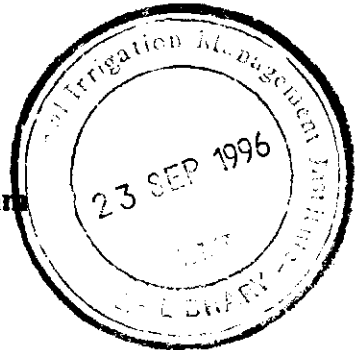


Status of Irrigation Management Transfer in India

**Water Users' Association in
Vagaikulam Tank, North
Kodaimelalagian Channel,
Tambraparani Project:
Farmers' Experience**

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Institute, Colombo
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**Water Users' Association in Minor 10 (Shevare), Bhima
Project: 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 V. Selvam 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.

V. Selvam'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 and Dinakaran. The edited first draft was translated into English and reviewed by the study team, particularly by R. Sakthivadivel and Jeffrey D. Brewer.

The members of the study team, including V. Selvam, wish to thank the people of Village Vagaikulam, 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 Vagalkulam Tank, North
Kodaimelalagian Channel, Tambraparani Project:
Farmers' Experience**

Irrigation is an age old practice in Tamil Nadu. Water was made available for agriculture by damming rivers and storing water through dams and small reservoirs. Users' participation was an important factor for the efficient functioning of irrigation systems in Tamil Nadu. However with the advent of the public works department (PWD) for construction of big dams and reservoirs during British rule, and consequently taking over irrigation management responsibility as well user participation slowly declined. The trend has continued in the post independence period also.

The surface water resource potential of Tamil Nadu is estimated at 1200 TMC. This gives a per capita availability of about 20,000 cubic feet per annum. With almost no scope for further development, efficient water use seems the only solution. Recent experiences have shown that user participation can greatly enhance efficient use of irrigation water.

In the southern part of Tamil Nadu, the important irrigation system is the Tambraparani. This is the only major river system which originates and ends in Tamil Nadu. Other major rivers have their origin in the neighboring states. Tambraparani starts its course at an altitude of around 2000 m from the eastern slope of the Western Ghats. The catchment area includes Pothigaimalai. Tambraparani traverses a distance of 125 km through Tirunelveli Kattabomman, and Chidambaranar districts before reaching the Gulf of Mannar. Important tributaries include Servalar, Manimuthar, Koraiyar, Gadana, Pachaiyar, and Chittar.

At 18th km of Tambraparani, the Papanasam dam was constructed and an hydro electric project came up during the 1940's. The dam has a capacity is 156 million cubic meters and a catchment of 150 sq. km. A diversion dam at 22 km (below the confluence of Servalar and Tambraparani rivers) was constructed and water taken through pipes to generate 28 mega watts of electricity. To stabilize river flow and the irrigation system eight anicuts

were constructed across the main river. All except Srivaikundam were constructed by the British. Eleven channels branch off from these anicuts. The system irrigates 63,000 hectares through direct and indirect irrigation. Tamil Nadu is unique for its tank irrigation systems. There are about 4,000 tanks having an ayacut of nearly one million hectares of land. The irrigation development programmes have included stabilizing tank irrigation. Thus the river systems through their branch canals provide direct irrigation besides feeding the tanks along their course; such tanks which receive supply through channels besides water inflow from their own catchment are called system tanks.

The North Kodaimelalagian channel (NKMC) feeds 18 system tanks and has 61 sluices. NKMC traverses on a contour along the foot hill for more than 5 km. During heavy rains silt brought by erosion from the hill slope is deposited on the course of NKMC. The Sepparu passes as a cross-stream carrying lot of sand. The NKMC is the first channel to take-off from Tambraparani westward along foothills of Papanasam. NKMC irrigates 913 hectares directly and through 18 system tanks.

Vagaikulam

Vagaikulam village gets direct irrigation from sluices 49 through 53. Eighty-eight hectares get direct irrigation. The 44th sluice feeds the Vagaikulam tank and through the 55th sluice water is taken along a peripheral channel to the first sluice for initial irrigation before the tank gets filled up. The tank has a water spread area of 15.77 hectare and irrigates 100 ha. Its capacity is 7.88 Mcft.

