

## **PIM - LESSONS FROM INTERNATIONAL EXPERIENCE**

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Participatory Irrigation Management is increasingly being recognized as critical to irrigation reforms. The paper provides an overview of PIM and contrasts early and present day reforms and illustrates a few country cases. Promoting PIM continues to be a challenge as more and more governments deliberately attempt to reduce their management roles. Sustainable WUAs require an enabling environment, clear political will with clarity of objectives, accountable partnerships, incentives and long-term capacity building. There is an urgent need for networking at the local, national, regional and international levels to share information, new ideas and learn from the lessons of hard-won experience to be incorporated into new programs implementing PIM reforms.

### **1. OUTLINE OF INPIM**

The First International Seminar held in Mexico in 1995 saw the creation of INPIM as a global network to facilitate and promote participatory irrigation management through sharing of lessons of experience, training materials and networking among irrigation professionals, researchers and sociologists. Perhaps PIM as a term, as we know it today, was first used at the Mexico Seminar organized by the World Bank Institute (WBI) to share the lessons of the Mexican reform which were radically different from the earlier phase of reforms in the irrigation sector. This new strategy laid the foundations for a new paradigm in irrigation reforms which were in part stimulated by the fiscal crisis and the overall reforms in Mexico.

INPIM was constituted by World Bank staff with founding country members from Egypt, Morocco, Mexico, Albania, Turkey, India, Pakistan, Nepal, China, Vietnam and Indonesia, all countries where PIM programs were being pursued on a national level. Since its creation, it has conducted regular International seminars on PIM. INPIM and WBI also conducted an International workshop "Second Generation Challenges of PIM" and later launched a capacity building program on participatory irrigation management at the Mediterranean Agronomic Institute, Bari, for a period of five years and plans to conduct the second round of training programs for WUA and irrigation district managers in Turkey starting from 2004. INPIM maintains a website at <http://www.inpim.org>. It conducted the first International e-mail conference together with FAO on irrigation management transfer in 2001. INPIM operates through country chapters which are independent registered non-profit organizations at the national level.

### **2. INTRODUCTION:**

Until the late 1800s, irrigation was developed by users at the village or community level using local resources. By the early 1900s irrigation came to be developed through large public agencies. The period 1950-70 saw the large-scale development of irrigation through public and donor funds. By the early 1970s it was apparent that irrigation systems were difficult to maintain due to inadequate funding of O&M, poor collection of service fees, deteriorating canals, drains and structures. They were open to rent seeking and were becoming less and less sustainable (Repetto, 1986). The period that followed (1970s and 80s) was a phase of irrigation improvement wherein the emphasis was on rehabilitation and introduction of new technologies, management techniques, training, introduction of service fees and farmer participation. At this stage a number of irrigation specialists articulated the need for a new paradigm for irrigation development as they recognized that sustainable irrigation systems require active participation of the users in order to be properly operated and maintained (Coward and Levine, 1987). By the time Government recognized the need for user participation in O&M, they were confronted with large public irrigation organizations who saw the move towards users as a challenge to their authority and power.

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### What is PIM?

The term participatory irrigation management refers to the *participation of users –the farmers—in the management of the irrigation system*. The Handbook on PIM defines Participatory Irrigation Management as *the involvement of irrigation users in all aspects of irrigation management, and at all levels*. **All aspects** include planning, design, construction, operation and maintenance, financing, decision rules and the monitoring and evaluation of the irrigation system. **All levels** include the primary, secondary and tertiary levels. A more comprehensive variant of PIM is Irrigation Management Transfer (IMT). *IMT is the full or partial transfer of responsibility and authority for the governance, management and financing of irrigation systems from the government to water user associations* (Vermillion 2003). *PIM usually refers to the level, mode, or intensity of user participation that would increase farmer responsibility and authority in the management process* (Svendsen et al. 2002). The basic concept of subsidiarity, that water management should be handled locally where this is possible is consistent with a wealth of social science findings about the advantages of local decision making and community empowerment (Cernea 1991). From a rural development perspective, *PIM builds up productive capital* (better maintained irrigation infrastructure) *and social capital* (new institutions such as WUAs, skills, leadership and community action). If we ask ourselves for whom do we construct irrigation systems; who are the actual users; and who are the direct beneficiaries, then the issue of PIM becomes central. PIM is thus more than an approach to irrigation management.

