preferred to conveniently reverse the reform rather than mid-course corrections by taking remedial measures. Understanding and re-tracing the thought process of various key stakeholders who conceived, advised, suggested, designed and implemented these reforms will help re-structure these reforms from the user's perspective for reliable and equitable supply of water for better agricultural productivity, ensuring future food and water security prospects of the country.

3. MATERIAL AND METHODS

This study is descriptive that employs qualitative research techniques, review of primary and secondary literature and interviews of key stakeholders including policy practitioners, water experts, irrigation technical staff, selected member of previous Area Water Boards

and Farmer Organizations, academicians, and consultants in the field of irrigation systems and On Farm Management Practices.

This paper has been organized in three sections. Section 4.1 discusses the necessity of reforms and attempts to understand the user's perspective in reforming the irrigation system. Section 4.2 explains the design, process and implementation of institutional reforms for ensuring equity in water distribution. Section 4.3 provides critical appraisal of these institutional reforms that how the yoking together of faulty reform design and systematic biases coupled with an anti-reform mindset created a thwart in its successful implementation and led to its rolling back after two decades. While pondering over the possible opportunities of post-IPM reform scenario and positioning of the non-functional PKPA, it explores that how re-introduction of decentralized path of irrigation reforms, by adequately institutionalizing user's perspective, still have the potential to be brought back for better outcomes in shape of participatory and shared governance of tertiary level irrigation system for improved agricultural productivity.

4. FINDINGS OF THE STUDY

4.1. User's Perspective in Irrigation Systems

Though the population of Punjab has increased manifold and stands at around 110 million and the area under cultivation has also been doubled i.e., 14980612 hectares in 1990-91 to 30966875 hectares in 2019-20 (PBS, 2020) yet the availability of irrigation water for the agricultural purposes has more or less declined form 58,000 cusec in 1990-91 to 49,000 cusec in 2019-2020. There is an average decline of 40% in irrigation water due to less investment in construction of water reservoirs (PID, 2022). On the other hand, with the ever-bulging population, per capita water availability is seriously on a diminishing trajectory (Figure 1).

Figure 1 – Pakistan water availability vs population growth by Nazir Ahmad Tarar, 71st Annual Session Proceedings (2006-2011), Pakistan Engineering Congress

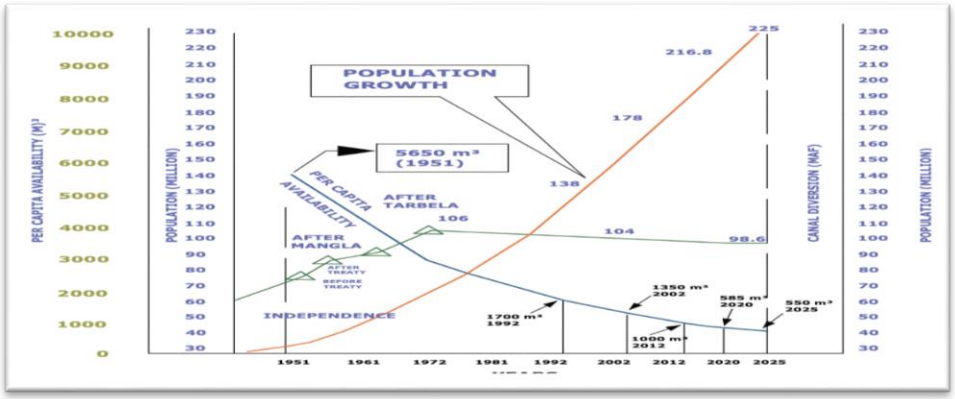
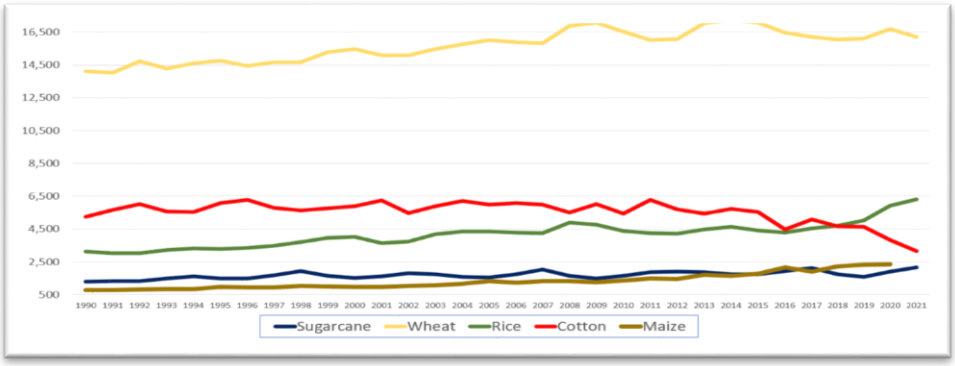
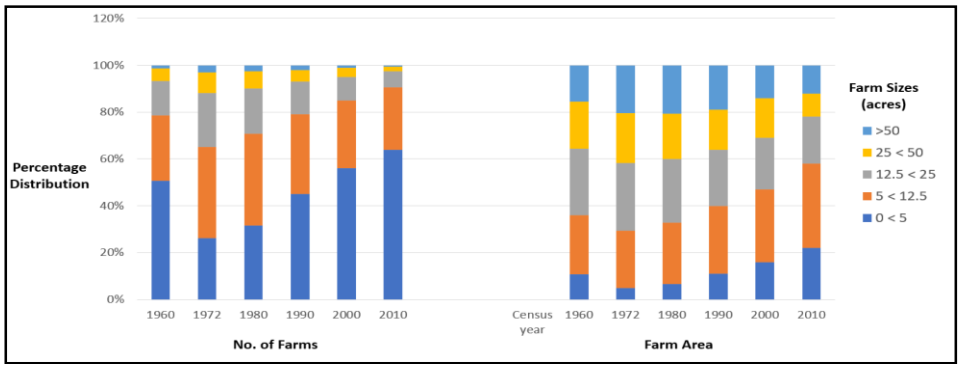


