SIGNIFICANCE OF TANKS CONSERVATION IN AUGMENTING GROUND WATER RECHARGE AT PAMBAR KOTTAKARIAR RIVER BASIN: PROJECT DHANA

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ABSTRACT

The DHANA project is one of the significant initiatives of DHAN Foundation and Axis Bank Foundation to address the livelihoods of the 30000 direct and 30000 indirect families in the project area through efficient use of the tank and ground water through renovation of tanks and ponds in the region. It is implemented at the junctions of four districts namely Madurai, Dindigul, Sivaganga and Pudukottai where the four blocks are situated on contiguous basis namely Natham in Dindigul, Kottampatti in Madurai, S.Pudur in Sivaganga and Ponnamaravathy in Pudukottai districts. This entire belt is known for intensive tankfed agriculture and most of the families live in the project area are small and marginal farmers and they mainly depend on agriculture for their livelihood through conjunctive use of tank and ground water for their agriculture operations. There are 2395 tanks together exists in the four blocks.

The objective of the project is to revive the decimated streams from encroachments and rehabilitate the entire network of feeder channels and drainage channels in the proposed chain of tanks and to revive & restore tanks, ponds and ooranis to their original capacities, in order to recharge the ground water so that the drought effect can be minimized. The project is now under implementation and 300 more tanks and ponds have been rehabilitated through the community involvement and participation. In all the works taken up the community have contributed 25 percent works cost and remaining funds have been donated by Axis Bank Foundation through its corporate Social responsibility. All the work have been implemented by the community through the institutions promoted around the water bodies.

The recent mid-term evaluation done by an external consultant has shown that the Renovation of tanks has resulted in substantial recharge of wells in the command area of the tanks. Farmers with wells in the command area of the tank derive substantial benefits in relation to the farmers who totally depend on the tank water. The project ultimately supporting to promote 600 tank based people institutions and 75 tank cascades will be promoted and in place for taking care of the local management of these water bodies for generations. 10000 hectares of tank command area will get stabilized for their tank fed agriculture and assured production by rehabilitating the 600 tanks. 3750 more ground water wells are getting recharged because of the storage created additionally through the tank rehabilitation under this project.
The paper shares the conjunctive use of tank and ground water and also the augmentation of ground water due to extensive renovation of the tanks and their storage in the region.

DHANA PROJECT AT PAMBAR BASIN:

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The proposed four blocks are falling under four drought prone districts of the TamilNadu state. The project area is part of the Pambar- Kottakaraiar river basin on hydrological basis for drainage of rain water during the monsoon. The proposed area is particularly falls under Thirumanimuthar sub basin with three ephemeral streams namely Thirumanimuthar, Virusuliar and Manimuthar and finally joins together at one point and then drains to Pambar Kottakaraiar basin. This region has endowed with hundreds of small scale water bodies namely irrigation tanks, village ponds. These small scale water bodies are only the sources for irrigation, agriculture and drinking water and the like needs of the people, majority of them poor living for their survival and sustainability. During the past these water bodies have been maintained and managed by the local village community through Kudimaramth system by contributing voluntary shramadhan as collective action. People have owned and shared the benefits from these resources collectively through community system of management. But during the last 3 to 4 decades these water bodies have faced lot of management issues for their survival and sustainability. During the British period the local management system of these water bodies have been shifted from the community to state and then onwards the local management system by the community was alienated from the community and state took the responsibility.

Because of the situation above the maintenance and management have lost its originality and these water bodies started facing issues of sustainability. Other side, due to the above issues farmers has lost the interest on agriculture and youngsters were searching labor works as an alternate livelihood and started migrating to Middle East countries like Malasia and Singapore by leaving the old people in the villages for earnings. Many are working at Tirupur and Coimbatore within the home state for their labor works.

Another issue according to our recent pilot study on mapping out vulnerable tanks and ponds for flood reveals that because of poor management of tank system and missing of local management system, many tanks have got breached during the recent floods during the years 2005, 2007 and many tanks are not performing to their original efficiency. Aforesaid issues triggered us to make this proposal to revive the tank system in this sub basin on a mass scale for ensuring the food security and livelihood opportunities to the small marginal farmers in the project area. It was also observed that many villages in the project area still using the drinking water ponds for their drinking sources and these water bodies are also in dilapidated conditions and people are facing the drinking water problem. This holistic proposal would address the livelihoods and drinking water issues of the farming community in the project area on comprehensive ways and approaches.

The project area is junctions of four districts namely Madurai, Dindigul, Sivaganga and Pudukottai where the four blocks are situated on contiguous basis namely Natham in Dindigul, Kottampatti in Madurai, S.Pudur in Sivaganga and Ponnamaravathy in Pudukottai districts. This entire belt is known for intensive tankfed agriculture and most of the families residing here are small and marginal farmers and they mainly depending on agriculture for their livelihood.

