



## **BROADENING THE FRAMEWORK OF PARTICIPATORY IRRIGATION MANAGEMENT: FROM EFFICIENCY TO SUSTAINABILITY AND EQUITY**

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### **1. INTRODUCTION**

Though Participatory Irrigation Management (PIM) – both in terms of policy support and practice on the ground – gained currency in India in the 90s, the early articulations about user participation in irrigation management can be traced way back to the 1930s. The Irrigation Enquiry Committee headed by Sir Vishvesaraya in 1938, which went into the causes of under utilisation of irrigation water in Maharashtra, a central-western state in India, did recommend, amongst other things, the formation of users' groups to improve the utilisation of impounded water (Lele and Patil 1994)<sup>2</sup>. In terms of official talk and policy support, the Sixth Five Year Plan (1980-85), the Guidelines issued in 1985 by the Command Area Development Programme under the Ministry of Water Resources, Government of India, the National Water Policy of 1987, and the Irrigation Pricing Committee (1992) headed by A. Vaidyanathan all talk about the need for farmer participation in irrigation management as a way out for the crisis in the irrigation sector in India. Non Governmental Organisations (NGOs) took the lead in setting up pilot projects, especially in the states of Maharashtra and Gujarat, in the late 80s and early 90s. PIM in India got further fillip when the Planning Commission of India set up a Working Group on PIM for the Ninth Five Year Plan (1995–2000). As of today, PIM has gained roots in many states in India and about six to seven states have already enacted legislations that make PIM a statutory requirement to get access to irrigation water and many of the other states are also contemplating enactment of similar legislations.

Thus, it would not be wrong to say that there has been a definitive change in the situation in respect of the Participatory Irrigation Management (PIM) in India since the late eighties. In the late eighties there were very few Water Users Associations (WUAs) in any form whatsoever and the Irrigation Departments (IDs) of the various states were extremely sceptical, if not hostile, to the concept of PIM. Much of the discussion in

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2- In fact the earliest water users' associations or societies were formed as early as the 1930s on the Godavari canals, Maharashtra, by the local private sugar factory. The Samvatsar society is an example of this. Another example of the early efforts at user participation in Maharashtra is the Malinagar Irrigators' Water Supply Co-operative Society, registered in 1967, on Neera Canal

meetings and conferences on PIM was focused on arguing for or against PIM. While the sceptics are still around, their number is diminishing and the question of whether or not there is a need for PIM seems to have been largely answered in the affirmative.

This paper is based on two assumptions. One, PIM in India is desirable, is no more on trial and it is here to stay. Two, PIM if it has to become an instrument of water sector restructuring, then it has to go beyond the present limited objective of efficiency and make sustainability and equity as its normative concerns and design the PIM accordingly. To argue that it is possible to go beyond the present preoccupation with efficiency and re-design PIM to encompass normative concerns of sustainability and equity, the paper analyses two cases of PIM initiatives from Maharashtra, namely, the Ozar WUAs in Nashik district and the Tembu Lift Irrigation Scheme in South Maharashtra. It is hoped that the lessons learned from these two grassroots experiences would help in expanding the present framework of PIM in India.

## 2. NEED TO GO BEYOND THE LIMITED FRAMEWORK

PIM is one form of collective action, which is seen by and large as a “joint management” or “co-management” strategy to manage irrigation water. Though the two terms contain certain differences, both essentially mean state initiated partnerships in which the rules of the game are decided by the irrigation agency and the local WUAs have very little say in these (Lele 2004). This is the case with most of the legislations in India regarding PIM and only in Maharashtra there has been some attempts at defining water entitlements or provisions for volumetric supply and pricing and for compensation if the users do not get their entitlements (GOM 2005<sup>a</sup> and 2005<sup>b</sup>), which can be empowering for the WUAs.

