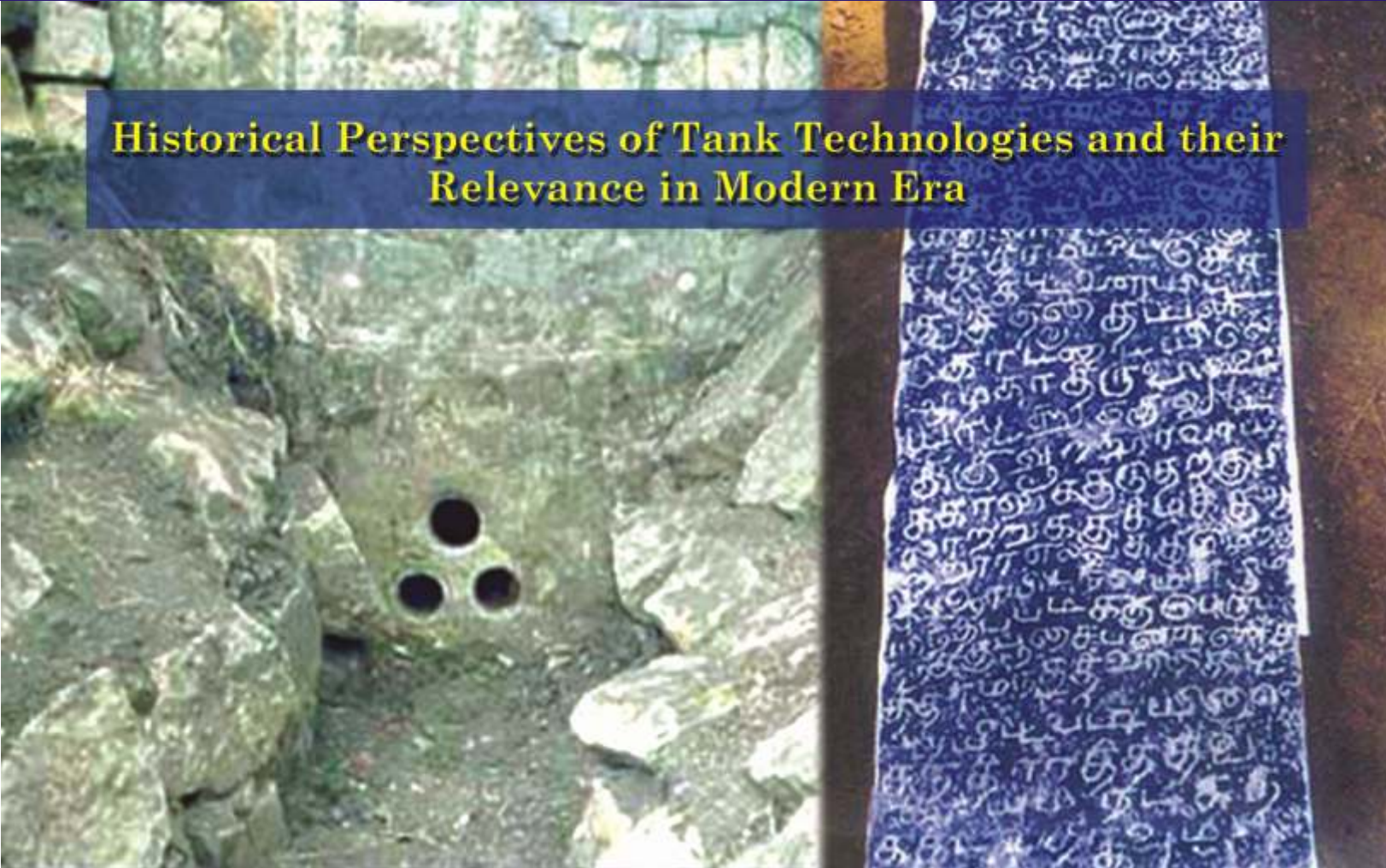




Policy Brief **4**

Historical Perspectives of Tank Technologies and their Relevance in Modern Era



Pulikkan Madai, (Tiger's Eye Sluice) Nenmeni Tank, Sattur

Stone Inscription

Executive Summary

Catching rainwater “where it falls” was practiced in India as well as in Tamil Nadu. Thousands of small-scale water bodies are scattered over the countryside even now. These water bodies have survived the passage of time. These tanks have been carefully planned by our ancestors based on good site selection backed by sound knowledge of local conditions using locally available materials for their construction. Most of these tanks serve the purpose of irrigation

and ground water recharging. They not only serve humanity but also the flora, fauna and at the same time keeping the equilibrium of the village ecosystem. This traditional intellectual wisdom of our forefathers has been appreciated by the modern day engineers.

