DHAN FOUNDATION's Experiences on Efficient Tank Irrigation Management through Traditional Water Managers in South India: Challenges and Opportunities

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ABSTRACT:

We in DHAN Foundation do believe that answers for sustainable solutions always include local management of the available resources. The rural water managers are important and play a critical role in the local management of tank resources. Neerkattis, these water managers are called, help running these important systems for the wellbeing of the people and villages. These managers who work in almost all the tanks make their livelihood based on providing their services like water of crops in rotation basis, protecting the tanks and its recourses, mobilizers of the local communities and general village workers.

The Water managers (Neerkatti) act as watchman of the tank against natural calamities like breaching due to floods and collapsing sluices and weirs due to wear and tear. Water management of the functions in tank system vary depending on the availability of water in tank storage, type and extent of crops, class of farmers and set of practices in the ayacut areas. While farmers are kept away from the irrigating on their own, Neerkattis ensures the water supply to every field in rotation. Strict rules for the purposes of irrigation regulation existed in all the tanks. Neerkattis are the only persons allowed to open and close the sluice outlets and regulate the flow of water to the fields and the farmers do not generally interfere.

At a discussion in a group meeting of Neerkattis with a pointed question on 'how do you revive your jobs'? The Neerkattis retorted that the revival of their jobs is only possible by reviving the tank and institutions. The following are the practical answers from the DHAN Foundation's last twenty years of experiences with the tank rehabilitation and revival of Neerkattis system in the tanks in South India. (1). Farmers should not attend to their water management functions. They should abstain from the tank bund and leave the tank to the Neerkattis and the local village tank associations. (2). This would mean that a new management regime, restrained behavior, collective action and an individual responsibility to safeguard common property would emerge. It also means that the farmers have to taught to get together and respect the need for a management order and manager who can run the business based on consensus. (3). Local illness to be cured. The encroachments on tank bunds, feeder channels, surplus courses and tank beds to be evicted locally. This would mean that the farmers have to collectively restrain themselves from indulging in free for all and vacate the encroachments for the better performance of tanks. (4). Every tank should have an organization with irrigating farmers as the core and others users surrounded. (5). Every tank should be revived, its structure be recreated to its full strength.

This mean that the governments should liberalize the tanks and hand them over to the village associations for better management where in Neerkattis play critical role as an efficient water manager.

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1. WATER MANAGERS

Water, a precious commodity, is closely related to human development. Water development is seen as parallel to the development of nations of the world. India, a bastion of many cultures has its own art of managing water in many forms and shapes, of which irrigation tanks are one of the most important in semi-arid areas and shaped the south Indian Development. Many of us believe that they still hold the key for the much-required rural development. These are the days of mind boggling discussions haunting development managers about the sustainability of water development in many programmes.

Most of the tanks in South India had water guides / Managers to effectively manage the water distribution. Each tank had one or more such water managers called 'Neerkattis'. There are no accurate estimates as to how many Neerkattis would have been involved in such tanks management functions. If we make a guess from the number of tanks in the region, there would be around 4,000 Neerkattis in Gundar Basin, one of the dry basins measuring around 5,500 sq.km of geographical area

with around 2,500 small and big tanks. They are still working in the tanks providing irrigation and other services for the dependent communities.

The neerkattis had several functions to perform ranging from supply of water to every field at the farm level to safeguarding the tank structures from all natural and man-made calamities. Their typical functions included the following. It need not be mistaken that all the functions can be observed in every tank. A great deal of variation and sophistication existed across the tanks in every basin. The description about the lives and functions of Neerkattis is only illustrative and not exhaustive.

1.1 Mobiliser of village labour

The tank as a common property requires collective action to remain fit and performing. The tank complex consists of various sub systems like feeder channels, field channel s, tank bund and structures like sluice outlets and surplus weirs and surplus courses. The feeder channels and the surplus courses have to be kept clean so that they carry as much water to feed and dispose off the surplus water of the tank during monsoons and floods. The cleaning and desilting of channels is an annual activity that needs to be carried out before the monsoon in a short period of time.

Also the field channels in bigger tanks need cleaning and shaping. The Neerkatti acts as a planner, manager and manager of farmers to organise these tasks. With the help of tile village elders or administrators, he is responsible to do that. He estimate the required labourers after a careful study of the situation and the and the need for various types of labourers for jobs like jungle clearance, earthwork etc. As part of the duty, he informs every household personally or through public announcements of any important activity to be undertaken. Thus he ensures that the work is done.