The experience so far indicates that the impact of PIM in India has been, by and large, limited to efficiency objective like increase in area irrigated, increase in irrigation intensity, improvement in the maintenance of the system and improvement in collection of water charges (Lele 2002)<sup>1</sup>. The main reason for this is that PIM has been designed only to address issues related to efficiency, the assumption being that the water sector crisis in India is primarily one of lack of efficiency.<sup>2</sup> As Mollinga puts it, the move towards PIM is largely driven by three ‘crises’ (Mollinga, 2000): a financial crisis (IDs not being able to recover water charges and hence not being financially viable), a technical crisis (irrigation systems are in disrepair) and crisis of legitimacy (as faith in the irrigation system’s ability to deliver has eroded). Except the third crisis (that of legitimacy) the first two are clearly related to efficiency. Of course there is also the push from donor agencies (World bank for example) to push for reforms including PIM. Since PIM has been pre-occupied with only efficiency one could say that the space and potential opened up through PIM for water sector restructuring has not been fully exploited or explored.

Apart from the faulty analysis of the water sector crisis another important reason for the limited framework underpinning PIM efforts in India is that the wider developmental objectives of sustainability and equity have not become part of the normative concerns of PIM. Understanding the crisis and the changes that are taking place in the water

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1- For a recent review of PIM in India see Lele 2004.

2- For a detailed discussion on the water sector crisis see Paranjape and Joy 2004.

sector requires first an understanding of the notion of ‘development’ as what is desirable and how this broad notion is to be translated into the specific context of water. The notion of development or the normative framework underpinning PIM today is limited to only efficiency. “Appropriateness” of institutions and design of institutions depend upon one’s normative concerns (Lele 2002). In other words the motivations driving PIM today in India is limited to a framework limited to efficiency considerations (SOPPECOM 2004).

Also there are two viewpoints at work here. The mainstream viewpoint sees PIM mainly as a *transfer* of the irrigation command from the hands of the ID to the hands of the farmers, treats this transfer as the main objective and the benefits then flow from that transfer. The non-mainstream viewpoint does acknowledge this transfer, but treats that transfer as a *means* or *instrument* of restructuring the water sector improving its performance, ensuring equitable water access and allowing a transition to a sustainable and integrated management and use of water resources (SOPPECOM 2004). There is a need to shift from the transfer viewpoint to a restructuring viewpoint by incorporating the broad developmental objectives of efficiency, sustainability and equity<sup>1</sup> part of the normative framework of PIM.

Though one may not be able to go into a detailed discussion on sustainability and equity<sup>2</sup> here the debate can be summarised in terms of certain minimum principles as given below:

#### SUSTAINABILITY

- Sustain the underlying bio-physical processes, their environmental integrity and dependability as mediated by human intervention
- Conserve and/or enhance the primary productive and assimilative potential of the ecosystem
- Use water within renewable limits: use annual flows, stocks to be used only in bad years with the understanding that they would be replenished in good years. Minimise import of water, do it in a fair manner

#### EQUITY

- Ensure inter-sectoral equity: water use prioritisation
- Ensure minimum water service livelihood needs to all on affordable terms irrespective of landholding

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1- *Efficiency* is concern with maximizing current well-being derived from the natural world at minimum cost, whether measured in physical or monetary. *Sustainability* is concern about the continuation of well-being into the future and within this, concern for ecological sustainability is based on the idea that there is some “immutable biophysical basis to human well-being”. *Equity* is concern about the *intra-generational distribution* of human well-being, across typical barriers of class, ethnicity, gender, etc., including concerns about fairness of outcome as well as process. It is relevant both in the context of sharing of the fruits of resource use and also in the context of externalities generated by resource extraction, processing and consumption (Lele 2002).

2- For a detailed discussion see Joy *et al* 2004 and Joy *et al* 2005

- Favour those bearing the brunt of the inequity due to class, caste, ethnicity, gender, spatial location, etc.
- Sharing of shortages
- Provide women with preferential access to water both for domestic and productive uses

The two case studies, given below, show that it is possible to go beyond the limited framework of efficiency and also address issues related to sustainability and equity.