The small irrigation works thus created are environment friendly and easily manageable by

local community. A close examination of the traditional technology behind these simple but cost-effective structures indicate that the design principles developed thousands of years ago still hold good for the present and for the future.

“In Search of Ancient Wisdom–Irrigation Tanks” is the first book of the Historical Research Series brought out by DHAN Foundation. This book is rich with amazing information about the shapes of tanks, fascinating types of sluices (*Pullikan Madai* or “Tiger eye” sluice), sustainable water management practices through village councils etc.

DHAN Foundation organised a one-day seminar on “Historical Perspectives of Tank Technologies and their Relevance in Modern Era”. Senior officials from various Government Departments, Research Institutions, and Lead Farmers

deliberated in the Seminar. Some of the recommendations that emerged at the end of the Seminar are: there is an urgent need to create an Independent Autonomous Authority to look after the small-scale water bodies in totality. A systematic enumeration of tanks using satellite imagery techniques is to be carried out and tank memoirs should be republished and made available in the website. More comprehensive research is needed on the use of “Araiman” for the tank bund formation. Steps would be taken to organise Road shows and create awareness about the Historical findings of Tank Technologies and DHAN Foundation will approach the Government and Research Institutions for further action to fulfil the desired objectives. More Policy and Research Leads are discussed in detail in this policy brief. This policy brief proposes the following recommendations to related departments for policy and practice changes.

Summary of Suggested Changes in Policy and Practice

Existing Policy/Practice	Policy/Practice changes required
1. Water Resources Organisation/Rural Development Department	
Under tank modernisation programme, new technologies are being introduced without taking into consideration the efficacy of traditional technologies.	The traditional technologies, which are time tested, should be followed in the rehabilitation and in new irrigation works. Some of the traditional technologies that can be still adopted are: <ul style="list-style-type: none"> • Criteria for the selection of tank • Economic alignment of tank bunds • Use of locally available material with suitable modifications (Araiman) • Pulikan madai • Plug and Socket sluice shutters • Curved anicuts • Silt trap in feeder channels
Currently steel paddle shutters and falling shutters in sluices are being adopted as modern techniques.	Plug and Socket shutters have been traditionally more effective. Some rethinking on the adoption of modern techniques should be considered.
No systematic enumeration of tanks and the tank cascades (chains) is being carried out.	Tank memoirs to be republished and made available in the website. “Project Tank” in the lines of “Project Tiger”/“Project Elephant” may be initiated for taking up the enumeration of tanks in the State.

Satellite imagery, Pan data and Aerial photography could be used for enumeration of tanks including tank cascades. This may preferably be carried out during good monsoon years when it would be easy to identify the water bodies.

Policy guidelines should be prepared on the use of catchment areas and the foreshore areas. Measures to promote good sanitation and hygiene have to be taken up and people using the catchment should be educated about these concepts.

As a number of Government Departments are independently handling several issues regarding tanks, coordination between them is rather absent.

There is an urgent need to create an Independent Autonomous Authority to look after the small-scale water bodies in totality.

Rights to share income arising from the management of tanks by the Tank Associations are not defined.

Desilting and fishing rights should be vested with the Tank Associations, as this would give enough revenue for the maintenance of the tanks.

All villagers should be involved in the issues so that stake holding can be widened. Maintenance of tank water bodies should rest on the functional users at the village level.

Steps should be taken to encourage fishing, as this is an economically viable activity, which can be undertaken in most of the tanks.

There is no policy on the utilisation of tank bunds and foreshore during off-season period.

Government should formulate a policy wherein SHGs and destitute women can use tank bunds and foreshore during the off-season for increasing their livelihood opportunities.

Many kinds of trees are being planted on the tank bund and foreshore area without understanding the local ecology of the region.

More attention should be paid to the kind of trees that can be grown in the foreshore area. For example, there are certain tanks, which are named after certain trees like the *Kadamba* that are planted in the tank foreshore. (e.g., Kadamberi is named after *Kadamba* tree.)