Studies of farmer managed systems indicate that the active participation of farmers in irrigation management helps ensure the sustainability of irrigation systems and has resulted in:

- more predictable water delivery;
- tailored design and construction;
- reduced incidence of conflicts over water;
- improved maintenance; and
- ability to financially support O&M of the system.

Based on the 1997 EDI-IIMI Workshop, the following positive impacts from the perspective of the WUAs were identified as (Svendsen et al., 1997):

- sense of ownership and secure water rights;
- increased transparency of the water allocation process;
- greater accessibility to government and system personnel;
- right to fix and collect water fees;
- improved maintenance;
- participation in decisions concerning irrigation service;
- reduced conflicts among users; and
- increased agricultural productivity.

### 3. INTERNATIONAL PROGRESS WITH PIM, ISSUES AND SUCCESSES

A review of the countries which have launched reform indicates that the stimulus for reform emerged over a period of time from a combination of accumulated problem of increasing subsidies to the sector, financial crisis, low water charges and poor collection of rates, budgetary gaps, highly staffed irrigation agencies, farmer dissatisfaction due to poor quality of services and the need for expansion of irrigated agriculture. Perhaps the trigger for reforms has been the fiscal crisis as seen in Mexico, **and the establishment of “user-pays” principles in** Australia, New Zealand and elsewhere. New Zealand went to the extent of selling irrigation systems to water user associations, Australia and the Philippines chose some form of a corporate structure such as the Goulburn Murray Authority, Murray Irrigation Company etc and the National Irrigation Administration in the Philippines. Mexico went all out in constituting water user associations and federating them into Societies of Limited Responsibility.

### The Old and New Reform Paradigm:

Early reforms in the irrigation sector were modest with a primary focus on rehabilitation; the formation of small water user associations was often supplemental at the community or tertiary levels. Many of these WUAs were often created to satisfy donor requirement. Most of the WUAs created did not have an appropriate legal framework or sufficient power to take actions. Public irrigation agencies did not see the WUAs as a threat as long as WUAs cleaned canals, collected fees and were subordinate to the Irrigation agencies. This old paradigm does not dislodge the equilibrium of perverse, entrenched interests and hence would be unable to overcome the key threats facing irrigation agriculture such a financial and physical non-sustainability of the irrigation system. Such weak attempts in the lack of a political will often led to the collapse of the WUAs soon after the donor project was over as seen in the case of India, Pakistan, Nepal and China.

The present reform paradigm in contrast is a departure from the old. Reforms in the late 1980s, in Mexico and subsequently in Turkey, Andhra Pradesh and Indonesia unleashed a new strategy and approach: reforms were driven politically; water user associations became a part of a larger process of institutional reform through well-defined legal frameworks and substantive roles in operation and maintenance of the irrigation system, a federated WUA hierarchy, choice to raise resources, hire their own staff in some cases and a new accountability between the users and the agencies. The reforms in Mexico coincided with the collapse of the Soviet Block in 1989. A new set of PIM challenges became evident in the former soviet republics where water user institutions were needed to take the place of dismantled central irrigation agencies (water enterprises) and collective state farms.

