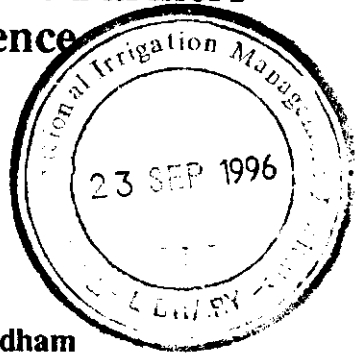


**Status of Irrigation Management Transfer in India**

**Water Users' Association in Dusi  
Mamandur Tank : Farmers'  
Experience**

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December, 1995**

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**Water Users' Association in Dusi Mamandur Tank : Farmers' Experience**

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## Foreword

This booklet is one of the series of short narratives about farmers' efforts to create and manage water user associations. The purpose of the series is to provide other farmers in the state with succinct, readable, and interesting information about these efforts that might enable farmers to improve their access to the irrigation services. This study is being published in both Tamil and English. See the back cover for information about the other narratives in this series.

This narrative was written by K. Sivanandham under the guidance of IIMA and IIMI team members. He lived with the farmers described here from October, 1994 to April, 1995. While there, he interviewed and observed the farmers in order to document the water user association and irrigation management transfer process at this site. The information presented here reflects the ideas and opinions of the farmers themselves.

K. Sivanandham's effort was part of the study on Status of Irrigation management Transfer in India being carried out from 1993 to 1995 by the Indian Institute of Management, Ahmedabad, and the International Irrigation Management Institute, Colombo, with funding from the Ford Foundation. The study investigated and documented the policies and activities of agencies, non-governmental organizations, and others with regard to promoting irrigation management transfer from the government to farmers. The overall goal was to contribute to formulation of effective policies and programs with regard to irrigation management transfer in India. In addition to this series of short narratives, study results are reported in more traditional research reports and other forms.

The primary members of the IIMA/IIMI study team were Shashi Kolavalli, Amarlal Kalro, Gopal Naik, and S. Ramnarayan from IIMA, and Jeffrey D. Brewer, R. Sakthivadivel, and K.V. Raju from IIMI. Editing in Tamil was carried out by S. Subramanian. The edited first draft was translated into English and reviewed by the study team, particularly by Amarlal Kalro and R. Sakthivadivel.

**The members of the study team, including K. Sivanandham, wish to thank the people of Village Dusi and Mamandur, concerned government and non-governmental agencies who gave their hospitality and time to answer questions and explain how things work without expecting compensation. We sincerely hope that their experiences will be useful to others.**

**Jeffrey D. Brewer  
IIMI**

**Gopal Naik  
IIMA**

## **Water Users' Association in Dusi Mamandur Tank: Farmers' Experience**

Farmers' involvement in irrigation management is an age old practice in Tamil Nadu. Water users were fully involved in every stage of irrigation development. Kings, chieftains, and big landlords constructed several tanks and reservoirs with the help of people and delegated management responsibilities to them after construction. With the formation of the Public Works Department (PWD) by the British government, people's involvement in irrigation management started to decline and continues to decline even after Independence.

### **Dusi Mamandur System**

The Dusi Mamandur tank is the oldest and second largest tank in Tamil Nadu. King Mahendra Pallava built an earthen dam between two hillocks located on the western side of Dusi and Mamandur villages, and the tank derives its name from these two villages. The length of the earthen dam is 1.5 km. There is a further link 2 km. long to a third hillock. About a thousand years after its construction, this bund is believed to have been strengthened and the tank desilted during the regime of Diwan Damal Vengappa Naidu of Kangudi (Nellore district of Andhra Pradesh). The tank has a water spread area of 13 sq.kms. When full, it looks like an ocean and can store nearly 180 million cubic feet of water at its full water level of 30 feet. The tank has its own free catchment area and is also linked to the river system for augmenting water supply. It is therefore called a system tank.

The catchment area of the tank is 297 sq.km. and commands an area of 1667 hectares spread over 18 villages. The catchment area receives its water mostly during the north-east monsoon. The tank is also linked to the Palar system through three sources. The main source is the Rajakkal channel which takes off from the right bank of the Palar river, approximately 20.8 km. below the Palar anicut. The length of this source from Palar is 14 km. The second water source from the Palar system is

the Sakkamallur channel which passes through a series of minor tanks and finally leads to the Vangalathur tank which surpluses into the Rajakkal channel in its second km. The Thennampathu channel is the third water source from Palar which supplies water to several minor tanks and finally ends in the Olugavakkam tank which in turn surpluses into the Rajakkal channel.