2. Department of Archaeology

There is no systematic survey of the tanks. Only random work is being carried out depending upon chance findings.

Archaeology department should form a “Task force” to study these tanks on a systematic basis.

Separate project should be initiated and funds should be made available.

Heritage tanks should be notified, preserved and included in the eco-tourism map.

Existing Policy/Practice	Policy/Practice changes required
3. Department of Agriculture	
<p>There has been no documentation on traditional tankfed agriculture practices.</p>	<p>Documentation on traditional tankfed agriculture practices should be done and made available to user groups.</p> <p>Identify and implement traditional tankfed agriculture practices that can be incorporated into package of practices.</p>
4. Department of Education	
<p>The current syllabus does not lay specific stress on the importance of tanks at the school/college level.</p>	<p>Irrigation textbooks should be prepared containing the traditional technologies, which are relevant even now. A separate course may be introduced at the under graduate level.</p> <p>Role of tanks to be included in the environmental education curriculum at the school level.</p>
5. Pollution Control Board and Local Administration Department	
<p>The Pollution Control Board does not take pollution of village tanks and ponds seriously.</p>	<p>Pollution Control Board should monitor and prevent pollution of water bodies. They should interact closely with Local Administration Department to check pollution of village tanks.</p>
6. Law Department	
<p>There are no legal provisions available for preserving the tanks.</p>	<p>Steps should be taken to enact a “Tank Preservation Act” along the lines of Forest Protection Act. The Act should ban the use of tank areas for development purposes such as roads, bus stand, schools, government buildings, etc.</p>
7. Research Institutions, NGOs and Government Departments	
<p>Currently there is little interaction between research Institutions and the user departments.</p>	<p>Priority should be given to the findings from the research programmes leading to better field practices in course of time.</p>
<p>Very little research is being carried out by various departments on traditional technologies of tanks.</p>	<p>Use of locally available materials, resources and manpower in the renovation of tanks to make it more cost effective.</p>
<p>People/Tank Associations are seldom consulted during tank rehabilitation work. Generally a top-down approach is adopted.</p>	<p>Policy on investments in Tank Rehabilitation should be formulated, keeping the communities' interests in mind and also involving the people while formulating projects.</p>
<p>A Comprehensive research programme rarely exists. Only piece-meal research on an ad hoc basis is being carried out.</p>	<p>Best practices and customs should be documented and brought to the notice of Tank Users' Associations and NGOs.</p>

An impact assessment should be done before replacing the time-tested technology by any other alternative technology.

Prioritise the water sharing mechanism based on the availability of water.

To study the kind of materials used in the ancient times for the construction and maintenance of tanks. Special emphasis should be given on the use of *Araiman*.

Document the performing and non-performing tanks and take up research to find out why certain tanks are functioning well.

Research should be undertaken in the conjunctive use of ground and surface water in tank cascades.

Research is needed on erosion of soil and silting of tanks.

Basin-wise research has to be undertaken to document ancient technologies in irrigation.

Though some of the tanks in Tamil Nadu have been studied in detail, still a large number of tanks have not been studied with reference to Social, Economical, Technical and Cultural points of view.

A study should be initiated on the status of Tanks in Tamil Nadu on a project mode towards documentation of the following:

To study the traditional village institutions and their functions.

To study the traditional customs, beliefs with reference to tanks.

To study the folklore literature with reference to tanks.

To undertake a study about the local flora and fauna and their impact on the tanks.

The brief reinforces the follow-up action required through initiating processes and mechanisms among relevant State Government Departments, Academic/Research Institutions/NGOs.

I. Background

India has historical evidence on village water bodies dating back to 200 BC as derived from Stone as well as Copper Plate inscriptions and epigraphs. The irrigation tanks are called by different local names like *Kanmoi*, *Eri*, *Kulam*, *Johads*, *Cheruvs* and *Keres* etc. They are simply earthen rainwater-harvesting structures designed by our forefathers using indigenous, native wisdom and constructed with the generous support of native rulers and chieftains over the past several centuries. British Engineers namely Sir Arthur Cotton and Horsley have recorded their appreciation on these traditional water-harvesting structures.