Major PIM programs were initiated as components of irrigation rehabilitation loans in Kazakhstan, Uzbekistan, Azerbaijan, Tajikistan, Kyrgyzstan and the surrounding communist block of countries namely Bulgaria, Romania, Macedonia, Slovenia and Albania (Johnson III et al 2002). PIM is not merely restricted to the recipients of development assistance but also to many OECD countries such as USA, Canada, France, Japan, Australia and New Zealand. Most countries in the Asian continent have been focusing on PIM. Major programs are being launched in India, Pakistan, and China, Sri Lanka, Indonesia, Vietnam and Thailand. We will briefly review a few cases to illustrate the status of PIM

**Sri Lanka:** the country adopted PIM as a policy in 1988 to decrease recurrent expenditure and improve productivity, and transferred the operation and maintenance of minor irrigation schemes and distributary canals of medium and major irrigation schemes to farmers organizations. Despite the transfer the control of O&M budgets, water charges, staff were still under the control of the irrigation department. Farmer's organizations need to obtain approval from the irrigation department before making special repairs other than weeding or desilting. There has been a strong resistance to water charges.

**Philippines:** the Philippines has a total irrigated area of about 1.4 million ha of which communal irrigation schemes (CIS) total around 510,400 ha and schemes handled by the NIS around 689,000 ha. Some 174,200 ha are privately owned irrigation schemes. Communal irrigation schemes are relatively small (<1000ha), the O&M is done by farmers themselves who also amortize the direct project cost. The irrigation systems operated by the National Irrigation Administration (NIA) are larger than 1000 ha with O&M administered by NIA and paid for by farmers as an irrigation service fee (ISF). The Philippines adopted an incremental voluntary approach to transfer management responsibility for irrigation systems from the NIA to water user associations. WUAs were formed at the tertiary level and federated at the secondary level in the case of large schemes. In the case of small schemes, WUAs federated at the scheme level. The transfer is made possible through a system of contracts: Type I – maintenance, Type II - maintenance plus collection and Type III - total irrigation management transfer. By the late 1990s full transfer (Type III) had been implemented in 10-15% of the irrigation schemes while more than half were under type I. Though NIA is autonomous, its sustainability through collection of water charges has been quite low, making it dependent on the government for financial support. It did suffer a major reversal when the populist government of Joseph Estrada announced the abolition of water charges.

**Mexico:** By the end of February 2000, Mexico transferred 95 percent of its 3.2 million ha irrigated area to 427 WUAs (Modulos) serving 474,000 water users. 72 of its 82 irrigation districts have undergone total transfer, 7 partial transfer and 3 districts are yet to be transferred. The lessons of irrigation management transfer have drawn worldwide attention and interest and have been a part of a wide and ongoing reform in the country for over a decade. The WUAs employ their own staff, undertake O&M using the machinery that was given to them as part of the inventory during the transfer and collect the water charges. Prior to the transfer, the water charge collection rate was about 15% with the balance being contributed through government subsidies, as against the current collection rate of over 80%. WUAs have been given a water right concession. WUAs are federated at the secondary level and the national level federation (ANUR) undertakes training and lobbying activities. Second generation problems are clearly emerging and need to be tackled as they emerge. Research and field studies by IWMI have shown modest improvements in quality of water services and productivity after transfer. The quality of O&M in general has improved.

**Turkey:** Following Mexico, Turkey launched an ambitious transfer program through the DSI (Directorate of General Works), transferring 80% of its large scale irrigation systems. The primary driver for the reform was to a large extent fiscal crisis and unionized labor costs in the late 1980s. The Turkish transfer program however is unique in adopting the transfer to local governments such as municipalities rather than to association of farmers. WUAs are managed by a five member executive committee who are elected from a general assembly which ranges from 50-80 members and contain all the local village heads (mukthars) and municipal chairman and farmer leaders. Reforms were linked to the accelerated transfer program and privatization program of the World Bank which enabled procurement of the machinery. Each of the WUAs has been provided with an office and computers and supported by two professionals, the general secretary who is an agriculture engineer and an accountant. WUAs undertake O&M and water management levy and collect water charges and settle disputes. The transfer is through a transfer agreement between the DSI and the WUA. Water charges collected by the WUA are about 13% less than what the DSI collects in its administered areas. Collection rates are around 80% as against 43% by the DSI. DSI staff in O&M (unionized labor) has decreased substantially, as well as the budget on O&M with WUAs taking up O&M.