Figure 2 – Total acres of cultivated crops from 1990 to 2021(Agriculture Department, Government of Punjab)



In terms of area under cultivation, during this period, there has been a continuous increase in cultivated area of wheat, maize, sugarcane and rice but decline in cotton from 1990-91 to 2021-2022 (Figure 2). The data of landholdings shows that from 1960 to 2020, there is an increase of smallholders and subsistence farmers. Small farmers which are 90% in numbers occupy

Figure 3 – Percentage distribution of number of farms and farm area quantized by farm size.



40% of land area, whereas the remaining 60% of the area is occupied by medium (6%) and large (4%) farmers (Figure 3) (Asad, et.al. 2016). The availability of water is generally not an issue for the large landholders due to their social clout and influence on the local irrigation managers, however, this data shows that main users of the irrigations water who are suffering from system inefficiencies, water shortages, corruption and rent seeking are the subsistence farmers and smallholders that constitute the majority of landholders.

The user's perspective starts and ends at the timely and sufficient flow of irrigation water for their agricultural purposes as there is a positive correlation between the availability of irrigation water and social wellbeing of the farmers (Hussain et al., 2003). However, there are different perspectives by different users owing to their proximity to the head of irrigation channel, their political and social clout and capacity to play, legally or illegally, with the irrigation system for their respective benefits. Defying the basic principle of equitable supply of irrigation water to every user; the headers are always the main beneficiaries while the tail-enders always remain sufferers. Different stakeholders have a different understanding of user's issues for the use of irrigation water. The Punjab Irrigation Department (PID) supposedly perceives that their efforts in terms of efficient handling and maintaining of canal systems (main canals, branch canals, distributaries and minors including outlets) will eventually benefit the users at the receiving end. Although this statement is true in its essence, yet the absence of user's perspective, in the policy discourse presents another picture. Per say users are the customers and should be at the centerpiece of functioning of the PID but the smallholders, subsistence farmer and tail-enders are virtually the most voiceless in entire gamut of things. In the Punjab Rules of Business 2011, the Agriculture Department is responsible for establishing the Water User Associations at the outlet level that somehow engages with the users, at least, during the rehabilitation of existing water channels, though after the contribution of funds from the users, or construction of new outlets. They view the user's right to timely and equitable availability of water as the prime concern for the farmers. In other words, they acknowledge the role of users as a partner in the development, maintenance, and upkeep of the outlets. So, to say, there is little interaction between the PID and the users when it comes to designing, managing and maintaining irrigation systems at tertiary level - resulting into lack of true understanding of actual needs, ethos and pathos of users.

4.1.1. Legal and Policy Landscape

It is interesting to note that other than the Punjab Irrigation and Drainage Act, 1997, there is no legal regime available that ever attempted to address the decentralization of irrigation systems or recognized the user's perspective. On the policy side, sequel to National Water Policy, 2018, the Government of Punjab also approved a provincial Water Policy in 2018, with the premise to address water issues in a holistic manner and manage its water resources in a sustainable way. It, however, remains silent on the role of water users in the management and operations of irrigation water for an improved agricultural productivity. The irrigation system in Punjab is mainly governed under the Canal and Drainage Act 1873, read with, its subsequent amendments, rules and regulations. As a measure to provide legal cover to the institutional reforms of ensuring autonomy, decentralization and user's participation, the PIDA 1997, provides for the establishment of the Punjab Irrigation and Drainage Authority, formation of the Area Water Boards, Farmers Organizations and Khal Panchayats. Related to water courses management at the village level, the On Farm Water Management and Water Users' Associations Ordinance 1981, created a platform of Water User Associations (WUAs) for the rehabilitation and construction of water courses. As an international best practice, this WUAs model was an established and well-treaded path to involve users in construction, O&M and conflict resolution at tertiary levels of

irrigation systems. However, in Punjab, this model was not adopted in toto as its ingress remained restricted to the restoration and construction of water channels. The Punjab Khal Panchayat Authority, 2019, which repealed the PIDA, sets a renewed yet weak edifice of the Khal Panchayats, at the outlet level. The Water Act 2018 gives a broader framework for managing and regulating water resources in the province by establishing the Punjab Water Resource Commission (PWRC) and the Punjab Water Services Regulatory Authority (PWSRA). The duties of the Commission include conservation, redistribution and augmentation of water resources, and allocation of water resources for domestic, agricultural, ecological, industrial and other purposes. It also promises to ensure the maintenance, improvement and development of wildlife and fisheries in the water bodies. While it treats the water sector holistically, it misses the link to decentralize the management of irrigation waters to the user's level and does not provide for involving the users in reform design, subsequent resource allocation and implementation of policies and plans at the local pedestals. Under this policy and legal regime, the handle to control irrigation waters, its management and localized decision-making remains exclusively in the hands of the irrigation bureaucracy at the provincial level.