Rainfall at the headreaches of the Tambraparani is high. The quantum gets reduced as one goes towards the tailend. Mean annual rainfall of the Tambraparani ayacut is 750 mm of which 446 mm is received during October, November, and December. (north east monsoon).

The mean maximum temperature is the highest during May (36.4° C) and lowest during December (30.2° C) while the mean minimum temperature is the lowest during January (22.3° C) and highest during May (27° C).

The relative humidity is high during the north east monsoon period and wind velocity is high during June through September and medium during the north east monsoon period.

Vagaikulam village has a population of 2188 according to the 1991 census of which 1065 were male and 1123 female. The scheduled caste constitutes one-fifth of the population (426). They are the main workforce in the village. The North Kodaimelalagian Landholders Association (NKLA), formed by the villagers in the 1960's, manages irrigation.

Problem

Tambraparani water flows for about 10 months from June through March. Although the North Kodaimelalagian channel is the first in a series of 12 channels in the Tambraparani, farmers in the village experience great difficulty in getting water. NKLA has to spend every year a large sum of money on cleaning 4-5 km of the main canal to make the water flow to the supply channels.

Two crops of rice are grown. The first crop *kar* is sown in June. Short duration varieties (110 - 120 days) are preferred for *kar* crop. The second crop termed *pishanam*, is planted during November/December and harvested by March. Medium duration varieties (135 - 140 days) are preferred for this crop.

Although sufficient water is released from the anicut, in the first half of the canal where 32 sluices are situated, a large portion of the water is wasted owing to leakages. Since the drainage water returns to the river, the PWD officials are not unduly worried about sending more than the required quantity through the anicut or take steps to reduce seepage. Most of these 32 offtake sluices are oversized and none of them has gates. The openings are plugged with sandbags, straw, and rubbish materials. On the downstream side of these offtakes, the channels are steep and therefore water rushes through these channels.

Since NKMC is a contour canal, many cross-drainage works join the canal from above. On the other side there are surplus weirs. Over a period of time, the canal was covered with silt and, in order to push sufficient water, temporary barriers were constructed across these surplus weirs. Some of the farmers who want to catch fish from the Tambraparani river open the temporary bunds and obstruction on sluices. The water rushes down and joins river. Fish from the river starts moving upstream and the farmers catch the fish easily. This however, process disrupts regular flow to the tailreach of NKMC.

A large tract of area very near the canal but on the elevated side has been brought under cultivation. It is estimated to be about 20 per cent of the designed command area. In this unauthorized area, paddy, coconuts, orchards etc. are cultivated. In many places water is lifted by diesel/electric pumps for cultivating these crops. Moreover, those fields which are bordering the canal gets water in some cases through gravity. When these fields reach the stage of harvest, water from the fields are to be drained. In that case, farmers in the encroached area opens the offtake sluices to drain the water from their fields. This again disrupts the flow in the main canal and the tailend farmers get less water.

Because of the direct inlet of the mountain stream coming and joining the canal, a large amount of silt is being brought in. The excavated silt in many locations has formed a big heap. When there is heavy rain, the silt is again washed into the canal. In places where the silt has not been removed, it forms an obstruction and prevents effective flow. This is the main reason for the high depth of flow in the upstream reaches of NKMC.

Downstream of the 32 offtake sluice, the canal has to traverse a rocky terrain and the bed has not been depressed sufficiently. This also affects the water flow. There are three "tanks on channel". When water is released for irrigation during June, these tanks have to be got filled before water moves farther in the canal. This causes delay in water reaching Vagaikulam tank during the beginning of the first season.

Social Aspects

The antiquity of the temples indicates that the village is ancient. In fact, Pramadesam, the adjacent village, was the taluka headquarters for a long time. The taluka headquarter is now Ambasamudram town, three km south of Vagaikulam.

