

WATER SCARCITY IN RAMANATHAPURAM DISTRICT**Dr. A.D. PADMASREE**

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Abstract

Water is a source of food for living creatures and also prime ingredient for food production by the living organisms. Water is a source of input for growth, a tool for development, a place for civilization, a land for cultural nourishment and a habitation for flora and fauna. Water is life it is a source of sacredness. Water the universal asset is being fast depleted. The demand for fresh water for drinking and domestic purposes water for food production and waste disposal are all increasingly threatened. Pollution contaminates available scarce supplies. Water resource experts have been warning that the world is heading towards a water shock which may dwarf the oil crisis. In India, the shortage of water and the increasing pollution of water have acquired the proportion of a crisis for our people, and most of all, for the poorest of the poor. Nowadays, bottled water as expensive as milk is available in the nook and corner of the ravages of the environment. Tamilnadu, a southern state of Indian sub-continent, well known for its age old water management techniques has now suffered a lot to supply water to the growing demand. A sacredness and scarceness of water resource and used as wisely as possible and safeguarded it against harm. Over exploitation of ground water, etc. are worsening now and a big question mark remains how to meet the future demand. Fresh water is becoming a saleable commodity in many parts of the state including cities.

Key Words : Water, Scarcity, Production, Environment, Pollution.

Introduction

“No Water, No Life, No Blue, No Green” - Sylvia Earle

Ramanathapuram district is one of the water scarcity district in Tamilnadu state. People living outside of Ramanathapuram district always think that the district is a cursed one. The government officials considered their service period in the district as punishment in their lifetime. Water is a scarce as well as a saleable good in the district. It is one of the coastal district of the state located in the south eastern part of Tamilnadu. It has an area of 1,218 sq.k.m. The landscape is almost plain having the slope of less than 2%. It has seven taluks and eleven panchayat unions. Among the 11 panchayat unions, Kamudhi, Kadaladi and Mudukulathur unions are highly susceptible to the water scarcity. Low infrastructural facilities, marginality of agricultural land holdings, saline nature of ground water, frequent chronic drought and flood, economical backwardness, migration, high rate of illiteracy, communal riots are the common

characteristics of the district. It has tropical climate and receiving an annual average rainfall of 827 mm in 48 rainy days. Rainfall is bi-modal and erratic in nature. More than 65% of the annual rainfall is received during the north-east monsoon period.

There is no perennial river of importance to supply water. The wild rivers which carry water for a few days or hours after the downpour are connected to the tanks and *ooranis* and they are emptied on their way to sea. Hard clayey soil constitutes about 46% of the total soil distribution. The hard clayey nature of soil morphology restricts the availability of the deep seated fresh water aquifers.

Geomorphology Structure

Geomorphology Structure of the soil itself cause salinity. Sea water intrusion also causes rapid upward movement of salinity. These factors restrict the ground water alternative to solve the problems than any other methods. The historical civilization has mostly flourished on the banks of perennial rivers and their glory is identified with the water. But in Ramnathapuram district, people have created a history of more than 2,000 years old without any river of importance flowing on their landscape but they cherished their culture by creating water on their own. The Aryan epics of Ramayana have many poems to narrate the glory of this water starved country.

The great people of Ramanathapuram have identified *kanmois* and *ooranis* as their source water to make their history of habitations. *Kanmois* are called as tanks, they are earthen bounded reservoirs constructed across the slope. These *kanmois* are constructed before a period of centuries and is still the main stay of agriculture in the district. *Ooranis* are called as ponds. These are the earthen reservoirs bounded by earthen bunds along the sides and receive water from the monsoonal runoff and stored for the whole year. These are the main sources of drinking water for more than a million people in the district. These traditional resources are simple, apposite, effective and manageable by the community. They provide better solution to the community to meet the diversified needs of water.

