



## ROLE OF INSTITUTION IN TANK WATER MANAGEMENT IN KARNATAKA –INDIA

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### **Abstract**

*This paper is a modest attempt to explore possibilities of erosive power of irrigation tank (**kere in Karnataka**) through community participation in Karnataka, India. Where one third of farmers absolutely depends on tank resources for their livelihood. Irrigational tank which has been a long drive force of rural economy is in deep trouble. And yet, people across the country have devised a variety of mechanisms to share the water and maintain their tanks. One such mechanism is a community effort, locally known as **anicuts** (check dams) built across streams, or by streams in valleys. The outflow of one tank supplied the next all the way down the course of the stream; the tanks were built in a series, usually situated a few kilometers apart. This ensured a) no wastage through overflow, and b) the seepage of a tank higher up in the series would be collected in the next lower one. (collective action of community extending labor voluntarily for repair and maintenance work in tanks) to circumvent problem is tank system. This umbilical connectivity between villagers and common property resources is broken over a period of time. This leads to this venerable, irrigation structures deteriorated & this transit paved the way to change its conditions from sublime to ridiculous. This paper is going to compare the traditional with government and NGO sponsored traditional institutions and its inestimable impact on tank water institutions.*

*This research suggests that the time is ripe now for transformation with almost every household in village realizing by sheer experience. Tank Irrigation is the typical example of the water harvesting techniques and is mostly managed by the local communities as common property resource. Budget constraints and poor community participation make the tank performance unsustainable. The immediate solution is to identify the appropriate investment strategies and make the local Panchayats responsible for the operation and maintenance of the tanks. For this it is resource mobilization and people's participation is very essential.*

**Key Words:** *Institutions, Tank irrigation, NGO, Karnataka, India.*

### **INTRODUCTION**

India is well endowed with sufficient average rainfall of 1215mm per annum. But this rainfall is not distributed throughout the year, as 80 % of rainfall occurs during four months of June to September due to south east monsoon. And of this 80% about 50% rainfalls occurs during 15 days. This leads to floods during rainy season and water scarcity during summer months.

Tank irrigation is passing through defining moment in India today and past. Tank irrigation contributes significantly to agricultural production in India in general and particularly in Andhra Pradesh, Karnataka & Tamil Nadu Tank irrigation system is one of a vast network of thousands of water bodies that constituted a distinctive landscape which was medieval in origin but still was the basis of livelihood in the southern plains (**David mosse 2003 - The rule of water**) Tank is a small reservoir, constructed across the slope of the valley to catch and store water during rainy season. Water is controlled by sluices attached to the tank bank and it is delivered to paddy field by distributing channels. Tank is considered as a common property resources that are accessible to and collectively owned and managed by identifiable community and on which no individual has exclusive property rights (**NSSO 1999**). The role of tank and not only providing association between tank and zerner. In **1998** and **2002** opined that local population as greater interest in the sustainable use of resources than does the state are distinct corporate manager, that local communities are more cognizant of the interests of local socio-ecological process and practices and they are more able to effectively manage those resources through local or traditional forms of access, in recognition of this fact, government and non- governmental organizations (**NGO**) put their effort to motivate formers to re-build th institutions which was destabilized. Even then things would not happen in the way one would have accepted. In this connection the main focus of this paper is to:

- Compare effectiveness of traditional irrigational institutions with government and NGO sponsored one.
- Analyze its functioning style and its efficiency of these institutions at tank system level.
- Find out possible reasons for disintegrating.

### **METHODOLOGY**

Southern India as well as the arid areas of Central and Western India have seasonal rivers which limit the scope for canal irrigation while the scope for wells is limited due to the presence of hard granite and gneisses. As a result of these, tank irrigation is prominent in these areas.



This study is primarily concerned with small reservoirs. Karnataka, Andhra Pradesh and Tamil Nadu have thousands of old tanks in various stages of maintenance. However, the decay of the management and reward mechanisms in place earlier has led to a corresponding decay in these tanks. While the old social systems that maintained these tanks are no longer in existence, they have not been replaced by satisfactory institutional arrangements. The study has been conducting in three tank villages of kolar district of Karnataka, India. This village has been selected purposefully as they represent different kind of irrigation institutions. Considering availability of water is the main motivational factors to organize formers themselves. Care must be taken to indentify to study villages. Which are receiving more or less same amount of rainfall from the vicinity area in which there are totally three villages are selected:

- Tank village one represent traditional institution.
- Tank village two represent institutions promoted by government and tank village.
- Tank village three represent the institution promoted by NGO's.

