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ARE SECTOR REFORMS WORKING? ASSESSING IMPLEMENTATION OF IRRIGATION MANAGEMENT ACT OF MADHYA PRADESH

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Abstract

The irrigation sector plays a vital role in food production and rural economy. Realizing the importance various reforms are carried out world over to modernize irrigation systems and make them more efficient. One such approach is the decentralization of irrigation management from the government agencies to the end users. This paper looks into the implementation of Irrigation Management Act in the Indian state of Madhya Pradesh where partial responsibility of irrigation management was transferred to the end users. Emphasis is given on the administrative, governance, institutional and financial reforms carried out as per the act and the impact these reforms had on the irrigation management. The success of such programs is highly dependent on effectiveness of the execution and the financial resources available with the government which are often limited. Such programs will reap desired benefits, if the end users are involved in more effective manner with greater autonomy and delegation of authority. Also in view of financial scarcity with governments to carry out such large programs, the idea of involving private sector investors in irrigation management may be a good option. Such alternative institutional models can be considered to further improve the overall efficiency and management of the irrigation systems.

1. INTRODUCTION

Agriculture and irrigation sectors have always been a prime focus world over for reforms because of their importance in world economy and farmers' livelihoods (also employs 41% of world total labour). The World Bank has lent some 35 billion dollars for irrigation development or an equivalent seven percent of all its lending since 1950s (Plusquellec, 1999). In spite of such huge investments, irrigation sector continued to be trapped in a vicious circle. It has been observed worldwide that lack of basic infrastructure for irrigation, poor maintenance of existing systems, and reducing government investments on repair and rehabilitation (R&R) of systems have been the major precursors for the irrigation reforms (Vermillion 2001; Gulati et al. 2005; Madhav 2007). Irrigation reforms stated as early as 1960s in Bangladesh and USA, 1970s in Mali, New Zealand and Colombia and to 1980s in the Philippines, Tunisia and Dominican Republic. The new century interventions have taken place in Sudan and Pakistan (2000), India (2001), China (2002) and more recently in some of the central Asian countries. Presently more than 60 countries in the world have undergone some type of irrigation sector reforms (Munoz et al., 2007). These countries constitute around 75% of the world population and represent some 80% of the irrigated area of the world (FAOSTAT, 2003).

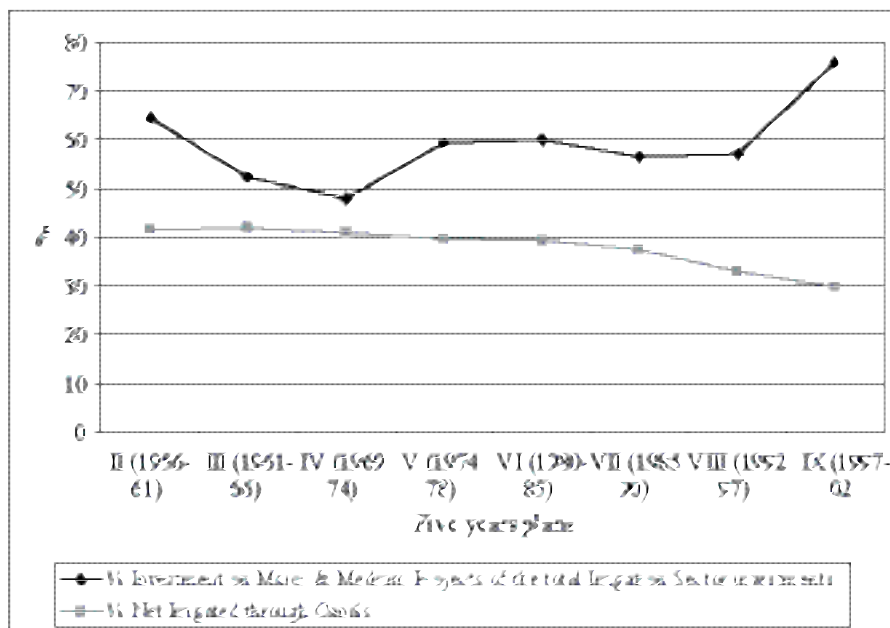
In India, various policy reforms have been carried out over the past decade in water sector including irrigation. This is primarily because: a) water is becoming increasingly scarce in many regions, and requires judicious management and b) country's surface irrigation systems are deteriorating. As per estimates, of all the uses of water in India, irrigation is a major consumer. Figures indicate (Source: Indiastat) that annual requirement of water for irrigation in India will go up from 541 BCM (85% of the total annual water requirement) from the 2000 levels to 910 BCM by 2025 at the current levels of efficiency (20-50%). Major problems facing Indian irrigation sector include: a) declining investment on maintenance; b) low levels of system efficiency; c) poor financial working; and, d) low quality, reliability, and system-wide equity. Further, there is a competing demand for water from other sectors. In this light, our ability to address future water scarcity problems and conflicts over the use of water would depend heavily on how we manage irrigation sector (Kumar, 2007).

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To improve the overall situation in irrigation management, it is important to involve end user groups or farmers in the operation and maintenance of the conveyance system, which can improve irrigation efficiency, generate a sense of ownership among farmers towards canal system and improve the irrigation charge recovery rate. This laid the foundation for irrigation management transfer (IMT) in India. IMT started mainly as a Participatory Irrigation Management (PIM) movement². As a result, various state governments enacted PIM legislations. These states include: Andhra Pradesh, Chattisgarh, Gujarat, Madhya Pradesh, Maharashtra, Orissa, and Tamil Nadu.

However, mere enactment of legislation does not assure solutions to the problems circumscribing the country's irrigation sector. Even after the completion of the eighth and ninth five year plans, there was no pronounced effect in the net irrigated area through canals (Figure 1). Similar trends were noticeable for quality of maintenance of conveyance systems, timeliness and equity of water delivery (DSC 2003), and efficiency of water fee collection. This was the situation despite emphasis for both government investments in irrigation and involvement of end users in irrigation management. Research studies have also shown that even after the enactment of IMT act in various states, performance of transferred systems has improved only marginally (van Koppen et al., 2002; Parthasarathy, 2000). Some of the reasons for this are: a) haste in creating WUAs without any capacity building of farmers as in Andhra Pradesh, b) transfer of systems without complete R&R work as in Gujarat, or c) lack of appropriate legal back up for end user organizations as in Punjab and West Bengal. In the past, researchers have focused on the performance of farmers' organizations but not much on the act or policy, which shaped the organizations. In order to understand the factors that lead to success or failure, it is critical to look into formulation and implementation of PIM acts. Often people who formulate acts and those who implement them consider themselves to be unrelated (Sutton, 1999). In case of PIM act, this perceived dichotomy may lead to ineffective act implementation and working of the whole irrigation system. Thus, it becomes more important to know about the status of implementation of these acts in the respective states and the expected success they are able to achieve.

