PARTICIPATORY TRAINING PROGRAMME IN CANAL IRRIGATION IN ANDHRA PRADESH, SOUTH INDIA

R. Doraiswamy[1]

ABSTRACT

This paper deals on the field activity of participatory training programme (PTP)/capacity building of various stakeholders undertaken by JalaSpandana in large canal irrigation projects namely Kurnool Cuddapah Canal, Rajolibanda Diversion Scheme and Priyadharshini Jurala Project in Andhra Pradesh (AP). The objectives are to strengthen PIM, sustain WUAs, enhance water use efficiency and livelihoods, etc. JalaSpandana designed Participatory Training Programme (PTP), which build the confidence of farmers and other stake holders and produced good results in taking over the responsibility of collecting water tax/rates/charges, exploring alternates for efficient main system management, sustainable WUAs, tail end deprivation, etc. The design adopted approach to involve users and other stakeholders in the process of preparation, implementation and impact assessment of training modules. Further, the trainings were carried out in an integrated approach to Integrated Water Resources Management with unlimited time bound programmes that is easy to encompass all the complexities of the irrigation system, which again could be registered by the participants. In AP, PTP is supported by Irrigation and Command Area Development, Government of Andhra Pradesh. PTP is extended to irrigation projects that are undergoing modernisation programme with huge expenditure. Establishing model farms and WUAs are fetching good results in developing participatory field channel and other canal structures design. The representatives who were initially discussing only on physical works started exploring alternatives for efficient water management. Establishment of dummy/informal project level committees is yet another technique adopted in PTP.

1- Mr. R. Doraiswamy is working as water resource specialist is with JalaSpandana – South India Farmers Organisation for Water Management, Bangalore, India. JalaSpandana is a non-governmental organisation formed by the representatives of water users associations in South India. Contact: doraiswamyr@vsnl.net, doraiswamyr@rediffmail.com, www.jalaspandana.org, Phone: 91-80-22286161, 09448268401, Address: 72, 7th Cross, Chikkathayappa Street, Vasanthnagar, Bangalore 560052, India.
Mr. R. Doraiswamy is thankful to I & CAD, GOAP and to Mr. S.P. Tucker, Principal Secretary, I & CAD, GOAP.

1. INTRODUCTION

Worldwide the need for farmers to participate in the management and distribution of water for irrigation purposes is recognised. As the water for irrigation purposes is getting scarcer with the passage of time and increase in population the need for optimal utilisation of the resources is felt throughout the world. One of the methods identified is to make the irrigator responsible for his act through an institutional structure in which farmers participate in governance, management and finance of irrigation. Andhra Pradesh is one of the pioneer to adopt PIM in India (Peter 2001).

The experiences in investment in irrigation infrastructure in India, including Andhra Pradesh reveals that enormous amount is spent on Hardware component of Irrigation system like construction of dams, canal network, command area development including land leveling and crop loans. The software component of Irrigation system like capacity building exercise, which is essential for the utilization of hardware component of irrigation systems have not been given adequate attention. Thus leading to under utilization of water compared to desired results as envisaged in the design characteristics of the irrigation system (Wade 1982).

The Capacity building exercise and strengthening of farmers' involvement in water management in irrigation system is necessary to increase the momentum of water sector reform. Farmers are generally excluded from the process of preparing training contents, and are mainly conceived as passive listeners or receivers only and implementers of skills and expertise imparted during the training programmes designed by others. It is posited that an explicitly multi-stakeholder training programme process and balanced representation of the different interest groups in that, including farmers, will enhance the quality, acceptability and pace of irrigation system improvement (Narwani 2005).

The first section of the paper deals with the Introduction and area profile, section 2 deals with Participatory Training Programme concept including Micro Plan Preparation, Participatory Modernisation Programme and Water Users Research Facility. The third section deals with the Methodology of PTP in which Training Need Assessment, Training Modules and Impact Assessment is discussed. Fourth section deals with Lessons learnt, followed by fifth section which lists References[1].

Irrigation and CAD, GOAP supported JalaSpandana to carry out capacity building exercise in three major irrigation projects namely Rajolibanda Diversion Scheme (RDS), Priyadharshini Jurala Project (PJP) and Kurnool Cuddapah Canal (KCC)[2] in Krishna Basin in Andhra Pradesh[3]. The PTP was carried out from January 2005 to mid 2006.

1- The detailed report of PTP in RDS, PJP and KCC can be obtained from writing to jalaspandana@yahoo.co. in or visit www.jalaspandana.org.

