

STRIVER POLICY BRIEF

Strategy and methodology for improved IWRM

- An integrated interdisciplinary assessment in four twinning river basins

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Participatory training in canal irrigation in Andhra Pradesh: The *JalaSpandana* Experience

This Brief discusses the Participatory Training Program of various stakeholders undertaken by the farmers' organization JalaSpandana in Andhra Pradesh, India. It was found that Participatory Training had a positive impact on water use efficiency and in particular farmer to farmer learning was found to be significant in promoting sustainable irrigation management.

Participatory training in canal irrigation in Andhra Pradesh: The *JalaSpandana* Experience

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Abstract

The need for farmers to participate in irrigation management is recognized worldwide, as is the need to protect limited water resources. One method to do so is to make the water user/irrigator responsible through an institutional structure in which farmers participate in governance, management and finance of irrigation, as has been adopted in parts of India. This report describes a Participatory Training Program of various stakeholders undertaken by *JalaSpandana*, a non governmental organization in Andhra Pradesh (see www.jalaspandana.org) with the objectives to strengthen Participatory Irrigation Management, sustain Water Users' Associations, and enhance water use efficiency and farmers' livelihoods. Empirical evidence was used to demonstrate that a shift from conventional to participatory training methods actively involving water users in designing and implementing training programmes was needed in order to make training efficient and sustainable. It was found that Participatory Training had a positive impact on water use efficiency and in particular farmer to farmer learning was found to be significant in promoting sustainable irrigation management.

This STRIVER Policy Brief is based on the following research report:

Doraiswamy, R. and Peter P. Mollinga (2009), 'Participatory training in canal irrigation in Andhra Pradesh: The JalaSpandana Experience'.

Fact box

Due to a lack of holistic management of water resources, there is conflict amongst farmers as well as between farmers and the government over water allocation in the Tungabhadra Basin. Capacity building in irrigation systems has not been given adequate attention. The Irrigation and Command Area Development Department I&CAD Government of Andhra Pradesh empanelled NGOs and assigned the task of carrying out Participatory Training Programmes (PTP) in canal irrigation in Andhra Pradesh. Under this programme I&CAD supported *JalaSpandana* to carry out capacity building exercises in three major irrigation projects, covering a total area of almost 200,000 ha with 125 Water Users' Associations(WUAs), and 20 Distributary Committees (DCs) spread across 452 villages. At the inception of the project, none of the 125 WUAs had established offices and only one WUA had records pertaining to the WUA. The State of Andhra Pradesh is one of the pioneers to adopt such a PTP method in Participatory Irrigation Management PIM in India (Hooja, 2006; Peter, 2001).

INTRODUCTION TO TOPIC CONTEXT

Generally in South India, there is **lack of comprehensive long-term irrigation management** and lack of effort to re-evaluate the command area and the crop pattern based on regular review of project performance (Doraiswamy and Mollinga, 2004). Most representatives of WUAs and government officials are involved *ad hoc* in water management and thus lack understanding of long-term project performance. Due to lack of effective management, irrigation projects have been underperforming (e.g., violation of cropping pattern, unauthorised irrigation, poor cost recovery) and wasting water for several decades. As a result, water use efficiency and crop productivity are below the expected levels. Farmers have had to adjust both the area and crop cultivated, depending on water availability and crop is lost due to non-availability of water at crucial growth phases. This situation is causing **water conflict between stakeholders** (Doraiswamy and Gujja, 2004).

Most irrigation projects receive much attention on technical aspects but **neglect social aspects** such as public participation, operation and maintenance, capacity building, convergence between relevant government departments, productivity of water and crops, and peoples' livelihoods. **Donor supported** projects are often **short-term** and do not achieve sustainable results (Doraiswamy, 1995; *JalaSpandana*, 2005). Training is often imparted in capital cities and district centres (Doraiswamy, 1995; IDPAD 4-3-7, 2003). This limits outreach, and leads to handing over responsibilities to user organizations based on a one-time activity, without adequate capacity building. Farmers are apprehensive about training programmes as the conventional approach consists mainly of top-down delivery of lectures.

Due to poor government policy, most irrigation projects receive less funding than the estimated cost of **operation and maintenance** O&M, which results in a technically poor delivery system. The government tends to tackle this problem by applying for large loans to carry out the modernization of irrigation projects, which again need funds for operation and maintenance. However, as capacity to secure

these funds is not built in parallel, this strategy raises the question of how to sustain the modernized canal system and repay the loan. Thus, operation and maintenance is a core subject in the politics of irrigation development. Because the consensus of WUAs on the modernisation programme is not sought, new structures in canal systems are often tampered with.

There is a **wide gap in knowledge** between water users and professionals, and not enough research that sincerely tries to transform research findings to be understood by users (Pastakia, 2002), and the relation between stakeholders is weak. Further, there is a general **lack of knowledge** on rules and regulations, e.g. of the 1997 Andhra Pradesh Farmer Management of Irrigation Systems APFMIS Act and its subsequent amendments, among representatives of WUAs, officials of the Irrigation and Revenue Departments, and farmers.