Figure 1: Investments on Surface sources (only canals) and Net Irrigated Area, India



Source: Indiatat

² Participatory Irrigation Management (PIM) refers to the involvement of irrigation users in all aspects and all levels of irrigation management. "All aspects" includes the initial planning and design of new irrigation projects or improvements, as well as the construction, supervision, and financing, decision rules, operation, maintenance, monitoring, and evaluation of the system (Source: World Bank).

2. EXPERIENCES OF IMT IMPLEMENTATION

International experiences with IMT suggest mixed results. In some countries it has reaped benefits in terms of improved system performance and increase in irrigated area, whereas in other countries not much success is achieved (Table 1). Pant (2007) based on his experience of working across India short listed conditions of success for PIM, which included: a) criticality of water; b) able local leadership; c) provision of incentives; d) democratic functioning of WUAs and e) close involvement of key stakeholders. Two action research projects in seven irrigation schemes across India, Nepal and Kyrgyzstan demonstrated that to improve irrigation governance and water distribution by end users, provision of appropriate legal, financial and political environment is must (Howarth et al., 2007). Hodgson (2007) in his findings on government of Iran/World Bank funded Alborz integrated land and water management project also emphasized the need for proper legislation for the sustainability of WUAs.

Table 1: Results of IMT In some Regions of the World

| Regions | Parameters | Cost of Irrigation for Farmers | Efficiency of Fee Collection | Quality of Maintenance | Timeliness of water delivery | Equity of water delivery | Area Irrigated | Crop Yields | Farm income |
|---------------|------------------------|--------------------------------|------------------------------|------------------------|------------------------------|--------------------------|--------------------|----------------|----------------|
| Latin America | Argentina (Mendoza) | Increased | Increased | Increased | Increased | Decreased | Same | Same | Same |
| | Colombia | Increased | Currently Decreasing | Increased | Change Unknown | Same | Increased | Same | Same |
| | Dominican Republic | Increased slightly | Improved | Improved | Improved | Improved | Increased | Increased | Increased |
| | Ecuador | Increased | Same | Declined | Same | Same | Decreased Slightly | Same | Decreased |
| | Mexico | Increased | Increased in most districts | Improved | Improved | Unchanged | Same | Same | Increased |
| | Peru | Change Unknown | Same | Improved | Improved | Decreased | Same | Increased | Same |
| | Armenia | Increased | Decreased | Same | Same | Increased | Increased | Increased | Increased |
| Asia | Bangladesh | Unchanged | Same | Increased | Increased | Increased | Increased | Change Unknown | Change Unknown |
| | India (Andhra Pradesh) | Decreased | Decreased | Increased | Increased | Increased | Increased | Increased | Increased |
| | India (Karnataka) | Same for farmers | Increased | Increased | Increased | Increased | Increased | Increased | Increased |
| | Nepal | Increased | Increased | Improved | Improved | Improved | Increased | Same | Same |
| | Pakistan | Change Unknown | Change Unknown | Change Unknown | Improved | Improved | Change Unknown | Change Unknown | Change Unknown |
| Srilanka | Change Unknown | Same | Same | Improved | Improved | Same | Same | Change Unknown | |
| Africa | Zimbabwe | Change Unknown | Increased | Decreased | Improved | Decreased | Decreased | Same | Same |
| | Albania | Decreased | Increased | Increased | Increased | Increased | Increased | Increased | Increased |
| Europe | Bulgaria | Decreased | Decreased | Increased | Increased | Increased | Decreased | Increased | Increased |
| Australia | | Increased | Improved | Improved | Improved | Same | Increased | Same | Same |

Source: International e-mail conference on Irrigation Management Transfer, 2001

Lesson learned from the survey on 44 IMT programs worldwide suggested that the future IMT programs should concentrate on the following aspects: a) WUAs and irrigation agencies need substantial capacity development; b) IMT programs need systematic public awareness campaigns, consultations and involvement of all key stakeholders; c) IMT should be tailor made and flexible and d) Checks and balances should be created to ensure that WUAs act according to the members' interests (Munoz et al., 2007). IMT experiences in the Indus Basin irrigation system of Pakistan has demonstrated that lack of role clarity between different organizations after transfer, insufficient experience and resources for water users mobilization, lack of democratic approach for establishing water users associations, political involvement and fear of loss of authority of government departments have been the major factors for poor participatory irrigation management progress (Khan et al. 2007).

Results listed in Table 1 do not give clear indication on whether IMT to end users should be promoted or not. In recent times there have been lots of voices in favor of involving private service providers in the irrigation management. Few countries like Niger and Senegal in West Africa (Hermiteau et al., 2001), and some parts of Chile and Mexico (Turrall, 1995) have even gone ahead with public-private (involving service provider) irrigation management mode. But it was just impossible to replicate this arrangement at many other places mainly because of the political economy associated with irrigation and agriculture. The bigger question, which remains unanswered is whether transfer of irrigation systems to the end users is the only solution or involvement of private agencies or a combination of both can also work.

Often the success of any irrigation management transfer depends upon how effectively it is implemented. In this regards, role of legislation and people who implement those laws becomes important. Act and policies will always be effective if they are formulated and implemented as per the local needs and problems. Therefore it is important to keep in mind that for what purpose the act is being designed? Who will be the stakeholders? Who will implement it? What will be the role of policy makers in its implementation? As discussed earlier, often the act formulation and implementation are considered as unrelated activity. But this notion does not hold true in practicality. This dichotomy can actually impact the policy outcome in significant way. May be the policy gets implemented in a way which was not thought of originally.

3. OBJECTIVES AND METHODOLOGY

The focus of this research is to search for answers at policy level itself. These include what are the driving forces and original idea behind policy formulation for IMT? How does the policy get implemented and what are the administrative/governance reforms carried out during the implementation? The major objective of the study is to understand the process of PIM act formulation and its implementation. For the implementation aspect, major emphasis was given on the administrative, governance, institutional and financial reforms carried out under the act in Madhya Pradesh.

The selection was based on the researcher discretion with the broader view of expanding the study at the national level if possible. Purposive sampling was followed for the selection of respondents, which included government officials, academicians, NGO personnel and farmer's representatives from the WUA. Two different kinds of schedules were developed. One was used for the selected government officials (irrigation department officials)/academicians/NGO people involved with PIM policy development and other for the selected farmers from a WUA. Focus group discussions were carried out with selected WUA representatives to have their views on the PIM act formulation and implementation in the state. Government records, research papers and other working papers and articles were also used for reference and secondary data.