Irrigation water but also it provides bio-mass, fuel wood, order, for life stock and other forms of economic livelihood Sustains of villagers (**Chopra and Das gupta, 2008**) tank irrigation gets special significance as it provides livelihood support to large number of marginal small formers and landless agricultural labors. This system then once well maintained by villagers , slowly disintegrated over the period of time due to various reason like changes in land holding pattern development of large scale irrigation project and ground water development and change in preference of livelihood strategies among villagers and so on. Considering the fact that tank irrigation had un-deniable impact on rural livelihood and it deserve. Reliability on tank irrigation among farmers also gets reduced over the period. Most of the problems of tank irrigation is facing today are self generated either by management by government or ignorance of local people. Many researchers brought into the lime light, the problems in tank irrigation to various programmes like European economic community assisted tank modernization during **1789 do 1999** almost all the programmers initiated by the government was not given adequate importance to local people participation. Later after criticism came. It gave some attention to people participations but it is not effective enough. Government and all the agencies involved in tank modernization add the opinion that merely physical improvement of tank system with machines can do wonder but fail to ponder about close. The data has been collected through pre-tested, semi- structured interview schedule paying personal visit to the villagers. Simple random sampling was employed to indentify sample resonance (farmers). The data were collected through personal interview; focus group interaction and discussing with opinion leaders. The study was conducted in the current the year (April) 2014 and **this Research aims to learn from the history of tanks and examine their relevance to the present.**

### RELEVANCE OF IRRIGATION TANKS

Big dams and groundwater exploitation, which are 'mainstream' solutions to irrigation, have their own drawbacks and limitations. Tanks are decentralized means of water supply and irrigation which also have other benefits, namely:

- Flood control
- Drought and maintaining the water table
- Fisheries
- Green belt.

### TANK WATER INSTITUTIONS

The villagers generally have traditional informal association other than village Panchayats.

These associations have a leader who is respected by villagers. Some of them by virtue of their age and service rendered in the past and their social status build considerable influence in the village.

### TRADITIONAL IRRIGATION INSTITUTION

Traditional irrigation institution may be referred to the evolution of principles for collective action of users, for board spectrum of social responsibility such has system maintenance water sharing and conflict resolution (coward 1980) even today villagers have traditional institutions in many villages to manage tank effectively as common property resources. Traditional system of water distribution was based on their beliefs customs and the concept of equality. The water allocation ensures smooth sharing to all its members at default. The performance of these irrigation systems depends on collective decision they make and keep. These institutions characterized by socio-cultural and contextual arrangements in order to provide services to village community. These institutions have rules and regulation in the form of ethics and norms as it is resultant of complex pattern of behavior of large number of people over protracted period of time (**BASU 2000**).

### GOVERNMENT SPONSORED INSTITUTION

Effective functioning of tank system is simply based on how its different components like physical, technical and Institutional parameters are managed. In the earlier days villagers considered tank as system. Over the period of time, when



government took over these structures, its is failed to considered as system, consequently it is said to be managed by five different departments and acting as separate entity in different directions. After some period, government concentrates only on physical improvements of the tanks. But still they did not yield fruitful results as there are no institutional structures for maintenance. Thus institutional problems crop up and it was hasten by changing social structures.

### NGO SPONSORED INSTITUTION

Many NGO's in India are working with rural people in tank command area. Promoting participatory management, they follow different methods to organize farmers and develop institutions in the community level in order to provide collective actions to tank system management; they employed locally known persons as negotiator to inspire people to participate in the institutions.

### FILED OBSERVATIONS:

The research demonstrates some specific observation about the difference in strategy notions. Structure and functioning style among all three institutions in the study villages. Overall aim of all the stakeholders involved in this campaign was creating successful local, Independent and self-organizing. Institution at community or village level. But notably these groups varied tremendously in their values, attitudes and beliefs towards the cooperation and the best means to achieve their desired ends. All initiatives look for the active participation of rural people in working out a better livelihood access for themselves. New policies and schemes have been set in the place both by the government and NGO's to facilitate this process of involvement.

