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# TANK REHABILITATION THROUGH SOCIAL CAPITAL PAPER

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**Abstract—** There have been a great number of efforts made in various countries to introduce farmer organization, commonly called as water user associations (WUAs) to achieve greater farmer participation in irrigation management. Interestingly there are incidences of farmer participation introduced even in a larger irrigation scheme where definite net benefits could be seen very shortly after the introduction and many more comments on positive effects on participation than negative ones recorded. (Norman Uphoff, 1986)

The present research emerged with the research question: What are the important recipes for successful farmer organization particularly in divergent social conditions to achieve common goals? And How does social capital helps nurture and mobilise men and materials for tank rehabilitation? In a cluster of non system tanks, two tanks namely Kedar from Villupuram district and Kattiamandal from Kanchipuram district, Tamil Nadu, India, were selected as it showed complexities in building social capital among the stakeholders during tank rehabilitation. The objective of this study is to explore reasons for the complexities in the process of building and sustaining social capital for tank rehabilitation. Employing the method called content analysis, the variety of social capital built in the two districts were studied and concluded that it was attributable to the social, economic and political factors such as collective consciousness, caste, financial capital, and leadership responsibilities.

**Keywords—** Farmer, Participation, Water Users Association, Irrigation, Rehabilitation, Caste Conflict

## I. INTRODUCTION

India's role for attaining food security and economic growth is ambiguous particularly due to the socio-economic conditions, increasing water stress, the increasing demand and the oblivious politics. In India tank irrigation alone contributes to about 23 per cent of the total irrigated area, but on account of its mismanagement and the mistrust among the people the country is in water stressed condition.

A tank is referred as a natural or a man made reservoir created by simple earthen construction that captures surface runoff. Tanks are normally classified into system and non-system tanks. System tanks are those, which receive, water from nearby major streams or reservoirs in addition to water from their catchments. They enable the farmers to raise more than one crop. Non-system tanks depend on the rainfall in their own catchment areas and are not connected to a river system. Building of new storage structures like Tanks and rehabilitation of tanks would eventually maximize production. Tank rehabilitation is a process of modernisation of a tank's structural elements such as those of the supply, main, branch channels and on-farm development works. A complete rehabilitation enables efficient system of distribution in the head, middle reaches and tail end of the tank command, reducing conflicts and disputes arising in water distribution.

As part of social capital, participatory approach in water management proved to have succeeded across the world. Participatory approach is nothing but involvement of Irrigation users in all aspects at all levels of Irrigation management (Peter Sun 1996). Social Capital on the other hand consists of the features of social life-networks, norms and trust-that enable participation to act together more effectively to pursue shared objectives (Pelling and High, 2005). Irrigation systems, especially large-scale gravity flow systems, are a good place to look for social capital. Water, one of the precious resources is finite and relatively scarce. If used efficiently and well distributed, this resource can be very productive for all who have access to it so that they can grow and harvest a good crop (Uphoff N and C.N.Vijayaratna, 2000).

## II. MATERIALS AND METHODS

Abstracting two tanks which are poles apart namely Kattiamandal and Kedar, (see map. 1) a content analysis was done with the objective to explore the reasons for the complexities in the process of building and sustaining social capital for tank rehabilitation among the stakeholders with the research question: What are the recipes for successful farmer organization particularly in divergent social

conditions to achieve common goals? And How does social capital help nurture and mobilise men and materials for tank rehabilitation?

This is a pioneering work in the international arena that the Tamil Nadu government issued the contract of tank rehabilitation to the WUA (Water User's Association) in 1990 in addition to a loan as seed money. Shortly after that the works were shared by various related agencies. Under the above task for each tank a trained team of an Institutional Organiser (IO), a Process Documenter (PD) and a Technical Assistant (TA) were stationed to connect people (community, local leaders and the government agencies) through the formation of WUA.

The Process Documentation Records (PDRs) prepared by the team involved were the most important source not only for determining the implementation of new intervention strategy but also for the changes that need to be made in the agency policies and procedures in order to eventuate the programme function in a more effective way. Thus, the process documentation serves as an input into the process of reorienting an action agency to a new mode of working with its clients John A. Joseph and Veneracion (1989). The PDRs are condensed by content analysis so as to identify and test various themes that are encountered in the process of rehabilitation to help the irrigation bureaucrats understand the need of content analysis for tank rehabilitation.