2- Rajolibanda Diversion Scheme is fifty year old project, PJP is new project in which the notification and area delineation is yet to be taken up across the command area and KCC is about 130 year old project, which is undergoing modernisation programme with the financial loan from Japanese Bank of International Cooperation (JBIC).

3- Irrigation and CAD, GOAP empanelled NGOs and assigned the task of carrying out PTP in other irrigation projects in Andhra Pradesh (I&CAD forth coming publication on Sustainable Water Resource Development in AP).

1.1. AREA PROFILE OF THREE PROJECTS IN ANDHRA PRADESH

Table 1. shows JalaSpandana engagement in PTP in AP

Name of NGO	Irrigation Project	No. of WUA	No. of DCs	WUA area (ha)	Villages
JalaSpandana	Rajolibanda Diversion Scheme	34	6	35425.00	79
	Priyadharshini Jurala Project	5	-	4500.00 ha*	27
	Kurnool Cuddapah Canal**	86	14	1,60,000 ha	346

* In addition, PJP provides water for 12,145 ha to the RDS tail end command area.

** JalaSpandana with other two NGOs namely APARD and WCUSS carried out PTP in KCC.

2. CONCEPT PTP

The experiences during the field work in irrigation systems reveals that there are number of problems inbuilt in the training programmes imparted in the capital and district centers. These trainings have limited time bound programmes, which are never easy to encompass all the complexities of the irrigation system, which again can be registered by the participants in short duration. The need of the hour is to see the training programmes as continuous process of capacity building. Most irrigation systems have huge command area and to reach all these users needs a thorough investigation while preparing the training module.

It is not enough to merely create users institution to turn and take over the responsibility of water management in irrigation systems, which is complex and dynamic features in terms of social, economic, technical and political fronts. The participation of users in any institutional activities do not make any meaning if it confines to members turning out to vote during elections only (Inbanathan, Bhagyalakshmi and Doraiswamy 1997). The task of government and non-government agencies in capacity building exercise is ever increasing phenomenon particularly as we move towards building users institutions. Many times it is felt that the task of capacity building is over with the formation of users' institution at various levels, but the true fact is that the responsibility to increase the capacity among users' increases as we move forward. Thus we need to explore the viable institutional mechanism to install training centers in each of these projects on a permanent basis. The attempt will also focus on **'supply driven and self driven'** training module.

The concept Participatory Training Programme (PTP) is evolved to enrich farmers with all the management techniques by involving them in all aspects of the programme. The PTP gives opportunity for the users to understand the problems and its implications in the irrigation project and also enables them to realize the mistakes committed by some farmers. The PTP is more encouraging to clarify apprehensions on different practices and evolve strategies to manage the system efficiently. One of the major attention is to simplify the rules, regulations and other day to day business of WUAs, so that the farmers can manage it like any of their own business. The programme aims to develop

number of farmers field school, which in turn carry out the training programme and reach many farmers in the region (Doraiswamy and Mollinga 2004). The perceptions of water users and experts on water policies, Irrigation Act, Rules and Regulations help modify and design comprehensive policy and move towards contractual agreement (Mollinga 2004).

This training programme undertakes a new type of activities in three parts in the process of developing effective training materials and organizing training programmes for dissemination for efficient water management in irrigation systems in Andhra Pradesh, South India, which has so far been characterized by government-initiated training programmes and managed by few professionals. The training the general advocacy of participatory approaches to its logical conclusion, by initiating multi-stake holders emphasising farmers' involvement in preparing and dissemination of the training module in order to increase and strengthen their role in water sector training programme formulation and implementation.

2.1. AIMS AND OBJECTIVES OF PTP

The aims and objectives of the training programme are to carry out training needs assessment in irrigation project area, develop participatory approach in training needs assessment, assess the capabilities of users in water management at various levels, carry out capacity building exercise, increase the productivity per unit of water, food and employment security, reduce brewing water tensions in the region, assess the feasibility of application of computers and simputers and explore the possibilities of viable and feasibility of sustainable training centers in project area

3. METHODOLOGY OF PTP

The training programme consists of three parts namely Training need assessment, Training and Impact assessment, which was carried out in participatory approach with participatory monitoring and evaluation mechanism, through involving different stake holders like farmers, department officials, elected representatives in the region at all levels, NGOs and other institutions.

