



Role of water societies in Tunga Left Bank Command Area, Shimoga and Davanagere districts, Karnataka, India

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Abstract

The sustainability of irrigated agriculture in India is in jeopardy due to the low performance of Irrigation systems, which leads to an inefficient use of land and water and to an agricultural production much below potential. The intention is to encourage efforts by individuals to take responsibility for the management of resources in the belief that individuals have greater stake and better information for making efficient resource allocations (Brewer et al 1997). Most of the schemes that this paper describes did not consider the release of water for the down stream users and environmental aspects which results water conflicts between the upstream and down stream users. All this design problems and challenge results the scheme to be unsustainable and frustrate on the farmers. Therefore, before design irrigation schemes, it should address the mentioned challenges. Irrigation improvement has been identified as one of the key factors responsible for improving agricultural production.

Key words: Tunga Command Area, Water societies

I. INTRODUCTION

Increasing user participation in the management of irrigation systems is being tried as a means to reduce pressures on government finances, improve performance of irrigated agriculture, and ensure sustainability of irrigation systems. Experience shows that farmers all over the world are potential managers who, when properly organized, are able to manage their own affairs. Participatory irrigation management is increasingly viewed as a means to improve the performance of irrigation investments. Since independence the area under irrigation through major and medium command has been increased from 9.70 mha to 55 mha, there is simultaneous increase in cropping intensity and production also with a targeted food grain production of 2.09 m tons (Perspective land use plan for Karnataka 2025). Water use efficiency in most irrigation system is low in the range of 30 to 40 percent, low water use efficiency leads to lower productivity, inequality in supplied to tail end to reach of the command. For the successful management of Water User's Associations it should work with a background of prier planning, its execution and marketing pertaining to cropping pattern, scientific water management practices, drainage

system, etc in an integrated approach. To identify the constraints in the operationalization of participatory irrigation management, the Tunga Left Bank Canal Command area has been taken up.

In the present study an attempt has been made to know the status of canals system of the Tunga command. Tunga Left bank canal (TLBC) is located in between longitudes $75^{\circ} 31' 00''$ to $75^{\circ} 40' 00''$ E and latitudes $13^{\circ} 50' 00''$ to $14^{\circ} 02' 00''$ N covering an area of 147.9 Sq.km. The area lies in the part of Shimoga and Davangere Districts of Karnataka state (Fig 1). The area under the project is in semidry zone, the mean annual rainfall in the study area is 814.90 mm during the period from 1991-2005. The monthly average temperature is 26.22° C. The maximum temperature of 46° C was recorded in March 1994 and a minimum of 09° C was recorded in month of December 1994. The average relative humidity of the study area is 63.64%. The relative humidity recorded at in the months of July to October (monsoon) varies from 84% to 54%, while in other months (pre and post monsoons) it varies from 91% to 22%. The study area has an average wind speed of 4.22 km/hr.