### 3. THE OZAR WATER USERS' ASSOCIATIONS: PIM AN INSTRUMENT OF CO-MANAGEMENT OF SURFACE AND GROUNDWATER<sup>1</sup>

#### THE LOCATION AND SALIENT FEATURES OF THE PROJECT

The Ozar WUAs, namely, the Banganga Water Distribution Co-operative Society, the Mahatma Phule Water Distribution Co-operative Society and the Jay Yogeshwar Water Distribution Co-operative Society were formed in 1991 in Ozar village, 16 kms north of Nashik town and about 150 kms away from Mumbai in Nashik district of Maharashtra. The Ozar WUAs lie in the extreme tail portion of the Right Bank Canal (RBC) of the Waghdam dam command area.

The Waghdam dam, built across the Kolwan River, is one of the four dams (the other three being Ozarkhed, Karanjwan and Palkhed) that comprise the Upper Godavari Project. The Upper Godavari Project has been planned to service an irrigable command area (ICA) of about 59,000 ha spread over 180 villages in six talukas<sup>2</sup> of three districts in Maharashtra. The ICA of Waghdam system comes to 6,750 ha. Waghdam is an eight-monthly irrigation project in the sense that water is not provided for hot weather crops.

**Table 1:** Salient features of the Upper Godavari Project (comprising Waghdam, Ozarkhed, Karanjwan and Palkhed dams)

	Upper Godavari Project	Waghdam system
Gross Storage	341.14 Million m <sup>3</sup>	76.5 Million m <sup>3</sup>
Live Storage	317.68 Million m <sup>3</sup>	70 Million m <sup>3</sup>
Gross Command Area (GCA)	104,100 ha	13,500 ha
Culturable Command Area (CCA)	89,400 ha	9,640 ha
Irrigable Command Area (ICA)	59,000 ha	6,750 ha

(Source: *Samaj Parivarthan Kendra, 1994, p. 1*)

1- This section is largely based on a study by Paranjape and Joy, 2004

2- Tehsil is a sub-district administrative unit

The operational area of the three Ozar WUAs comprises a contiguous geographical area of about 1,300 ha with gross and culturable command areas as shown below in Table 2. The details of water quota<sup>1</sup> allocated to the three WUAs are given in Table 3. The ID allowed the WUAs to carry over the unused water from the Rabi quota to summer (hot weather) taking into account the evaporations losses.

**Table 2.** Gross and Culturable Command Areas of the Ozar WUAs

	Banganga	Mahatma Phule	Jay Yogeshwar
Minor	Distributary 1 of Sub-Minor 3	Minors 17 & 18	Minors 18A & 19
Gross Command Area (GCA)	249 ha	432 ha	615 ha
Culturable Command Area (CCA)	216 ha	340 ha	595 ha

(*Source: Samaj Parivarthan Kendra, 1994, p. 9*)

**Table 3.** Irrigation quotas of the Ozar WUAs<sup>2</sup>

WUA	CCA	Kharif (Monsoon crop) quota ('000 m <sup>3</sup> )	Rabi (winter crop) quota ('000 m <sup>3</sup> )
Banganga	216	424	528
Mahatma Phule	340	440	1,016
Jay Yogeshwar	595	1,216	1,410

(*Source: Samaj Parivarthan Kendra, 1994, p. 10*)

The major initiative in setting up the Ozar WUAs was taken by the *Samaj Parivartan Kendra* (SPK) a social organisation in the area. Society for Promoting Participative Ecosystem Management (SOPPECOM)<sup>3</sup> provided the necessary technical assistance to SPK.

1- Maharashtra is the only state where the Memorandum of Understanding signed between the Irrigation Department and WUA provides for water quota to each WUA proportionate to its area. It is also the only state which provides for volumetric supply and pricing of irrigation water.