Traditional Drinking Water Source

The ponds are called by different names like *Ooranis*, *kulams*, *Eris* ect. in different parts of the state. These are the surface storage system meant for rain water harvesting bounded by earthen bunds having inlet provision for getting water from its own catchment and interlinked to other systems like irrigation tanks, feeder channels ect. Donating land to form ponds or assisting pond formation is regarded as one of the great virtues. The people treated the nature of work with religious sanctity. Most of the *Oorani* lands were donated to temples and in god's name. One can see temples, in pond bunds or in nearby areas. The maintenance and management were vested with the village assemblies. Every year during the celebration of temple function, they have done maintenance works through *kudimaramathu*, a process where each family contribute free labour to do the common work during ancient time. The regular maintenance executed were deepening

work, feeder channel clearance, filling of *ooranis* during the monsoon periods, enforcing a code of conduct and ensuring equity supply during the scarce period.

Villages have separate ponds for drinking, domestic and for livestock. The ponds are of different types. They are the simple ponds are earthen bunded and don't have any masonry structures and fencing arrangements. The rainwater collected into the pond is directly taken for drinking purpose. The second type is ponds with steps, sluice and fencing arrangements. Here steps are provided through which people get into the pond and take water. Sluice is provided through which rain water flows into the ponds. A shutter provision is also made to regulate the rainwater entry into the pond. Fencing is provided to arrest the livestock entry into the pond. The third type is sophisticated ponds with filter well mechanism. This is a well structured pond, bunds are stone pitched or masonry wall constructed on all the sides of the ponds to avoid siltation. A filter well is provided to get clean water.

Monsoon runoff stored in the pond may not be pure. People followed simple traditional water purifying methods to treat the water. Thettan kottai is one of the local tree seed which is mainly used for purifying water. The seed is rubbed with the inner side of the vessel, after that water is poured in the vessel. After settlement of the sediments at the bottom of the vessel, the water is used for drinking purpose. Scratching stones are found in a few places which are roasted by fire, then the roasted stones are taken and stored. If the roasted stones are added into the pond water have been taken in the pot, the water gets purified.

When a glass of salt water is added into the pond water, the pond water gets purified. This practice is also being followed in some places. Our expert engineers using various methods of topographical surveys to identify places to construct tanks and ponds. The advanced technology of today finds it very difficult to construct new tanks and *ooranis*. But the ancient people of Ramanathapuram with their vision and hard work have changed their landscape and miles and miles of earthen bunds are constructed to store runoff. They not only formed the structures and these structures are connected by chains of canals and divisions. These are noble works and express native engineering talents. They have stood for hundreds of years. From these structures, the modern engineers learned how to secure a foundation in loose sand of unmeasured depth.

Each and every village in Ramanathapuram district has tanks and *ooranis*. Which were mostly donated by the chieftains and individuals. By adopting the technology of digging earth and collective efforts of the public, these lands were converted to *ooranis*. The villagers evolved norms for regular maintenance and upkeep. They ensured during monsoon period that the *oorani* get filled with water. Even after the end of the monsoon, the villagers used to divert the tank water to fill the *oorani* either through gravity flow or through pumping. Priority is given for filling the *oorani* rather than irrigating crops. They also ensured the optimum storage in the *oorani* in order to meet the demand during the summer months. In short the villagers themselves were responsible to meet the water demand on their own.

Social Fencing

Substance of traditional drinking water ponds depends on the social system. The social system with great corpus of knowledge, techniques and norms evolved over generations which have wide spread influence on water harvesting, *ooranis* maintenance and management in order to ensure the sustenance. An elaborate social system of water bodies maintenance was backed up by strong religious traditions and sanction in order to maintain the performance of the resource. The people diverted monsoon runoff effectively to fill the *oorani*. In order to ensure the quality, they won't allow the first rain water which normally carries more wastes. During heavy flood period, they filled the *oorani* to the optimum.

In most of the cases, *oorani* are interconnected with irrigation tanks. During the end of the monsoon period, they used to divert the tank water to the *ooranis* either by gravity flow or by pumping. Even the riparian rights of water are vested with the *ayacutdars*. They give the most priority to fill the *oorani* rather than irrigating agriculture. Some times, particularly during scarce period, when for want of one irrigation, the crops get failure at that juncture conflicts arises among the users in sharing of water for agriculture and *oorani*. As per riparian rights, the court of law supports to *ayacutdars* while the village assemblies give first priority to fill the *oorani*. Every year people spend Rs.5,000-Rs.10,000 to pump water to the *oorani* apart from other maintenance works. In a few places, even after filling the *oorani* the tank water is not allowed for irrigation and they reserved it for other domestic purposes. The people used the summer rains to the best possible. They ensure 2-3 fillings in a *oorani* in a year and thereby the system performance is assured.