4.1.2. Decentralization Reforms Guard User's Right

The users' perspective has been successfully incorporated by decentralizing the decision-making powers to the farmers in many countries. In the Philippines, under the National Irrigation Administration (NIA), there are more than 5600 communal irrigation schemes that covers almost half of the irrigated area. For each 50 hectares, there is an Irrigation Association (IAs) that is registered as a non-profit and non-stock entity under the Securities and Exchange Commission, giving it a legal mandate to enter into agreements with NIA and other agencies. They conduct O&M and operate on a self-financing basis with technical assistance from a network of Irrigation Community Organization (ICOs). Indonesia adopted the model of WUAs when its insufficiently financed small-scale irrigation system were under stress to meet the O&M costs. By defining legal rights of building capacities of the WUAs, the Government of Indonesia transferred more than 400 systems, covering an area of more than 34,000 hectares to the WUAs. This program met a considerable level of success due to involvement of farmers at design stage and continuous handholding during its implementation phase. In Nepal, farmers have more than 70% control of the irrigation systems and fully in-charge of construction of new sub-systems and its O&M. The irrigation system in the Dominican Republic, was transferred to the 'Nucleos' formed at each sublateral (water course) that controls the water after it leaves the lateral (distributary). All the 'Nucleos' at the irrigation lateral then formed the WUAs (locally known as *junta*), which work like an FOs in Punjab. After transferring the system, the studies suggest that the irrigation system witnesses a sharp rise in cost recovery and improved O&M of the irrigation system. This model, in many Latin American countries has also produced encouraging results. In Mexico, reforms were introduced to decentralize the management functions from the irrigation districts to water users. Under the National Water Commission (CNA), the transfer happened to the users in two stages: first, the responsibility of O&M of lateral canals and minor drains was shifted to the users under the User's Associations. Having demonstrated the capacity to sustain and operate,

these entities were graduated in Enterprise Associations (Sociedad) which took over the O&M of the main irrigation and drainage canals as well as the O&M machinery and equipment. In Argentina, the smaller unsustainable and inefficient model of traditional user organizations (50 to 100 hectares) were clubbed into bigger associations (5,000 to 15,000 hectares) with an aim to achieve economies of scale. In both Mexico and Argentina, unlike the Asian and Caribbean models, these associations engaged the services of professional managers to take charge of functions like cost recovery, water delivery and maintenance. These interventions helped to improve 10% conveyance efficiency in Argentina and 80% increase in cost recovery and O&M in the reform areas in Mexico.

4.2. Institutional Reforms for Equity in Irrigation System

For ease of understanding, there are five key phases of reforming efforts of irrigation systems in Pakistan. With one common premise of maximizing farmer's wellbeing through provision of accessible, timely and equitable water, each one of these phases employed different pivots, strategies and shown variegated outcomes. As a first step, the Britain not only reformed the inundated irrigation channels but also intensively expanded the irrigation networks in the sub-continent with a speed and size not less than a miracle. At the advent of separation of Pakistan and India, the immediate topsy-turvy in irrigation systems was well-handled by the then irrigation managers despite the latter's aggression and held back many key assets. With the efforts and brokerage of the World Bank's, ownership of rivalling water assets finally settled through the Indus Basin Treaty in 1960. Having full control on the rivers of Indus, Jhelum and Chenab, the Water and Power Development Authority (WAPDA) constructed Tarbela and Mangla Dam in 1966 and 1977 respectively. The third phase constitutes the major reform period, introduced by the International Financial Institutions (IFIs). Spanning over three decades, these reform discourses culminated with the start of WB's financed the National Drainage Program (NDP) in1996. Besides some key structural reforms, the NDP's main focus was on decentralization of management and O&P functions to the users. The concept of Irrigation Participatory Management (IPM) was propagated and institutionalized through the provincial legislative framework under the Punjab Irrigation Drainage Act 1997 (PIDA). The fourth phase, from 1997 to 2019, tell the spectacular story of rolling out the IPM through piloting the Area Water Boards (AWBs) and Farmer Organizations (FOs), its skewed success and full implementation and then sudden and one-sided rolling back and coming back to the square one. Users from the owners of irrigation systems was shrunken to mere assistants to the irrigation bureaucracy at the outlet level. The fifth phase, the existing one, starts with the introduction of the Water Act, 2018 and the Punjab Khal Panchayat Act 2019 (PKPA) and it operates at the confluence of cautioned participation of users and bringing in water regulations through the Punjab Water Resource Commission (PWRC) and Punjab Water Services Regulatory Authority (PWSRA). Infancy of everything rules, anyways.

4.2.1. Conceptualization and Initialization of User-Friendly Reforms

As this paper only dilates upon reform design and institutionalization of user's perspective into the policy discourse for the development of efficient, decentralized and sustainable management of canals and irrigation water available to the smallholders, subsistence

farmers and tail-enders, let us now trace the thought process, origin and do a genesis of participatory management reforms, it's pilot to full-scale implementation, its sudden reversal and replacement by the new system that minimized the role of users. Owing to the political economy of irrigation systems in Punjab; where inefficiencies at equitable distribution, dilapidated century-aged canal networks, over-exploitation of fresh groundwater and inadequate O&M of canals and insufficient canal delivery, the leg-work and conceptual framework of IPM reforms was developed by the World Bank in 1994. Recognizing the user as an essential partner, it suggested i) bringing enabling legislation on water rights, quality, markets and institutions, ii) doing the pilots for setting-up public utilities and developing user organizations at the canal command area, and iii) bringing in provincial water authorities for regulating and efficient utilization of water resources in the province. The urge to implement this reform agenda, a joint program of the Asian Development Bank (ADB), Japan Bank of International Cooperation (JBIC) and World Bank, was started under the National Drainage Program (NDP). All the provincial governments, in compliance to the NDP's Disbursement Linked Indicators (DLIs), implemented this agenda and instituted reforms for inclusion of the users in the decision making for management, O&M and collection of water rates. As a first step towards autonomous public utilities, the Government of Punjab, established the Punjab Irrigation and Drainage Authority under the PIDA Act 1997 and legally promised to transfer all major functions of the Punjab Irrigation & Power Department to the newly established Authority. The additionality was the establishment of AWBs (at the main canal) and FOs (at the distributary level) under this new Authority.