The tank has four sluices, two catering to Dusi and two to Mamandur. Each village has one high level sluice and one low level sluice. The left side of the tank has two calingula, 116 metres and 72 metres long for surplusing during the rainy season. The two high level sluices are located at the two extreme ends of the tank. Only the high level sluices are opened as long as there is adequate flow and are capable of irrigating the entire command area which has a slope towards the middle. A drainage channel runs through the middle of the command area and collects seepage water from both sides. In some places, irrigation is done by blocking the seepage water flow or by pumping out this water.

### **Formation of the Water Users' Association**

Agriculture is the main occupation of the 18,358 persons living in the 18 villages commanded by the tank, which is their only source for irrigation. Hundreds of farmers from each village used to group together during rains, clean the Rajakkal channel, and make temporary obstructions at Palar near the Rajakkal head sluice to divert water into the channel. Despite their efforts, the inflow into the tank was inadequate. During the 23 years period from 1953 to 1976, the tank reached its full level only six times and in 8 out of 23 years, the water level was less than 6 metres. During this period, the government had planned to construct the Thandarai reservoir across the Cheyyar river. Farmers felt that water from this reservoir could increase water availability in their tank. They therefore made a request to the irrigation board which managed the Dusi Mamandur tank to pursue the government to construct a direct channel from the Thandarai reservoir to the Dusi Mamandur tank. The government was however reluctant to accede to this request. The irrigation board members who were all nominees of the government with allegiance to the political

party in power were unable to act against the decision of the government. The farmers of Dusi, Mamandur, and Pallavaram therefore initiated a direct action programmes to press their demand. They resorted to bandhs and rasta rokos several times. Some of the influential community leaders also met senior officials and presented their demand to them. After a series of meetings during 1976-77, the government finally acceded to the farmers' demand to construct a channel from the Thandarai reservoir to the nearby Sithathur tank and make this tank surplus flow to the Dusi Mamandur tank. (However, during the last 20 years not a single drop of water from Sithathur has ever reached Dusi Mamandur tank.)

The partial success of their efforts and lack of support from the irrigation board members made the farmers consider organizing themselves into a group in order to bring water to the tank and distribute it equitably among themselves. Kandappa Mudaliar of Menallur who along with Vendantham had played a key role in uniting the farmers took a keen initiative to form a water users' association. They met farmers in each village and explained the advantages of co-operative action. Important persons from each village spent a great deal of their time for at least six months in convincing other farmers about the advantages of forming an association. They used their own resources for conducting meetings, travelling expenses, and meeting officials. They assured the farmers that each village would be able to participate in this association. After two years of strenuous efforts, the Dusi Mamandur Tank Water Users' Association was finally formed in 1980 with its headquarters at Dusi village. Each member contributed Re.1 per acre towards membership fee.

The association began its water management activities soon thereafter but the nominated irrigation board opposed its functioning. The association had to approach the court to establish its legal rights and jurisdiction. After the court recognized the association and its functioning, the government dissolved the tank irrigation board and the president of the then board expressed his desire to join the association. The association respected his request and created an additional position of vice-president for him.

The size of the command area in each village formed the basis for fixing the number of representatives for that village. For example, five members represented a big village like Mamandur and only one member represented a small village like Mannur. The presidents of village panchayats were also included as members. For technical advice, one retired Work Inspector was also included as a member. Sixty two persons constitute the membership of the association which has the following composition:

Selected members	42
Technical Advisor	1
Village Panchayat Presidents	19

These 62 members select from among themselves one president, four vice-presidents, one secretary, four joint secretaries, and one treasurer. They constitute the executive committee.

The objectives of the association are to bring water to the tank, plan for its equitable use, resolve disputes among water users, correspond with government regarding tank matters, and take responsibilities for operating the tank sluices.