The local people established a code of conduct which is of self regulative in nature in order to preserve the pristine quality. They don't take bath; they don't allow cattle for drink; they don't enter with chappals / slipper and cleaning of vessels / utensils inside the *oorani* as prohibited. Even women during mensural period are not allowed to enter into the *oorani*. At that time, women stand outside the *oorani* and someone get water to them. These elaborate social system packed up with sanctity helped the people to ensure the system to perform well.

Government Efforts

During 70's and 80's government has provided efforts to alleviate the water scarcity. Initially they don't recognize the *ooranis* as a source for drinking water. They have provided wells, hand pumps and deep borewells in each villages. Due to the lack of adequate good water aquifers, the effort was failed in many villages of the district. Without considering the ground water availability and its status, the departments implemented the similar efforts in many villages. It resulted more than one hand pumps, overhead tanks, public stand posts, underground pipelines, deep borewells etc. and was idle for a longer period. In a few stand posts and pipes have never seen water even from its inception.

During the late 80's, government tried several alternative and experiment a few ideas. They took efforts to supply water through implementing desalinization of ground water schemes. On an experiments basis it was implemented in a few selected villages. Technocentric nature of the system, centralized bureaucratic management, lack of infrastructure an lack of maintenance had affected the performance level of units and most of them are now functioning below potential and it will reduced the life of the unit.

During the same period, government has implemented Combined Water Supply Schemes (CWSS) in which good water aquifer are identified and water pumped through deep giant borewells and supplied too many villages which are interconnected through pipelines. This scheme was comparatively successful in serving the purpose and more than 30 combined water supply schemes are functioning in the district. The schemes are facing high administrative losses which are unaccountable in nature. The exploitation of scare good water aquifer causes negative impact on the resource base. It also affects the sustenance of the resource to supply water.

Every year water demand is increasing with growing population and improved standard of living. In the early 80's, the villagers revived their local village assembly which is the informal governing body remained as defunct for a very long period of time. The village assembly gives priority to the drinking water, they have approached the government and have succeeded to get bore well schemes to their village. Hand pumps, deep bore wells with pump room, pipeline , public stand posts were provided. Unfortunately none of them served the purpose.

Problems due to Water Scarcity - An Emotional Issue

Water is a source of life; one can live without water for a few days but can't live without water. Water is an emotional issue particularly during scare period. Fetching water is considered mostly as women's business. The competition for the limited resource will aggravate the tension among the public and conflicts among the users. The small issue will become a clash among the people in the villages. Even though each community is having own source of water, if the resource gets dried, they went to others, then it creates tension and there are cases where these situation leads to communal riots, inter village conflicts etc. Being a source of an emotional issue, it ends up with group clash and even murder.

Wastage of Energy

Normally women wait in long queue for longer periods to get one or two bucket of water. Even during the night, they are waiting in queue to get water,. Otherwise they were walk more than 3 km and they have to spent more than 50 % of their time to fetch water. They face uncertainties, hardship, emotional feelings and tension. These causes affected to their physical and mental health. Harmony of the family gets affected; water scarcity creates unhygienic condition and health hazards. Women and children are most vulnerable to this problem.

Cost of Water

The opportunity cost of waiting in queue to fetch water or walk miles to bring water is very high. In many cases water markets are prevailing in which the vendors supply water for cash. The rate varies from Rs.2 per pot to Rs.8 per pot. They supply water through bullock cart tankers, tractor tankers. In a few places, people go by bus to get water. Poor people are suffered a lot as they can't afford either.

People' contribution and work implementation

It was discussed to complete the contribution by way of village common work, the association faced difficulties in mobilizing voluntary lab our and monitoring the progress. The task was handed over to the individual communities and accordingly work was allotted. Each community must complete their share of work. Each community allotted to a minimum work to each family to complete it. As per the decision, each family must dig 5m*4*0.3m size of pit and should dispose the earth. The work for contribution was implemented and completed within 5days. As per the measurement each family had contributed Rs.80- Rs.140 value of works as contribution towards *oorani* rehabilitation.