4.2.3. Rollout and Institutionalization of Reforms

This Authority, over a period of 22 years, established 05 Area Water Boards (AWBs) in Lower Chenab Canal, East (LCC-East) Circle and Lower Chenab Canal, West (LCC-West) Circle in Faisalabad, Lower Bari Doab Canal (LBDC) in Sahiwal, Bahawalnagar Canal Circle, Bahawalnagar and Derajat Canal Circle, Dera Ghazi Khan. These AWBs have 402 Farmers' Organization (FOs) with varying degrees of tenure, irrigated area and operational challenges. Although, as studies reveal, the new dispensation brought some positive changes, yet with time, the performance was declined. Raza (2008) conducted an economic analysis of these reforms on LCC East and found that involvement of users in O&M of irrigation water improved *abiana* collection from 42% to 62% during the reform period with a considerable increase in delivery performance ratio at the tail-end of the distributary. It also positively impacted the yield and productivity of the farmers for all major crops coupled with a significant improvement of water available at the tail clusters of the distributary. However, it is not true for all reform areas and some key issues were also observed in other systems like poor operation and management of irrigation channels, low *abiana* collection, increasing incidence of water theft, poor upkeep of the system and above all elite-cum-political capture in the PIDA, AWBs and FOs. In the areas of the AWB Bahawalnagar, management committees of 10 FOs were suspended for 90 days on account of engineered water theft, tampering of outlets, corruption and embezzlement. The Auditor's Report of FOs also highlighted issues of poor record keeping. Many of these FOs upon completion of their first tenures, managed to prolong their stay, through the

court orders which severally jeopardized the continuity of democratic process of electing new management committees. Rampant reports of misappropriation of *abiana*, decisively, dented FO's trust profile and became a major cause of reversal of the participatory management system. Finally, the PIDA was wounded up and replaced with the Punjab Khal Panchayat Authority in 2019.

The decentralization reform met with different responses in four provinces (Table 1). In Punjab, under the pressure of the World Bank, this system was rolled out with a thumping sound. However, the more colonial-minded, stratified and risk-averse bureaucracy designed the reforms that created competing interests amongst the main stakeholders. These rivalling interests gave rise to rancour towards the reforms. Throughout the reform period, the reform baby had been struggling hard to find a father and ultimately was thrown out of the tub (Jacoby, 2018). The IPM reforms had remained a non-starter in Baluchistan until now and after the promulgation of the Baluchistan Irrigation and Drainage Act 1997, no authority could have been established so far *(Fateh, personal communication, 22nd January 2023)*. The experience of Sindh has been encouraging as they not only established the Sindh Irrigation and Drainage Authority (SIDA) but developed it into a full-fledged independent organization. It established 03 AWBs (Nara, Ghotki and Left Bank) out of 14 Irrigation Circles and 362 FOs. Although the SIDA is still working and has not been rolled like in Punjab, the factors that contributed towards its survival and suitability are not entirely attributable to its core functions. It is rather because the SIDA's gradual development of its capacity helped it to become a developmental arm of the Irrigation Department Sindh. It has been the implementing agency for the World Bank's financed Sindh Water Sector Improvement Project (SWSIP) for improving the efficiency and effectiveness of irrigation water distribution in three AWBs (Ghotki, Nara and Left Bank) with focus on measures of reliability, equity and user satisfaction. Recently it has been selected for the implementation of the (Sindh Water and Agriculture Transformation (SWAT) Project which aims to increase agricultural water productivity in the command area of selected 15 FOs and capacity building of the SIDA. It has, however, been able to successfully manage, by and large, a transition and succession plan of FOs and AWBs. The reform design of IPM reforms in Sindh is as faulty as in Punjab, but the SIDA at least took an autonomous character. It was because of the fact that the headquarter of the Authority was made in Hyderabad, away from the main power hub of irrigation bureaucracy in Karachi. Secondly, the Irrigation Department let the SIDA grow as it has at the initial stages of reforms, distributed territorial functions and retained complete control in 11 Irrigation Circles. The department, however, due to systematic biases against the reform, managed to take back the function of drainage from the SIDA in 16th year of the reform period. However, the struggle of the SIDA to find a political pitch and bureaucratic ownership is not different from the other provinces and its survival mainly depends on the continuity of donor funding, rather than its mainstreaming in the irrigation hierarchies, even after the passage of more than two decades.

Table 1 – Comparison of decentralization reforms in different provinces.