STEP BY STEP APPROACH

PRE-TRAINING

1. Benchmarking of WUAs
2. Action research on micro and main system/project performance
3. Unstructured meetings with all WUAs at project level
4. Participatory identification and establishment of centre and sub centers for training
5. Social, Physical and Natural capital documentation
6. Involvement of officials of I & CAD and others right from the beginning

7. Formation of project level informal committees of WUAs
8. Participatory action plan
9. Entry point activity
10. Participatory identification and establishment of model distributary, farm and WUA
11. Participatory training module preparation in an integrated approach on IWRM
12. Preparation of concept note and subsequent action plan for various issues
13. Facilitating the preparation of video documentation on water issues

3.1. TRAINING NEEDS ASSESSMENT

The training need assessment, carried out in participatory action research approach adopting extensive and intensive facilitating and enabling conditions to elicit information required for the training module reveals ground realities and ways to overcome such predicaments (Naik et al 2002). The following are some of the findings that emerged during the training need assessment.

- Water users, department officials and other stake holders in the command area have great potential to make PIM success
- Extension services related to water conservation technology and agriculture is poor.
- Water and crop productivity is below the expected level, for instance, paddy average yield in the region is about 30 bags per acre, which could be increased up to 50 bags by adopting different technologies.
- Representatives of WUAs, and department officials do not have holistic picture of project performance since its inception till date.
- Modernisation programme lay emphasis on physical works.
- WUAs are not involved in modernisation programme, as a result tampering of structures of canal system continues.
- WUAs not keen on water tax collection due to mechanism deficiency, Revenue Department is not apportioning the water tax to WUAs. As a result, WUAs are not getting their due share of money to carry out operation and maintenance of canal system.
- Sharing of data on the water tax collection by Revenue Department to Irrigation Department and WUAs is missing and cumbersome process.
- Wide gap in potential created and utilized in RDS project - Tailenders deprivation
- Lack of knowledge on the rules and regulations of APFMIS Act.
- Informal arrangements like community *lashkars* (water man), patrolling on the canal system towards managing scarcity.
- None of the WUAs had established WUA offices and only one WUA had records

pertaining to WUA.

- Informal project level WUAs committee formed under FNWSR supported by INPIM showed great potential to develop as pressure group and lobby for PIM (JalaSpandana 2004 & 2005).
- No financial support from Government to make WUAs sustainable.

3.2. TRAINING

In each of the irrigation command area, one main training centre and several regional centers depending on the size of the command area were established to suit the convenience of the farmers spread across the command area right from head reach to tail reach. The training components will focus on Social, Political/Institutional, Economic, Technical and Management issues related to irrigation and development. The trainings were given to farmers, representatives of WUAs, department officials and other stake holders.

As the capacity building is carried out in major irrigation projects with large number of WUAs spread across large canal network, the training programme was strategically designed in a participatory manner to reach all WUAs and farmers.

1. General training carried out to all WUAs and farmers in project area
2. Intensive training to establish fair representation of model WUAs
3. Too intensive training to establish model farm and farmers field school
4. Participatory approach to modernisation of irrigation project (blending social with technical)

TRAINING MODULES

MODULE – I (WUA ROLE, RESPONSIBILITIES AND FINANCIAL MANAGEMENT)

1. Know your project – SRSP project and its modernisation
2. Participatory Irrigation Management and its importance
3. Formation of WUAs and its objectives
4. Andhra Pradesh Farmers Management of Irrigation Systems 1997 Act (APFMIS)
5. Role of Irrigation, Agriculture and Revenue Departments in PIM
6. Functions of Presidents, TC members, sub committees and general body
7. Maintenance of accounts and book keeping
8. Gender issues
9. Sustainability of WUAs

MODULE – II (IRRIGATION MANAGEMENT + PROJECT VISIT)

10. *Warabandi* – Rotational Water Supply
11. Irrigation Projects – Water distribution system and maintenance of structures
12. Methods of Irrigation – Surface, Sprinkler and Drip Irrigation
13. Water logging – Salinity and drainage
14. Water balance and Conjunctive use of ground water

MODULE III (WATER MANAGEMENT IN DIFFERENT CROPPING SYSTEMS)

15. Systematic land development
16. Soil, water and plant relationship
17. Water Requirement for different crops and critical stages
18. On-farm water management
19. Water management in horticulture crops and fruit crops
20. Water management in ID crops

MODULE – IV (SRI PADDY, FARM MECHANIZATION AND FIELD VISIT)

21. SRI (Paddy) method of cultivation
22. Farm mechanization

MODULE – V (IMPROVED CROPPING SYSTEMS)