Generally bonding relationship is viewed as strong or thick while bridging relation is weak or thin (**Naryanan 1999, Onyx and Bullen 2000, Putnam 2001, Woolcock 2001**). Thus bonding relationship existed in traditional institutions which refers the villagers has close relationship with this institution. These people tend to make close relationship has they have similar interest and common affiliation.

Ann Dale and Jennie Sparker (2007) argued that adhesiveness within "bonding" Network is a sense of deep trust held among members. This is often highly relational. Personalized and thus has potential for conflict when their trust and commonalities break down. Once, the tank irrigation system has been considered as a sole livelihood provider. Almost entire village population depends on it. **During the 1980-81**. Population depended on agriculture in the study villages was **92** percent. But in **2007**, it is **67** Percent, (**Block Statistics 2007**) over the period of time; due to changes in government policy and education opens various avenues for villagers, this is aggravated still by frequently failed rainfall. Match box, fireworks and cotton industries are coming to exist in nearby towns and they opened opportunity especially for youngsters. They also offered relatively high salary than agriculture slowly, youngsters, consequently farmers faced with labor shortage as they could not able to attract laborers through competitor's wages. Most farmers leased out their land or left fallow. Their also looking for Non- agricultural employment in the vicinity of the villages in mean time they receive remittance from their son and daughters who moved out from villages. The government also announce programmes like **Samporna Grama Rozzgar Yojana (SJRY), National Rural Employment Guarantee Scheme (NREGS), sawarna jayanthi grama swarozzgar yojana (SJY)**. Basic all objectives of all these programmes are to give supplementary wages employment to rural labors. Moreover upper-cast farmers were enjoyed control lower- caste. People lost their control due to changes in social structure and land holding pattern. Hence once reason for coming united common goal is broken. The traditional institution and disintegration get started. **As our research shows** the role of the people and participation in the institution is much dimensioned now but not entirely forgotten.

In the case government sponsored institution the cohesive force could be termed as "**Bridging**". These relationships characterize by more in personal and village participation is merely per functionary not intuitive. It is often viewed as weak and opportunistic tie that facilitates to access to resources.

"**Bridging**" occurs when someone from the government try to connect with the local people through some agenda (**Granautter 1973**) Here, the trust among members are often thin and tend to brake when the Bridger from the government side left the village or once his agenda or program completes. This type of institutions tends to provide comprehensive solutions that have tried to exorcize the factors which hinder the progress and simply do not work as expected. It is often concerned as designed to provide comic relief but not constant relief. This system failed to understand the fact that villagers are divided into many group based on their caste, income, status and land holding etc. to connect or bring them into one group as tank common area farmers. Connecting thread is diluted by communal force and widespread social disparity, government sponsored institution is not concentrated on this aspect. They try to identify all the farmers as tank formers. They have time limit and they could not able or not interested to address this problem.

Regarding NGOs sponsored institutions the core principle employed is “linking” they try to mobilize the farmers and themselves made a link with government agencies and other financial institutions. The prime objective of their “linking” is to get accustomed to use government program for the benefit of common. It is also considered as opportunistic ties and viewed as the capacity provider for institution to lever resources. Ideas and information from the formal institution (**Woolcock 2001**) NGOs showed interest to operate in villages only when favorable condition exist or assure to provide. When they find difficulty to operate they withdraw from these villages and automatically from institution building process. In time of experience, in the study village from 1992-2002, the NGO Called **ASSEFA** (Association of sarva seva farm) came to create sound institution and regularly frame work as well as enabling environment for people & participation by providing loans, but after the initial involvement they exhibit and they failed to imbibe a sense of self help and a sense of sustainable progress in the long run. Villagers attained the mindset that “they will do” mentality. Once conducive environment disappearing, the NGO also slowly came out from the village. There is an argument that NGO looking for conducive climate to operate in order to impress their funding agencies. It is easy for the NGOs to operate in new villages rather than operate in order to impress their funding agencies for longer time. After **ASSEFA** withdraw, another NGO called **DHAN** foundation came to operate in this village. Considering that relatively small village with single community. The basic platform to launch its platform was already initiated by earlier one. This NGO also did its level best to organize the farmers to form tank institutions called “**kere**”. (**The sight of brimming water**), they showed substantial and positive improvements in tank performance surpassing initial hurdles. Even than priority between farmers and NGOs is differing. This system also will not yield good result if they fail to understand in changes happened in the external environment, **Bolding** (1994) argued that any external involvement no matter how well intentioned and can be perceived as meddling and even be feared. Hence, what they need today not bringing expert from outside, but an awakening of the expertise within the villagers.