### Content analysis

Content Analysis is a research technique used at large by the social scientists. Berelson's (1952) defined content analysis as a systematic and quantitative description helps to manifest content of communication and to identify specified characteristics of messages. In other words Content Analysis employs an explicit, organised plan for assembling data, classifying and quantifying the themes under study, examining the emerging images, the mental pictures, created by words in the Process Documentation Research. The images are sequentially related to themes, persons or groups or organizations that are connected with rehabilitation and participation in it as documented in the reports interrelationship among them leading to the interpretation of farmers' network by using the case specific/general category system by coding (the system of coding for the verbal interaction between farmers alone and not of outsiders comments. The assumptions in categorizing the verbal interaction or attitude taken from them and the data generated in the study in fact was to capture the typical activities, behaviour or events occurring in the village or irrigation setting) the nature and content of verbal interaction, single words, phrases, sentences and paragraphs of the PDRs were used as the units of analysis.

### III. RESULTS AND DISCUSSIONS

#### Themes - Kedar Village

In Kedar the themes reflecting activities and events relating to tank rehabilitation were by and large on the basis of the interactional themes. The other themes which are given in the order of importance are community/social themes; resources themes: role themes and control mechanism themes. The aggregation of the above mentioned five themes cover 95.4 per cent of all activities which are discussed below to bring out important and noteworthy social capital.

#### Interactional Themes

The interaction between the team and farmers ranked top when compared to the interactions between farmers and other agencies or between the team and other agencies. This was because of the continuous functioning of the WUAs without any disruption from the initial stage. All activities of WUA namely conduct of Executive Committee (EC) and general body meetings, administrative matters, execution of works resource mobilization, conflict resolution to surplus course, straightening of main channel, cutting of trees in the poramboke (squatter) lands etc. needed much of the interaction among themselves and to an extent with other agencies. Also they convened EC meetings to pass the bills from PWD (Public Works Department) and AED





(Agricultural Engineering Department), obtaining grant for the extension of the project period, for approval of annual accounts by Registration department,

Apart from this, the WUA office bearers visited Peikulam (a place where traditional organization is functioning since 125 years) and discussed with the office bearers of the Peikulam WUA and observed the performance of the WUA. They also visited the neighbouring villages called Kattiamandal and Sowdarpatty and observed the various WUA activities.

### **Community / Social Themes**

For the benefit of the community, at large, more concerted efforts were made for the enrolment of all farmers in WUA to achieve better participation. In Kedar there were about 13 castes groups (stratification of people), and all they had equal representation in the EC. Task forces and work groups were formed to carryout supervision as well as to check the quality of work. To inform the farmers fully about the WUA activities, meetings at each hamlet were conducted. Team members and EC members of WUA of that hamlet explained the farmers about the rehabilitation works that were carried out in the tank and the activities of WUA. During execution of works, there was water, accessibility and availability of land and the labour posed problems. At that point of time the locals proved their generosity by providing timely assistance to rehabilitate the tank.

### **Resource Themes**

The first and foremost issue in resource themes is that of mobilizing an amount of Rs. 40,000 (\$666) towards seed money to be deposited for taking ahead the rehabilitation programme. The EC had decided that the EC members had to contribute towards seed money deposit. However, due to the then prevailing famine the EC members could not afford to contribute. As a good start the president contributed Rs. 17,000/-, (\$283) and later two EC members each Rs.5000 (\$83) and Rs.1000 (\$16) respectively and two members each Rs. 500/- (\$8) contributed for the work. With that, the money got from the sale of Babool Tree (acacia nilotical) was also used to deposit as the seed money. The next most important problem was that the money sanctioned by the government Rs. 33,000 (\$ 875) for the entire work that could be received only after completion of the work. So the investment of money directly from the pockets of the farmers and the insufficient fund given by government even which was not accessible on time are great concerns for them.