2- Note that the ad-hoc allocation gave Mahatma Phule a relatively smaller kharif quota and a relatively higher rabi quota. The quotas for all the societies have subsequently been reduced by 12%.

3- SOPPECOM was formed around 1990 with the specific objective of promoting participative management and sustainable and equitable use of natural resources, especially water and had taken the initiative in setting up the first pilot projects in PIM in Maharashtra. For details of SOPPECOM's activities, especially in the PIM area visit [www.soppecom.org](http://www.soppecom.org)

## SOME OF THE INNOVATIONS

The Ozar WUAs have performed very well by any of the conventional norms like membership in the WUA, irrigation efficiency, increase in the ICA, maintenance of the system, managing the water properly, and collection of water charges. Besides being good WUAs, they have also struck out in new directions and set significant precedents in PIM. Interestingly the Ozar WUAs are more known for these innovations that can provide valuable lessons for water sector restructuring in India. For lack of space only two innovations – co-management of surface and groundwater and volumetric supply and pricing of water to the users – are taken up for a brief discussion below.

- 1) Co-management of surface water and groundwater: One of the most important innovations of Ozar WUAs pertains to the co-management of surface (canal water and groundwater (water from wells)). First, SPK convinced the Government to build 18 check dams on the streams within the command area of the three WUAs as a special case as this is not allowed in Maharashtra. The check dams played a dual role: one it helped to harvest the rainfall and two they also helped in collecting the “losses” from the distribution system through seepage. WUAs also put a part of their water quota into these storages. Because of these local storages the recharge increased and almost all the wells in the command area became perennial. Second, they switched to a system of one rotation from the canal and the next rotation from the wells. This not only provided stability to the system through improved dependability but also gave them the flexibility to go for crops like vegetables and fruits like grapes which require light but high frequency irrigation. It also improved water use efficiency and also crop productivity as the farmers could provide water as per crop requirements. Third started charging the well owners water charges. This is a very significant step because well water is generally seen as a private property in India and though there is a provision to charge well owners in the command area the provisions are seldom used by the ID. In the case of Ozar WUAs, SPK could clearly show to the members that the increase in the wells is because of the efforts of the WUAs as they had kept a detailed record of each of the wells in the command area showing what was the situation before WUA formation and after. SPK also devised simple but robust and transparent method of estimating the recharge of each well and each well owner was charged accordingly. The charge they levied for the well water was half of the charges of the canal water. Thus the WUAs could extend their jurisdiction over the wells in the command too and become an instrument of integration of local and exogenous water and surface and groundwater.
- 2) Volumetric supply and pricing - switching to hourly basis: In Maharashtra under PIM WUAs pays the government on the basis of the metered quantity of water it receives, but the internal distribution of water and assessment of water charge for users remain based on area and crop. It decreases state presence, facilitates recovery of water charges and links them to volumetric supply, but for the *individual* farmer in the command, nothing much changes, and his/her costs are still not linked to the volume of water he/she uses. In creating a push in the direction of water saving and increasing efficiency of water use, it goes only half the way. However, volumetric supply to individual farmers is said more easily than done. The need is to find a solution that is readily acceptable to farmers and easily implementable with little or no transaction cost. The Ozar WUAs evolved such a solution, first implemented in full in Mahatma Phule and Jay Yogeshwar WUAs in 1998-99 and also applied in

Banganga WUA around 2002-03. Estimating the losses and delays and leaving a small cushion for adjustments, they calculated the total time that would be available for watering. Dividing this time by the total demand for irrigation, gave a figure of the time taken to irrigate one ha. At present this estimate, in farmers' terms, is that of watering 1 *bigha* in one hour. A *bigha* is roughly half an acre, so that the norm here is that of 5 hours/ha. The water charge was then converted to the number of hours a farmer received water. The calculation was simple enough to understand and, though there were some doubts, the farmers agreed to give it a try. The system has now been in operation for four years in two of the societies. The issues have not been fully settled but there has definitely been an overall acceptance.