**Andhra Pradesh:** AP is the fifth largest State in India with a population of 73 million and 4.8 million ha of irrigated lands. Deteriorating infrastructure, shrinking command areas, and increasing cost of maintenance (with over 80% going to staff salaries) and the election of a dynamic Chief Minister led to reforms in the irrigation sector. The author was instrumental in the reform program both in the capacity of Joint Secretary and Secretary Water Resources and Irrigation. Intense consultations with farmers led to the enactment of revolutionary legislation called the AP farmer's management of irrigation systems Act 1997 and tripling of water charges. Elections were conducted in the state in 1997 (and in 2002) electing more than 10,000 water user associations to manage the major (>10,000 ha), medium (2000-10,000 ha) and minor (<2,000ha) irrigation schemes.

The scheme is an example of excellent demonstration of political will, campaign modes of communications with a strong legal back-up. It enables empowerment of farmers to levy a special fee from its members and provides power to resolve conflicts. WUAs have carried out maintenance works over the last five seasons and been involved in water management especially during the last three seasons. The high level of public awareness of the reforms through state, regional and project level meetings has raised the aspirations of the water users and has put pressure on WUA leaders and irrigation departments to perform at a high standard. The major achievements have been bridging the gap areas (tail end reaches), spreading maintenance throughout the system, construction of minor drains, maintenance of accounts and auditing.

**United States:** WUAs in the United States have a strong legal basis with clearly defined water rights. Water user organizations (WUO) are of two types: irrigation districts and canal companies. Irrigation districts are local governments while the canal companies have the status of non profit corporations. Both of these organizations are run by an elected board of directors. The water service fee (100%) is collected by the tax collection system locally. Water is managed by the ditch riders. Agricultural

extension is available through state universities. Private companies provide a wide range of support for inputs, equipment, marketing and business matters. Despite strong support systems, the WUOs in the US too have problems similar to those of developing countries: inadequate maintenance, growing competition for water and low prices of crops.

Sustainable WUAs require an enabling environment, clear political will with clarity of objects, accountable partnerships, and incentives. Merely creating a legal framework or linking them with rehabilitation projects alone, will not lead to successful WUAs. Nevertheless empowerment of water users, long term capacity building, financial resources, appropriate incentives with timely monitoring and remedial actions can go a long way in strengthening the WUAs. The sustainability of a WUA clearly depends upon internal factors: farm size, location, social stratification and heterogeneity; and external factors such as the institutional environment, legal framework, staffing, financial and technical assistance, agricultural policies, markets, hydraulics and demography.

#### 4. LEVELS OF PIM

PIM as a concept and as a strategy can be extended to all levels starting from the tertiary to secondary, primary levels and finally to the basin level. PIM equally becomes relevant in the context of integrated water resource management. The key concept in PIM is the paradigm of governance – **who decides**. In Mexico, WUAs at the tertiary level have been federated at the secondary level into societies of limited responsibilities (SLR). The SLRs manage and finance irrigation at the main system level. At the National Level, the National federation ANUR lobbies for WUAs interests at the National level. The WUA federations at the secondary level in Colombia called *Federriegos* lobby at the Government level for laws, prices etc.

In the case of Andhra Pradesh, water user associations have been formed at the minor level (tertiary) and federated as distributary committees at the secondary level and the finally federated as the project committee at the Primary level. The APFMIS Act enables the formation of an Apex committee at the State level which permits the representation of all irrigation projects through out the State of Andhra Pradesh. As farmers federate to higher and higher levels at the State (**province**) and national level, they tend to clearly come into conflict with political structures and agency functioning. Federations at the secondary, primary and national level can be successful with the right incentives and an appropriate institutional framework. In most countries it is common for politicians to intervene in the functioning of the irrigation sector. Farmers organizations and politicians could come into constant conflicts unless they recognize their respective roles.