### **Role themes**

In the role theme, emphasis was given to the motivation of the farmers to form WUA in the beginning stage. At the initial stage of formation of WUA, there was lack of knowledge about the function and responsibilities of the different forums like Executive Committee and general body. Nevertheless, in course of time they had grown informed by involving in various activities. The WUA members became proficient enough to select work groups to supervise the block casting and channel lining. Initially the On-Farm Development (OFD) works were given to the private contractors. The quality of work done by private contractor was not much satisfactory and so the work was stopped immediately and handed over to WUA themselves. Although the office bearers had given priority to their personal work at times than to do WUA works, no major breakdown occurred in WUA activities. Despite there was a delay, the rehabilitation work went on without any interruption. The PWD officials sometimes were willing to help the WUA during crisis in the execution of rehabilitation work.

### **Control Mechanism Themes**

The technical control theme incorporates those main activities such as maintenance of channels, cart crossings, measuring devices, casting yard and water distribution. The entire responsibility of regulation of water was vested with 'Neerkattis' (water manager). At that point of time, there was no interference from the farmers documented. All above conditions resulted in a reduction in the wastage of water and had helped to distribute water more equitably. To guard the machinery and materials and to check the illegal catching of the fish in the tank, a security was appointed. In addition, the farmers who damaged the lining work were strictly fined.

### **Themes- Kattiamandal Village**

In Kattiamandal, as most frequent activities recorded were the interactional theme that accounted for 37% of all activities. The resource theme ranked second and community theme stood in the third position. Fourth and fifth were problem resolution themes and role themes. Support system was the sixth important theme recorded. Altogether, the six themes account for 95 percent of all events discussed below with the illustrations.

### **Interactional themes**

The interaction between team and farmers ranked top when comparing the interaction between farmers and other agencies or team and other agencies. It was recorded that the egoistic feelings of a few individuals resulted in a legal battle and caused the intervention of judicial institutions in the



process of rehabilitation which necessitated constant interactions between the farmers and agency. With the inactive PWD, the problems became aggravated that delayed the smooth functioning of WUA. Even though interactions were initiated, they were only meant to resolve conflicts rather to evolve with strategies for improvement.

### **Resource Themes**

The contributions extended by farmers showed the interest they had in rehabilitation works. Mobilising monetary support was obviously to overcome the financial crunch. There were instances of contribution by farmers recorded. The secretary and joint secretary contributed in many ways financially even by mortgaging their jewels. Their support was crucial particularly at the time when WUA was at stake. ASSEFA, (an NGO), who also on its part has contributed money as loan to the farmers.

Labour mobilization became a difficult task as the labourers were demanding more wages as they knew that there was fund availability for rehabilitation and they demanded the labourers should be called at all cost from the local area. For supply channel clearing operation, the members decided to give 12.35 man-days / ha or Rs. 86.45 ha, but for when it came in operation nobody responded positively. There was constant interruption of work recorded due to shortage of diesel and crude oil, repair of concrete mixer machine, troubles in procuring construction materials as the fund allotted by PWD was much smaller than the market rate. The whole process was hampered in one way or the other even when there was the availability of subscription fees of the members, and money earned from auction of trees and fine from cattle pound for WUA.

### **Community / Social Themes**

The community/ social themes focus on the overall farmer participation which need to be voluntary in nature such as enrolment as members, involvement in on farm development (OFD), rendering services, leadership responsibilities and so on. Although 95 percent membership was obtained through the constant effort of WUA and various committees of the WUA supervised all the works associated with the rehabilitation to make the participation more effective, the tasks which needed to be accomplished were relatively slower than they were anticipated. The reason was that the farmers were ready to render their services if at all they had pecuniary benefits out of it which was

evident from the fact that works done for casting of yard site and water supply were charged by the farmers.

On the one hand, the role of panchayat president and other village elites were of very discouraging. The effect of incessant conflict between the caste groups due to caste hierarchy was very obvious which resulted in the accommodative processes thin. In other words caste consciousness among the farmers and village elites who belong to the two predominant caste groups namely Mudaliar and Scheduled Caste aggravated the already fractured relationship.