4. IRRIGATION MANAGEMENT TRANSFER IN MADHYA PRADESH

Madhya Pradesh has a total irrigation potential of 6.72 mha. Of this, a potential of 2.15 million hectare has already been created. However, the potential utilized is only 46%, i.e., 1 mha (as per 2003-04 figures). The main reasons for such heavy underutilization were system deficiencies, deferred maintenance of the system, insufficient revenue to meet O&M cost and non-involvement of farmers in irrigation management (Agrawal

2005; Pandey, 2006). Hence, to improve the overall situation, policy reforms were conceived and PIM act was enacted in 1999. The dual purpose was to improve system condition and involve end users in irrigation management. However, even after 8 years of its existence, little literature is available on the progress and achievements of IMT in MP. Some reference was made to the PIM act, that it was implemented in full capacity in Samarat Ashok Sagar Project, Vidisha district, MP (Pangare et al., 2003; Pandey, 2006).

The assessment study brings out some unstated and interesting facts, which were unknown before. These are discussed under the following sections.

4.1 Reforms in the Past

Before formulation of PIM act, MP government took several other initiatives to have farmers' involvement in irrigation management. They established the Irrigation Panchayats (IPs) in early 1984-85 under MP Irrigation Act, 1931. The functions of these IPs, their rights and duties were not clearly defined under the then existing MP Irrigation Rules, 1974. Consequently these IP's became defunct.

In 1994-95, Farmers Management Committees (FMCs) were formed on pilot basis. Their design principles were very much similar to the farmers' cooperatives in the state of Gujarat and Maharashtra. These FMCs were registered under the cooperative society Act of the MP state. But these FMC's were not able to deliver goods as desired of them and did little to involve farmers in irrigation management. The success of farmer's irrigation management committees in Gujarat and Maharashtra was because of history of strong cooperative movement in these two states i.e. the Milk Cooperatives in Gujarat and the sugarcane cooperatives in Maharashtra. But in MP there was no such initiative in past and consequently these FMCs became obsolete.

4.2 Coming up of MP PIM act, 1999

Drawing on the experiences from two earlier attempts of involving farmers in irrigation management, it was important to create an enabling legal framework before going ahead with IMT. IMT legislation received major thrust because of the then chief minister Shri Dig Vijay Singh's inclination towards participatory approach for natural resource management. During his regime, Joint Forest Management (JFM)³ act was launched with a success in the state. For accomplishing the formulation of the irrigation management act, necessary environment was created in the state by discussions and interactions between beneficiaries' farmers and public representatives. This formed the foundation for PIM act formulation. There was no involvement of civil society organizations in these initial stages of policy formulation. The irrigation department (now water resources department) was given complete responsibility to provide suggestions for the formulation of PIM act by looking at the procedure followed worldwide and within the country. Examples of implementation of farmers managed irrigation systems in Mexico, Philippines, and India (Andhra Pradesh, Gujarat and Maharashtra) were examined. Finally, the government decided to formulate an act similar to Andhra Pradesh PIM act with modifications as per the regional settings of MP (Source: As told in various meetings with WRD and PIM directorate officials, MP).

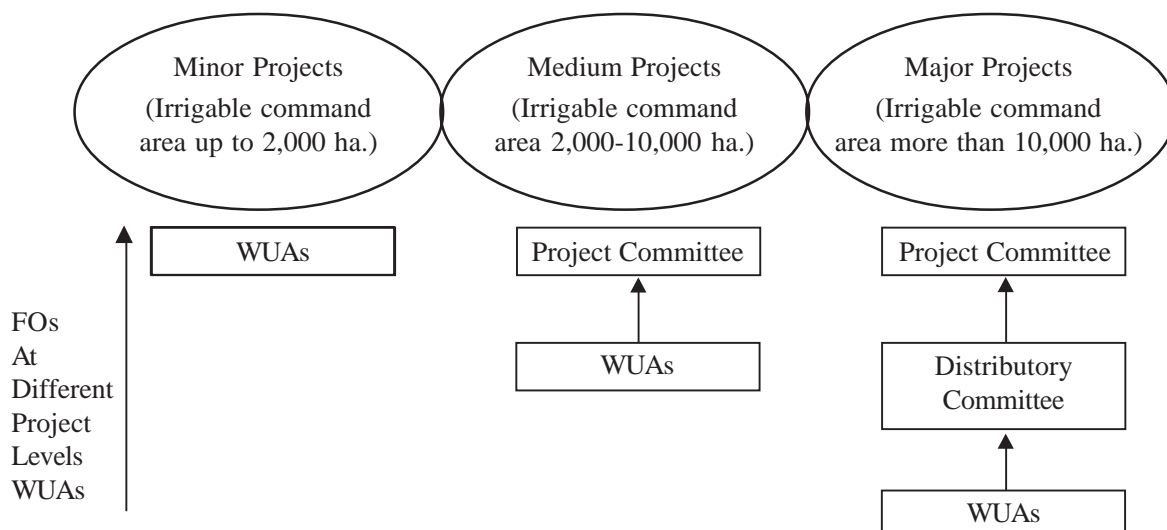
Detailed institutional processes were initiated before coming up with the initial draft of MP PIM act. A core committee consisting a) officials from Water Resources Department (WRD), b) officials from all line departments such as Water and Land Management Institute (WALMI), Agriculture Department, Rural Department, and c) academicians was made. This committee was empowered with providing inputs and suggestions at the various stages of act formulation. Several meetings and discussions were held with the progressive farmers (full time involved in agriculture) about the need and importance of PIM act for the state. Farmers had mixed notion about IMT. Some supported the idea whereas majority of them expressed concern about their capacity to manage irrigation systems, which WRD has not been able to manage for last 50 years. Because of political will of the ruling party, PIM act formulation was supported equally by the bureaucratic lobby in the state.

³ The practice of management of forest resources jointly by the Forest Department and the local communities which would entitle them in sharing of usufructs in lieu of their participation in protection and management of forest resources (Source: Forest Department, Madhya Pradesh).

4.3 Enactment of PIM Act and its Implementation

Finally in 1999 MP PIM act called as “Madhya Pradesh Sinchai Prabandhan Mein Krishkonka Bhagidhari Adhinyam 1999” was brought into force for the entire state. The rules for act implementation were passed in the same year (Madhya Pradesh Farmers Organization Rules, 1999) by the state government. The Act provides for a three-tier farmers’ organizations (FO’s) for irrigation management. The lowest tier in the institutional hierarchy is Water Users’ Association (WUA) at minor canal level of the irrigation system, secondary unit is

Figure 2: Farmers Organizations at different Irrigation Project/Schemes levels



Note: District collector was empowered for the delineation of command area of WUAs and state government was empowered for the delineation of command areas of DCs and PCs)