#### 5. CAPACITY BUILDING FOR PIM

Capacity building must not be merely viewed as a training program aimed at bridging gaps in knowledge and skills among farmers and agencies but also as facilitating the change process. A blend of skills and attitudes needs to be imparted at all levels which also includes policy makers (Peter 2003). Operating a WUA requires many new skills to develop the technical, administrative and financial management of the WUA. So also irrigation agencies require new skills to **tackle** WUAs and farmer leaders. Collective action depends on a wide variety of internal and external factors as already mentioned. Carrying out actions in a transparent and accountable manner will determine the sustainability of the WUA. A training needs assessment, followed by developing flexible training modules which could be adapted for a wide range of clientele would be required. Training will be required not only for the members of the WUA but also the irrigation, revenue, finance and agriculture agencies. The dialogue will have to be further widened through awareness campaigns among farmers. In the state of Andhra Pradesh, campaigns through farmer conventions at the project, district and State levels were conducted in addition to structured training. In the initial stage the training may be introductory but as the WUAs go along, training will become more specific for example on quality control, measurements of works, arbitration, contract management, negotiation and conflict resolution. Some of the common skills that would be required are:

- **Technical:** O&M, inventory and asset management, preparation of estimates, procurement, quality control, water management, crop water requirement, water scheduling and budgeting.
- **Legal:** Awareness of the law and legal provisions and procedures, dispute resolution.
- **Financial management:** Accounting, audit and social audit, raising resources, levy and assessment.
- **Administrative** - Conducting of meetings, recording minutes/proceedings, communication and negotiating skills, conflict resolution and conjunctive management with the irrigation agency/government.

## 6. OPTIONS FOR PIM

Some of the important lessons learnt from reforms include:

- i. **Flexible approach:** any reform option needs to be flexible with options to go either for total or partial reforms. It could even span a part or whole of the project at times which could be opportune and convenient. Different models could be adopted within the irrigation sector. A different model for large reservoir based irrigation schemes, or small rainfed tanks or tube-well schemes.
- ii. **Learning by doing:** This is perhaps the most reliable way of doing things rather than importing large scale alien concepts into the country. Once farmers get into the process of decision making a large number of unexpected things which have not been visualized happen. Lessons from the pilot project could be used to scale up the project. The selection of the pilot project must be carefully done and as far as possible be taken up in a complete project.
- iii. **Legal framework:** A well defined legal framework is essential to respectively define the roles of the different actors, the functions and responsibilities of each. The legal framework needs to be broad and general. Details of functioning can be detailed in the rules and regulations which can be easily changed at the administrative level. Too prescriptive a law can make amendment a very difficult and cumbersome process.
- iv. **Enabling environment:** An enabling environment which nurtures and encourages people's initiative is a must. This includes the political climate, the political will, the administrative support and finally the incentive structure that would help WUAs to be empowered over a period of time. Transfer of management functions entails a change of attitudes among farmers, irrigation agencies and governments. This process requires a change in attitudes of the government officials as well as of the people in the WUAs.
- v. **Financial resources:** A WUA without adequate financial resources is like a vehicle without gasoline! A broad resource base is a must. Financial revenues could include water charges, special repair fees, betterment levy, sales of trees, grass and fish, rental of buildings and machinery, membership fees and conflict resolution fees.
- vi. **Linking reforms with rehabilitation:** The creation of a WUA requires that it be immediately put into action by involving them in the rehabilitation program. WUAs could be asked to undertake the works relating to deferred maintenance which includes cleaning of canals, removal of weeds, oiling and painting of gates. WUAs can in turn either get the work done directly through local contractors or get it done by members of the WUA itself. By this process, WUAs are involved in the actual functioning of rehab program, contract management, quality control procedures and financial procedures. Irrigation agencies often underestimate the innovative skills farmers **can demonstrate when** they are given an opportunity.
- vii. **Responsive support system:** WUAs require frequent advice on day to day issues; this could include technical, administrative, financial and legal issues. An irrigation advisory **system** could bridge the gap between the agency and the WUA. Similarly agricultural support services for the WUA would be required to give advice on crops, pesticides, corporate management methods, market intelligence and development of an agribusiness plan.