	Punjab	**Sindh**	**Baluchistan**	**KP**
Legislation	1997	1997	1997	1997
AWBs and FOs	5 and 402	3 and 362	-Nil-	No Data
MDs and Chairman	Additional Charge to Secretary PID	Independent MDs	-Nil-	No Data
Headquarter	Lahore	Hyderabad	-Nil-	No Data
Succession and Political Transition	Difficult	Smooth	-Nil-	No Data

These reforms, though imposed, produced some positive results, by incorporating the role of the users in the management, operations, dispute resolution and equitable distribution of the agricultural waters to the farmers. However, it also demonstrated a shift of powers from the irrigation managers to the users which put the protectionist and status-quo bureaucracy on tenterhooks. All the provinces passed through different reform implementation trajectories and hence mixed outcomes. It is not that during the initial period of reform, when there was sufficient donor pressure, the irrigation bureaucracy developed some regulations and rules for the implementation of the decentralization reforms in Punjab. However, with the passage of time and with the growing complexity of AWBs and FOs due to changing circumstances where decisions were started to be made at the grassroots levels, there was a gradual decrease in political and bureaucratic ownership. It also ignited challenging the inertia of the irrigation managers and ultimately led to the immature reversal of the reforms. Under the new PKPA law, the Khal Panchayats at the watercourse level has only been given the notional mandate and users cannot effectively voice their concerns to the local irrigation managers.

4.3. Reforms - Appraisal and Opportunities

To make a critical appraisal of the system, it is important to understand the background of the reforms processes, political-cum-bureaucratic ownership of its rolling out, carefully crafted modes for mid-course corrections of systematic aberrations and contributory factors leading to success or failure profiles of the reforms. From the historical perspective, the IPM reform was the first one that attempted to recognize the role and responsibilities of users. Before it made enroots in the socio-cultural fabric of Punjab, the IPM concept has many success stories with different proportions of outcomes. In Punjab, the IPM won initial successes but owing to the perceived shifting of control towards the users and fear of sharing of historically unrivalled powers, the inertia of the irrigation system demonstrated itself in many latent forms. Let us discuss them one by one as under:

4.3.1. System Biases Halted the Progress of Reforms

Some tracing of history tells that, after the expansionary period of the British era (1850-1947) and the Indus Water Treaty (1960), no major reform was introduced by the then Irrigation and Power Department. It was partially due to the fact that with the advent of

WAPDA, the construction role was shifted to the Authority and the provincial department was only left with O&M of its irrigation assets. The plummeted situation, compounded by the challenges of salinity, waterlogging and post-SCARP phase, was captured by many studies of the IFIs and donor agencies and some *ad-hoc* measures were taken to correct the system inefficiencies. As the introduction of the IPM came through the donor funding and not evolved within, it was tagged as a 'foreign agenda'. Before it could formally roll out, there was a massive amount of silent and perpetual resistance from the irrigation managers. This reform, unfortunately, never succeeded to create its champions, and the inherent system biases kept coming in the ways of its implementation. It created conflicting situations and contesting competitors – the old versus the new. Starting with the legislation, which is deficient in defining the user's perspective, mixed-up different administrative functions and added layers of confusion. Traditionally and technically, policy-making regarding the water sector was the prime role of the Irrigation Department. According to the Punjab Rules of Business 1974, the main function of the policy making had been the mandate of the department, but under Section 5 (6) of the PIDA 1997, the function of policy-making and its implementation was entrusted to the Authority. Though the Act envisioned that the AWBs and FOs will be fully operative and financially self-sustaining within a period of 07 to 10 years, the enabling rules and regulations could only be issued by the department in 2010 and 2011 after almost 13 years. Without realizing the well-established role of the department, the legislation shifted the roles and responsibilities to the Authority. Section 11, in an attempt to provide security to the existing human resource by making them part of the Authority, ushered the identity crisis amongst the ranks and files of the main stakeholders.

This new reform adopted a unilinear trajectory. There could have been many levels of collaborations and integrations within the existing systems about designing the local-level rural institutions. It showed a complete disregard to the institution of *lambardar* and its historical ingress in the socio-economic fabric of village settings by only making him member of the KP and stripping him of his decisive role in *abiana* collection. Not only the collections of *abiana* due to the water users was being collected by the *lambardar*, under the Canal and Drainage Act 1873, but entire structure of land revenue administration was revolving around this 'kingpin' in the rural economy as per the Land Revenue Act 1967, as well. The IPM system architects, while designing the reform missed this important link, and entrusted all his functions, under the PIDA 1997, to the Khal Panchayats. Though the aetiology of the word 'panchayat' was known to the water users, yet this new concept took a long time to make its way into village life without the *lambadar* as the pivot in the system. It went against the centrality of one institution which was known to everyone and created two rivalling streams one led by newly made Khal Panchayats and the other by the *lambardar* and *patwaris*. Another tested vehicle which was readily available at the outlet level was Water Users' Association under the Agricultural Department. It was a delivery-bound system for the last two decades for improvement of watercourses; its rehabilitations and construction. The functions of a KP, as envisioned under the new Act, were partially being performed by an extensive network of WAUs in the province. The entry of a KP added a sufficient level of confusion in the system that could not muster the local support

for its survival; giving a space to political forces to fill. The need was to look at reforms in a holistic manner with a prism to improve agricultural productivity through autonomous and decentralized irrigation water management. This purpose could have been better achieved by using the WUAs at the outlet level and providing one-window facility to users to plan according to their multiple agricultural requirements in which irrigation water was only one input. The main reason, for bringing a new institution of KP and not using the already available vehicle of WUAs, was the departmental turfs. The WUAs were being administered by the Agriculture Department and irrigation managers of tertiary and secondary level in PID were not in favour of letting control out of their hands. The game of retaining more control over the resources by the central irrigation bureaucracy kept producing confused and parallel laws and ultimate user remained a perennial sufferer.