### **Problem resolution themes**

In Kattiampandal the incessant conflict occurred were predominantly in the tasks such as water distribution, cleaning of supply channel, traditional rights, labour sharing, and in cattle pound. The financial crunch, strict enforcement of quality control measures, purchasing of materials, casting yard dispute and personal problems like channel disputes were used as tactics to meet the personal ends of the influential and affluent stakeholders. Many times, the conflicts had gone up to the extent of seeking legal remedy. The overall condition existed in Kattiampandal left the WUA completely crippled. Solutions concerning technical problems were given through the team sent by University, Association for Sarva Seva Farms (ASSEFA) and PWD. The clashing groups through the mediation of the team, officials of Anna University, PWD and ASSEFA sorted out legal conflicts (Civil and Criminal cases).

### **Role Themes**

The team members were highly involved in motivating activities which include forming of WUA, collection of necessary data, act as catalyst and to serve as liaisons between farmers and agencies. The team was fully involved in guiding the WUA in prioritizing works and in performing day to day activities including labour mobilization, reducing tension and resolving conflict.

ASSEFA was immensely helping WUA by providing financial help, providing guidelines in running the WUA and in mediating group conflict as well. The police, Revenue and Court were also involved in conflict resolution especially during the process of executing the rehabilitation works. As far as farmers' roles were concerned, committees had been organised to look after various activities like purchasing, providing labour, and supervision of the rehabilitation works.

### **Images - Kedar village**



In Kedar the social solidarity and reciprocity of the people in accomplishing tasks in rehabilitation proved their collective consciousness which paid them the price of successful rehabilitation, which was again attributable to the leadership pattern found there. The benevolent leadership of the president and his honesty in financial matters made people accommodative of new ideas and to reciprocate.

Under the community/social images, existed a remarkable inter-village cooperation between Kedar and its neighbouring village Palliandur. Kedar the heterogeneous community appeared to be conducive to the rehabilitation process and better poised for the existence of WUA for sustained irrigation management.

The cooperation and support extended by the PWD official and in specific AED officials well unto the planning stage to include the felt needs of the farmer in locating vents and channels, build roads along channel by giving their lands to get straight channel were remarkable.

**Image - Kattiamandal Village**

The president who was supposed to play a key role in rehabilitation was not much capable.. Though the secretary of WUA had good rapport with the people and was fully committed with devotion to see through the success of WUA, he had to play a role next only to the president. The actions of PWD in Kattiamandal were contradictory. Sometimes they were very encouraging and many times they were unduly harsh and free of responsibilities. The support of AED and AD officials were very encouraging and helped to the farmers and WUA . The bank officials were not much helpful whom always quoting to the rules and laid many hindrances to the poor farmers to obtain loans. The collector of the district involved himself in assisting the successful functioning of WUA through steering committee meetings. On the whole, much of the time,, energy and work force had to be set aside in resolving conflicts, rather than doing productive works for the village/community.

**Coding categories**

An important aspect of content analysis is that it can be used to show the changing nature of social capital (attitudes, networks and the behavior) of participating farmers over the period of four years. The matrix of nine-fold coding category can be used to show, say on a monthly basis, the changing attitudinal, behavioural and achievement configuration. The nine coding categories, which are a combination of three classes of interactions (positive, neutral and negative) and three classes of areas into which interactions may be classified (socio-economic, SE, task, T and

achievement, A). In the order of priority farmers' verbal interactions were captured and then the outsider's comments and approval were given the importance. A typical table showing the coding categories for Kedar for the month of July 1989 is shown in Table.1

**Table 1: Coding categories Matrix (Kedar )**

	Positive	Negative	Neutral
++ (2)		-	-
++++++ ++++++ (11)		-	-
++ (2)		-	-

The nine coding categories with their frequencies for Kedar and Kattiamandal for the entire period are given in the Table 2.

In Kedar, the PDRs indicated that 970 activities/events have been accomplished in the task towards rehabilitation over the 48 - month period considered for analysis. Socio-economically, positive intent/attitude to rehabilitation shows a frequency of 10 occurrences while the negative intent/attitude to it just about 4 occurrences. This low-key performance on the positive intent was because they did not show up. It holds good for the achievement angle with just about 33 occurrences as positive and 16 as negative.