- viii. **Federated WUA Structure:** WUAs need to be federated at the scheme level. Very often WUAs are constituted at the tertiary level making them dependent on the irrigation agency. Federations at the secondary and primary level enable WUAs to be sensitive to a whole range of issues.

## 7. REGIONAL COOPERATION

Since most Asian countries are similar with respect to irrigation, regional cooperation by sharing of experience and study tours could prove invaluable. Reforms in Andhra Pradesh paved the way for several Indian States to follow. Countries of a shared river basin could be an excellent platform for cooperation. For example all countries under the Mekong basin could form an excellent platform to share experiences, information and skill sets. Countries could cooperate under very well structured river basin commissions. There could be other informal mechanism by which regional cooperation could be forged.

A powerful mechanism by which this could be achieved is the creation of farmer networks at the national level or through INPIM Chapters. INPIM chapters are non profit Organizations and comprise of membership of WUAs, irrigation engineers, researchers, and farmers. India, Pakistan, China, Indonesia and Vietnam each have a country chapter. These chapters could undertake a large number of activities both at the national and the regional level. Some of the activities undertaken by India NPIM are:

1. Developing a database of documents and relevant literature;
2. Workshops at the local, state and national level;
3. Action research programs;
4. Capacity building activities;
5. Publication of a newsletter / email conferences;
6. Documenting the experience of different States/ countries and WUAs;
7. Organizing study tours;
8. Lobbying and advocacy;
9. Networking with the Nepal chapters and the National federation of water user associations of Nepal;
10. Participation in international seminars; and
11. Information dissemination through the website

Farmers networks could be another platform for regional cooperation within a country or among countries. They relate directly to the users and hence have stronger incentives to cooperate. INPIM has started promoting a regional farmers network on a pilot basis in three South Indian States. The program takes the general advocacy of the participatory approach to its logical conclusion by initiating networks of farmers in order to increase and strengthen their role in water sector policy formulation and implementation. Scaling up and strengthening of farmers networks in water issues is necessary to increase the momentum of water sector reforms. Farmers are generally excluded from the process of policy formulation and are mainly conceived as implementers of policy designed by others. An explicit multi-stakeholder policy process and balanced representation of different interest groups will enhance the quality, acceptability and pace of water sector reform. The initiative is akin to some of the functions taken up ANUR in Mexico, the Federriegos in Colombia, and farmers networks of Thailand.

## 8. CONCLUSION:

PIM as a concept is easy to understand but difficult to implement. PIM cuts across several entrenched interests. As farmers get empowered they clearly occupy some political space as clearly seen in the case of AP, they start demanding for their rights and start asserting themselves in all forums. Sustainable WUAs require an enabling environment, clear political will with clarity of objects, accountable partnerships, incentives and long term capacity building. Increasing competition for

water, inability of governments to continue providing subsidies, heavily staffed irrigation agencies, low agricultural prices and the need for farmer protection from outside interests make PIM and reforms inevitable. PIM could be an excellent starting point for making reforms happens in the irrigation sector. Clearly **present day reform represents a radical change from early reforms.**

**In the future, PIM may take even more different forms.** With more and more farmers moving out of agriculture and seeking non agricultural activities such as is evident in Japan, China, India and elsewhere, the nature of participation will shift to more indirect modes of involvement in irrigation service. **There could be an expanding role for the private sector, facilitating the introduction of new technologies to save and conserve water, but requiring professional management to be accountable to farmers (Mexico).** As the nature and scope of irrigated agriculture changes there will be new opportunities for participation and new challenges in the larger context of integrated water resource management. In making water everybody's business (2<sup>nd</sup> World Water Forum), participation should be treated as a serious objective for irrigation development. There is an urgent need for networking at the local, national, regional and international levels to share information, new ideas and learn from lessons of hard-won experiences to be incorporated into new programs implementing PIM reforms.

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