There are several **existing informal water management practices** and community initiatives that are relatively capable in managing water scarcity. Examples of these are rotation systems, hiring of private *lashkars* (watermen providing information, managing rotation and, patrolling the canal system), increasing inflows, collective negotiation for water, and utilization of water from different sources, that benefit tail-end farmers.

The limitations of existing intervention and extension approaches of government agencies together with the (often unacknowledged) existence of considerable water user knowledge and capacity, make a case for a participatory approach to training (PTP), in which water users are closely involved in the design as well as the implementation of the training programme. An explicitly multi-stakeholder training programme process with balanced representation of different interest groups is expected to enhance the quality, acceptability and pace of irrigation system improvement (Narwani, 2005)

Main objectives of PTP

The PTP aims to draw attention to the **importance of carrying out capacity building** in irrigation projects in order to promote comprehensive improvement of system performance. Further, because irrigation systems are complex and have dynamic features in terms of social, economic, technical/hydrology and political dimensions (Vaidyanathan, 1999), **capacity building has to be a continuous process** and permanent exercise of government and non-government agencies. The PTP objective as undertaken by *JalaSpandana* is to increase the efficiency of water use and irrigation management in order to increase productivity per unit of water, food and employment security, and reduce conflicts in the region.

The challenge in the empowerment of WUAs is not just in dissemination of information, but in **identifying the processes** involved in irrigation management and finding ways to redress problems in the present water resources management system. Thus, the PTP stresses **research experience in the region** (Doraiswamy, 1995; *JalaSpandana*, 2004, 2005), including situational analysis of WUAs, water management practices, project performance, and ideal locations for setting up training centres. Joint data collection with representatives of WUAs (Naik *et al.*, 2002) and participation of farmers and department officials in identifying problems and solutions enabled structuring the content of the PTP and training materials to suit the location, and incorporate local knowledge.

The characteristics and outcomes of PTP as pursued by *JalaSpandana* were the following.

- It helps to **strengthen relations between stakeholders** by improving co-operation between department officials and water users, necessary for substantial improvement in water management.
- **Participation** of higher government officials, national and international delegates, as well as elected representatives (members of parliament) and NGOs **adds value**.
- PTP promotes **keen interest of farmers in understanding project performance** and involvement-

- Farmers share responsibility for training sessions.
- In areas where PIM was effectively applied, **water use efficiency increased substantially**, from 5 to 7 acres per million cubic feet (MCFT) of water.
- Many engineers had not been in the habit of working out water use efficiency systematically prior to the PTP. Subsequently, **I&CAD developed a format for management of information** for every irrigation project to assess the water use efficiency, which calls for regular assessment by irrigation engineers.
- The PTP aims to **bridge the wide knowledge gap** between users and professionals using appropriate training materials.
- Sending findings of the PTP frequently to concerned authorities, participatory knowledge generation and dissemination helped to **break the monopoly over data** on irrigation projects and enable farmers to participate in mainstream politics of irrigation system.
- The PTP **enabled stakeholders to understand problems related to irrigation on a wider scale**, by visualizing the negative impact of officials not discussing with farmers to verify appropriateness of modernization measures to avoid future tampering, tampering mistakes committed and the benefit of timely involvement by farmers in irrigation management.
- The **interactive communication** aided knowledge generation. Outreach to the whole command area was enabled by wide distribution of multi-media materials e.g. audio-visual, including by cable TV.

Simplification of rules and regulations on the water tax share apportioned to WUAs to carry out O&M, roles and responsibilities of Irrigation and Revenue Departments, and other day to day businesses of WUAs aims to reduce apprehension and **enable farmers to manage the system efficiently** and independently (Chambers, 2003). The design

of comprehensive policy and a move towards contractual agreement is helped by inclusion of the perceptions of water users and experts on water policies (Mollinga, 2004). The first **computerization** of WUA administration perhaps in India was implemented by *JalaSpandana* with cooperation of WUA representatives in English and Telugu.

The aim of documenting **local farmers' knowledge and informal practices** and community initiatives is to assess the scope of expanding these to larger scales in order to improve overall water use efficiency. For example, it was found that the employment of *lashkars* (watermen) in the entire command area reduces water wastage, improves water use efficiency and crop productivity. The PTP advocates adoption of various **new strategies** in water and crop management and **new cropping methods** in parallel to **retaining conventional methods** to help spread demand of agricultural practices for water over the full irrigation season.

INSTITUTIONAL MECHANISMS

The PTP conceived by *JalaSpandana* is set up as a continuous and permanent step by step process of **user organization and capacity building** to empower WUAs and make them responsible in the whole process of water tax demand raising, collecting, carrying out O&M, and manage the irrigation project including capacity building. During the PTP, almost all WUAs set up offices. The PTP comprises **Training Needs Assessment, Training, and Impact Assessment**, all carried out through participation, with monitoring and evaluation mechanisms involving various stakeholders and assessment of capabilities of users in water management at various levels.