As our available water resources are shrinking very fast, we have to conserve every drop of rainwater. The hydrological characteristics of the monsoon necessitated creation of facilities like Tanks and Ponds to hold the rainwater where it falls so as to utilise the same at a later date. A closer examination of the technology behind these tanks and ancient irrigation structures indicates that the design principles developed thousands of years ago still hold good for the present and for the future. We can manage our water resources in a better way by understanding and adopting the technologies behind these structures.

II. Tanks in Tamil Nadu

The British, in their eagerness for revenue generation, took over these common properties under the state control across the country. In effect, tank systems had undergone great changes in terms of administrative scenario by transferring certain roles and functions to the Panchayat systems on the assumption that they are closer to the ground. However, the results of such transfers had not met with success due to the changes in socio-economic and political conditions.

An extent of about 9.0 lakh hectares is irrigated by an estimated 39,200 tanks in Tamil Nadu. Of these, around 9000 tanks are big and have ayacut (command area) more than 40 hectares under the control of the Water Resources Organisation

(WRO) of the State Public Works Department. Around 30,000 tanks fall in the category of small tanks having a command area of less than 40 hectares each and they are under the control of Panchayat Unions. Being smaller in size, larger in number, spread over a wider geographical area, these tanks are not amenable for centralised maintenance and management.

In recent years, many of these tanks have started showing signs of deterioration and not functioning to the potential capacity because of heavy siltation, degradation of structures and encroachments on many parts of the tank complex. The social control mechanism of these tank systems at the village level has also shown considerable degeneration.

The Centre for Water Resources, Anna University, carried out field studies during 1988–1996 through the Ford Foundation funded research project titled "Alternative Approaches to Tank Rehabilitation and Management: An Experiment", by selecting 12 non-system tanks in Tamil Nadu State. The findings of the studies paved way for a massive Tank Modernisation project in Tamil Nadu. Accepting the potential of increasing efficiency in small-scale tank irrigation, the European Economic Community, now known as European Union came forward in 1984 to assist the Government of Tamil Nadu to rehabilitate tanks and provided grant funds. Nearly 600 tanks were rehabilitated, negligible compared to the total number of tanks in the State.

III. DHAN's Initiatives in Historical Research

DHAN believes that traditional/indigenous technologies available with the people would enrich the development intervention in the modern era. These traditional technologies are easily acceptable and ensure permanence, as they are culturally compatible. This prompted DHAN to take up the study on "Tanks".

Historical perspectives reveal the following among many other aspects:

- Construction of Tanks by Chieftains and Kings were viewed as a very important service

to humanity, which in turn was seen as service to God

- Tank maintenance was handled and managed well with local artisans and with locally available material.

These historical contexts and their perspectives have their relevance even now. Engineering professionals dealing with modern engineering and water management as well as People, Bureaucrats, Policy Planners, Academia and Youth have not been adequately exposed to our traditional water management during the historic past, the knowledge of which will enrich our present management practices.

“In Search of Ancient Wisdom–Irrigation Tanks” is the first book of the Historical Research series published by DHAN Foundation, which deals with ancient practices relating to tanks such as storage structures, disposal of surplus water, regulatory structures, command area and water distribution layout, anicuts, case studies and institutions for management.

IV. Review of the Book “In Search of Ancient Wisdom–Irrigation Tanks”

Evidence from Sangam Literature: A possible way to identify the antiquity of tanks could be from the artefacts and other remnants found during archaeological excavations. During the megalithic age, there was a practice of burying the dead in an urn near a watercourse, either on the banks of rivers or near a tank either in the foreshore or outside the bund. If a Sepulchral urn is found near a tank, we can conclude that the tank probably belongs to the Sangam period (1650 BC to 200 AD). Around 100 tanks in Madurai and Ramanathapuram districts have been thus identified during this research study.

The evidences pertaining to Tanks in the form of epigraphs appear from 200 BC. An epigraph of that period (*Mudalikulam* Inscription) mentions, that “the assembly of *Vembirrar* constructed a large tank” in Sivagangai District. **The tank is still in use in Vembathur village of Sivagangai taluk, Sivagangai district.**

Selection of Site for Locating a Tank: The Sangam literature written during 300 BC to

200 AD describe the tank, water lifting devices, sluices, gates and channels. One Sangam poem of *Purananuru* written by *Kudapulavianar* advised the King to form Tanks wherever the topography is undulated with depressions to store rainwater.