The switchover to an hourly basis for assessment of water charge has led to an increase in discipline and efficiency. The canal operators had received instructions that they should supply water for the calculated time and the farmer should be ready to receive water. Farmers began to try and prepare their fields well in time and manage their affairs in such a way that they would be ready to irrigate their fields when it was their turn to receive water. Earlier the canal operator would generally have to wait till the farmer was satisfied that he/she had 'filled' his/her farm. He could try and persuade but not stop the farmer from taking more water than was customary, and only if it was excessively wasteful could he take the matter to the WUA. Now the whole problem was simplified at one stroke. All the canal operator had to do was to see that he got so many hours of flow, and it became the responsibility of the farmer to see that his field was irrigated within that time. The result was a greater awareness on part of the farmers and an increase in water application efficiency.

Seeing the success of the Ozar WUAs, the farmers from the entire command area of Waghad project have formed WUAs. The WUAs have been federated into a federal society and recently the entire project has been turned over to the federal society. This is the first case of project level transfer in India.

#### **4. THE TEMBU LIFT IRRIGATION SCHEME: PIM AS AN INSTRUMENT OF EQUITY AND CO-MANAGEMENT OF ENERGY AND WATER<sup>1</sup>**

##### **THE LOCATION AND THE PROJECT**

The Tembu Lift Irrigation Scheme (TLIS) in Satara, Sangli and Solapur districts of South Maharashtra is one of the many government operated high lifts coming up in the Krishna basin to divert water to the drought prone regions of the basin as part of a wider plan to utilise Maharashtra state's share of the Krishna waters.<sup>2</sup> There is a sharp variation in the availability of water amongst the different sub-basins within the Krishna

1- This section is drawn from Joy and Paranjape

2- The Krishna Water Distribution Tribunal, which went into the question of sharing the Krishna waters amongst the riparian states of Maharashtra, Karnataka and Andhra Pradesh Maharashtra, Karnataka and Andhra Pradesh apart from deciding on the relative share of each of the state also stipulated in its Award, known as the Bachhawat Award, that the states should utilise their share of water awarded to them by June 2000, failing which the unutilised share would be pooled together and would be open for negotiations and re-distribution. Since none of the states could actually utilise their share of water the Government of India has constituted a tribunal to go into the question of the sharing of the unutilised water.

basin. At the bottom of the heap is the Yerala sub-basin with an estimated per capita water availability of 83 m<sup>3</sup> (year 2001) and at the top we have the West-South sub-basin of Upper Krishna with a corresponding per capita availability of above 4,900 m<sup>3</sup>, almost 60 times! The administrative sanction for the project was given in 1996 and presently the works on the high lifts and the main canal have reached an advanced stage.

As per the project design the scheme would lift water to about 300 meters in five stages and would utilise 22 TMC of water to irrigate about 79,600 ha area in 173 villages in six tehsils in the eastern part of the basin through an extensive network of canals as per the details given in Table 4 below.

**Table 4.** Details of irrigation area and water use according to different tehsils

Tehsils	No. of villa-ges	Total area (ha)	Culturable command area (ha)	Irrigated command area (ha)	Irrigation intensity (%)	Water use	
						TMC	Mm <sup>3</sup>
Karad	2	1,150	860	600	69.77	0.16	4.70
Khanapur	86	61,350	49,100	28,300	57.63	7.82	221.63
Tasgaon	15	20,570	15,450	7,700	49.84	2.13	60.30
Atpadi	36	61,568	43,100	16,000	37.12	4.42	125.3
K.Mahankal	13	13,750	10,300	7,000	67.96	1.94	54.82
Sangola	21	36,500	29,200	20,000	68.49	5.53	156.63
Total	173	194,888	148,010	79,600	53.78	22.00	623.38