Table 2: Constituted Farmers Organization in Madhya Pradesh

| | In 2000-01 Total number of farmers' organization (FOs') | Total elected Person | Area under FOs (million ha.) | Total Members (in lac) | In 2006* Total number of farmers' organization (FOs') | Total elected Person | Area under FOs (million ha.) | Total members (in lac) |
|--|---|----------------------------|------------------------------------|------------------------------|---|----------------------------|------------------------------------|------------------------------|
| W U A s | | | | | | | | |
| Minor | 850 | | | | 936 | | | |
| Medium | 153 | | | | 209 | | | |
| Major | 467 | | | | 542 | | | |
| Sub-Total | 1470 | 11752 | | | 1687 | 12877 | | |
| Distributory Committees (for major Projects only) | 90 | 300 | 1.5 | 11.75 | 90 | 300 | 1.69 | Not available (NA) |
| Project Committees | | | | | | | | |
| Medium | 57 | 398 | | | 57 | 398 | | |
| Major | 19 | 151 | | | 19 | 151 | | |
| Sub-Total | 76 | 549 | | | 76 | 549 | | |
| Total | 1636 | 12601 | 1.5 | 11.75 | 1853 | 13726 | 1.69 | NA |

* Only elections for WUAs are held, figures for DCs and PCs are of 2000-01 elections only

Distributory Committee (DC) at distributory canal of the irrigation system and tertiary unit is Project Committee (PC) at the whole irrigation project level. All minor irrigation schemes had only one tier i.e. WUA, medium irrigation schemes had two tiers (WUA & PC) and the major irrigation schemes all three tiers (figure 2). By default, all farmers having irrigable land in the jurisdiction of the WUA has to be its member. Each WUA area was divided into territorial constituencies (4-10), depending upon the command area under them.

Structurally each WUA was supposed to have a management committee (comprising of elected president and one representative from the each territorial constituencies) and a general body of all the members. Similarly, each DC is comprised of a general body (which consists of the Presidents of all the WUAs in the distributory command) and management committee of not more than five members headed by president. Each PC constitutes a general body (of all presidents of DCs in the project area) and management committee of not more than nine members headed by chairperson, to be elected from the general body members. The term of office of the chairperson, president and members of management committee was five years. By the year 2000-01, management committees of 1470 WUAs, 90 DCs and 57 PCs were formed through the election process. Election for the second term of WUA management committee were held in 2006 (Table 2). However, election for the second tenure for the management committees of DCs and PCs were still to be held.

4.4 Financial Support for the PIM Implementation

During the early stages of PIM implementation, all the financial support was provided by the MP government. After the first FOs election in 2000, an operation and maintenance grant (O&M) at the rate of Rs. 40/ha was provided to each WUA to make them functional. From 2004-05 this grant was doubled. At present Rs. 90/ha O&M grant is given to the WUAs at major and minor irrigation projects and Rs. 80/ha is given to the WUAs at minor irrigation project. In addition to this, a sum of Rs. 5000/annum is being provided to the WUAs for their administrative expenses. A daily wage staff at the rate of 1 person per 200 ha is also provided to WUAs to assist them in repair and maintenance of minor canal.

In 2002, MP government received financial support from the Indo-Canada Environment Facility (ICEF) to speed up the process of implementation of PIM in the state. This support was for the duration of four and half years to assist in the physical work on the transferred irrigation systems and capacity building of both WRD officials and farmers. Under the project, 1 major (Samrat Ashok Sagar), 3 medium (Koncha, Chappi & Satak) and 3 minor irrigation schemes (Gora, Birsagar & Segwal) were selected. Noticeable clause in the project was related to the total expenditure on the execution. Under the clause, 50% of the total expenditure was contributed by ICEF, 20% by state government and 30% by the farmers. However, because of farmers' inability to contribute the 30%, the proportion was later changed to the ratio of 50:30:20 and again to 60:30:10. In total of about Rs. 111.3 million was spent over four and half year of ICEF project execution.

After the completion of ICEF project, state government has now received a World Bank support under the MP Water Sector Restructuring Project. This project has a financial support of Rs. 19.19 billion and will cover the five river basins in the northern part of the state. This project is for period of seven years (2005-2011) and has a major focus on modernization of irrigation system and effective implementation of PIM act in the state.

5. REFORMS CARRIED OUT FOR THE ACT IMPLEMENTATION

For effective implementation of the act, various administrative, governance, institutional, and financial reforms were carried out by the state government. In addition, necessary amendments were made to the act. For capacity building of newly formed FOs several trainings and workshops were organized. We will discuss these in the next half of the paper.

5.1 Administrative Reforms

Major reforms were carried out at the administrative level. For efficient monitoring and evaluation of PIM activities, a separate PIM directorate was formed within the WRD in the year 2000. The directorate

comprises of Director, two Deputy Director, two Assistant Director and about 15 junior staff members. In addition to this, one superintending engineer from the office of Chief Engineer and one Assistant Engineer (AE) from the office of Executive Engineer (EE) were nominated as nodal officers of PIM. The main responsibility of the nodal officers is to collect information regarding various WUA activities and compiling a progress report. District collector was responsible to oversee the monthly progress of each WUA. For each district, one executive engineer was made the nodal officer to assist district collector for review meetings.

In accordance with the PIM act, competent authorities were deputed to different farmers' organizations i.e. sub engineers for WUAs, Assistant Engineers for DCs & medium project PCs and executive engineer for Major projects PCs. The main responsibility of the competent authorities is to act as a coordinator between the government departments and the farmer's organizations. Sub Engineers were also responsible to assist WUA in preparation of detailed list of work to be undertaken by them and in preparation of estimates for the same. However powers of giving technical clearance for the works to be undertaken by the WUAs dependent on higher authorities, and was based upon the scale of work identified by WUAs (Table 3).

Table 3: Competent Authority to grant Technical Sanctions for Canal Repair Works

| Scale of Project | Competent Authority |
|------------------------------|--|
| a) Ordinary Repairs | Executive engineer (within the funds provided to farmers organization) |
| b) Special Repairs | |
| Repairs up to Rs. 5,000/- | Executive engineer |
| Repairs up to Rs. 50,000/- | Superintending engineer |
| Repairs up to Rs. 5,00,000/- | Chief engineer |

5.2 Governance Reforms

Complete authority for monitoring all the PIM activities in the state was given to PIM directorate formed within WRD. The PIM directorate headed by superintending engineer was also made the nodal agency for carrying out various trainings to FOs members and WRD functionaries involved with PIM implementation. These trainings were targeted to equip key stakeholders to perform their roles effectively under the new regime of irrigation management transfer. District collector was empowered to delineate the command area under each of the irrigation system in the district to be transferred to the WUAs. This delineation was done on hydraulic basis. Similarly delineation of command areas for DCs and PCs was done by the state government in consultation with district collector. District collector was also made responsible for the election of management committee members of FOs.

A sub engineer was appointed as a competent authority for each WUA and as an ex-officio member of the WUA (AE for DCs and medium project; EE for Major Projects PCs). In addition to the sub-engineer, one WRD staff from administrative cadre and one staff from agriculture department was also made ex-officio member of the WUA. For the collection of water charges, a staff from WRD called as Amin (a lower official who collects water revenue in villages) was made responsible. Thus, control over collection of irrigation charges from farmers still remained in the hands of WRD.