The *Porumamilla* Tank inscription narrates twelve requirements for the selection of sites for locating Tanks. The same Inscription also indicates the types of locations, which should be avoided for constructing tanks. The contents are valid even now.

Knowledge of hydrology was considered essential to identify the site. The bed of the tank site should be hard and impermeable. The tanks were never dug but created by forming earthen bunds to hold water generally in a sloping terrain. A later Sangam literature *Sirupanchamoolam* written by *Kariasan* outlines the layout of a tank irrigation system—tank proper, surplus escape, feeder and irrigation channels, developed command areas and a common well.

Shape of Tanks: The best shape of a tank is given by a Sangam Poet *Kabilar* who while praising the King *Paari*, describes that the tanks in King *Paari's* state are in the shape of the moon on the eighth day after new moon i.e., it is in a semi-circular shape. In semi-circular shaped tanks the ratio between the circumference (the bund length) to the area (water spread) will be the minimum than a square or rectangular shape of equal area. Hence the cost of formation of tank bund in the former case will be less for a given water spread area and in turn storage capacity.

Earth Used for Bund: The earth used for the tank formation was not brought from other places. Locally available earth had been used with admixes as evident from the use of word *Araiman* (Grounded Earth) in Sangam literature. By banning the removal of earth very near to the tank bunds, the safety of bunds was ensured. For example, *Thirayaneri* tank is situated east of Kancheepuram and was formed by the first Pallava King *Ilanthirayan*. An inscription near the tank mentions, “whenever the bund is to be strengthened, earth for the

purpose should be excavated from the tank bed well away from the bund". Modern engineers interpret this ancient phenomenon, as the angle of repose of the bund should not be disturbed by desilting near the bund.

Protection to Tank Bunds: The embankments adjoining the surplus weir are the weak portions of any tank bund. In the old tanks, one can observe a small temple or a tablet stone engraved with the figures of seven angels (*Saptakannis*). Whenever there is a flood and water rises to a level endangering the tank during the night, the people believed that the seven angels would wake up all the people of the village and alert them. In normal periods, the seven angels are believed to be patrolling the tank bund during the night and they would punish those who tamper the sluices or the bund. By instilling the fear of God, the tanks were protected from destruction.

Tank Structures: There are extensive evidences in the Inscriptions and Tamil Literature pertaining to various tank components such as:

Farm ponds (*Wavi*); Chain of Tanks (*Enthal, Thangal*); Feeder Channels (*Attrukkal, Uttrukal*); Head sluices in Rivers (*Kurranvay, Thalaivay, Vaythalai*) and Surplus Escapes (*Calingu, Kodu*)

Sluices played an important role as Water Regulating Structures. All the three components, for example, Barrel, Inlet Cistern and Outlet Cisterns are well described with respect to shape, material and construction. *Pulikkan Madai* sluices, stone pillared sluices with plug and socket to control the flow were very common. Sharing of water was done with efficient alignment of field channels. *Pilaru, Vadhi* and an *Kannaru* were the different types of field channels of varying sizes to form an effective irrigation distribution network.

"Baby tanks" were found attached to bigger "Mother Tanks" for providing flexibility in water distribution. These tanks create additional storage capacity and also help in reusing the drainage water of the upland command. Anicuts (Diversion Weir) were the mode of diverting river water for irrigation during the Sangam period. Bamboo piles and Elephant grass were used in the earliest anicuts to raise the water level in the



The *Pulikkan Madai* (Tiger's Eye Sluice) was common in southern districts. This type of sluice has three circular holes of roughly 2" diameter to form vertices of a triangle on the masonry head wall of the sluice. This arrangement of holes resembles the eyes of a Tiger with a dark spot on its forehead and hence this name. During early period of cultivation when more water is required all the three holes will be opened. When the demand reduces, the number of holes to be operated will be reduced. The cut stone is placed with the single hole on top and two at the bottom. Water flow in the holes will be in relation to the depth in the tank and the size of the hole.

river. The Grand Anicut built during the second Century AD is a technological marvel as this hydraulic structure is built across a mighty river in sandy bed and serving to this date.