### FUNCTIONING STYLE OF INSTITUTIONS

Traditional irrigational institutional is functioning as a two tier system. In the top level there will be commanding position called “**NEER KATTI MESTRI**” (Informal village leader) usually occupied by upper caste people. In the lower level. There will be an executing position as irrigation worker called “**Neer katti**” (water manager) “**NEER PACHI**” (water distributor) and “**thotti**” (Field assistant) are employed. These all post usually hired from scheduled caste household on rotation basis, in government sponsored institution they will organize water user association with membership of all ayacut (tank command) farmers. They are expected to elect three positions like president, secretary and treasurer. Based on the number of villages included in association. They will select members also. apart from this elected body this system also employs irrigation workers from scheduled caste householders in case of NGO sponsored institution the NGO appoint one person as negotiator to motivate farmers elect or select their president, secretary and treasures. The NGO provide accountant staff to help the farmer to maintain their accounts.

### ROLE EXECUTION

A traditional tank water institution is existing here from the time of immemorial. Then, these institutions have complete control over the common resources. The way they approach to the problems are perhaps most incisive and provide constructive contribution to its better performance. Rules and roles that operate, maintain and manage these systems are strongly shaped by caste hierarchy. These institutions took the responsibility of supply channel maintenance, de-silting tank bed (farmers are allowed to remove top fertile layer of slit for their manure need) strengthening of tank bund, maintaining of tank physical structure (sluice and surplus weir) water distribution, resolving dispute and conflict resolution. However the present situation is that most of the functions are not executed as external environment explicitly changed, farmers are not allowed to take silt from the tank as social forestry program implemented by the government, due to this misplaced priority regular de-siltation did by farmers are stopped. As a result every year about 2 percent of tank capacity area are also encroached and but these institution have no power to deal with them. Thus at present majority of the tank water institution have only limited responsibility that too not regularly (Jankarajan 1993 and Palansami 2006)

As discussed earlier, due to the government policy transfer of land holding is happened from upper caste to lower caste people it is not simply considered as land transfer but also power transfer, power sharing and not viewed in right way by upper caste people they physically accept but are mentally and emotionally much reluctant and not ready to accept that lower caste farmers empowered through land, upper caste people leased or sold their lands to landless laborers and lower or goodwill of large or upper caste farmers to get employment became self-employed in the meantime, the entry of more and more caste based political party in to the village system damaged the village coherences and consequently wipes off cooperative attitude within and between farmers and villagers. This could be a possible reason for dismasting traditional institutions, disintegration of joint family, promotion of education development of cottage industry are hastened the process, As Agarwal (2001) rightly put if farmers have earning activities that are not reliant on common resources and their incentives to the collective management will be reduced the degree of dependency on small scale irrigation will depend both on farmers



capacity to exploit it and on what alternative livelihood options are available to them our observation confirmed that farmers are slowly losing their ability to exploit potential benefit from tank irrigation system because of their weak institutional power when compare to government sponsored institution traditional and NGO sponsored institution showed incremental increase in the delivery system. In these two organization farmers strives continuously to subjugate impossibility and then try to succeed.