The people belong to several communities: Moopanar, Thevar, Chettiar, Asari, Naidu, Pillai, Muslims, and scheduled castes. The main occupation is agriculture and most of the villagers are small land holders; even those lands are scattered. There are a number of small bell metal units. Asariars were the pioneers in making articles from bell metal. Presently, even other caste people are working in bell metal industries since they could earn higher wages. Products from the metal industrial units- metal pots and bells- are marketed through cooperative societies in nearby Ambasamudram town.

Land Tenure

According to the land tenure system in vogue in this village, a cultivator (tenant) has to pay annually 24 bags of paddy per acre of land he cultivates to the landholder. For a single crop, the *varam* is 12 bags of paddy per season. The farmers feel that the tenure charges are high order since they have to part with 50 per cent of the produce for the tenure.

A rice research station at Ambasamudram, constituent of the Tamil Nadu Agricultural University, has released several rice varieties suited to the tract. It has also suggested crop production technologies for higher productivity and crop protection packages.

Soil

The soils are well drained, moderate to high in fertility, and slightly acidic in soil reaction (pH 5.0 to 6.9).

Change Process

Agriculture is the mainstay for many of the residents of Vagaikulam. Rice is the major crop and Vagaikulam tank is the only source of water. The tank gets supply from the Tambraparani river through NKMC. Vagaikulam is a hard rock area. Well digging is highly expensive and underground water resource is very poor. There are therefore no wells in the entire irrigated area of 180 ha.

NKMC gets silted when it traverses along the foot hill as mentioned earlier. The upstream farmers get adequate water since their sluices are oversized. Fields on the downstream side of the channel are steep and water rushes when sluices are opened. The affected users are the Vagaikulam farmers and a few villages down below. Desilting the main channel is expensive and requires the involvement of all landholders in the tailreach villages. There are no big farmers who could meet the expenses. Even to approach agencies (PWD) for more water or for cleaning the channels individual efforts seldom yield desired results. Hence there was an urge for joining together for group action in acquiring adequate supply to Vagaikulam tank.

The Government of Tamil Nadu during the 50s introduced the land ceiling act. According to the act, one could have only 6 hectares wetland. Some of the villagers thought that the landholders' interest will not be fully protected unless they were united. With reduced land holdings they may not be able to get things done through individual efforts. A few elite farmers- Sivakkolundu Mudaliar, Sankara Iyer, and Ramasamy Iyer- took initiative to form an Association.

There were two objectives in forming the association. The first was for taking steps to fill Anandakulam, Arasaradikulam, Singankulam, and Vagaikulam tanks on the schedule dates. The first three tanks get supply through the 49th sluice while Vagaikulam is fed through sluice 54 of NKMC; sluices 50, 51, 52, and 53 directly irrigates land of Vagaikulam village.

The second objective was to protect the interest of land holders. Sivakolundu Mudaliar was honest and service minded. He was rich and maintained good relations with PWD officials. Thanks to his persistent efforts and initiative, the farmers joined together to form an association. It was registered as the North Kodaimelalagian Land Holders Association on January 20, 1960.

The Association

All land holders in the area can become members of the association. The executive committee has 15 members giving proportional representation for each one of the communities: Nadar 1, Naidu 1, Pillai 1, Chettiar 2, Muslim 1, Thevar 2, Moopanar 2, Asariar 2, Christian 1, and scheduled caste 2. The executive committee coopts two members, one from Ambasamudram and another from Pramadesam.

A meeting (mahasabai) is held at a common place during April/May. During the meeting each will by consensus elect the members to represent their community in the Executive Committee whose duration is one year. Thus constituted Executive Committee will then elect the President, Secretary and the Treasurer. The same person can be elected for more than one year. The present president was elected for the third year consecutively.

The objectives of the association are to get sufficient water at scheduled dates for the four tanks Anandakulam, Arasaradikulam, Singankulam and Vagaikulam, and to provide irrigation to all fields.