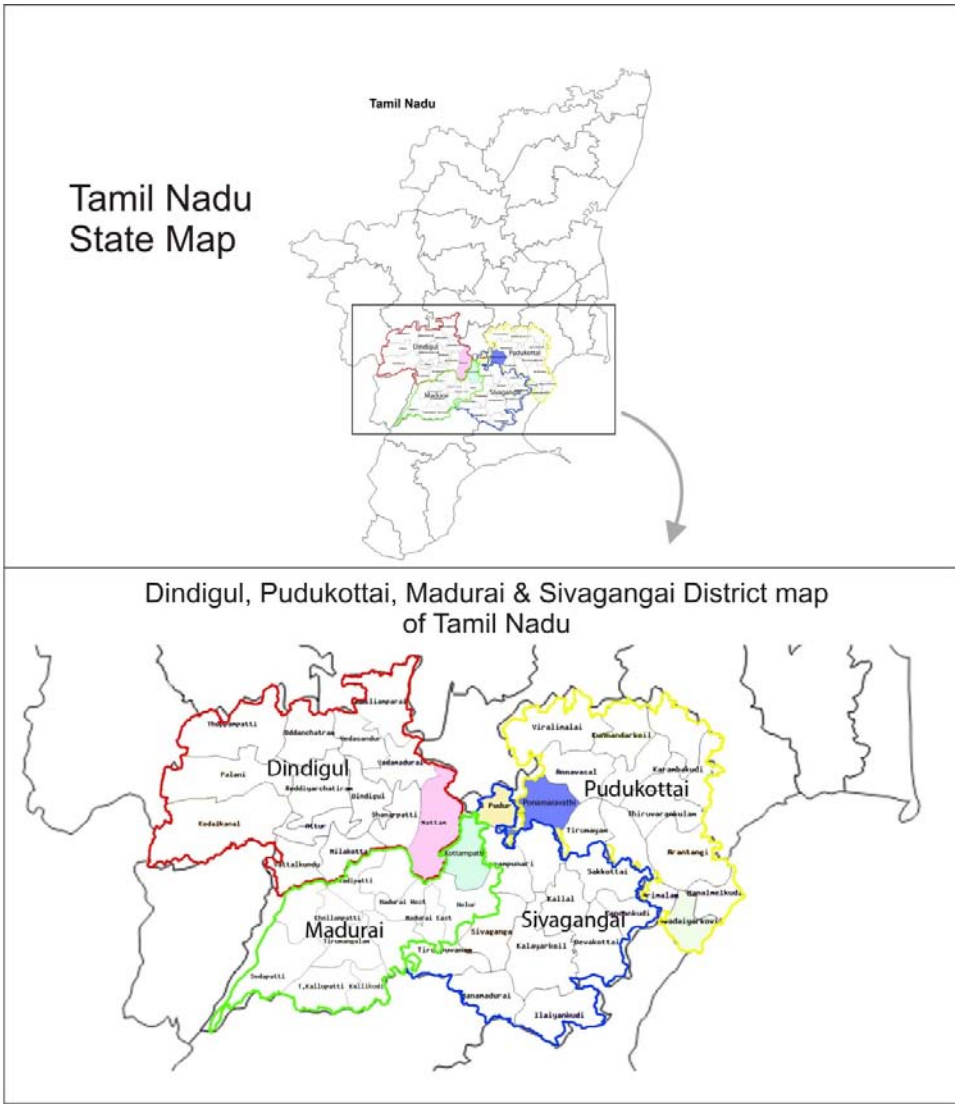

Figure-1: Map showing the project area

The Thirumanimuthar and Palar sub basins are part of the Pambar Kottakaraiar major basin (covering 5847 Sq.KM) one of the 17 river basins in Tamilnadu. The proposed four blocks to implement the project with the support of Axis India Foundation are located within the basin for their sources of harvesting rain water during the north east monsoon. The very less rainy days with intense rainfall as well as varied distribution monsoon distribution characterize the North East Monsoon which commence normally October every year.