### **ROLE EXECUTION OF IRRIGATION FUNCTIONARIES**

An institution, irrespective of its nature or governance is assisted by a group of irrigation workers called “NEER KATTIES” (WATER MAN) who are generally hired from scheduled caste house hold in rotation in the tank village. If a particular tank village does not have that particular schedule caste community, they employed “NEER KATTIES” from near by villages. The discussion about “NEER KATTIES” becomes important considering the service they render to tank institutions. They are specialist in water management having rules to allocate water in the time of scarcity on the basis of detailed knowledge of the needs of individual wetland fields, thus mitigating usual tension between head and tail-enders (MOSSE 2006) the “NEER KATTIES” are omnipresent who are work almost all the tank villages making their livelihood based on their services like sluice operation irrigation to the field protecting tank resources and so on. In the mean time like any other institution tank as an institution has also changed a lot and profiles of these functionaries also changed. In many cases, over field experience showed that such changes have played havoc with their lives but still many are thriving by adopting themselves to the villages have “NEER KATTIES” community and one village did not have “NEER KATTIES” community, by custom the “NEER KATTIES” are expected to execute some responsibility (Table 4). It is clear from table 3 that mere existence of “NEER KATTI” family in the village is no guaranty for execution of expected work, During my interview with “NEER KATTIES” in the village, they accepted that they are not doing jobs what their father or grandfather as a “NEER KATTI” did they spelled out some of the reasons for their hesitance.

**Dependency:** In the past 10 years because of uncertainty and insufficient rainfall tanks had not received enough water to cater farmers need. A study shows that only 2 years of 10 years tank received water to its fullest capacity. As a result most of the farmers ended with crop failure of left fallow. One “NEER KATTI” needs to work for at least 30 acres of farmer’s field as water man to get justifiable income. When this falls down, he encountered with insufficient income and struggle to maintain family. Thus, he preferred to go out for other agricultural or non-agricultural jobs.

**Payment:** usually after the crop harvest the “NEER KATTIES” are entitled to have 12 kg of grain per acre. This type of payment is applicable only during normal tank season, when tank fails or partially performed they are not sure about their payment. Again some farmers, even if they are reaped good harvest are reluctant to come forward to pay their due to “NEER KATTIES”. This type of problems cropped up day by day, they have often involved in quarrel with “NEER KATTIES” about their work execution, and these all dissipate the custom of payment to “NEER KATTI”. Hence, they are reluctant to perform their duties as they perceived, another reason would be as I discussed earlier that disintegration of caste based hierarchy and dismantling of institution. The majority of them were not able to produce enough income through agriculture and start doing or searching on wide array of OFF-FARM activities to supplement the income gap, when they adopted out non agricultural opportunity, they could not fully concentrate on “NEER KATTI” work as they did earlier.

### **ROLE EXECUTION OF IRRIGATION-REFORMS**

As mentioned earlier, several states in India adopt Participatory Irrigation Management (PIM) as its major reforms agenda, which aims at involving farmers in the management of irrigation system. Andhra Pradesh was one of the pioneers in enacting exclusive Act called as Andhra Pradesh Farmer’s Management of Irrigation act of 1997, followed by Tamil Nadu which by and large adopted similar act in 2000. Karnataka in June 2000 amended its irrigation act of 1995, Which emphasizes on empowering farmers participation in irrigation management (Doraiswamy and Bhavanishankar 2000). As a result there are number of water users association (WUAs formed in these states) (Sastry, 2006). Andhra Pradesh has more than 10,000 WUAs, Karnataka has about 3000 WUAs and Tamil Nadu has about 2000 WUAs, which also includes major, medium and minor irrigation system

These rules and regulations embedded with the above policies had certain prescription in terms of size of the WUAs, structure and functions. The size of the water users associations even for tanks was fixed to be **500 to 750 hectares** with those landed in the command area are eligible to become the members. In **Karnataka** the membership fee was fixed to **Rs. 106/-**. These prescriptive rules created tension in the villages thus demanded for changes in these rules and regulations.

Although, PIM reform is welcome move by these governments for the reason that it emphasizes on farmers participation in water management, these reforms were not appropriately conceived while formulation and implementation. As a result, PIM



created problems in some of the existing traditional institutions. The problems are also due to the lack of political will to implement traditional institutions. The problems are also due to the lack of political will to implement what is promised in the PIM policy. These problems can be summed up as follows:

- Split in the existing tank institutions and multiplicity of tank institutions due to the conditionality of PIM in terms of structure and functions and the area fixation for each association.
- Weaken existing tank informal institutions in the rush to formalize the associations by insisting to form cooperative as contemplated in the PIM policy.
- Operation and maintenance is not transformed as a policy to all the tank institutions formed under PIM.
- As in the case of Andhra Pradesh, the water tax collection is not handed over to tank users association formed under PIM.
- The election to tank users group is centralized and is decided by the state agency.
- There is enough capacity building at least during the transition period i.e. from informal traditional practice to formal associations
- Initially, PIM in Karnataka created tank users association pooling up few tanks to reach the fixed area.
- The younger generation was misguided and the whole tank users association was taken as platform for moving up the political ladder and financial gains.
- Many association formed under PIM exist on paper due to target oriented and top down approach.
- The comparative analysis from various available shows that the newly formed association is not in position to handle deprivation and Operational Maintenance issues.