*(Source: Maharashtra Krishna Valley Development Corporation Documents, cited in Joy and Paranjape, 2004)*

#### **STRUGGLES TO RESTRUCTURE THE SCHEME IN EQUITABLE LINES**

As seen in Table 4 above, each tehsil is allocated a particular water quota from the scheme and within the tehsil the water would be distributed on the basis of designed cropping pattern and area basis (as per gravity flow). Those who have lands in the designated command would get water, those who have more land would get more water and those who do not have land in the command area would not get access to water with the result that some of the villages would be fully irrigated, some would be partially irrigated and the others would not get any access to water. Though the primary objective of the scheme is drought proofing the scheme in its present design would not eradicate drought of vast majority of the population in the area.

The local people under the leadership of Shetmajoor Kashtakari Shetkari Sanghattana (Organisation of Agricultural Labourers and Toiling Peasants, SKSS to be brief) agitated against this demanding restructuring of the scheme on equitable lines. Their contention was that if water is being brought to the drought prone region involving huge investments both in terms of money and energy (the per ha cost as per the original cost estimate is about USD 4,000 (and this would go up by the time the project gets completed), total Horse Power (HP) required is about 200,000 and the electricity



required is about 171 MW) then the water should be equitably distributed so that it can eradicate everybody's drought in the area.

Along with agitations SKSS also explored various options, with support from SOPPECOM, to make the scheme viable both economically and in terms of energy as some of the critics projects had written off the scheme as an unviable one and would only serve to eat into the finances of the state (Godbole 2002). The alternative proposition from SKSS included the following:

- Take up local water harvesting through micro watershed development programmes along with the implementation of TLIS (basically integration of local and exogenous water) and use water from a larger source like Krishna to stabilise the local water systems
- Distribute water equitably to all the households in the region and SKSS showed that it is possible to distribute about 5000 m<sup>3</sup> of water (at source) to each of the household in the region as basic service to meet livelihood needs and the surplus water can be distributed to those who want more water for commercial crops as economic service
- Form WUAs at the village level and the ID should provide water to these WUAs on a volumetric basis and the WUAs in turn would distribute the water equitably to all those who reside in the village including those who do not have land<sup>1</sup>
- Provide basic service (5000 m<sup>3</sup> of water) to all the households at an affordable cost basically to cover operation and maintenance cost (and because of the electricity use the O & M costs would be substantially higher than the typical canal irrigation water) and the economic service to be provided at a much higher rate to even recover capital costs over a period of time. This is some sort of a graded tariff system that the Irrigation Pricing Committee had advocated (Government of India 1992)
- Bring a portion of the land in the command area under energy plantation to partially meet the energy requirements of the scheme

#### **COMMITMENT TO EQUITY AND CITIZENSHIP AS THE CRITERION FOR MEMBERSHIP IN THE WUAS**

As a result of the agitations and negotiations by SKSS the government agreed to restructure the scheme in three tehsils (Atpadi, Tasgaon and Sangola) as a pilot project. As per the agreement water would be allocated to each village on the basis of population but within the quota allocated to each tehsil as per the original plan. The villages can form WUAs taking village as a unit (and not the designed command) and the WUAs are free to distribute the water on an equitable basis to the villagers irrespective of landholding. All families in the village can become members of the WUA. Thus there is a shift in the criteria of membership – shift from possession of land in the command area to citizenship in the village. This has significant implications for widening the scope of PIM, especially in terms of both equity and membership. It is also important in the context of the growing criticism that co-management institutions

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1- Those who do not have land can take land from others on a produce sharing arrangement

(like WUAs) are leading to “participatory exclusions” and they have been also arguing that citizenship should be the criteria for membership of these institutions and not one’s status as a user or present access to the resource (Agarwal 2001).