5.3 Institutional Reforms

The major Institutional reform was the formation of farmers' organizations itself. A three tier structure of WUA formation was followed. The detail about their institutional structure are already presented in section 4.3. Major responsibilities given to farmers organization included: a) preparation and implementation of Warabandi⁴

⁴ Warabandi is a system of rotational turns through which each shareholder in a watercourse obtains his or her water supply.

schedule for each irrigation season; b) preparation of plan and carrying out maintenance of irrigation system in the area of its operation; c) monitoring flow of water for irrigation; d) resolving disputes arising in between the members and the water users in its area of operation; e) maintaining accounts; and f) assisting in the conduct of elections , and g) conducting various meetings at appropriate time intervals. At present Warabandi system is not followed in any of WUAs in MP but as per WRD officials it will soon be implemented.

In past, MP Irrigation Act of 1931 envisaged the formation of irrigation panchayats to carry out similar functions. However, the subsequent rules (Irrigation Rules, 1974) were not able to clearly define the rights, duties and responsibility of these IPs. As a result, these IPs mainly remained as paper organizations and contributed little to improve canal system management.

5.4 Financial Reforms

Financial assistance provided to the WUAs has been already discussed in section 4.4. In addition, irrigation rates were revised after the PIM act. First revision after the act was done in the year 1999, followed by in 2002 and again in 2005. Revisions in 1999 and 2002 resulted in tremendous increase in irrigation charge (water rates) for different crops (Table 4). For some of the crops irrigation charge increased by as high as 850% (for paddy crop grown in rabi season in 2002 as compared to in 1992). In 2005, state government decided to keep irrigation charges as per number of waterings given to different crops. Before that, the charges were based on irrigated area, and were irrespective of number of waterings. Thus financial reforms of 2005 increased pressure on farmers in relation to the irrigation charges they have to bear. Although state government is continuously making changes in the irrigation rates, it does not support irrigation revenue recovery. At the beginning of the financial year 2006-07, arrears for the recovery amounted to Rs. 42,000 lacs.

Table 4: Water Charges for different crops through flow & lift irrigation

| Crops | | Water Rate (Rs./ha) | | | % change in 2002 over 1992 | Rates for each watering (Rs./ha) 2005 |
|--------------------------------------|--|---------------------|-------|------|-------------------------------|---|
| | | 1992 | 1999 | 2002 | | |
| Paddy | Kharif | 60 | 202.5 | 215 | 258.33 | 85 |
| | Rabi | 55 | 500 | 525 | 854.55 | 155 |
| Cotton | Ordinary | 60 | 175 | 185 | 208.33 | 70 |
| | Hybrid | 93.75 | 375 | 400 | 326.67 | |
| Wheat | For land preparation (including 3 watering) | 62.5 | 202.5 | 105 | 68.00 | 125 |
| | For extra watering | 15 | 62.5 | 65 | 333.33 | 75 |
| Gram | | 42.5 | 250 | 105 | 147.06 | 75 |
| Groundnut, Moong, Soyabean & Tuar | Kharif | 45 | 125 | 130 | 188.89 | 50 |
| | Rabi | 60 | 250 | 265 | 341.67 | 75 |
| Green fodder Crops | | 45 | 125 | 130 | 188.89 | 50 |

5.5 Capacity Building

Capacity building of the WRD officials at various ranks and WUAs representatives was the major activity carried out during the act implementation. In the first phase (March, 2000), training of 120 Assistant Engineers (AE) was conducted by WALMI. The main purpose was to enable AEs to educate lower functionaries of WRD and office bearers of WUAs regarding the objectives and provisions of MP PIM Act and rules. In the next phase (May, 2000), capacity building program for the WUA presidents/members and lower functionaries of WRD were conducted by WALMI to directly educate these people regarding the implementation of the PIM act. In addition, regular workshops were organized at district head quarters between WUAs presidents/members and the competent authorities i.e. sub engineers concerned for the WUA. The main agenda of these workshops was to discuss and solve any problem arising in implementation of PIM program.

In November 2000, regional workshop of Presidents, TC members and competent authorities was organized which was chaired by then honorable CM of MP. An exploratory visit for the experts of PIM in the country was also organized in October 2001 to assess the progress in PIM implementation in the state. During the period 2002-03, a total of 100 training courses were organized at RCVP Naronha Academy of Administration and Management, Bhopal. These trainings were mainly organized under ICEF funded project. Under each batch 15 WUAs president and 15 competent authorities (sub engineers for WUAs) were trained to enable them to implement PIM in effective way. On similar lines 9 trainings were also organized for the EE's and AE's of WRD. As a part of making PIM effort popular, a quarterly magazine called as MP Sinchai Sandesh was used to be published by PIM directorate. Now it is no longer published.

5.6 Amendments to the Act

In the initial phases of implementing PIM, no civil society organization or NGOs were involved in the capacity building or implementation. But after the ICEF project, involvement of four NGOs namely ASA, BAIF, VIKALP and SRIJAN was mandated under the project. These NGOs played a significant role in increasing community awareness and focus towards the importance of PIM. Besides this, they facilitated bringing about as many as 6 amendments to the existing act for the benefit of community and PIM. Some of the key amendments include:

- a) Provision for voting right to the presidents and TC members of medium projects for the election of chairperson and managing committee of PC.
- b) Provision for voting rights to the wife of valid landholder in the area for the selection of office bearers of WUAs.

6. INSIGHT ON PIM IMPLEMENTATION IN ONE OF THE IRRIGATION PROJECTS

Satak irrigation project located in Khargone district, MP was selected to understand the actual working of PIM in the field. Selection was broadly based on the recommendation by PIM experts in the state.

6.1 Satak Irrigation Project: Brief Profile

Satak Irrigation Project is a medium tank project constructed during 1955-66 on Satak River in Narmada basin. The tank is located in Bamandi village of Kasrawad tehsil, in Khargone district of MP. The project has 2706 ha of culturable command area, out of which 1800 hectares is irrigable command area. The tank has a total distribution network of 53 km and covers 17 villages comprising 1750 water user families. The canal system of Satak tank project consists of 1 main canal, 1 main distributory and 13 minor canals. Crops in the command area include soyabean, chilies, cotton in kharif (monsoon season) and wheat, gram in rabi (winter season). There is large-scale use of well water in the command area.