### **CONCLUSION/WAY FORWARD**

The thinking of community was of lowest level of aggregation at which people organize for common efforts; i.e. a small, homogenous harmonious and territorially bound unit (Kumar 2005) many researchers showed that the rural or traditional community are in harmony with local customs and demonstrates long established patterns of sustainable and equitable resource use (Li,1996) traditional or institutional approach to common property received wide spreads acceptance and resulted successful for quite a long period, it is proved that community can own manage, sustain (Berkes 1989 and Ostron 1990) but present situation, tank irrigation system as an institution fail to deviled what it is capable of. Reasons are multifold and deep rooted as discuss earlier ,The centralized authority over the tank by the respective States has further weakened the tank informal institutions which performed relatively efficiently in terms of equity as defined by the village community. In South India, the number of tanks out number the capacity of the Government Department to manage, which was not realized while takes over the system. The collective action over common property resource conservation and utilisation has been declining trend (**Agarwal and Narain 1997**).

The main flaw in today's approach to tank institution is its fragmented approach and the need in holistic approach. Tank irrigation system is involved physical structures, technical aspects and institutional factors. All the attempts made so far to modernize or rehabilitates the tank system fully concentrates only on physical improvements that too was not as good as farmers expected. The institutional aspects completely ignored until international donor agencies is asked to do so. Even the reports showed that government spent 71 percent of money in physical improvements and 27 percent spent on institutional aspects and after maintenance. Importantly, the institutional factors and physical factors do not act in isolation; they are so complex and often interact with each other. Hence it is recommended that due importance with be given to address institutional aspects. About 10 percent of the cost could be spent towards institutional and system maintenance.

Participatory management of water resources although is welcome step, the structural and functional design of the tank users associations and the implementation of the policy have created problems in terms of multiplicity and duplicity of tank institutions. There is clear lack of political will in all these states to transfer the management responsibilities with adequate powers to the newly created tank users associations. Thus creating series of doubts about the commitment of the government towards empowering tank users associations.

As a result, there are many tank users associations that exist only on paper and are not really effective in making significant impact in addressing equity, operation and maintenance and balancing the eco-system. The traditional tanks users associations studied stand as model in water management and offer several lessons like structure and functions of tank users associations, rulemaking mechanism, and users' priorities to water resource conservation and utilization.

The farmers asserted that government induced participation and often purely exploitative. They administer some temporary palliatives to address much deep rooted problems as a result things would not happen in the way one would have expected



the minor irrigation system is to be treated as one integrals holistic unit comprising catchment. Water spread tank structures and tank command. As experience showed that most of the encroachment occurred in catchment and supply channel which is fall in some other village Panchayats. So the institution could not exhibit its power on this chronic problem. These institutions are provided with power to evict encroachment and safe guard its resources. In overview true attempt could be made for revival of traditional irrigation institution with its original vibrant. The policy should underpinned by principles of sustainability and equity. Women are widely encouraged to participate in the institution. Like in the other districts. Women and Men from every agricultural household could become member in the institution. It is undeniably true that if we reestablish relationship between farmers and tank institutional reinvents its role as independent arbiter through radically different and inspiring innovative approaches.

The capacity building exercise that encompasses indigenous knowledge should be carried out to all the tanks whether they are on the list of restoration or not. The discriminatory attitude of the state towards capacity building only in those tanks that are taken up under the financial assistance from World Bank and other Donor agencies. Of late, the better approach in training programme is the Participatory Training Programme that requires sufficient time and budget. All the State governments should allocate substantial budget for the capacity building programme in building tank institutions.

### **SUGGESTIONS**

I would like to stress on that a comprehensive watershed development plan needs to include tanks. Traditional practices such as that of granting a small portion of land to an entrepreneur in exchange for tank construction need to be revived. A synthesis of traditional finance and management systems with modern government infrastructure and institutions may be the best means for ensuring the continuance of this unique method of irrigation and water supply.

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