### **FROM WUAS TO WEUAS**

Another important learning is that energy is a price that has to be paid for equity, as certain amount of lifting energy would be required if everybody has to get access to water. Thus energy and water co-management is an important precondition for this. One of the other important implications of the need for energy and water co-management is to move from Water Users Associations (WUAs) to Water and Energy Users Associations (WEUAs). It is essential that there should be a unified management of water and energy. By changing over from the command area as basis to village or region as basis will facilitate this changeover. Just as the WUAs receive water at a given point on a volumetric basis from the ID the WEUAs can receive energy and water at selected points on a metered basis and may then decide on how to distribute this cost internally. Since equitable access implies household rather than command area as the basis, and consequently, habitat, village and similar units at higher levels it is easier for them to make the transition from WUAs to WEUAs.

Though the scheme is not operational yet, it is important that SKSS could bring the government to the negotiating table and make it agree to principles and norms, which can make PIM an instrument of inclusion and equity. SKSS has already started the process of forming the WUAs on the explicit understanding of equity and the experience it would generate would be valuable to expand the present limited framework of PIM to include equity as an important normative concern.

### **5. CONCLUSION**

The foregoing discussion shows that PIM has taken roots in India both in terms of policy support and practice. However, the gains of PIM have been limited to efficiency considerations and it is rather difficult to address water sector crisis in India within this limited framework of PIM. Instead it is important to expand this framework to include concerns of sustainability and equity if PIM has to become an instrument of restructuring the water sector in more sustainable and equitable lines. The two case studies discussed also show that it is possible to incorporate efficiency, sustainability and equity as overarching concerns of PIM. For this it is important to shift from the “turn over” viewpoint to “restructuring” viewpoint.

Though it would not be possible to detail out the strategy for this shift within the limits of this paper<sup>1</sup> it definitely calls for both enabling policy support and also an incentive system. PIM legislation should include positive enabling provisions, or at least it should not foreclose options, that may become acceptable in the near future. For example, provisions that take ‘what is’ as given and absolute and include them as part of the legislation may function as foreclosing options that may be better, more equitable and more sustainable. In fact this is happening in most of the states in India where PIM legislation has taken place as the rules and regulations of these legislations serve to

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1- This is discussed in greater detail in SOPPECOM 2004

consolidate the interests of those who are already in a favourable situation in terms of possessing land in the commands. They do not provide for progressive negotiations with regard to acquiring new water rights or access to water. Instead, legislations should be flexible enough to include provisions that offer space offer innovative experiments like the Ozar WUAs or the restructuring TLIS. Also there should be willingness to learn from such experiments and efforts should be made mainstream the principles these experiments embody.

There is also a need to actively encourage those PIM groups who do take up issues of sustainability and equity in a pro-active manner. There should be some kind of incentives built into the PIM structure that rewards those who do so. The problem of incentives is simpler to handle in the bottom-up strategy<sup>1</sup> that does not rely on legislation. In fact, in Maharashtra, the simple expedient of a policy in which WUAs received water with higher priority than non-WUA areas has acted as good incentive towards PIM in many cases. In general, in a motivational strategy it is easier to structure incentives. Things change as soon as we come to the legislative, top-down strategy. Since by statute all areas are now WUA areas (that being the point of the legislation), it is difficult to build in incentives. Nevertheless, it may be suggested that WUAs who show good performance and take successfully pro-active steps towards ensuring equitable access, increased efficiency and sustainability should be conferred some relative advantage in water allocation and/or water rates. The social benefit of such measures often far exceeds the small relative advantage that may have to be conferred on such action.

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1- In India there are two strategies for promotion of PIM. One is the legislative root, which is also called the big bang approach or top down approach, and Andhra Pradesh was the first state to adopt such a strategy. In contrast there is the motivational approach, which is also called the bottom up approach, as in the case of Gujarat and also Maharashtra till the recent legislation in which the ID and the NGOs motivate the farmers along with certain incentives to go for PIM.

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