6.2 Implementation of PIM on Satak Project

Only one WUA was formed in the entire command area of Satak project in the year 2000. The canal distribution network was transferred to WUA without the necessary R&R works. Until the early part of year 2003, the major role of WUA was restricted to only annual maintenance of the canal structure. In the later half of 2003, Satak project was included in the ICEF project for the renovation of whole canal network and Rs. 128.05 lac was assigned for the purpose. Under this project 30% of the cost (i.e. Rs. 38.41 lac) was to be borne by the farmers of the command area, which was later reduced to 20% and finally 10%. A NGO named ASA was involved as a facilitating agency to mainly: a) promote local institution building at grassroots level, b) motivate farmers to pay their contribution and c) to provide guidance to the farmers for the execution of the physical works. WRD was also equally involved in conducting meetings with farmers and providing guidance for the canal renovation. After a number of meetings and three years of dedicated work by ASA, both quantitative and qualitative change was visible in the community participation for both cost sharing and management of canal system. It was one of the few projects where community made full contribution from their side as a requirement under the ICEF project. However, as a rule under the PIM act, all the money was deposited in the joint bank account of the EE and divisional accountant, WRD, Kasrawat. Release of fund from this account is subjected to technical clearance of physical works from the WRD.

Before finalizing on the repair work on the canal, a participatory walk through (PWT) on canal was carried out jointly by WRD, farmers and NGO members with the aim of deciding priority work to be undertaken first. After the participatory walk through, WUA undertook the canal restoration work under the guidance of WRD and NGO.

6.3 Current progress

As per the PIM directorate record (June 2007), physical work on the Satak project has been executed as per the cost estimates (128.05 lac rupees). Our visit to the Satak project area (23-27 September, 2007) presented the different story. The physical works were still in progress and only initial part of the main canal was renovated.

6.4 Performance of Satak WUA

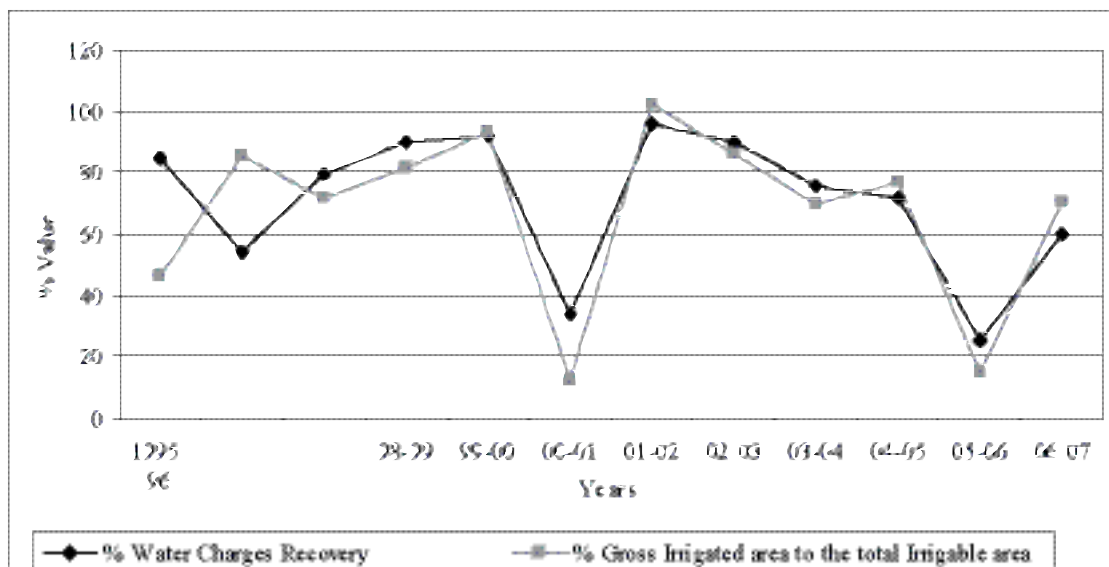
Satak tank is considered one of the best schemes under the ICEF project and it is being promoted as a successful PIM model across the state. Under the PIM Act, role and responsibility of WUAs is only restricted to maintenance of canal system and motivating farmers to pay their water charges on time. However, collection of water charges is still under the WRD representative (called as Amin). Also, WUAs as per the act are not totally independent. An officer of the rank of sub-engineer is the secretary of WUA (does not have any voting right) and the competent authority to oversee the implementation and execution of the decisions taken by WUAs.

Considering the limited role offered to WUAs, what was looked in the performance of Satak WUA was the improvement in the irrigation in the command area and water charges recovery from the farmers. It was found that there was a strong correlation between the gross irrigated area and the water charges recovered after the formation of WUA (i.e. 2000) and more especially after Satak tank was made part of ICEF project i.e. 2003-04 (Figure 3). It can be inferred that the work carried out by WRD and NGO with the farmers under the ICEF project is paying rich dividend at least in terms of water charges recovery. One significant feature to note is very less gross irrigated area in the year 2000-01 and 2005-06. It has to do with poor rainfall during these years leading to less storage of water in reservoir and hence less irrigation.

Once the ICEF project was completed, the NGO has also withdrawn support from the command area. It is quite prominent from the limited information that WUA was able to work when some kind of financial and organizational support was provided to them. But how this WUA will perform in future is not clear. However, one thing was quite evident, WUA office bearers feel that the limited role they have been offered under the PIM act should be expanded. They should be given right to collect their water charges, to have their operator looking

after the canal system and greater freedom in their administrative working. It seems that competent authorities of WRD officials still have a bigger say in the day to day management of canal water and also in sanctioning funds to WUA for the maintenance activities. Because of the limited role of WUAs, they are not able to achieve what they actually desire i.e. equitable and timely supply of irrigation water across the command.

Figure 3: Water Charges recovery and Gross Irrigated Area over the years, Satak Project



There was one more source of concern for the WUA. After the second term of WUA elections in the state, earlier office bearers have changed. The new office bearers also need to be trained as was done for the earlier office bearers. But, who will do that? Who will provide financial support for that? The newly formed management committee of WUA at Satak project was not confused about their future course of action. Discussions with farmers revealed that they are not very comfortable with the limited role offered to them under the PIM act and also with the larger involvement of WRD officials in their working.

7. DISCUSSION

Quite often policies are made to resurrect the situation or in response to the problems faced by the communities at large. In the context of the paper, we are looking at the IMT policy adopted by the state to bring back the poorly performing irrigation infrastructure in line. In this section, we will attempt to use literature from different sciences to discuss the IMT policy process followed in the state of MP.

7.1 Model adopted for policy formulation

Discussions with the key respondents involved with PIM process and the way in which act was formulated, it seems incrementalist model of policy formulation was followed in the state. Incremental model simply refers to change “by small steps”. Under the approach, small number of alternatives are looked into for dealing with the problem and finally an option is selected which differs only marginally from the existing policy (Lindblom, 1980; Sutton, 1999). Development of PIM act in MP followed the same route. In response to the problem of poor irrigation system performance, state decided to go for some policy reforms. In the event, IMT as made operational worldwide and in Indian states of Gujarat, Maharashtra and Andhra Pradesh were also looked into. Finally MP PIM act was drafted in close line with AP PIM act with little modifications as per the state socio-political environment, nature of hydraulic systems, investment need and agriculture pattern. This kind of policy making phenomenon is generally “less rational” with actors (refer to policy makers) taking into consideration only limited analysis and factors. Lindblom (1980) bring forth this type of policy making process

but often the approach is criticized because of its focus on the short-run period and pessimistic decision-making not bold enough to venture into the distance.