OBJECTIVES OF THE DHANA PROJECT:

Overall Objective

"Ensuring the improved agricultural and allied livelihoods to the underprivileged poor farming and landless community living in disasters (flood induced/drought hit) ephemeral Pambar-Kottakariyar river basin in South India"

Specific Objectives

DHAN Vayalagam (Tank) Foundation proposes the following specific objectives that can be achieved through different development interventions as well as social processes. They are as under:

1. To organize the unorganized people in project villages into formal associations viz. Vayalagams, Cascade and federations in phased manner and empower their capacity through need based skill and leadership development programmes..
2. To enhance the bio diversity and Micro Environment in the Project Villages with appropriate actions to overcome from Degradation and constant disaster occurrences.,
3. To create access to improved Drinking Water Surface Water resources
4. To Financially include the Excluded byPromoting micro finance activities
5. To empower the women folks by integrating their needs for occupational development and basic needs in the project area.
6. To create a mass awareness of the Climate Change Implications in Madurai City through Marathon Event.

PROJECT AREA: - AN OVERVIEW

Table-1: The tank details of the four blocks

Sl.No.	Name of the block	District	Number of tanks
1	Kottampatti	Madurai	967
2	Natham	Dindigul	629
3	S.Pudur	Sivaganga	349
4	Ponnamaravathi	Pudukottai	450
Total			**2395**

Components of development in the project area

Focus of Development Intervention in the Chain

i. Revival of the decimated streams from encroachments and rehabilitating the entire network of feeder channels and drainage channels in the proposed chain of tanks.
ii. Revival & restoration of tanks, ponds and Ooranis to their original capacities, in order to recharge the ground water so that the drought effect can be minimized.
iii. Establishment of soil and water conservation measures in the common land and private lands to arrest the soil erosion and thereby conserve the fertile top soils and ecology.
iv. Promotion of people's institutions to safeguard the above tanks and network of channels for their conservation and future management.
v. Inland fresh water fishery promotion and liaison with gram panchayats for benefit sharing
vi. Integrating Safe drinking water access and use practices at poor households through varied demonstrations of Bio sand filter Utility.
vii. Demonstrating the improved agriculture and animal husbandry measures in the selected farming lands and households and then mainstreaming the same to all for enhanced productivity and income at all households.
viii. Creating dead storages in the selected tanks and ponds for demonstrating the inland fisheries and ensuring the water for ecological preservation in the project area.

Status of Implementation of the DHANA Project: The project has completed it two successful years of implementation 2011-12, 2012-13 and third year of implementation is in

progress now. During the period 300 more tanks and ponds (90 village ponds and 210 irrigation tanks) have been renovated under the DHANA project. In all the places the renovation was done through the Vayalagams promoted around the tanks and village ponds without engaging the contractors and with their contribution of 20% funds and the Axis Bank Foundation has supported its funds for the project works.

The Ground water status of the project area and relevance of tank renovation for the ground water recharge:

The recent studies and their reports published by the Central Ground Water Board reveals the ground water status of the project blocks in the Table-2:

Table-2: Ground water status of the project blocks

Sl. No	Block name	Net ground water availability	Existing gross draft for Irrigation	Existing gross draft for all uses	Stage of Ground water development	Category of the block
1	S.Pudur (data in Ha.m(2004 March)	2052.94	1446.31	1636.12	23	Semi critical
2	Kottampatti	5673.63	1008.54	1234.79	22	safe
3	Natham	4295.27	2539.19	2798.32	65	safe
4	Ponnamaravathy	4071.06	305.8	505.19	12	safe

Based on the status shared above, the CGWB recommended in the District ground water status report that the following areas could be possible in the project locations for the Ground Water Development as:

1. As there is scope for further development of ground water, irrigation can be augmented using the ground water sources.
2. On the basis of the experiences in execution of central sector schemes and demonstrative projects on artificial recharges, desilting of the existing tanks and ponds will be the cost effective structures for artificial recharges.
3. A concerted effort of involving the Government and Non-Government Agencies can make the movement on artificial recharge to ground water a successful one.

The interesting analysis from the data furnished in the above table that Natham, Kottampatti and Ponnamaravathy blocks are categorized as safe for ground water development and this is due to the presence of the large numbers of small scale water bodies such as tanks and village ponds in the area. But the predictions in future is that because of the decay of these tanks and village pond and their lower performances these blocks may fall under the semi critical and critical blocks in near future and to address the issue of ground water declaim the renovation of mass scale rehabilitation would protect these blocks from ground water shortage and weak recharges.

The DHANA Project at present aims to take up the mass scale rehabilitation of the water bodies in the four blocks above to facilitate the tank and ground water irrigation as conjunctive use of tank and well water.