- * to carry out cleaning and maintain NKMC
- * to safeguard the rights and interest of the landholders
- * to increase the productivity of the land through adoption of scientific farming/green manuring and use of inputs like fertilizers
- * to infuse, establish, and nourish cordial relationship between farmers

- * to maintain acceptable wage structure and tenency terms
- * to take steps to improve overall economic conditions and standard of living of farmers

Project Administration

NKMC is operated and maintained by the Public Works Department (PWD). The Superintending Engineer, Tirunelveli, is in overall charge of irrigation management and construction works in Tirunelveli Kattabomman and Chidambaranar districts. The Executive Engineer (OM), Tambraparani, is the executive authority for the operation and maintenance of the system. The Sub-divisional officer, an assistant executive engineer at Cheranmadevi, guides and supervises the operation and maintenance of the Kodaimelalagian dam and the North and South Kodaimelalagian Channel through the section officer stationed at Ambasamudram. The section officer has a work Inspector and luskers to assist him.

Three luskers are to look after the KM anicut and NKMC. One of the lusker's position, has not been filled. Therefore, one lusker attends to the dam and the other to the entire length of NKMC. The government is not filling up the vacant positions at lower level. Hence the lusker is not able to effectively supervise water distribution and maintenance.

Water acquisition

Every year the association holds a meeting during May prior to water release on June 1. In the meeting planning is done for silt clearance and cleaning of the main canal for obtaining adequate supply of water to the tank. The canal runs on the foothill and large sums are needed to clean the canal. Whenever heavy rains come, silt is accumulated in the canal. The association was successful in getting a siphon constructed by PWD for the main canal at Koraiyar crossing during 1981. During the floods of 1987, a breach occurred on the canal. The association contributed labour and assisted PWD in closing the breach and clearing the silt. In

1994 the regulator gate was set right by providing a new shutter, the cost of which was borne by the association even though the responsibility rested with the PWD. This has helped in keeping friendly relations with PWD.

None of the upper reach sluices has shutters. They are plugged with sand bags, weeds and debris. When the plug is removed water rushes with force since the offtake channels are steeply inclined. Excess water drains into the main river. In many of the sluices, there are permanent leakages. This causes low supply to the lower reaches. Frequent patrolling is required. Water released from the NK anicut takes long time to reach Vagaikulam. It takes another 3 to 4 days for the tank to fill up. Hence a peripheral channel (Purakkal vaikkal) was dug and lined by PWD to take water directly to the sluice. This direct flow from NKMC is used for raising nurseries and at times of scarcity. The tank is desilted every year. The farmers use the silt as an amendment to their fields. The tank has gone even deeper than desired. Water hyacinth and ipomea are spreading fast in the tank. Removing them involves hardship and expenditure.

Water Distribution

The Vagaikulam tank has three sluices. Usually irrigation is done through the first sluice. The third sluice is opened only in the initial period. The area covered by the third sluice can get water directly from the NKMC sluices 50-53. Moreover, the fields are undulating and tapering towards the middle. The return flow from upper reaches are adequate to meet the water requirements of the third sluice command. The second sluice is used only to empty the tank during May.

Water distribution is normally done by farmers themselves; the first two months of the Kar season are generally scarcity period as water requirement will be higher for carrying out land preparation and transplanting operations. During this period the watchman is given additional responsibility of water distribution to ensure equity.

The water will be released from the tank for irrigation only when the level reaches 4 feet (1.2 m). The sluices are operated by one of the eight watchmen employed by the association. The watchmen collect information about water requirements in different zones. The usual procedure is rotational distribution which is well established over time. It is not followed during land preparation or transplantation or at the time of harvesting in late-planted fields. Guidelines exist for water distribution. Banana will get a few irrigations even during April-May. The first irrigation will be given to banana on preferential basis. Such a preference is extended at the time of nursery preparation as well.

There are some elevated patches where water does not reach under normal flow; such land holders are permitted to cross bund and irrigate twice a week. Here also the rotational system is followed.