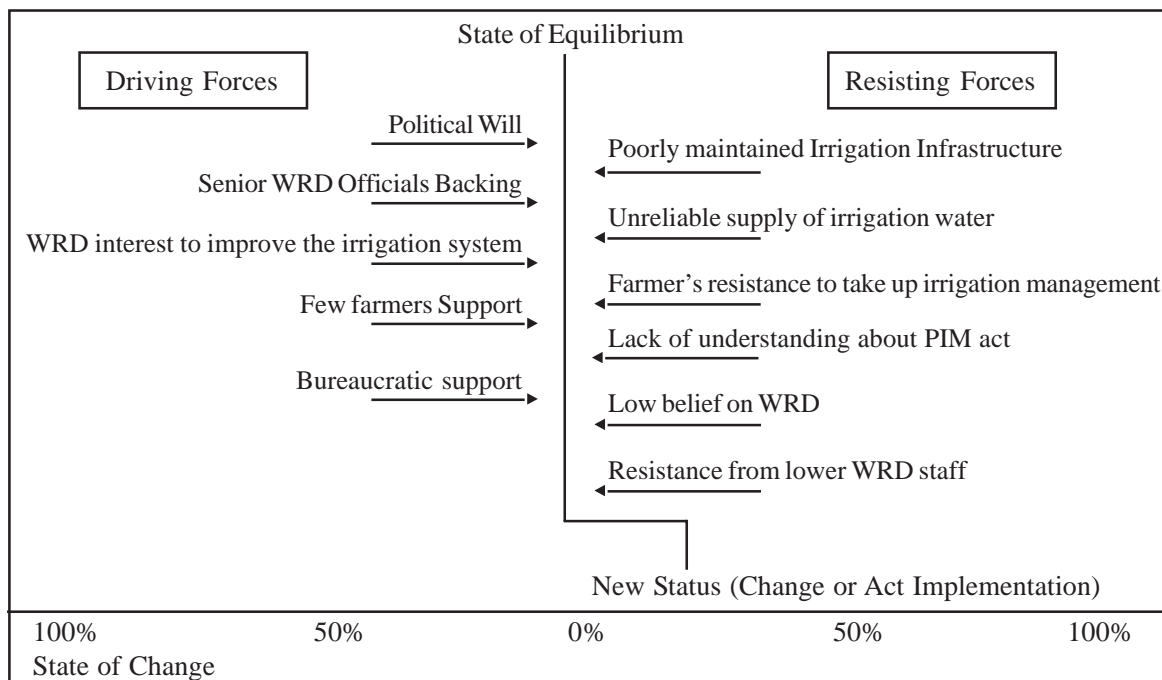
7.2. The Epistemic Community

Epistemic community, also called as policy community, is a group of technical experts who have access to privileged information and ideas. Others do not have such privileges and are excluded. These individuals can be from research communities, NGO's etc. These communities have powerful influence on policy making process. In the course of PIM act formulation in MP, senior experts from WRD played the all important role of epistemic community. These senior experts were the one's, who actually looked into the IMT process worldwide and finally guided the PIM policy drafting for the state. They also enjoyed full support of the then Chief Minister who had an interest in participatory and decentralized resource management. This created a favorable environment in the state for the sound relationship between the WRD experts and bureaucrats in coming up with the PIM act. Some meetings were carried out with the selected farmers before the finalization of the act mainly to understand how they will take the new change. These meetings were few and only with selected individuals. It can be inferred that the policy formulation process did not pay attention to the perception of majority of stakeholders. Views of NGOs and any other civil society organizations were not taken into account during this stage. NGOs were only involved in later stages (ICEF funded project) and that too as a necessity under the funded project.

7.3. Implementation of change

One of the most important aspects after policy formulation is how the change will be implemented. The change has to go through various stakeholders i.e. WRD officials and farmers in this particular case. As per the force field analysis theory⁵, for any change to be brought in there are driving forces, which push for change and resistance forces that act against change. For any change to be successful, either, driving forces needs to be increased or resistance forces should be decreased. In the case of PIM act implementation in MP, we tried to identify the nature of both these forces (Figure 4).

Figure 4: Force Field Analyses for MP PIM Act



⁵ Force field analysis is a systematic method of understanding competing forces that increase or decrease the likelihood of successfully implementing change.

It was observed that government was able to implement the act because of driving forces created through the political will of the then chief minister, backing of senior WRD officials mainly to improve the irrigation system and bureaucratic backing because of political support. These driving forces outweighed the resistance forces of the majority farmers reluctance to take up the system management because of its poor infrastructure and unreliable supply. These driving forces also outweighed the resistance within the lower WRD staff, which was mainly on account of their fear of losing power and control over the system once act will be implemented.

Opposition to any change may be because of wide range of reasons. In the implementation of PIM act, majority of farmers opposed it because of their low trust on WRD works and their fear of how they will manage the irrigation system which WRD has failed to do in past 50 years. Lack of understanding and information about the benefit of PIM among farmers initially was also a major constraint. Whereas fear of lower level staff of WRD was more because of threat to their status i.e. what will be their role once the system would be handed over. But, since the act implementation was done more in top down approach, government was able to overcome this resistance. However, it took nearly 5-6 years to make farmers fully understand about their role in the irrigation management. This became possible more because of external funding provided by ICEF for capacity building during 2002 - 07. After the second election in 2006, new WUA management committee again looked confused about their role, and their capacity building has become necessary. How WRD will address these issues in future, needs to be seen.

The best thing observed in the PIM act implementation was no dichotomy between the act formulators and implementers. This means the experts or the officials who were involved in the act formulation made sure that its implementation is done under their guidance.

7.4 Are Reforms carried under the act Rational?

We will restrict our discussions here to the administrative, governance and financial reforms carried under the act. Various administrative and governance reforms carried out under the Act, suggested significant involvement of WRD officials within the WUA working, be it Amin collecting water tax from the irrigators, WRD canal operator regulating water use, ex-officio members from WRD and agriculture department in the managing committee of WUAs and other higher ranks WRD officials in charge of granting technical sanctions to the WUAs, WRD has a big presence in WUA functioning. As per the World Bank definition, "PIM refers to the involvement of irrigation users in all aspects and all levels of irrigation management. 'All aspects' includes the initial planning and design of new irrigation projects or improvements, as well as the construction, supervision, and financing, decision rules, operation, maintenance, monitoring, and evaluation of the system". But the way MP state has gone about implementing PIM, most of these functions still remain with WRD. WUA role is only restricted to maintaining the irrigation system and motivating farmers to pay irrigation tax.