The decision of **setting up training centres** and sub-centres for carrying out PTP and general training to farmers and all WUAs, conveniently located for access, is taken during interactive sessions with farmers and department officials. One main training centre and several regional centres are planned to cover the entire command area evenly, whilst ensuring free access to all farmers, i.e. free from any particular community, class or person. In the long-run this enables a viable institutional mechanism for the self-driven installation of training centres in irrigation projects on a permanent basis.

Intensive training is used to establish **model WUAs** to increase outreach and strengthen linkages between stakeholders. 28 model WUAs were formed which also function as users' schools, and were making progress in the development of WUAs, participation in water management, water tax collection, etc. Very intensive training is used to **establish Model Farms and Farmer Field Schools (FFS)**, to carry out PTP and increase outreach to farmers in the region (Doraiswamy and Mollinga, 2004), which can demonstrate new strategies in water and crop management and new cropping methods and give farmers firsthand experience and confidence to adopt learning in their WUA. **Farmer to farmer learning/technology transfer** is very significant in terms of adopting new methods on a trust basis from fellow farmers. Thus, *JalaSpandana* promoted farmers as trainers and deployed farmers experienced in new methods to train farmers in the command area, making water users integral to PTP. The establishment of Farmers Field Schools was given importance due to its efficiency in transferring knowledge to farmers on new methods of farming. In this exercise 436 FFS were established, and one of the outcomes of these FFS is enhanced productivity i.e. increase in yield from 30 bags to 50 bags per acre.

Data and information obtained from concerned departments and farmers was analyzed in collaboration with farmers, whereby the intervention agency functioned as a facilitating agent. The concept of **Water Users' Research Facility** is now being explored, where farmers' identification of problem areas that require further research is facilitated. **Study tours** for representatives of WUAs, department officials and other stakeholders are also employed to convey understanding of increasing pressures on water resources. The initiatives listed in PTP are samples of larger initiatives which could be designed on a regular basis.

POLICY GUIDELINES

The *JalaSpandana* PTP experience suggests the following policy guidelines.

- In order to enable the continuous capacity building process of government and non-government agencies that is necessary for building viable user organizations, a **sufficiently long time frame** is needed of at least three years. Because of the complexity of issues, regular revisits, intense analysis, and ongoing suggestion of measures for emerging challenges in irrigation project management are needed.
- At the Irrigation Department **staff from various disciplines should be recruited**, to sustain the realization that PTP is integral to irrigation management, and thus sustain the allocation of sufficient budget for training and the social component of irrigation management. A reason for the past neglect of social aspects is that many Irrigation Department staff exclusively have an engineering background, or are kept too busy preparing estimates.
- PTP has to **involve department officials at every stage of the training**, with the aim that in the long run the entire capacity building process and improved irrigation performance become a **joint venture of WUAs and Irrigation Department as system managers**. Impact assessment of the PTP revealed significant change in attitude of Irrigation Department officials towards empowerment of WUAs and NGOs, and activities and data became shared. This intense coordinated activity between Irrigation Department, WUAs and *JalaSpandana* has drawn the attention of many NGOs across the State.
- Creation of a **Research and Development cell for each irrigation project** inside the Irrigation Department is advised. Through involvement, officials realize that development of scientific assessment of water auditing and

budgeting at all levels of irrigation projects and coordinated efforts of the Irrigation, Revenue and Agriculture Departments are needed for sustainable irrigation management. Field research revealed the existence of much raw data available at different agencies on irrigation project management and system performance. Most of this data remains unused in understanding system dynamics. The PTP showed that many of the water problems in the region could be solved utilizing a **systematic data bank** on the various dynamic factors at all levels of the irrigation system.

- The 1997 APFMIS Act emphasises the formation of WUAs at three levels: Primary (WUA), Distributary (Distributary Committee) and project level (Project Committee). *JalaSpandana's* experience suggests that **Project Committees are essential for system performance improvement**, as major decisions of allocation of funds and water are taken at that level. Lower tiers of organisation depend on these decisions for their effective functioning. PIM was introduced in Andhra Pradesh in 1997, but the formation of Project Committees only took place in 2009. **The new Project Committees need to be strongly supported through participatory training programmes.**

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About STRIVER

STRIVER- Strategy and methodology for improved IWRM - An integrated interdisciplinary assessment in four twinning river basins is a three year EC funded project 2006-2009 under the 6th framework programme (FP6) coordinated jointly by Bioforsk and NIVA. The point of departure for STRIVER is the lack of clear methodologies and problems in operationalisation of Integrated Water Resource Management (IWRM) as pointed out by both the scientific and management communities. 13 partners from 9 countries participate as contractual partners in addition to an external advisory board.

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Front-cover photo: *Farmer's efforts to save his crop by manually lifting water in Tungabhadra Left Bank Canal. Photo: R. Doraiswamy*

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