1.2 Watch and ward of tank assets

The Neerkatti acts as a watchman of the tank against natural calamities like breaching due to floods and collapsing of sluices and weirs due to wear and tear. He is also the caretaker of tank usufructs coming from trees on tank bund, foreshore and the channels, apart from the withered and windfallen trees and twigs. Many villages in south India derive their revenue from such resources in tank. The tank bund is a place for trees like Tamarind, Jamun and other trees of timber and economic value. The tank bed is a place where trees like Accacia sp. (Babul) which grows both in standing water and in drought conditions. These products from tanks are highly valuable and are the biggest source of revenue for the village. In many tanks, the Neerkatti is the guard for such trees apart from watching the crops in the agricultural field against stray cattle damaging them.

2. WATER MANAGEMENT FUNCTIONS

Water management functions in lank systems vary depending on the availability of water in tank storage·, type and ex tent of crops, class of farmers and set practices in the ayacut areas. While farmers are kept away from irrigating on their own, the Neerkatti ensures the water supply to every field in rotation. Strict rules for the purpose of irrigation regulation existed in all the tanks. Neerkattis are the only persons allowed to open and close the sluice outlets and regulate the flow of water to the fields and the farmers do not generally interfere. The most common forms of water regulation in times of normal and scarcity situations are described below.

2.1 Normal water supply

The most commonly observed system of water supply is that irrigation would start from the tail end fields to the head reach fields stage by stage. This method is believed to be the most efficient way of irrigation among the farmers. However, this is not the case in every village tank and varies greatly from place to place.

2.2 Scarcity management

In rainfed tanks the availability of water in storage does not always match with the requirement. Neerkattis are responsible to manage the scarcity conditions and expected to tide over the crisis due

to shortage of water. Though there are no uniform rules across tank areas, the following are the generally observed management practices in such situations.

2.3 Restricting the number of wettings

The Neerkattis restrict the number of wettings as decided by the farmers collectively taking care to prevent the crop losses by providing the threshold level of supply. This is an optimization technique learned over a period of experience by the communities to get optimum yields.

2.4 Reduction of ayacut area

In case the restrictions of irrigated area become necessary to use the water most efficiently, the area will be reduced. There are several ways by which this reduction is done. Usually a uniform area per family is fixed and a limited area close to the head reach is selected and all the farmers are assured water for piece of land for cultivation.

2.5 Farm management

On-farm operations related to irrigation of crops in the ayacut area are left only to the Neerkattis. The farmers are not allowed to attend to the irrigation functions. The neerkattis are also expected to report to the farmers on the crop diseases and pests for taking up timely control measures.

3. FORECASTING OF MONSOON AND WATER AVAILABILITY:

Neerkattis in many places are used to forecast the arrival of water to the tank, availability of water in terms of number of days of supply and selection of suitable crop varieties based on the water storage. There exist measuring posts on the form of pillars or stand posts close to the sluices to estimate the water availability and its adequacy for the crops.

The three cases of the effective water management system at Pudukottai and Ramnad districts of TamilNadu, India have been shared here for the evidences of the traditional water manager's role in efficient management of water and total system of tanks in south India as narrated below

4. WATER DISTRIBUTION PRACTICE AND IMPLEMENTATION IN PARAMBUR TANK OF PUDUKOTTAI DISTRICT OF TAMILNADU

4.1 When tank receives water for one month:

After the rain, the FA members would visit the tank in order to assess the quantity of water in the tank. If the tank received water for a month then the committee would instruct the Neerkatti to open the sluice for nursery preparation. There are some norms being practiced by the FA for nursery preparation. They are:

- The farmers who have below one acre of land are permitted to raise nursery for their land holding
- The farmers who have 1-5 acres land will be permitted to raise nursery for half of their land holding
- If they have more than five acres they are advised to raise nursery for 1/3 of their total land holding

After some days if the tank received water again, all the farmers would be allowed to raise nursery for their remaining land. After the completion of transplantation the Neerkatti would take control of the tank and he distributed water to all fields from tail to head. No individual farmer would be allowed to take the responsibility of irrigation. They would be permitted to oversee the activities of Neerkattis.

When there was no further rain and the EC was convinced that the water available in the tank may not sufficient to get full maturity of crops in the whole ayacut area, then the committee would decide against irrigating the whole area. The farmer who got below one acre of land is allowed to take water

for his land holding. But all the big farmers would not be permitted to take water for their land holdings. They are given water for half of their land holding.