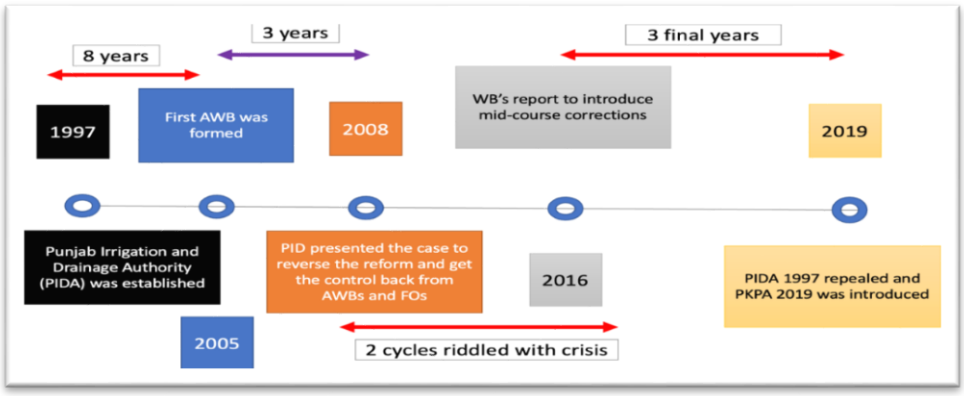
While implementing the PIDA reforms, there had been creation of many systematic conceptual aberrations as the reform did not involve wider stakeholder consultations. According to the true spirit of the reform's proposal by the WB in 1994, introduction of the IPM model through Farmers Organizations at the distributary level, was to provide a public utility run by the water users in the form of shareholders and co-owners. It needed more attention for controlling water theft, collection of *abiana*, repair and maintenance and ensuring water equity to all users with enhanced focus on the tail enders. News of creating water markets created ripples in the most protective irrigation system and process of tweaking with the reform design was chipped, right there, since the beginning. The making of AWBs in the backward linkage of supply side and Khal Panchayat in the forward linkage of demand side, was an afterthought. The control of irrigation managers could only had been establishing by controlling the water flows to the distributaries and not relying on WUAs; those were not managed by Irrigation Department.

4.3.3. Reforms did not Address the Mindset

As the irrigation system in Punjab is a successor of the colonial times, it carries a sense of ownership of irrigation networks rather than being the custodian and service provider. Living in the romanticism of past glory, the system is awry to change and reform. Status quo rules. While the IFIs financed the introduction of IPM, it did not capture the necessity of reading the mindset and developing ownership of these reforms within the system. The WB arranged multi-country visits of the system operators to witness the fruits of decentralized water governance, yet the internalization of the reform's objectives could not be achieved. Messaging and communication strategy of reforms could not have been structured according to mindset. The users were altogether missed and could not find a place in the stakeholder's mapping. It is evident from the fact that, as against a proper elucidation of AWBs and FOs in the Irrigation Drainage Acts of Sindh, Baluchistan and Khyber Pakhtunkhwa, the Punjab's Act essentially missed the point. It failed to elaborate the functions of AWBs and FOs in the substantive legislation but through the rules and regulations which have a lesser force than the Act. It seems that the reform was consciously designed for its ultimate failure. Another important aspect of this reform is that due to frequent transfers and postings of Secretaries and other key stakeholders, no consistent understanding or sustainable policy could be developed regarding the reforms to meet ever-emerging challenges. During the 22 years currency of the reforms (1997-2019), 23

Secretaries were kept coming and going - throwing the reform to the mercy of biased and reform-averse second tier of the irrigation managers. Almost all the heads of the department had their own understanding of reform and steered the reform process with it. The Authority, however, could not find a single Managing Director and all the incumbent Secretaries had been assigned the additional charge of this important portfolio (PID, 2022). The controlled approach was also technically institutionalized in the management of AWBs and FOs. Mandated with technical and administrative powers, the Chief Executive Officer of the AWBs was a serving Superintending Canal Officer of the Circle who wielded veto-like influence over the functioning of the AWB. He also enjoyed overwhelming supervisory control over the function of the FOs. This approach portrayed the users and their representative institutions as rivals and competitors and not as the partners in management. Not only the reform but the entire system failed. It is evident that there was no urge within the system to decentralize and share management with the farmers. It was and is the 'mindset'. After the establishment of PIDA, its AWBs and FOs, there was a conscious effort by the department to let this 'foreign' system fail and things revert to normal (non-sharing of powers).

Figure 4 – Life cycle of decentralization reforms in Punjab Province



The system of participatory management, though successful in many parts of the world, was designed to complete failure. After the introduction of PIDA in 1997, the authority could not be strengthened and rather run-on *ad-hoc* basis for a longer period. The first AWB on LCCB could be made after a lapse of 07 years. The first training was started in 2005. One more factor is that in rural societies, the political public representatives had traditionally been enjoying infinite clout to a point of make and break. Their survival is in keeping the voters in good humour irrespective of their legal or illegal wish-lists. The reform design did not take this element into consideration.