23. Soil testing and its importance
24. Fertilisers and Integrated Nutrients Management
25. Integrated Pest Management
26. Bio-pesticides and Bio-fertilisers
27. Organic farming

MODULE – VI DAYS (LIVELIHOODS MANAGEMENT UNDER WUA)

28. Impact of Irrigation Projects on Environment and Environment management plan
29. Livelihoods development – diversification of agriculture, animal husbandry, value addition services to the products, market linkages.
30. Community health and sanitation with reference to water sector

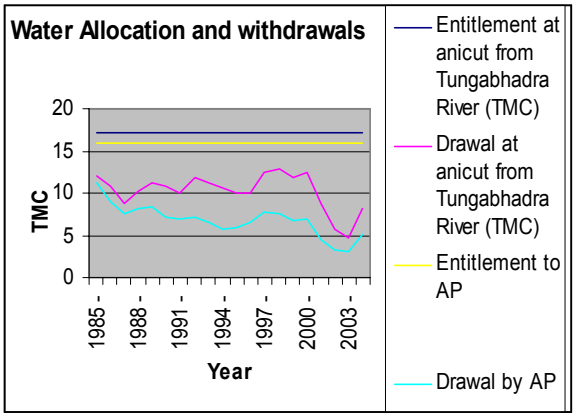
TRAINING OFFICIALS

The policies and programmes towards decentralization that calls for devolution has created a fear among the section of the stakeholders that they get displaced in the due

course of accommodating participatory programme. On the day to day activities the existing staff of I&CAD can become more productive and play important role in improving water use efficiency, which is very essential during the take off stage of PIM (Diemer and Huibers 1996). Farmers participation in irrigation do not eliminate the role and responsibility of the Government organisations and agencies in irrigation. This perhaps may be true in the long run or calls for redefinition of roles and responsibilities of different stakeholders in the system. The Government staff can take over the role of mobilizing, organizing, training and provide technical support in design, operation and maintenance of the system through which there could be substantial contribution from their professional background.

WURF

One of the main draw back in the irrigation sector is the wide gap in the knowledge between the professionals and the users. Several research topics undertaken by various researchers from various professional institutes have not made sincere attempt in transforming the research finding to the users (Pastakia 2002). The findings of many research topics that concern farmers and system managers in their day to day business of irrigation management is not shared with the users from whom the primary and secondary data is collected. Of late, in addition to the existing pattern of research both academic and development, concept like Water Users Research Facility is being propagated. The main proponents of this concept are Dr. Peter Mollinga[1] and Mr. R. Doraiswamy[2]. Attempts are being made to facilitate farmers to identify the problem areas that needs to be researched upon for better understanding and initiate actions accordingly. The **graph** was prepared and showed to stakeholders to understand how the RDS project is functioning over the years.



MICRO-PLAN

PTP helps preparation of micro-plan, which constitute detailing of the activities that is intended to be taken up during the pre crop season and crop season period at the level of WUAs. In the past, the micro-plan include budget estimates for the activities like physical works i.e. the repair of the canal networks and other irrigation structures. These estimates were prepared exclusively by the staff of irrigation department, which was not conducive for promoting participatory irrigation management. The threat in the conventional method is that the water users i.e. farmers would take back seat and depend on the staff of irrigation department to identify works and even to obtain the

1- Dr. Peter P. Mollinga, Senior Researcher 'Natural Resources and Social Dynamics' ZEF (Centre for Development Research), Department of Political and Cultural Change, Walter Flex Str. 3, 53113 Bonn
2- Mr. R. Doraiswamy, Water Resource Specialist, JalaSpandana – South India Farmers Organisation for Water Management, Bangalore - India

basic information about the water tax pricing, demand and collection (Dinar and Subramanian 1997).

MODERNISATION

PTP enables conceptualize canal modernisation programme that blend socio-economic and political factors with technical factors of irrigation system will be the central focus within the overall agenda. On the socio-economic and political front, we emphasise on the process of design and implementation through participatory and collective decision making approach. The social engineering, which was one of the missing link is roped in the process of irrigation development, that includes establishment of new infrastructure and modernisation of existing infrastructure.

Some of the advantages of this exercise is to improve water delivery service to farm, improve water use efficiency and irrigation project efficiency, create we feeling among the users, prevent tampering of canal structures, increased yield, ability to shift to new crops and methods like System of Rice Intensification (SRI), empower farmers to raise resources including water tax/charges/rates for the regular operation and maintenance, improved quality and quantity of work, etc (FAO 2003). In addition, issues like water conflict between farmers and system managers and among farmers is intended to reduce.