Maintenance

Most of the funds raised are used in setting right the 4-5 km supply canal at head reach. Every year the farmers themselves or jointly with PWD clean the supply channel. Water hyacinth is now becoming a menace. This water loving plant forms a thick mat and when the water level goes down produces a peculiar odour, thus compelling the villagers to clean the tank. For the last few years, clearing this weed from the tank is consuming a sizable portion of the maintenance fund. The outlet channels are cleaned by the farmers themselves. Wherever the channel runs on poromboke, the association cleans the outlet channel. Adayapattu, Sumaithangikulam, Seerpandikulam, Pudukkulam, and Gnanapallikulam farmers also contribute to a small extent in clearing the main channel.

Resource Mobilization

1. The members contribute annually Rs. 12.50 per acre of land holding as membership fee.
2. To meet the wages of watchman engaged for watch and ward, sluice operation, and water guiding during scarcity situations, all cultivators,

whether owner or tenant, contribute 16 measures of paddy (25kg) per acre of land cultivated. This is termed as pattivari (*Patti* in Tamil means the place where stray cattle are pounded). Since the main job of the watchman is to ward off stray cattle, the collection gets its name Pattivari.

3. Part of the funds collected through fish auctioning is given to the association. Since the collection goes mainly to the village common fund based on communal basis, the association gets one part out of fourteen, thirteen parts are shared by the thirteen caste groups.
4. After harvest ducks are let in the fields for feeding. A small amount is collected which goes to the association funds.

The bulk of the collection is spent on canal maintenance. The association has its own office. A part time manager collects taxes and keeps account. He is paid Rs. 225 per month. Other office bearers and EC members provide honorary service.

Conflicts

Water users follow conventional rules and regulations. They obey decisions taken by the office bearers of the association. When a dispute arises, the office bearers especially the president, settle the dispute. The association does not involve itself in village affairs. It concentrates only on irrigation management and related aspects.

Federated Associations

The Anna University initiated a programme of federating various WUAs along this canal. The president of the Vagaikulam WUA is secretary of the federated association. The ultimate objective of this federated association is to take over the canal for self-management. The Anna University has discontinued its work for want of funds and the federated association exists in a limbo.

Results and Benefits

For 35 years, the association has been discharging its responsibilities without wilting. Rules and regulations are followed and the president's decisions are accepted without dissent. Perceptible progress has been made in getting water to the tank.

As the association is functioning successfully for several years, a regard for the president amongst the district officials is visible. As leader of a model association, the president was taken to other states and other parts of Tamil Nadu at government expense.

Wastages are avoided and water is supplied on time adequately. This has enabled the farmers to grow banana, even though there is no well in the area (8 ha). Banana has brought prosperity. Good water management and new technology provided by agricultural university have enhanced and stabilized crop yields.

Normally the important duty of an agriculturist is to get water for his land. In Vagaikulam, the association has assumed this responsibility. Hence, farmers are able to spend and energy on other agricultural activities such as input mobilization, harvest, and other works, and increase their income.

Future Prospects

The aspirations of the association and members are many:

1. A dam below the Papanasam fall will reduce silt flow into NKMC
2. An aqueduct near St. Mary's School of V.K. Puram
3. Peripheral channel on the "tank on channel" will enable speedy flow on the first flush

In April, 1995, the superintending engineer, Tirunelveli, narrated to this case worker the future plans:

- 1. A Water Resource Consolidation Project is to be implemented in Tamil Nadu at a cost of RS. 1,140 crores. Tirunelveli district will be allotted Rs. 18 crores. Farmers will be asked to take the responsibility of irrigation management up to 500 hectares.**
- 2. All the sluices in NKMC (83) will have regulators with locking arrangement.**
- 3. The left bank along the hill slope will be strengthened with 1 m berm. This will avoid silt flow from the hill side into NKMC during heavy rains.**
- 4. Peripheral channels will be provided on "tank on channel".**
- 5. Vagaikulam and other tanks will be renovated.**

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 Anklav 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
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3. Water Users' Association in Minor 7, Mula Project: Farmers' Experience
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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 Panchanthatangipatti 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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