4.2 When tank got filled:

When the tank received enough water, the EC permitted the raising of nursery for the whole extent and the transplantation would be completed based on the period of nursery preparation. After the whole ayacut area is transplanted, only the Neerkatti is allowed to do the business of irrigation. The farmer should not interfere in the activities of Neerkatti in any way. In the middle of cropping season, if the committee found that water was sufficient only for a month but the crops would require irrigation for two months then, committee would instruct the Neerkatti not to irrigate all the lands of big farmers (more than one acre). The big farmers could get water only for half of the total transplanted area. By adopting such practices, the FA said that they could avert crop failure atleast in half of the land.

4.3 Action against the violators:

All the Neerkattis are strictly advised to follow the rules and regulations without any discrimination. The pattathars lists and their land holding details had been given to the respective Neerkattis so that he could follow the irrigation without any difficulties. If any problem arises during irrigation the Neerkatti can represent that problem to the committee. The farmers who act against the rules and regulations are summoned before the EC after issuing notices to them. The committee would then convene a meeting and if the farmer is found to be a violation of law it would impose a fine on him. If he refused to pay the fine, the police would be informed and legal action would be taken.

During the pending of the enquiry against the farmer the irrigation to his field would be stopped, and further irrigation would be given only after the settlement of the charge against him. However, if the farmers feared that the process of enquiry and decision making etc may take more time, then he would be asked to pay Rs 200/- to the EC and he would be allowed to take water continuously. If found of guilty the penalty amount would be deducted from his deposit of Rs 200 and the farmer would get the balance amount.

4.4 Payment to neerkattis:

Each and every farmer should give 15 measures of paddy to the sangam as a wage for Neerkatti. The Neerkattis are responsible to collect the grains. They collect the paddy at the time of harvest from the farmers and by visiting respective farmers houses. When the total paddy has been collected each Neerkatti would be given 15 bags (60kg/bag) of paddy as wage. If the cropping season is only partially successful then the Neerkattis would get only half of the total quantity (7 1/2 bags) as wage. If the whole ayacut area was not successfully harvested, then the Neerkattis would be given Rs 1000 per member as wage.

If a farmer refused to give the wages as decided by the committee, then the list of defaulters would be given to the Neerkattis and they would be instructed not to give water to their fields during the next cropping season. If that farmer approaches the committee and request for water the committee would call a meeting and the farmer would be given water only after he pays the pending money.

5. SPECIAL FEATURES OF PARAMBUR TANK FARMERS ASSOCIATION:

- The Neerkatti need not be from Schedule Caste
- The payment of wages to Neerkatti is strictly followed by the FA
- The president & secretary of FA are continuing in their posts since 1978. Only the treasurer has been changed
- The duties, quantum and payment of Neerkatti is enacted in the bylaws of the FA
- The VAO is one of the EC member of the FA
- The payment to Neerkatti is at one time even though the farmers go for second crop.
- One irrigation is assured at an interval of 8 days.
- The well owner may substitute well water to their field between the gap.
- The EC member may be removed if he absented himself from 3 meetings continuously
- The FA also donated Rs 20,000 for temple construction.

- Achievements record (for the past 24 years since 1978)
  - Double crop-12 years
  - Single crop-10 years
  - ½ yield –2 years

6. RAMNAD BIG TANK

Ramnad Big Tank covers 13 villages. They are Thoruvallur, Kavarankulam, Papakkudi, Kalathavur, Edayanvalasai, Surunkottai, Surankottai colony, Kottagai, Mudunaal, Nochivayal, Achundanvayal, Kooriyur, Putthendal. Caste wise the people belong to Pillai-velalar, Konar, Servai, Muslims, Pandaram, SC's (Pallar, few Sakiliyars). Among these categories, SC (Paller) are in majority. Next come Konars, Servais and Muslims.

The people of the 13 villages collectively manage the tank–water systems now along with the PWD in an excellent manner for which four levels of well-organized authoritative bodies are there. This type of management is being followed from 1991 by farmers' initiative. The Ramnad Big Tank Farmers Association was registered with the help of PWD and one NGO in 2000.

The four levels of management mentioned above are the Ramnad Big Tank Farmers Association, Sluice Committees, Village Committees and Neerkattis. The Sluice Committee is selected from among the tank farmers and consists of three persons. Among them one is chosen as the leader of the committee. These members are also members of the Executive committee of the Ramnad Big Tank Farmers Association. This executive committee meeting will be held on monthly basis and the general body meeting once in a year. The Association collects a membership fee of Rs.10/- per acre from all 13 villages. This Association is a member of the Ramnad traditional Vaigai Ayacut Farmers Federation. The Association and Federation have undertaken many struggles, conducted conferences and released books and pamphlets. There is a village committee each in all the 13 villages, which appoints the Neerkattis. These village meetings are conducted every month regularly.