On contrary, in Kattiamandal the PDR's indicated that only 160 activities/events were accomplished in the task towards rehabilitation over the 46-month period, while only 34 such activities or events were with shortcomings in the process. But socio-economically positive intent/attitude to rehabilitation showed a frequency of 306. The reasons were that in Kattiamandal, some of them behaved always in ways detrimental to rehabilitation. In achievement angle there were 92 occurrences as positive end product and 15 as negative.



From the above analysis it could be concluded that the WUA of Kedar is a high performing, task accomplishing and achievement oriented association showing more positive than negative intent. But this is not so in the case of Kattiamandal WUA.

**Table 2 Coding Categories**

A. Area and Interaction	Kedar	Kattiamandal
A. Socio-Economic Area		
1. Shows positive/intent attitude to rehab	10	24
2. Shows neutral/intent attitude to rehab	4	4
3. Shows negative intent/attitude to rehab		3
B. Task Area		
4. Accomplish a task towards rehab	97	16
5. Remains neutral to a task towards rehab	0	0
6. Fails in the task towards rehab	46	34
C. Achievement Area		
7. Completes/causes a job to result in a positive end product	3	9
8. Nothing is achieved/caused	3	2
9. Causes a failure, being negatively bent	16	1

**IV. RESULTS AND DISCUSSION**

Kattiamandal village in comparison with Kedar village had serious setbacks due to its recurrent and frequent intra - village conflicts and they appeared to be the major hurdles for an effective participatory tank rehabilitation. The two groups present were keen to approach court for solving problems, as they did not have confidence in settling by mediation and arbitration or by mutual understanding. Kedar was high performing and achievement oriented but the condition of Kattiamandal was based on personal antagonisms.

Kedar, which had heterogeneous caste set up, was better poised for rehabilitation which helped in sustained irrigation management than Kattiamandal.

There were indicators in the PDRs that the governmental agencies did not act in a way required to the successful completion of the project. The attitude of the officials to farmers proved to be impolite, harsh that led to a feeling of rejection and dejection among farmers. Apparently they seemed to have misused authority, positions and powers delegated to them..

In general, the images drawn from the PDRs were adequate to categorise the villages and the participating farmers. The images indicate that even though there was reciprocity, collective action and consensus, the difference of opinion and self-centred activities among farmers in Kattiamandal were recorded as major obstacle to tank rehabilitation.

1. In Kattiamandal where there are two predominant caste groups coexist, conflict between them was continuous and outrageous. The absence of oneness among the people hampered the successful implementation of the rehabilitation process.
2. Kedar the village where heterogeneous caste groups are found the place has become a 'cultural melting pot' in other words both material and non-material way living have provided grand avenues for accommodation of ideas and peaceful coexistence.
3. In Kedar where heterogeneous caste system is found, the availability of third party (who would obviously prefer the welfare of the village) to settle the differences between the two conflicting parties within their own community for arbitration or mediation was evident whereas in Kattiamandal the two predominant caste groups were seen 'with caste consciousness' than group consciousness and they also lacked mutuality and oneness.
4. Individual rapport (images) for each other in the village of Kedar was more remarkable than what was seen in Kattiamandal and therefore rehabilitation in Kattiamandal was not as much successful as it was in Kedar,
5. Finally, the type of leadership that was found in Kedar was outstanding that made the people follow with faithfulness. In Kedar the benevolent leader with the characteristics of willingness to assist and provide services to the people without expecting monetary benefits helped people assume the expected roles successfully. In contrast, the leadership pattern in Kattiamandal, was detrimental to rehabilitation and was often not promoting consensus. They had vested interests and acted against the whole rehabilitation process.



### Recommendations

- Investigating various possible methodologies that are cost effective to make the farmers realize the benefit of participatory approach through WUA so as to cover large number of tanks is mandatory.
- Immediate action to orient the government officers including judiciary, revenue and Police to adopt pragmatic approach to develop benevolent relationship with the farmer / WUA so as to take care of the ultimate rural development and upliftment.
- There is a dire need of amending the contract rules to encourage WUA to take contract works themselves. Funds can be raised by cattle pounds, fisheries, usufructs of trees and fine collection etc.

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