WUAS AS FARMERS FIELD SCHOOL (FFS)

The trainers of JalaSpandana develop WUA as Farmers Field School also to further up the training programme in its jurisdiction. This approach enables us to reach all farmers in the spread out command area. The WUAs as FFS in this approach is felt essential to make considerable impact on the command area. In other words, the linkages among the trainers, FFS and general farmers is strengthened to make large scale irrigation system function effectively. The FFS shall focus on water management, water distribution, SRI paddy cultivation method, organic manure, vermiculture, less cost/no cost inputs like panchakavya, herbal decoction, etc. The trainers or extension service people of JalaSpandana played facilitators role in promoting FFS.

LEAD NGO

The involvement of NGOs in canal irrigation projects for capacity building is negligible when compared with tanks and watershed programme, especially projects supported by World Bank. JalaSpandana played a role of lead NGO in K.C.C to promote NGOs participation in major and medium irrigation projects. In KCC two NGOs namely APARD and WCUSS were given training on irrigation management in large irrigation projects and encouraged to carry out PTP.

STUDY TOUR

JalaSpandana organised study tour to representatives of WUAs, department officials and other stake holders to personally visit their dam site and canal structure to know their project.

FARMER TO FARMER TECHNOLOGY TRANSFER

JalaSpandana has promoted farmers as trainers and deployed experience farmers in SRI paddy cultivation and organic farming to train the farmers in command area. This method of 'Farmer to Farmer Technology Transfer' has been strength of winning the hearts of the farmers of command area to adapt changes in the existing practices of water distribution and crop management. The mass communication like village drum beats, cable connections, wall paintings, posters, etc will be extensively used in the programme. JalaSpandana has employed representatives of successful WUAs to train the representatives of WUAs.

MODEL FARMS

JalaSpandana is engaged in developing Model farms in K.C. Canal in different locations of the command area. This model farm shall be self illustrative in terms of water and crop management with special emphasis on livelihoods. The action plan to develop model farms covers field oriented training programmes with package of practices on using advanced technologies, free cost and low cost technologies, automated water regulation and distribution, IPM, Organic farming, etc.

EXIT STRATEGY

JalaSpandana designed PTP with the involvement of officials, farmers and representatives of WUAs with the objective that at the earliest, the PTP become the responsibility of the representatives of WUAs and Department officials. The realization that PTP is the integral part of irrigation management both by department officials and WUAs is crucial for the sustainable PIM. The study tour organised in these projects were designed collectively and the responsibility was taken up by Irrigation Department. The presentation of the progress of PTP carried out by JalaSpandana, after some training was taken over by Irrigation Department officials, this shows the involvement of officials in PTP.

3.3. TRAINING IMPACT ASSESSMENT[1]

The basic objective of the training programme is to produce good output at the end of the training programme both in terms of quantitative and qualitative. Although, targets were set to undertake the training programme like the number of trainings to be imparted to different stake holders, the experience in the field shows that some of the trainings were required to be conducted more than the days stipulated in the six training modules prepared and circulated by I&CAD and WALAMTARI. We will discuss these issues in detail as we take up topic by topic.

- Parameters derived based on bench marking (PIM logistics, tail end deprivation, water use efficiency, office establishment and record maintenance, democratic functioning of WUAs, water scheduling and conflict resolution) and inputs provided in relation to issues identified.
- Participatory situational analysis

1- Please note that this is not an exhaustive list.

The **establishment of training centers and sub centers** in command area draw good response from various stakeholders in the irrigation projects. It was relatively easy to organise meetings as JalaSpandana was based in the command area and was accessible to farmers 24/7. WUAs who were only complaining against department for not delivering water in time, after PTP realize their roles and responsibilities and became pro active to address water issues.

One of the major achievement in PIM domain was the we feeling and **sharing of PTP** responsibility by representatives of WUAs and department officials in organizing trainings, study tours, data sharing, etc. In RDS project 30 out of 34 WUAs **established offices** and relevant records including gauge records and water tax. The remaining 4 are in extreme tail end are in the process of establishing offices. In PJP, all the 5 WUAs established offices and other details as mentioned above and in KCC, 78 out of 86 WUAs formed offices and other records. In these projects **28 model WUAs** were formed under PTP, which also function as users school. Some of these WUAs are supported with farm equipments to demonstrate income generating activities for the WUAs and **enhance livelihoods**. These WUAs are making good progress in development of WUAs, participation in water management, water tax collection, etc. **Tampering** of canal structures have been reduced to large extent.