Institutions and Management: Everyone in the village had equal interest in the upkeep of irrigation channels and tanks. The proceeds of common land and trees and the annual sale of fishing rights in the tanks were the source for the common fund. Their functioning reflected very well the rights enjoyed by the village societies over water resources. The community had the rights enjoyed by the village societies over water resources. The community had complete control over water. The earliest form of peasant organisation was the *Ur* a settlement of people who pursued agriculture. The *Ur* encompassed one or more villages. The agricultural settlement *Ur* also had their own assemblies to administer their settlement. The members of the assembly of *Ur* were the *Urar*. *Karai* is the word, which has been used to denote the Land unit and Rights. The word *Kudumbu* is also synonymous with *Karai*. There are many epigraphs mentioning the *Karaiolai* or *Karaicheetu* used for the periodical

redistribution of land by Lot (Picking at random). Notable feature in the early Tamil kingdoms was that there was little or no (probably) private property as land. All land being held nominally under the authority of *Urar* with the “owners” holding merely the right of possession at the *Urar*'s pleasure.

The Brahmadheya villages had a local self-governing institution called “Village Sabha”. For the purpose of administration, the Sabha created as many as fourteen committees called *Variyams*. These *Variyams* were looking after different aspects of land and water management in totality. The members of the above *Variyams* were elected every year, which enabled fresh members to get elected and serve in the committee. Kings, noblemen or the villagers for the purpose of maintenance of tanks made endowments in the form of gold or land. The income from these endowments was utilised for the maintenance of tanks.

Tankfed Agriculture: In tankfed agriculture, care was taken to maintain soil fertility through proper application of silt from tank bed. Periodical removal of silt ensured that the water holding capacities of the tanks were maintained at an optimum level. Moreover the silt was nutrient rich as the topsoil washed away from the catchment contained all the minerals essential for plant growth. This periodical application of silt was done by the farmers themselves using their cattle and manpower. Deep summer ploughing was taken up by the farmers, which was necessary to retain the soil moisture, and also facilitated good water retention in the fields. Organic manures and bio-pesticides were used, which proved cost effective. Traditional drought and pest resistant varieties were grown. Traditional water managers called “Neerkattis” played an important role in equitable and fair distribution of water among the farmers. Good quality seeds were preserved for sowing in the following season. Care was taken to minimise losses and also steps were taken to bring down the cost of cultivation as low as possible.

Traditional agricultural practices and knowledge enriched the environment. These practices supported economic development without eroding the traditional ecological knowledge. The challenge lies now in finding and promoting local forms of development that does not undermine

traditional knowledge. Good agricultural practices supported by sound water management backed by peoples' participation ensured development with very little ecological imbalance.

Repair and Maintenance of Tanks: Our forefathers did not stop their works after creating the tanks. A striking feature is the care, with which the ancient Tamils maintained these man made structures for sustained irrigation. Towards maintenance, workers like *Aal amanji*, *Vettian*, Boatman, Fisherman, Cart man, Washer man, *Neeranikkar*, Guards, Sluice operator, and others were utilised as seen from stone inscriptions. The major maintenance work, which requires constant attention every year, is silt removal from tank beds and restoration of bunds. One inscription says that all the villagers above the age of 10 years and below 80 years should remove the silt equivalent to one *Kuli* (6'-0”x6'-0”x6'-0”).

Water Management: Inscriptions contain wealth of information on water sharing, distribution, water rights and responsibilities, which are the elements of water management. Many stone inscriptions mention about the irrigation time schedule for fields in terms of *Nazhigai* (24 minutes). The words *Nazhigai*, *Vattam* and *Nazhigai Kanankkan* found in epigraphs and Sangam literature point out that a turn system was based on irrigation time and there were persons for calculating the time allocation. The concepts of Warabandhi and the Rotational Water Supply adopted in North Western India have been in vogue for several centuries in Tamil Nadu as found in the above inscriptions.

Water Rights: The *Ur* and *Urar* had the authority to allocate and distribute water from irrigation sources. This gradually became the rights to water attached to the land. The inscription of *Maran Sendan* in 770 AD is the earliest description on the water rights. All the ayacut lands had share of water from the tank, based on the extent of area, level, soil condition and crop grown. When the land was sold, the water share was also sold along with it. One inscription giving this information was found in Pudukkottai district.