### **Functions of the Association**

The three important functions of the association are to plan for water allocation and distribution based on water availability in the tank, contact PWD officials for opening or closing sluice gates, and solve disputes among the farming community in water distribution and irrigation. The association does not get involved in canal management. The villages themselves look after channel management and even pay salaries of neerkatties appointed for water distribution. The work inspector of the irrigation department is responsible for maintenance and operation of the head sluice of the Rajakkal channel. He is also responsible for maintenance of the four sluices of the Dusi Mamandur tank, as well as maintenance of the tank bund and supply channels. The sluice gates of the tank are operated on the instructions received from the association.



## **Water Availability and Cropping Pattern**

The tank receives water during both south-west and north-east monsoons. Water inflow is more usually in the months of November and December from the north-east monsoon rains. The rainfall determines the water level in the tank. During the last 12 years, only in 1985 and in 1991 did the water level reach the maximum height of 30 ft. In other years, the water level was 20 ft. or below. The main reason for poor water availability is the poor water supply from the channels leading from the Palar and Cheyyar river systems. The Thandarai system has also failed to provide water to the Dusi Mamandur tank. Despite the fact that the farmers were ordered to pay a betterment levy of Rs.50 per acre per year for 12 years for the construction of the

Thandarai channel, not a single drop of water has flown into the Dusi Mamandur tank since the construction of this channel.

Paddy is cultivated in the tank fed area except in the upper sluice command where groundnut is cultivated because of poor water flow. Paddy is cultivated either in Samba or in Navarai season. In the double cropped area, paddy is cultivated in both Samba and Navarai. In the tail reaches of the command, also because of poor water availability, groundnut is cultivated. Farmers of upper sluice regions and tail reaches of lower sluices supplement tank water with groundwater for irrigation. In some parts, ragi and gingelly are also cultivated. Some farmers, especially those near the Kancheepuram-Cheyyar main road, are growing vegetables which they take daily to Kancheepuram town 10 km away for sale.

## **Water Allocation**

Every month, the association decides water allocation according to water availability in the tank. Usually, they will decide about cropping pattern taking into account the water availability in the tank during November. The association has defined some norms for water sharing :

- \* If water level is below 8 feet, Dusi, Nathakollai, and Mamandur will get water for one crop.
- \* If water level is 14 feet, Dusi and Nathakollai will get water for two crops and Mamandur for one crop.
- \* If water level is 20 feet, Kuranganil Muttam along with the above villages, will get water for two crops.
- \* If water level is 24 feet, Pallavarm along with the above villages will get water for two crops and other villages will get for one crop.
- \* If water level is above 30 feet, all villages will get water for two crops.

These norms have been evolved after considerable discussions with farmers and on the basis of their experience. Farmers are accepting and respecting these norms are being adopted. This year 1995 only six villages got water.

According to Tamil Nadu government norms, any dispute pertaining to irrigation or canal matters should be resolved by revenue officials but here the association members themselves solved the disputes.

After water has reached a certain level in the tank, the association will announce the date of the general body meeting. The association conducts its meetings in the Dusi Middle School on Sundays. In this meeting, the association will decide the date of opening of sluice, level of sluice opening, and number of villages getting water. It will inform PWD about the date and level of opening of sluice gates through a letter.

Initially, the laskars open the upper sluices. If water is not available for the upper sluices, the lower sluices will be opened. This procedure is followed to this day. As a matter of routine, the association will inform the section officer about the day to day water requirement based on the cropping condition. Till the next information on sluice opening is received,

the official will maintain the level of sluice opening, as instructed previously.

Irrigation is continued during night also. If one inch (2.5 cm) rainfall is received on any day at the Ayyankulam rainfall station, PWD will close the sluice gates, without informing the association. Then, after receiving a requisition from the association, the Section Officer will open the sluices again. If a farmer needs more water, he will ask the association office bearers who will then write a letter to PWD. The association has maintained cordial relations with PWD officials on this matter.

### **Water Distribution**

Water is divided in the division box just below the tank and flows into branch channels. Which branch channel will irrigate which area and time allotment for each village are decided by informal rules and regulations.

Proportional dividers have been built in every canal to divert water to all directions. The size of division gates is fixed according to the area getting irrigation from that particular gate. However, in some places, proportional dividers are faulty. For example, the division structure of Mannur village, constructed in the third supply canal of the third sluice (Mamandur lower sluice), has been constructed on a curve of the canal. Because of this, siltation is possible on the convex side of the structure and the velocity of the water flow will not be uniform across the length of the division structure; the velocity will be higher on the inner edge of the curve and lower at the outer edge.