The above four bodies have different roles to play in the water management system. The Farmers Association governs the water regulation in all sluices along with PWD lascars and Engineers. The sluice opening and closing works are done by PWD lascars but they act as per the Farmers Association advice. During water supply periods each sluice committee decides the quantum of water release daily. Every sluice committee leader will express their demand to the Farmers Association office barriers and they together decide the shutter release level in all sluices along with PWD Engineers. Other than this, the Farmers Association has to take timely steps for getting water from Vaigai dam and check illegal water use along the path of the Vaigai River before water enters into the Ramnad big tank. They also have to solve conflicts among sluices and villagers also.

The village committees control and manage the village limit feeder channels from big tank, "Endal tank" (which is laid below the big tank)", Endal tank sluices, feeder channels. The main work of the Neerkattis are cleaning up of supply channels and irrigating the fields as assigned by village committee.

Now, we present the Neerkatti system in Kavarankulam village. Kavarankulam is a small village, which is a part of Thoruvalur panchayat, having one "Endal tank" called as Kavarankulam tank. This tank gets water from Ramnad Big Tank through Northern regulator. The Northern regulator surplus course acts as a big "Endal tank". It has six sluices and from among them Kavankulam tank gets Big Tank water from the first sluice. Kavarankulam tank has also six unconstructed – Thumbu sluices. These sluices irrigate 270 acres land.

Paddy and chillies are the main crops in this village. In some acres, cotton is also being cultivated. In the paddy cultivation both direct sowing and transplantation methods are followed. While in the direct sowing method Kuruvai Kalanjiam, Murungai kar like old traditional paddy seeds are utilized, in the transplantation method MDU-5, Kalsar Ponni and White Ponni are used.

The village has 200 families, and all of them belong to SC-Pallar caste. The village committee manages the affairs of the people. This committee which is changed once in a year and selected by the village meeting meets every month regularly.

7. KANANGUDI TANK OF KANANGUDI VILLAGE, KULATHUR TALUK OF PUDUKOTTAI DISTRICT

A team from Anna University came to the village in order to study the participatory approach concept. During the study, they came to know about the deterioration of traditional water distribution practices. A series of in depth and elaborate discussions among the farmers resulted in a new system being formulated in which full time sluice wise Neerkattis were appointed by the Farmers Association in order to take care of irrigation. The traditional "Kuzhumikkaran" was retained to look after the duty of opening and closing of the sluices. In this changed context, certain regulatory measures taken by the FA in distributing the tank water which are given below.

- During nursery period, all farmers are free to take water. But, the power of operation of sluices is vested with the Kuzhumikkaran.
- Well owners are advised to take water from their wells
- After the completion of transplantation no farmer has the right of irrigation to their fields directly. The full time sluice wise Neerkattis will take care of the distribution of water from tail to head.
- A committee has been constituted for the supervision of water distribution
- There will be no night irrigation.
- The offenders, irrespective of caste, are reprimanded by imposing penalty.
- The water distribution system is implemented when there is water at full tank level. If the water in the tank is low the appointment of Neerkattis will be avoided.

7.1 Payments to neerkattis

The wages fixed for the Neerkattis is Rs 50 per day. The wage given is based on the total number of days worked. The supervisor can get Rs 25 per day. The payment to the sluice operator will be Rs.10 per day. The contribution of farmers towards the wages of Neerkattis is in the form of grains. The Neerkattis could take the responsibility of collecting paddy from all farmers at the rate of 8 Kg per acre.

8. WAY FORWARD

At a discussion in a group meeting of Neerkattis with a pointed question on 'how do you revive your jobs'? The Neerkattis retorted that the revival of their jobs is only possible by reviving the tank and institutions. The following are the practical answers from the DHAN Foundation's last twenty years of experiences with the tank rehabilitation and revival of Neerkattis system in the tanks in South India. (1). Farmers should not attend to their water management functions. They should abstain from the tank bund and leave the tank to the Neerkattis and the local village tank associations. (2). This would mean that a new management regime, restrained behavior, collective action and an individual responsibility to safeguard common property would emerge. It also means that the farmers have to taught to get together and respect the need for a management order and manager who can run the business based on consensus. (3). Local illness to be cured. The encroachments on tank bunds, feeder channels, surplus courses and tank beds to be evicted locally. This would mean that the farmers have to collectively restrain themselves from indulging in free for all and vacate the encroachments for the better performance of tanks. (4). Every tank should have an organization with irrigating farmers as the core and others users surrounded. (5). Every tank should be revived, its structure be recreated to its full strength. This mean that the governments should liberalize the tanks and hand them over to the village associations for better management where in Neerkattis play critical role as an efficient water manager.

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