The factors attributed to the failure of FOs are ever-rising cases of water theft, rent seeking, sizeable decline in collection of water rates with an increased political interference (WB, 2018). The case was built that there had been no improvement in the equitable distribution of the water supply to the users. The failure-cum-reversal is caused

partially by the faulty reform design and partially by the socio-cultural system. The reform design, as developed, without involving the main stakeholders and winning an ownership and acceptability by the irrigation managers. There was a lack of publicity and communication of these reforms with the actual beneficiaries at the design stage. The farmers, so consulted, were mostly hailing from the political families or rural elite who had very little knowledge of the miseries of the smallholders, subsistence farmers and tail-enders. They were beneficiaries of the old system and predominantly reform averse. Anyways, as the reform was pushed by the IFIs, there was no option but to introduce the legislation for developing water markets and public utilities without having a clear idea how to implement them. It essentially lacked supervisory mechanism. Due to weak accountability systems and poor-cum-selective reporting, the tertiary level irrigation managers like *ziladar* and *patwaris*, colluded with the political and rural elites and influential members of the FOs to benefit them, embezzlement of funds and poor *abiana* collection. The suffering users did not either voiced themselves against the new system operators or their voice was conveniently suppressed.

4.3.4. Reversal was Preferred over Mid-Course Corrections

From a reform implementation perspective, it is important that reform may continue till the time it produces results. The rolling out of IPM concept in Punjab, had underwent many critical phases of uptake till its final reversal. The inner voices of reversal started while peeping in the policy discussion from early stages with an assertion that the IPM program should be implemented through the Punjab Irrigation Department instead of creating a super but isolated structure in the shape of Punjab Irrigation and Drainage Authority (Usmani et. all, 2000). Throughout the reform phase, AWBs and FOs majorly remained short of technical backstopping and handholding by the irrigation bureaucracy as it hijacked the reform process and amended the initial idea of user participation in the management of their irrigation water (Arfan, 2000). It was in 2008, only the 03 years after the establishment of pilot AWB in 2005, when the then Irrigation and Power Department while giving a presentation to the Special Advisor of Chief Minister, proposed three models: a) existing IMT model with improvements, b) joint management and c) reverting to the old system. Two of the three models were lucidly dilated on the option of gaining control back to the bureaucracy from the users on the pretext that they are unable to manage the system. Even the option one presented a model of the increasing influence of the official irrigation managers from the participatory institutions. It propounded, while realizing the need of enhanced handholding by the PIDA and AWBs through capacity building, that the role of canal officers be increased in monitoring and supervision of working of FOs, decisive role in handling of emergencies and increased oversight in the affairs of FOs. Model (b) created an interesting scenario that although the main responsibilities of FOs are related to governance, decision making, supervision and monitoring, *warabandi*, dispute resolution, *abiana* assessment, budget and work plan assessments, reporting and follow-up of cases and redressal of grievances. However, it was proposed that major amendments in law and rules may be introduced to give joint responsibility to the canal officers in implementing decisions of FOs, O&M of channels, water distribution, *abiana* collection, account maintenance, funding, and staffing matters.

The model (c) concluded that the participatory management be rolled back, and entire control be transferred back to the irrigation bureaucracy. This presentation and other similar arguments had been on the official tables of the irrigation managers, throughout the currency of the PIDA from 1997 to 2019, till the time it was replaced with the Punjab Khal Panchayats. The psychological internalization of the participation management could never have achieved an acceptability to make this system a success. Initial results of pilot project show that although there were some progresses on water availability, equity and reliability to the users, improvements in *warabandi* and reduction in corruption and water theft, however, it was cautioned that careful approach is required in the formation of FOs by including tail-enders in the management committee (Usman, 2013).

The competing interests of the PIDA and PID precipitated in the policy-making thought process of the PID. It was argued by the PID that the decentralization reform increased the instances of theft and corruption, fostered rent-seeking attitudes, multiplied the bribe rates and promoted elite capture through asymmetric political influence of different water users. It was also observed that a number of farmer organizations have been involved in misappropriation of *abiana* or have been unbale to perform their duties. However, instead of jumping to conclusion for reversing the reform, it was better to address the pain points and take remedial measures. It would be premature to throw out the reform baby with the bathtub (Jacoby et all, 2018). Frustrated by the negative dimensions of socio-economic changes that increased the social unrest in the villages, the political representatives also clamored for the ending the reform *(Aamir, personal communication, 26 December 2022)*. The Irrigation Department, without contemplating the mid-course corrections and putting reliance on the performance evaluation report of FOs by PIDA's independent consultant and WB's Policy Research Paper, *'Decentralization of Redistribution – Irrigation Reforms in Pakistan Indus Basin'* reversed the 22 years' reform process, without positively engaging and consulting the users and other key stakeholders, and replaced it with the Khal Panchayat System that virtually shifted the entire control of irrigation waters back in the hands of irrigation bureaucracy. The users are again at the mercy of the lower-level officials who are merely onlookers and have no say in the management of irrigation channels.

5. CONCLUSION AND POLICY OPTIONS

The user's perspective could not adequately find a place in policy discourse of irrigation reforms in Punjab. Irrigation system in the province is passing through the hardest phase in its history owing to scarcity of surface water, rapidly depleting groundwater sources, old canal networks, management and O&M challenges, pervasive rent-seeking, and elite-cum-political overstepping. This situation not only makes the province more vulnerable to water and food security but also slows down the poverty alleviation efforts. User friendly lens could neither be institutionalized in the reform processes as these were either imposed by some donor agency or designed without stakeholder's meaningful consultations the users. It has vividly come out that the reform design was not properly structured and lacked political and bureaucratic ownership. The systematic biases, lack of understanding the socio-cultural texture of rural society in the province and their political-bureaucratic

mindset negatively impacted the reform and its implementation and rather prematurely discontinued. Over a period of more than two decades, the reform failed to make positive headways and rather was reversed prematurely. The user's perspective can adequately be embedded in the reform design with wider and meaningful stakeholder's consultations, user's active engagement, their constant handholding and recognizing them as partners with a view to contributing towards national development for enhanced food and water security in the province.