The cases of the Ground water recharge due to rehabilitation of tanks and village ponds under DHANA project:

The recent impact evaluation on DHANA Project by the external consultant Mr.Vijay K Saradhana in the above project area consolidated the following cases of ground water recharge experiences as shared here under:

Case: 1

Name / Location of Tank: Maniyagoundan Kanmoi, Natham Block, Dindigul District
Date of Visit: Tank and Catchment Visited on 23rd February 2013
Members of Vayalagam: 32
Indirect Beneficiaries: 15 farmers
Benefiting Farmers: Direct 32 Members with 25 acres in the tank command;

Works undertaken: before Monsoon of 2011:

1. Cleaning/restoration of supply channel;
2. Tank Deepening: Application of silt on Tank bund and fields of 10 Members;
3. Total Cost: Supply Channel: Rs. 35,000/-; Members contribution: Rs. 17,000/-

Tank Deepening & Silt Application: Rs. 2, 14,000/- ; Members contribution: Rs.42,800/-.

Most members of Vayalagam have open wells in the command area; with 25 wells providing water to their coconut orchards. Members have taken to orchard farming some ten years ago due to growing labour shortage and small land holdings. Their own food security is totally out of buying rice and other necessities from the market.

Prior to tank renovation work (repair of supply channel), there was no storage of water in the tank. Availability of water from the wells was rapidly declining. With the repair of supply channel and tank deepening total groundwater recharge of the wells in the command area happened, so much so that in most wells water level rose to the brim (overflowing wells). This year, 2012 -13, failure of rain has had limited or negligible effect, since there is sufficient water in the wells. If rains fail next year, 2013-14, there will be some effect. Full tank in one year can take care of groundwater availability for two to three years.

Income: Members income has increased from Rs. 25,000/acre to Rs. 35,000/acre, an increase of 40%. Farmers claim that there is visible improvement in the quality of coconut trees due to assured water supply and in some cases the application of silt from the tank deepening. Members expect further improvement in the level of income particularly the benefits out of silt application take time to show up.

Indirect beneficiary farmers are in the catchment of the tank; their water availability has improved due to repair of the supply channel and application of silt from the tank bed.
DV(T)F had been concerned about the attitude of members of Vayalagams with orchards in that members were not seeing the relationship of tank with the water in their wells. This is not the case in the visited Vayalagam.

Members are now convinced of the benefits of the tank and are committed to maintaining the same.

Case: 2

Name / Location of Tank: Sunnambu Kanmoi Vayalagam, S.Uttampatti, S. Pudur Block, Sivagangai District
Date of Visit: Tank, Command and Catchment Area Visited on 20th February 2013 with President of Panchayat, Mr. Kenvetti;
Members of Vayalagam: 25,
Command area: 20 acres; Vayalagam has been established in June 2011;
Benefiting Farmers: Direct 25 Members with 20 acres in the tank command;

Works undertaken: between July and September 2011;

Renovation Cost: Rs. 150,000/-; ABF: Rs. 120,000/-; Members: Rs. 30,000/-

This was the first tank renovation in the Block. Building social capital (Vayalagam) took time.

This tank is also having a sacred groove as no tree or a piece of twig or plants are removed by the community thereby trees on the bund are maintained. Also no one is allowed to walk with foot wear in the tank.

Before rehabilitation 5 acres out of 20 acres of command area was infested with weeds (prosopis jungle). After rehabilitation all 20 acres with 15 wells in the command area were brought under cultivation in December 2011, and 25 wells belonging to farmers in the catchment area also benefitted.

Income: Crop yield (paddy) increased from 20-25 bags to 35-40 bags/acre with 76 kg/bag during the year 2011-2012, an increase of 60 to 75 % in yield. The ground water level has improved, rising up by 11 feet after the rehabilitation and that is why a large number (31) of farmers, including women, direct (12) and indirect (19) beneficiaries were present at the meeting on the day. Information of Individual farmers (9) was collected from direct (6) and indirect (3) farmers for analysing increase in income of direct families in relation to baseline information.

The evaluator over all major comment was that Renovation of tanks has resulted in substantial recharge of wells in the command area of the tanks. Farmers with wells in the command area of the tank derive substantial benefits in relation to the farmers who totally depend on the tank water. There is a need for examining feasibility of a community well in the command for providing critical irrigations during failure of rains.

Way forward and recommendations:

The paper analysed the situations of ground water scenario of the project blocks and conclude that the presence of large numbers of tanks and ponds are the major sources of recharge over the years and CGWB categorised the blocks from safe to semi critical for the drawing of water from the ground water sources. But the present conditions of tanks and water bodies performances and dilapidated situations alarming the ground water recharge potentials. The conditions of the blocks here are that these tanks and ground water are managed together as shallow water table due to water available in the tanks and ponds are used for irrigation in conjunctive practice and if these tanks are not performing well continuously for few years, the ground water automatically fall down and acute ground water shortage would happen. So our DHANA project experiences showed that mass scale renovation of tanks and ponds and their continuous maintenance and management through community only the permanent solution for addressing the ground water recharge and related issues.