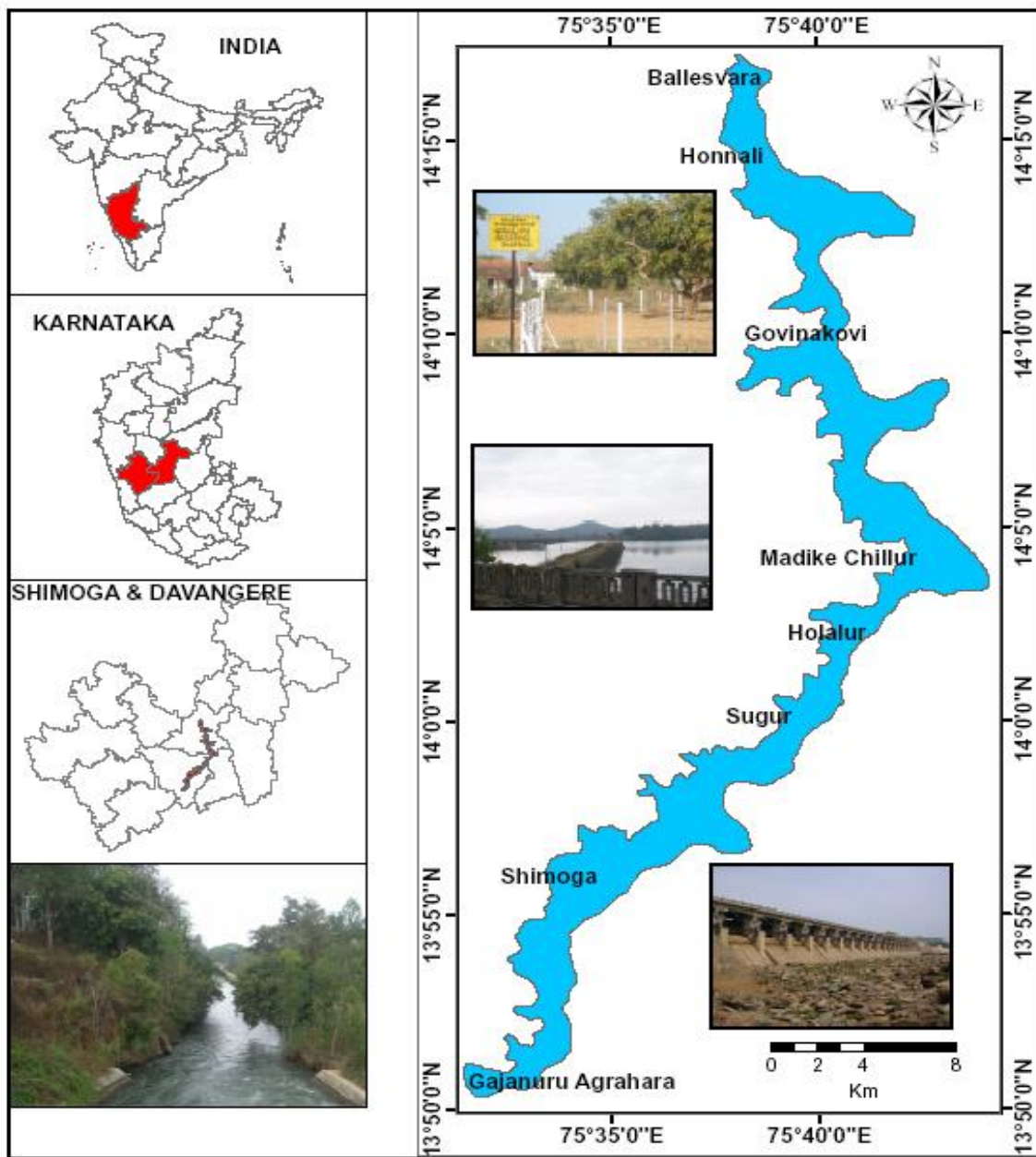


Fig 1: Location Map of the Tunga Left Bank Canal Command Area.

II. Participatory Irrigation Management (PIM)

In recent years the social aspects of irrigation have gained much importance and many management strategies have been developed including participatory irrigation management. The government of Karnataka has made sustained efforts to implement the principles of participatory irrigation management by launching Water User's Association's (WUA) during 2001. In spite of the abundant research findings on social dimensions of irrigation management and the efforts of the Government, several issues relating to efficiency of irrigation and inequality in distribution of water between the head-reach and tail-end farmers still remain unsolved (Karnataka Irrigation Act 1957). The progress of participatory irrigation management in terms of organizing Water User's Co-operative Societies in Karnataka was found to be successful.



Fig 7.1: Farmer's interaction near Arabhaghatta village

The efficiency of irrigation management is normally measured by the extent water actually used by the crops, out of the water released from the reservoir. The factors, which promote PIM are creating the awareness, organizational support by the Non-Governmental Organization's (NGO) and water theft through unauthorized outlets, wastage of water in head region due to excessive use of water leading to non-availability in tail-end.

III. Role of Water Societies in TLBC Area

Water User's Association (WUA) and Water User's Union (WUU) is a group of farmers, all served by a common source of water, who joined together to allocate, distribute, and manage water (Lele, 2000). The Karnataka Irrigation and Certain Law (Amendment Act, 2000) has enabled the formation of Water Users Societies or Co-operatives (WUCS) to take over the management of irrigation projects at the sub-distributary's level. The societies or the water user groups are responsible for the development of irrigation infrastructure, procure water in bulk from the Nigam, operate and maintain canals, levy and collect charges, mobilize resources and create awareness. WUCS had been initiated in the state long back in 1989 under the CAD Programme of pilot projects for community involvement. But, these societies did not have the institutional and legal back up, they received managerial subsidy for maintenance.