Then the remaining work was done through paid labour. Normally the government rate for earthwork is less than the prevailing market rate labourers were demented extra over the government rate. This was discussed in the meetings and the laboures had agreed to work for Rs.250 for digging the pit of 840.3m size. They appointed different committees to execute the work. A group of 4-6 labours together complete the work and based on measurement they got wage. Individual who wanted the earth provides tractors on their own.

The earthwork was completed within two months to the tune of Rs.0.7 lakh. The Ramanathapuram District collector Mr. Anand, I.A.S., and other higher officials had visited and appreciated their involvement in the work. Puseri *oorani* was declared as the best one under Rajiv Gandhi National Drinking Water Mission Scheme in Ramanathapuram District. Fencing and filter well construction work also given to the village assembly and completed within a month. Through the execution of all the works the association have saved Rs.5, 000. The work a space to discuss and to setup a new management regime in order to ensure the performance.

Maintenance:

During the last three years, they ensured minimum of two fillings in *oorani*. The *oorani* get water from the second sluice of Puseri tank. Before the sluices are opened for irrigation they give priority to fill the *oorani* to the maximum storage level. The second filling may be during December, at that time water storage in the tank may available for one or two irrigation only. They ensure maximum level of storage in the *oorani* before the last irrigation. Pumping is practiced to ensure maximum storage. They spend Rs.8,000- 10,000 to fill the *oorani*. The tank water in dead storage is reserved for bathing and other purposes. In 1999 they have spent

Rs.8,000 to clear the sides of the bund and they have contributed Rs. 12,000 value of work to repair 25m long feeder channel from the tank.

Short term Remedy

Frequently they approach the government and by their constant efforts they “Drinking Water supply through Desalination of Ground Water Scheme” to the village. The was designed to produce 30cu.m. Pure water to supply for three village i.e., puseri, kamdambodai and Thaliyarendal. Bore well was erected and plant was constructed in puseri. About 5km underground pipeline was installed to interconnect the three villages. Overhead tanks, public stand posts were provided to supply water. The TWAD (Tamilnadu Water and Drainage) Board in collaboration with TEAM (Titanium Equipment and Anode Manufacturers Ltd.), Chennai had implemented the scheme. The plant was inaugurated its operation in the middle 80’s.

Due to several facts the plant was unable to function to its full potential. Villagers of Thaliyarendal and kadambodai recalled that they never get water even from its inception. In the earlier period of its functioning, it supplied sufficient water to puseri village. This new arrival had a setback on *oorani* maintenance. The village assembly believed that this will be the permanent solution to the problem. The assembly decided that the public stand posts provided by this scheme were not in a position to supply water to all streets. They face difficulties in monitoring of supply. They have decided to provide one public stand post with 5 tap connections in only one place. They spend money on their own and constructed it. Till the early 90’s, even though they face problems then and there, they are very much happy about the performance of the plant in providing water to village.

Seeking an Alternative

Over the years of its functioning, the plan faced frequent interruptions. The villagers did not give much attention to maintain their *oorani*. Even they didn’t take care to fill the *oorani* it reduced the performance of the *oorani*. The *oorani* gets dried up during summer. The villagers depend desalination plant for all their needs. This lead to water scarcity during the middle of 90’s. In 1996-97 the assembly again made efforts, contacted TWAD Board for repairing the plant and Block Development officer for supplying water through tankers. It was difficult to get water. In the early 97, the village assembly seriously discussed and sought a permanent solution to the problem.

In the same period, DHAN Foundation a developmental organization has entered the village to implement with Europe Commission Funded people Participatory Tank Modernizations Programme in the village. Several village meetings and discussions were held and a people organization namely puseri Tank Farmers Association was formed .During the process most of the member expressed the water scarcity problem in the village . They said *oorani* rehabilitation is a prime need to solve the crisis.

Conclusion

The population in Ramanathapuram district of Tamilnadu State faces potable water scarcity through out the year in general and acute drinking water problem in lean periods of the year. To mitigate this problem, eleven reverse osmosis (RO) desalination plants were installed in problematic villages in the districts. General performance of these eleven plants and in –depth evaluation of two plants was undertaken to focus attention on the physic-chemical quality of water at various stages of treatment, present status with respect to operation and management of financial implications and overall management in rural situation.

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