With a view to improving water and food security in the province, it is prerequisite to ensure the timely and equitable supply of irrigation water, especially to the smallholders, subsistence famers and tail-enders for the agricultural uses. For these purposes, the decentralization reforms have tremendous potential, with necessary tweaking having learnt from 22-year pre-reversal experience, to institutionalize user's perspective in the reform design and its subsequent implementation for poverty alleviation efforts. The recommendations are as under:

User Friendly Decentralization Reforms be Revived

The decentralization reform may be revived through provincial legislation with the clear demarcation that policy discourse for the sectoral policy on water will clearly rest with the provincial government through the Irrigation Department, but the operational matters will be handled by the newly established PIDA. It will not only provide functional clarity but also provide peace to the provincial and strategic level irrigation bureaucracy to work in tandem with the decentralization reforms. The continuity of reforms plays a pivotal role, so it is necessary to re-introduce the reforms with some tweaking after thorough consultations with the users and true representatives of the farmers. It is recommended that AWBs may not be constituted because of the reason that neither the AWBs has the capacity nor the funding to maintain the bigger canal infrastructures. The decentralization should start at the level of distributary level that is closer to the user as compared to the AWBs. As the real business and the politics of the irrigation water starts at the distributary, the structure of FOs should be made more democratic to ensure equitable distribution of water. FOs may be treated as a body corporate and the burden of conducting timely elections and smooth transiting be transferred to the FOs rather than the provincial authorities. It can be ensured by introducing laws and regulations for the fixation of the tenure, election timelines and automatic transitioning of the FOs. It should also be added that as the fixed tenure of any FO will complete, all funds and accounts will be automatically ceased till the joining of the new organization. WUAs or KPs, as they are, should serve the constituent college of any FO with a proportion that different users get the proportional representation i.e., 25% head users, 35% middle users and 40% tail-enders.

- **Reform should Focus on Water-Course Management**

At the water course level, more mandate be provided to the water course level organizations. With the passage of time and removal of procedural glitches during the improvement of water courses improvement program, registration process of WUAs was streamlined and at present more than 50,000 WUAs stand registered with the Directorate of On-Farm Water Management (OFWM) in the Agriculture Department, Punjab.

Learning from the Sindh experience, no new Khal Panchayats are required to be created but these available Water User Associations (WUAs) should be looped in as the basic unit for the decentralization reform. This target can be achieved by repealing the Water User Association Ordinance, 1981 and adding this function to the Khal Panchayats under the new law. However, the role of WUAs may be increased from being only an agency of rehabilitation and construction of water courses to a more dynamic and democratic association responsible for dispute resolution, localized troubleshooting and ensuring equitable supply water to all users within their area. The strength of going down to the level of management at the basic unit of a water course has the potential to avoid the elite capture and influence of large landholders. It was easy to manage an FOs by the politicians who inadvertently had intervened its functioning directly by themselves or indirectly through the local irrigation bureaucracy. The situation demands that the more powers of decision-making be shifted towards the possible lowest tier where the local peer pressure, by default, would make it more difficult for a few to play with the system for their interested benefits and possibly keep the system immune from the political interventions. In addition, at the ground level, these reforms should be integrated with land improvement activities like laser levelling of the lands that improves water efficiency. This cost intensive service is provided by the Agriculture Department in some areas, however, there is a need to upscale this system. Inter-departmental synergies are required to be created not only at the provincial level but also at the water course and village levels. For this purpose, clustering of resources be achieved by redefining the role of WUAs through proper and careful legislative cover. From the user-friendly approach, the system can be updated with modern technology to increase efficiency and reliability. This can include the automation of canal gates, sensors to monitor water levels and a computerized management system. Moreover, farmers should be educated and trained on the efficient use of irrigation systems, and methods of crop maximization for enhanced productivity.

- **Shift from Supply-Driven to Demand-Driven Implementation**

Addressing the mindset is the key to success in decentralization reforms in irrigation systems in Punjab. Having it correctly understood, it is required to galvanize the political and bureaucratic ownership. As experienced in the past, these reforms could not make an ingress in the localized political economy. Andrews (2013) avers that the local context in any reform is one of the major elements in its successful progression. In any reform where the interventions routinely overlook the context and ultimately pay in failure. It is recommended that the re-introduction of IPM reforms may first pass the test of context setting. Here the role of political ownership plays a central role by debating the reforms in irrigation sector at village to the parliament level. There is a need of broad engagement for bringing deeper change. More the user's voices are gathered, deeper the local context will ingress in the reform design. The political and bureaucratic backstopping is not only important for bringing in reform after having incorporated in user's perspective in the reform design but also for its implementation framework. There is much to venture in through the PDIA approach that emphasizes importance of problem at the entry level for change and the necessity of iterative processes till the reform start transpiring the intended outcomes. With the politically accepted reform agenda and practically possible mirroring

of user's perspective, it is necessary to do a post-critique and following the steps propounded by Andrews to focus on small next steps and not the final solutions. The lens of these reforms to be changed from a bureaucracy driven (supply driven) to the more user friendly (demand driven) and then staggering it into politically easy absorbing steps. There is an opportunity in re-introducing this reform with a history of 22 years that could capture lessons and cultivate stories of positive deviations in the design.

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