When a channel is made for drawing water for irrigation from a river, no channel should be excavated in the upstream. Such excavation will

affect the flow in the old channel; their first right to water is protected by this inscription. The globally accepted concept of water rights “Prior Appropriation Right” and “Riparian Right” has been in existence in the early Tamil Nadu.

Decline of Village Republics: After the decline of Tamil kingdoms, there were series of invasions during the period 1300 AD to 1770 AD by Sultanates, Vijayanagar Empire and Maratha Kings. Later British East India Company took hold of more areas. To pay for the wars, up to 70% of the net produce of paddy land was taken over by the state in 1768. Heavy revenue extraction and neglect of maintenance of irrigation works created hardship and famines during this period.

The executive responsibility of public works in British India rested with the Military Board until 1850s when civil departments of public works were set up. From 1860 till 1921, irrigation was a central subject. In 1921, “Water” became a State subject with certain reservations. In 1937, “Water” completely came under State's purview and this continues even now.

The East India Company made material changes in the village community set-up. They dispossessed the village artisans and other village servants of their hereditary rights in land plots or in village produce. This eliminated important functionaries who maintained and managed irrigation. The colonial Government adopted the village accountants and village policeman (*Karnam* and *Thalaiyari*) and paid them monthly cash wages. The ryotwari system transferred the Common Property Resources into Government Properties. A Civil Engineer was appointed as Superintendent of Tank repairs in the beginning of 1800. Finally a department of public works was created in 1852. Thus the control of water and water bodies finally went to the Government. This alienated the people from the common properties.

In spite of the weakening of the community organisations, the cultivators probably kept those tanks alive by **their own efforts since there was no other alternative available.**

We have inherited these structures from our forefathers and it becomes our duty to protect, preserve and pass on this traditional knowledge and wisdom to the next generation making these tanks relevant in the years to come.

Summary of the Book: The community had complete control over water. People's organisations had well laid out rules and regulations to manage the water effectively. Traditional systems of water distribution were based on their belief, custom and the concept of equity as the villagers perceived. The water allocations made ensured smooth and equitable sharing among all the members. Behind these existing indigenous systems of irrigation, there are thousands of years of tradition.

Some of the important findings of the authors are given below:

- a. Tanks constructed during the Third Sangam period (300 BC to 200 AD) are still functioning.
- b. The earliest description dated 200 BC describes the construction of the tank by the community itself.
- c. The literature provides valuable information about the components of tank complex, its preferred location and shape.
- d. Inscriptional evidences throw light on formation of institutions and their functions.
- e. A number of inscriptional evidences are available about the periodical maintenance works and the ways of raising funds for such works.

V. Seminar

A one-day seminar on “Historical Perspectives of Tank Technologies and their Relevance in Modern Era” was organised by DHAN Foundation in Chennai on December 28, 2006.

Senior officials from the Departments of WRO, Agriculture and Archaeology, Academicians from Anna University, Tamil Nadu Agricultural University (TNAU), Madras Institute of Development Studies (MIDS), NGOs and Lead farmers deliberated on the importance of Traditional Tank Technologies and their current relevance.

VI. Recommendations and Way forward

The following recommendations are proposed to the various departments under the following leads:

Policy changes required

1. There is an urgent need to create an “Independent Autonomous Authority” to look after the small-scale water bodies in totality. In addition, steps should be taken to enact a “Tank Preservation Act” in the lines of “Forest Protection Act”.
2. Irrigation textbooks should be prepared containing “Traditional Technologies” and to introduce a new course on tankfed irrigation at the undergraduate level. Students are to be sensitised about the role of tanks and it can be included as a part of the curriculum.
3. Policy guidelines should be prepared on the use of catchment areas and foreshore areas. Additionally the government should come up with policy guidelines for alternate cropping in areas of water scarcity and during insufficient water availability in irrigation tanks.
4. Steps should be taken to enumerate all the tanks using satellite imagery techniques. Tank memoirs to be republished and it should be made available in the website for the benefit of all interested Tank Associations.
5. Steps should be taken to notify the “Heritage Tanks” and include them in the eco-tourism map.

Practice changes required

1. The traditional technologies, which are time tested, should be followed in the rehabilitation and in new irrigation works.
2. Best practices and customs should be recognised and brought to the notice of Tank Users' Association. Documentation on Traditional Tankfed Agriculture practices should be done and made available to the user groups.
3. Steps should be taken to use locally available materials, resources and manpower in the renovation of tanks to make it more cost effective.
4. Steps should be taken to plant ecologically relevant trees in the foreshore region. These trees can be economically useful to the local people.
5. Desilting and fishing rights should be rested with the Tank Associations, as this would give enough revenue for the maintenance of tanks.