But, the WUAs role in functions such as operation of the existing irrigation systems, making of irrigation schedules for the different crops, and collection of water tax remains open to question. At present, these roles are not given to them. Discussions with WRD officials suggest that they want to gradually transfer complete irrigation management to the WUAs. However, now has been good eight years of PIM act existence in the state and the situation remains more or less same. Can we call it a PIM? If yes, then is MP government going for IMT just to recover the irrigation charges and with a greater objective of reducing their costs on system maintenance.

Financial reforms (mainly relating to irrigation fee) in 2005 hint at government initiative to restrict excess use of water for irrigation. These reforms were also a step towards charging farmers on the volumetric basis and making them realize about the importance of judicious use of water. But, the irrigation charge recovery in the state is in an abysmal state, and the average rate of recovery for the past 19 years is only 19%. Therefore, the success of such kind of financial reforms is highly questionable. One can infer from the above discussion, that although the administrative and governance reforms were carried out to affect changes in bureaucracy, institutional reforms were not complete for WUAs to have autonomy, greater responsibility and incentive for irrigation management.

7.5 Can we do it without External Aid?

External aid driven projects are often found to have limited success. It is mainly because at one stage, the aid will stop and the process will get back to zero. At that stage, either community take the responsibility or people look for more funding or rely on government funds or just move as per the original pace of things. Although the author is not a critic of external aid, being driven into the implementation of community welfare programs but there should be some crafted rules and procedures, which keep established system in working condition even after the aid ends. Looking at the progress of PIM in MP, apart from creation of farmer's organization at three levels, nothing substantial came out in the first 3-4 years of implementation. Only with the ICEF funding and involvement of NGOs alongside WRD, we saw some positive results. But, that is also restricted to just seven projects. Now again we presume that with the World Bank funding for MP state water restructuring project, some break through will be achieved. This fund is also restricted for the projects located in the northern river basins of the state. The question is for how long we will continue to depend on external support. If state government is not able to generate funds within the system, and continues to depend on external aids, will the system survive? Do we have to find some other way of proceeding with IMT, may be by involving some private operators. The alternative institutional models like public-private partnership mode in irrigation management as experimented in some parts of China, Senegal, Egypt and Saudi Arabia (World Bank 2007) need to be explored by the policy makers.

7.6 Outcomes of the Eight years of PIM existence in MP

We would like to discuss the PIM outcomes dividing the implementation period into pre (1999-2003) and post (i.e. 2003 onwards) ICEF project. We are dividing the implementation process in two phases because the implementation moved on fast track at least for the seven irrigation schemes after they were made part of ICEF project. In terms of number of farmers' organizations formed and irrigable command area (ICA) transferred to them, no significant increase was observed in the pre and post external aid phase. Number of farmers organization increased by 13% in 2006 over 2000-01 and ICA under FOs' increased by only 12.5% for the same period (Table 2). This was quite expected, as focus of PIM during this phase was only on the improvement on the seven selected irrigation schemes.

Out of the total created irrigation potential of 24.88 lac ha (2006-07) only 16.9 lac ha have been transferred to farmers' organization. These are the figures when government claims to have implemented PIM in the entire state. Further, the net surface irrigated area in state remains only at 11.3 lac ha (2004-05). So, there is an obvious gap between the potential utilization even after the large scale reforms in the state. In the discussed case study (section 6) we observed a correlation between the irrigation and water revenue collected. The same relation holds true for the entire state. In 2003-04 and 2004-05 when there was improvement in the net canal irrigated area, irrigation revenue collected was higher compared to previous years. But, overall irrigation revenue recovery remains in abysmal state, averaging 43% for last 10 years (from 1997-98 to 2006-07) with arrears of Rs. 34,000 lac at the beginning of financial year 2007-08.

These numbers may not provide the reader with the entire insight into the outcome of PIM process in MP. But, one can infer that success of PIM in MP is still very far away from reality. Although state government is busy with implementing various PIM schemes but farmers are not satisfied under the current format. They want to have more role in decision making and maintenance of canal system. Farmers believe that unless there is complete involvement, they won't be able to improve the system performance or for that matter equity across the command area. WRD on the other hand feels that if farmers are given all the responsibilities, things will become messier and complicated. For them it is necessary to have WRD involvement in the functioning of WUAs if positive results are to be seen. WRD also fears that if complete transfer is done including the irrigation revenue collection power to WUAs, they may start behaving like a political entity (like panchayat) and then it will become much difficult to monitor and supervise their work.

8. IMPLICATIONS

Policy implementation is a continuously changing process requiring consensus building, participation of key stakeholders, contingency planning, resource mobilization and adaptation, which must be managed in a proper way. Newly formulated laws, acts or policies often bring about changes in roles, structures and incentives of implementers, direct beneficiaries and other stakeholders. Thus, any policy implementation should proceed in a very careful way. Looking at the MP PIM Act formulation and implementation, we see that more of a “top down approach” was followed, especially during the initial years (1999-03). This approach created number of resistance forces both within and outside the policy process system and resulted in little success in terms of benefits to community. Although the model adopted for policy formulation, the incrementalist model, was not rational but surely one, which was politically feasible under the system.

It appears from the foregoing analysis that the administrative, governance and institutional reforms for promoting effective farmer involvement in irrigation management were not adequate. Partial delegation of power and responsibilities to the WUAs are one of the major factors for success of the PIM process. From the discussions with the farmers, it was quite clear that the limited role offered to them and greater involvement of WRD officials in their functioning is not creating much of an impact in the improvement of the irrigation system as a whole. Further, the success of PIM seems to be in the grip of external aid. If there is financial support, stakeholders are sure of positive results but without it, no one seems to be confident. Even the financial reforms (related to revision of irrigation charges) carried out as per the act look out of place and irrelevant.

Effective management of irrigation system requires going beyond the single policy solution to a more refined approach that takes into account the local physical, social and economic conditions (Meinzen-Dick 2007). Thus, the present MP PIM act needs to incorporate a few changes, which are more suitable for the end users. Other ways for promoting farmer management can also be considered. At present private sector involvement in irrigation management is being given due consideration in many parts of the world. In India too, corporate involvement in telecommunications, retail segment, electricity, agro-forestry etc. have shown tremendous success. This success is not only in the quantity but also in the quality of services provided by them. May be we can think of having private sector involvement in irrigation, atleast at the main system level. But, this will only happen if there are less political bottlenecks and favourable policy environment for the private operators. In these privately managed irrigation systems, may be farmers have to pay more for the offered services. But, these can be made up from the increase in the net returns to farmers on account of improved delivery of irrigation water. This can be one of the ways of doing IMT differently. Some incremental thoughts can be given to current reforms and policies to make them more effective and acceptable by the beneficiaries.

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