Tank modernization works under the World Bank Tank Rehabilitation Programme, costing Rs.138 lakh, are under progress from 1991. The work has progressed till the Kancheepuram - Cheyyar - Vandhavasi state highway for a distance of 1.5 km. The supply canals have been lined with concrete slabs. Seepage water from the tank will be enough for the fields located in between the tank and the main road. The elevated fields irrigated through the upper sluice and fields located on the eastern side of the main road can be irrigated only through channel water.

Because of the concrete lining up to the main road, water rushes to the mid and tail reaches without any difficulty. The upper reach farmers irrigate their fields themselves, because water flow is not a problem for them. Sometimes, they may block the main supply channel and direct the water into their fields directly; because of good velocity, irrigation will be completed quickly before the tail reach farmers can identify that there is a block in the upper reach.

The farmers of the mid and tail reaches, except Mamandur, and Dusi lower sluice upper reach have, appointed kondamkatties to irrigate their fields. The number of Kondamkatties engaged in each village will vary according per the area irrigated. Kondam means a temporary cross bund and the persons engaged in forming kondam are called kondamkatties.

#### **Water Sharing at Vadakalpakkam**

Water sharing practices and water distribution were observed at Vadakalpakkam village. The Mamandur upper sluice has not received flow for the past several years. Vadakalpakkam receives water only from the Mamandur lower sluice (third sluice). Many fields are located in elevated patches from the channel course. Because of such topographical reasons, water will flow only when a cross bund is made and water level is raised in the channel. The villagers have appointed three persons as *neerkatties* (*kondamkatties*). One man will divert water into the fields by forming cross bunds across canals another will watch whether water is blocked in the upper reaches, and the third irrigates the fields, with free flowing water in the lower regions.

The Mamandur lower sluice caters to four main supply channels. Mamandur, Vadakalpakkam, Mannur, and Poonathangal are the main villages receiving water from the third sluice. Vadakalpakkam receives water from the third supply channel. This supply channel gets divided into a fourth branch before it reaches Vadakalpakkam. The Fifth branch channel irrigates the northern side and the sixth branch irrigates the eastern side. In three places, irrigation is carried out with kondamkatties.

Separate timings are allotted for every village to form kondam and irrigate. Vadakalpakam gets water between 5 am and 12 noon. When the allocated time is over, the downstream village's *kondamkatti* will take over. The farmers of Vadakalppakam have formed a semi-permanent earthen structure 3 ft height across the supply channel with a one foot gap at the centre. Instead of forming a fresh kondam every time, one needs to simply block the one foot gap. The Vadakalppakam farmers are having the rights to irrigate fields in the northern diversion between 6 am and 6 pm.

A turn system is followed for irrigation. Fields are divided into three parts, each getting water by turn. The *kondamkatti* will not irrigate each and every field, he will irrigate 3-4 fields at a time by forming cross bunds across field channels. After irrigating the first field, water will flow to the next field. Likewise, all fields in one part get irrigated in 7 hours. Because of this turn system, all fields situated in the head, mid, and tail reaches will get water regularly and equally. When the water flow in the canal is reduced because of poor pressure at the sluice, the *kondamkatti* will inform the village committee member. He will inturn inform the treasurer, who will write to the Section Officer to raise the shutter level. The Section Officer will arranges to raise the shutter.

Farmers decide about the turn according to water availability in the tank. If the tank is at its full capacity all the 18 villages will get water. This year because of low water availability, (maximum 18 feet) only six villages (Dusi, Dusi Nathakollai, Mamandur, Mannur, Kuranganil Muttam, and Vadakalpakam) received water.

*Kondamkatties* are paid in kind. Every farmer is required to pay 4 marakkal of paddy for every one third acre (14 kg/acre). *Kondamkatties* collect the paddy and divide it among themselves. *Kondamkatties* are also engaged in other village functions like cleaning the villages during festivals, erecting pandals, etc. In appreciation of their duties, the villagers will give them dhotis and towels during the pongal festival. Sometimes they may get paid in cash too for doing somebody's personal work.