Research changes required

1. Basin-wise research has to be undertaken for future water resources instead of piecemeal/localised planning/development.
2. A comprehensive research programme dealing with all aspects of tank management should be taken up. Research should be undertaken in the conjunctive use of surface and groundwater.
3. Research should be emphasised on the kind of materials used in ancient times for the construction and maintenance of tanks like the use of “*Araiman*”.
4. Research should be initiated to list the performing and non-performing tanks and also to share the conflict resolution mechanism adopted by the people in the past.

Way forward

Tanks not only serve human beings but also play a vital role in maintaining the biodiversity in the region. They serve as a breeding ground for different migratory birds coming from various regions. Some of these tanks can be promoted for eco-tourism

Road shows should be organised to create awareness about the Historical findings of tank technologies.

In a recent Judgment of the Supreme Court delivered on 23/2/06, in the case between “Intellectuals Forum and the state of A. P. and others” it was indicated that the Government is only a trustee and not the absolute owner of the Water Bodies or Tanks. Government should not divert the land for any other purpose other than the designated use. Steps should be taken to evict all encroachments as per the Supreme Court judgment.

Government Departments and Research Institutions would be approached for further action towards items mentioned above.

References

- S. M. Ratnavel and P. Gomathinayagam, (2006). *In Search of Ancient Wisdom–Irrigation Tanks*, DHAN Foundation, Madurai.
- A. Vaidyanathan (ed.) (2001). *Tanks of South India*, Centre for Science and Environment, New Delhi.

Why this Policy Brief?

DHAN Foundation is involved in Natural Resources Management focusing mainly on Community based Development and Management of Water Resources in South India. The initiatives taken so far have reached several villages through rejuvenating water bodies benefiting thousands of families, by working closely with the community, DHAN has gained valuable experience over the past two decades. DHAN believes that for better management of water resources, certain changes in the present policies and practices are needed. Hence it has now been decided to come out with Policy Briefs to disseminate the changes needed in specific sectoral issues. This will facilitate Administrators and Field level Organisations in their attempts of better management of scarce water resources.

Policy Brief 4 focuses on the issues related to “Historical Perspectives of Tank Technologies in Modern Era”. The policy and practice changes that are envisaged to protect the man-made water bodies and to understand the traditional technologies for better water management for irrigation purposes that is essential for tankfed agriculture is elaborated in this policy brief. This brief is planned for focusing the attention of the Secretaries to Govt. in Public Works Department, Rural Development Department, Education Department, Agriculture Department, Archaeology Department, senior executives of State Pollution Control Board, Academicians and Eminent Scientists. Tank Associations, Panchayat level administrators, Lead farmers, Professionals from Development organisations are also our target groups.

About DHAN Foundation

DHAN Foundation is a grassroots development organisation and was initiated with the objective of bringing highly motivated and qualified young professionals to the development sector for new innovations in development programmes and for upscaling development interventions to eradicate poverty. The Foundation works towards bringing significant changes in the livelihood of the poor through innovation in themes and institutions.

The approach of the Foundation is to promote people's organisation and their networks aiming at improving the livelihoods of poor communities by organising development works around themes. These people's organisations would sustain themselves and excel in long run. Presently DHAN Foundation is working on the themes namely Community Banking, Conservation of Tanks, Information and Communication Technology for Poor, Rainfed Farming and Panchayats.

About the Centre for Policy and Planning

The Centre for Policy and Planning of DHAN Foundation provides support to the programmes and institutions of the DHAN Collective so that they evolve, develop and modify their policies and fulfil their aims. It shapes the sectoral policies to practice at the grassroots. DHAN Foundation as a member of many policy-making bodies on Microfinance and Water Conservation strongly advocates pro-poor policies. The Centre takes up policy study and initiating research on Microfinance, Water Conservation, Rainfed Farming, Panchayat Raj Institutions and Disaster Mitigation. As a resource centre, it organises many capacity building events and training programmes for Bankers, Government officials and representatives of NGOs within and outside the country.



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