In TLBC, there are 14 water societies are present, out of which first five (Table 1) registered and nine unregistered societies, Official documents give information only on the targets, achievement in terms of number of registered societies, membership, grants received and they have taken over the management. They do not throw light on the functional capacity of WUCS. Stakeholders reveal that many of the societies are not performing even the minimum functions and quite a few have become defunct. The sustenance and development of WUCS becomes crucial in the light of the State Water Policy 2002, which specifies that the ultimate objective of participatory approach would be to transfer the management of water resources to the community.

Sl no	Name of the village	Achkat area in Ha	Members
1	Hosahalli	1510	661
2	Gondichatnahalli	1225	490
3	Melenahanasawadi	1230	510
4	Bullapara	887	500
5	Malali	1353	664
6	Hadonahalli	1365	700
7	Kotehal	1550	449
8	Holalur	1158	300
9	Kadadakatte	1260	586
10	Kurava	1260	579
11	Govinakovi	1040	742
12	Didagur	775	594
13	Bidaragadde	1057	463
14	Konayknahalli	810	320

Table 1: Water societies in Tunga Left bank command area

Number of WUCS				Percentage of WUCS		
Target	Registered	MOU	Handed over	Registered	MOU	Handed Over
20	19	8	1	95	40	5

Table 2: Over all Tunga Anicut project's WUCS (as of 31-7-2007)

IV. CONSTRAINTS OF WUCS

- Lack of awareness among the farmers with regard to WUCSs was observed to be a serious problem.
- In physical constraints, it showed that canal condition and siltation were the major problems, because in most societies the canal repair and FIC maintenance was not taken up on yearly basis because of the lack of funds to maintain the structures.
- The reason for lack of funds in turn was that the farmers were less co-operative in paying the water charges regularly to the society. This indifference needs to be tackled through effective training programs. Collection of water charges from users was a serious problem as opined by majority of the secretaries of the WUCS.
- Lack of co-operation was reported to be a serious problem both under functional and non-functional WUCS.
- Among the organizational constraints lack of co-operation was reported to be a serious problem both under functional and non-functional WUCS and between the WUCS of head and tail regions
- Creating collective organization for the common good is a formidable task. It requires a greater deal of patience. To pursue, encourage, and guide farmers in the process of formation and managing of WUCS, while analyzing farmers managed irrigation system, it observed that farmers must be made to respond to their own needs for successful participatory management of precious natural resource like water (Pant 2007, Poddar, 2001).

Farmers' Rights

Irrigation water is farmer's right and when there are no communication gap between the system managers and the farmers, they can negotiate or they can be informed about their entitlement to water, ideal quantities and arrival timings. Farmers' groups can monitor the performance of irrigation and promptly inform the management with whatever degree of vigor when they do not get their share. In essence, it is a kind of management by exception, with built-in feedback mechanism. First -flow of information to managers and staff about their systems for which they are responsible, second-flow of information to farmers about schedules and water deliveries and other matters of concern to them.

Particularly in study area, the localized areas themselves indicate the rights of farmers for water. All the farmers of the localized areas can form groups/committee/ association and monitor the flows and communicate the same to managers. Further, these farmers' groups/ associations can also collect tariff/fees/water duties. Farmers' groups can meet together and discuss the different issues like time of requirement of water, general problems related to maintenance of the outlet and canal etc.

The farmers' association under each outlet would be preferable as farmers have a tendency to readily combine and act to secure proper water supplies for themselves as groups. Generally, it runs smoothly where there are clear advantages to the group involved in terms of information on quantity of water, convenience,

predictability and timelines of water and other services. This can also include determining rotations and schedules between groups, keeping vigilance on the system, maintenance, which is clearly in the group's interest etc., however, there are not many successful examples of promoting participation in canal irrigation system and legal provisions to identify farmers' group, as legal entities may not work unless farmers themselves, want to participate. Unfortunately, the institution staffs are too good to encourage farmers' organization. Concentrated efforts and initiation at farmers' level itself might lead to this ideal situation.