Informal project level committee were formed in PJP and KCC and the existing informal project committee in RDS project formed under FNWSR supported by INPIM was further strengthened. WUAs participate in the water management at primary and main system level. Informal practices like community water man are being scaled up to cover the whole system to ensure efficient use of water. The regular discussions regarding water management is taking place after PTP between department officials and WUAs at various level.

The **water use efficiency** is increasing from 5 acres per MCFT of water to 7 acres per MCFT of water. PTP established 436 FFS covering an area of 1058 ha on SRI paddy method, ID crops and organic farming. Paddy **yield increased** 10 bags in areas where farmers field schools were established, particularly SRI. In selected distributaries, in these projects **volumetric supply** is introduced on pilot basis. In some WUAs, like for instance, Wadepally mandal in RDS project has made 100 per cent water tax collection, which is possible only due to WUAs participation.

The representatives of WUAs participate in **policy recommendation** to the government. WUAs are demanding government to hand over the water tax **collection responsibility**. It is worth mentioning here that prior to PTP, WUAs were not willing to take over the responsibility of water tax collection due to fear. I & CAD is considering transferring water tax collection responsibility to WUAs. All the WUAs in RDS, PJP and KCC prepared **micro plan** for their WUAs for the year 2005-06 and submitted to the Irrigation and CAD.

Irrigation and CAD and JalaSpandana prepared draft version of **Memorandum of Understanding to transfer water tax collection** to WUAs, which will be signed by the President of WUAs and Executive Engineer or equivalent representing irrigation department. The MOU speaks of the water tax rate and incentives and disincentives in timely collection. This is also translated into Telugu and the same was discussed before representatives of WUAs.

During PTP, the livelihoods of **the tail end farmers** were shown and explained to the farmers in the head reach and the effects on soil that would occur due to excess irrigation in the long run. At present the head reach farmers in head reach distributaries of RDS are not facing shortage of water. The issue before the WUAs and Irrigation Department is to undertake operating of sluices and gates. In RDS, which was facing severe tail end problem, is being coordinated with informal project level committee and enforcing rotation system of water distribution called as *Warabandhi*.

The first **computerization of WUA administration** perhaps in India was attempted in RDS by JalaSpandana and succeeded with the cooperation of WUA representatives. The WUA No. 7, Mandodi of RDS project was selected to experiment computerization of records pertaining to WUA functioning, list of TC members, voters list, project information, etc is installed and being successfully. The recent visit by APERP delegates also took note of this computerized WUA. The computer is being operated in English and Telugu and the necessary training required to operate the computer is being provided to the representatives of WUA by the JalaSpandana.

4. LESSON LEARNT

PTP is being carried out for the first time in Andhra Pradesh with commitment by the officers of I&CAD at all levels and WALAMTARI through NGOs in large canal irrigation system. PTP is the right way of training programme as different stake holders realize their roles and responsibilities and in three years period, the project committee of WUAs or Department officials show the sign of taking over the training as part of water management. The department officials and WUAs prove great potential to resolve majority of the issues including tail enders and operation and maintenance issue.

The **time** frame for PTP in these large irrigation projects given the magnanimity of the issues and work in large irrigation project **is inadequate**, the field experience shows that at least three years is necessary for NGOs to prepare the ground fully and **exit**. There are issues at policy, project and micro level that need constant support from external agencies like NGOs. Thus arise need to institutionalize PTP for minimum of three years through NGOs and later built into irrigation management by PCs or I&CAD. The modernisation programme right from the beginning needs to incorporate PTP. As the distributary committees are formed in the month of December 2006, the training at mezo level system maintenance should be carried out to the newly elected representatives of DCs. The intensified PTP in large irrigation projects compounded with policy reforms certainly make PIM success in AP, particularly in the wake of policy making WUAs continuous body with every two years election to one third of TC members.

The visits made by the higher officers of I&CAD, professionals from FAO, JBIC, INPIM (Hatsuya Azumi), Australian experts, and other field tours boost the morale of the PTP.

INPIM may commission study on PIM in Andhra Pradesh both from policy perspective and field situations for the benefit of larger interest of PIM. Further, it would be appropriate for INPIM to support activities like Farmers Network for Water Sector Reforms and Develop PTP.

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