## **Groundwater Usage**

Only in 1985 and 1991 did the water level reach 30 feet. At that time, water was available for upper sluices also. In other years, water level was much lower; because of this reason, wells have been dug in the upper sluice command area. Farmers with wells cultivate groundnut as main crop. Some farmers even cultivate three groundnut crops in a year. There are 421 energized and 142 Semi-permanent wells. In Vadakalpakkam there are 19 energized and 11 Semi-permanent wells.

## **Finances of the Association**

Every village has to pay a membership fee of Re.1/acre/year. This amount will not be paid in cash; instead, by letting out their lands there to rear ducks, the villagers collect a hire amount which is used to pay the membership fee. Because of poor water availability for the past few years, rearing ducks is proving difficult. Consequently paying of membership fee has also become a problem. Members are not ready to pay the fee in cash. For the past three years, the association did not have to incur major expenses. The treasurer uses his funds for small expenses.

## **Solving Disputes**

Laying down rules and regulations for water distribution and canal maintenance has reduced the number of disputes. Sometimes a change in time schedule may be needed depending upon crop need. When more than one village is involved, the office bearers visit the disputed site and settle the dispute.

Once the groundnut crop in one village was wilting. To save the crop from severe loss one irrigation was needed. But the villager's turn was later so they requested the upstream village to spare water out of turn. The treasurer and members of the two villages visited the area. Finding that the need was genuine, they directed water to flow immediately to this village. Apart from such adjustments, no serious have disputes arisen.

The association meets regularly every month. In these meetings problems that the villagers face, are discussed and solutions found.

### **Channel Maintenance**

Group action by farmers to clean the Rajakkal channel and constructing temporary bunds to divert the Palar water into the Rajakkal channel were described earlier. Such groups actions are not seen nowadays. However, farmers clean their field channels, and irrigation channels every year. Desilting of canals and removing the shrubs are done regularly. The tailreach farmers contribute more in cleaning the channel because water availability is a problem for them. The tailreach farmers clean the channel in their village and then move upward; they then join with the midreach villagers and clean midreach channels. Both then join with head reach villagers and clean the head reach channel.

The level of involvement varies with villages. The involvement of the upper reach farmers is meagre but moving downwards, the involvement increases. The farmers themselves share the expenses of these operations.

### **Benefits to Farmers**

To effectively use the available water to take at least one crop wherever possible, the villagers have framed norms which are strictly enforced. By this arrangement, crop losses for want of water have been avoided since those who do not get tank water make alternative arrangements.

Raising a crop on expectation of water and losing the crop for want of water is avoided; available water is effectively used to take a crop wherever possible. This avoids litigation and scramble for water.

Irrigation through neerkatty has been in vogue for centuries and has been perfected by farmers through experience. Without disturbing the topography of fields, farmers irrigates their fields by forming temporary cross bunds across the channel. Because effective water sharing, farmers income has been increasing.

The association has been maintaining a cordial and friendly relationship with PWD officials in opening the sluice gate. Using available water is used optimally. But, the tank modernization work worth several lakhs of rupees was done without consulting the association or the influential community members. The villagers feel that the work was done without taking into account the need of the area. The government gave the contract for canal development work to a person who did not have any interest in tank or agriculture or farmers. The association's efforts in securing the contract for itself or to a person resident in these villages did not meet with success.

The government does not get involved in the activities of the association except for operating the sluices as directed by the court at the time of formation of the association. Farmers are giving their fullest support in water sharing. Because of poor water flow to the tail reach villages, the interest of villagers in the association is getting weakened. The Upper sluice beneficiary farmers have even forgotten the tank water.

The association does not have any assets. It does not get involved with any other works. Consequently, farmers' involvement with the association is getting reduced. Because of poor water availability in the tail reach for the last ten years, the cropping pattern there is getting changed. The farmers are cultivating low water requiring crops like groundnut, using groundwater. The poor and small farmers are not happily placed like the rich farmers who can afford to dig wells and use groundwater. The small farmers cannot afford to dig wells on their own.

### **Current Situation**

Owing to poor water availability, this big tank cannot provide irrigation for even half of its command area (4118 acres). To make up for the water deficit, farmers have started growing groundnut. Sugarcane is cultivated in one or two places and groundnut and ragi are cultivated at several places.