Probably, NGO's / CBO's (Non-Governmental organizations / Community Based Organizations) involvement over a sustained period may bring in the change. A key element in this approach is direct personal contact between farmers themselves and farmers and managers, sorting out problems in the field face to face. Participation of farmer and farmers' groups, the establishment of legitimate expectation and rights to water and better communications between managers and farmers' groups seems to be essential in future for long-term management of canal irrigation system. While the farmer's participation, rights and communication are a must effecting for better management of irrigation systems and the author feels that, adoption of proper acts and policies are essential. The successful cases of Participatory Irrigation Management in Andhra Pradesh, Maharashtra are taken has reference (Raymond, 2000; Vijayashyamala, 2000; Panth, 2000).

The implementation of stages of participatory management can be identified as follows.

- Formation of farmers organization / Water Users Association (WUA)
- Generating political support at the highest level to provide motivation.
- Creating favorable environment.
- Evolving legal framework.
- Defining programs with clarity of roles of Farmers Organization, Irrigation department / CADA and other Governmental agencies.
- Capacity building of WUA, Irrigation / CADA and other-NGO's Intervention.
- Ensuring transparency and accountability and social audit.
- Monitoring and periodic evaluation.
- Officials suggested that higher investment on research and training and demonstration components could help, train not only the secretaries and presidents of WUCS (Sun, 2000) but farmers also.

V. Performance Monitoring & Analysis

Performance monitoring is a critical component of the model. To effect a better management, it is important to understand how a system actually performs in quantitative terms (Malhotra et al., 1984). A step forward in the direction of scientific management of irrigation is to be considered, computerization of the data seems to be the only answer (Suryavanshi and Patwardhan, 1984) to the voluminous job of working out water requirements of individual farmers and the allotment of irrigation schedules to them. Both performance monitoring and computer analysis require and depend on accurate data / information. The components / rights, communications and farmers' participation, performance monitoring and computer analysis through the CAIS to the operational plans that specify after allocation, scheduling. These components help in building up the knowledge of the physical system, identifying the areas for improvement and provide techniques for finding and testing feasible changes in the operational plans.

Canal network information - detail information on distributaries, sub-distributaries, minor outlets and the command served by each outlet, design discharge and other system related details like flow measuring stations.

- Land parcels information - the individual land holding under each outlet command.
- Information on irrigation schedule and quantity and area localized for specific crops under each pipe outlet with the details like crops, cropping season and duration of crop, crop water requirements.
- The drainage information-natural as well as the later developed drainage as a part of land development.
- Spatial information on groundwater quality and depth to water table.
- Information on soils at parcel level, regarding its fertility, permeability and irritability.
- Information on land topography and general hydrology
- Information on climatic as well as daily rainfall (humidity, temperature, evaporation /evapo-transpiration etc)
- Information on general infrastructure (transportation network, communication linkages, power supply systems etc.) and market, trade and commerce.
- Village level up -to date socio-economic information.
- Information about the daily reservoir storage and inflow in to the reservoir

Recommendation of the Research Station

Due to constant irrigation and in the absence of nature and adequate out-fall; water-table rises to dangerous levels and the lands are thrown out of irrigation besides affecting the health and sanitation of the locality. This situation can be remedied by a proper probe and study of the sub-soil stratum, regarding its permeability and locate either open or closed drains in the pervious strata and provide a proper out-fall. By such an arrangement, the sub-soil water, which is already accumulated, as well as the irrigation water which infiltrates through the soils can be conveyed to the locality otherwise threatened. The drains can be either open where the land is not costly or be covered in the case of costly lands or in the proximity of villages. The drains may be either of perforated cement pipes or of rubble and granite metal arranged as a reverse

filter. After investigating, the director of Karnataka engineering research station has prepared pilot scheme for the reclamation of some of the lands in the villages noted are Didagur, Chilur village 1& 2 blocks, Govinkovi and the three alternative proposals, viz, providing open drains, providing closed filter drains and providing closed pipe drains.

VI.CONCLUSION

Lack of awareness participatory irrigation management in terms of water user's co-operative societies and its utility as the first and foremost constraint in the successful of PIM in Tunga Left Bank Canal command area. Lack of effective leadership, lack of proper awareness, lack of motivation and lack of trainings were other serious problems in operationalisation of PIM. Therefore, there is need for effective field intervention by interested stake holders to set right the malaise at system level. The interference of the political parties, illiteracy of farmers, lack of training, heterogeneity in land, lack of co-ordination between WUCSs and WRD were the other factors in non-operationalisation of WUCSs. Similarly, lack of political will, untimely water release, community and social problems also contributed towards non-implementation of PIM in TBP command area

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