Again, owing to scarcity of water, the association has lost its interest and vigour. Rich farmers use groundwater are therefore not ready to take the trouble of bringing water to the tank. Government machinery, because of political developments, does not get involved either. The Government has not made any efforts to improve the water source. The association feels let down because the farmers are not involved in carrying out rehabilitation work in the project area.

Augmenting the water sources of the tank is still a dream. The association was started with several expectations. It took several steps and is still taking several steps to manage irrigation. But the solution is beyond its reach even though several development works like structures on the tank, improving water courses, strengthening tank bund, and division and diversion structures have been carried out.

The story of the Dusi Mamandur tank which should have ended on a victory note seems to be moving towards a tragic end. Government efforts to augment water source alone can bring some solace to the farmers. The water resource consolidation project to be implemented is the last hope for them for an additional source.

Dusi Mamandur Tank Command area, with number of wells (Village wise)				
Name of the village	Command Area	No. of wells		
		Fitted with electric motor	Fitted with diesel engine	Others
<b>Head Reach</b>				
1. Vagai	64.7	1	1	-
2. Dusi	446.2	10	1	2
3. Kuranganimuttam	179.3	8	3	2
4. Mamandur	990.7	23	39	2
5. Narasamangalam	110.4	15	5	12
<b>Mid Reach</b>				
6. Kanikiluppai	111.0	4	1	-
7. Keel Nayakkampalayam	253.6	17	4	4
8. Menallurimuttam	165.0	11	2	4
9. Vallavandhal	235.9	41	6	6
10. Vadakalpakkam	230.3	13	6	11
11. Kirjapuram	117.8	19	3	-
12. Sodhianpakkam	134.7	37	2	23
<b>Tail Reach</b>				
13. Pallavaramkam	403.7	44	1	10
14. Senianallur	102.6	-	-	-
15. Poonaitangal	146.1	24	-	-
16. Bagavanthapuram	106.6	22	13	14
17. Elacheri	327.0	28	2	47
18. Azhingalpattu	13.6	5	2	5

**List of case studies published in local languages under Irrigation Management Transfer Project**

*Case Studies conducted in Gujarat and published in Gujarati*

1. Water Users' Association in Ankav Subminor, Mahi Kadana Project: Farmers' Experience
2. Water Users' Association in Right Bank Canal of Pingot Medium Irrigation Project: Farmers' Experience
3. Water Users' Association in Left Bank Canal of Baldeva Medium Irrigation Project: Farmers' Experience
4. Water Users' Association in Bhestan Minor (Mohini), Ukai Kakrapar Project: Farmers' Experience
5. Water Users' Association in Bhima Lift Irrigation Scheme: Farmers' Experience

*Case Studies conducted in Maharashtra and published in Marathi*

1. Water Users' Association in Phulewadi Lift Irrigation Scheme: Farmers' Experience
2. Water Users' Association in Kadoli Lift Irrigation Scheme: Farmers' Experience
3. Water Users' Association in Minor 7, Mula Project: Farmers' Experience
4. Water Users' Association in Parunde Minor Irrigation Project: Farmers' Experience
5. Water Users' Association in Hadshi Minor Irrigation Project: Farmers' Experience
6. Water Users' Association in Minor 17, 18, 18A, 19 and Distributary 1, Waghad Project: Farmers' Experience
7. Water Users' Association in Minor 10, Bhima Project: Farmers' Experience

*Case Studies conducted in Tamil Nadu and published in Tamil*

1. Water Users' Association in XIth Branch Canal, Periyar Vaigai Project: Farmers' Experience

2. Water Users' Association in Kedar Tank: Farmers' Experience
3. Water Users' Association in Dusi Mamandur Tank: Farmers' Experience
4. Water Users' Association in 28L and 29R Outlets of Mettupalayam distributary in Lower Bhavani Project: Farmers' Experience
5. Water Users' Association in Malayadipalayam Distributary of Parambikulam Aliyar Project: Farmers' Experience
6. Water Users' Association in A9 Mahilanchery Channel (Saliperi), Cauvery-Valappar Project: Farmers' Experience
7. Water Users' Association in Panchanthatipatti Tank: Farmers' Experience
8. Water Users' Association in Pillayarkulam Tank: Farmers' Experience
9. Water Users' Association in Vagaikulam Tank, North Kodaimelalagian Channel, Tambraparani Project: Farmers' Experience

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