

MULTI FUNCTIONS OF PEOPLE INSTITUTIONS AND THEIR SUSTAINABILITY: ROLE OF TANK ASSOCIATIONS AND THEIR NESTED INSTITUTIONS FOR THE SUSTAINABILITY OF TANKS

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ABSTRACT

Irrigation Tanks (Traditional water harvesting structures called lakes) are small irrigation structures predominantly serve small and marginal farming communities to sustain the agriculture production by supplementing the monsoon rains. These are our heritage handed over to us by our ancestors and are the lifelines of villages. There will be festivities in the villages if its irrigation tanks get filled. The tanks, which had conferred benefits to humanity for over centuries since the beginning of history, are now in a bad shape. A proper maintenance of the tanks will prevent famine, starvation and unemployment and bring in prosperity. During the British rule, the tank as a common property has become the 'state' property. The tanks belong to the 'state' and they are 'vested' with government departments for their maintenance and management. In most of the Southern states in India, the major threats to tanks are mainly from the encroachers, inefficiency in the functioning of tank system and improper use by the government itself. The main reason attributed to this situation is the 'Institutional constraint'. If the tanks are surviving and still performing, it is by and large due to the local organizations and farmer's initiatives which are mostly informal. We consider that 'institutional constraints and alternatives' should be a prime question to be addressed as that of rehabilitation itself.

Some of the tanks have been restored and are maintained with the awareness created by DHAN Foundation, a Non-Governmental Development Organization by promoting Tank Associations (Water Users Associations) with an identity name "Vayalagam" in South India are in good condition. This has been made possible due to the awareness created among the people especially underprivileged farming community, by ensuring their participation and contribution during the selection and execution of works implementation time, promotion of nested institutions among the beneficiaries and making aware them regarding the future maintenance of the tanks. Our experience of working has been through farmer's organizations formed at the habitation, cascade (chain of tanks) and district levels for conserving the tank systems are mostly in drought prone areas. Each tier of these farmers associations will have distinct identifiable roles, responsibilities and resources. DHAN Foundation's approach mainly relies upon the regeneration of Farmer's Management by establishing their organizations and involving them in rehabilitating works.

Key words: *Irrigation Tanks; Small farming community; Community participation; Farmers Associations; Nested institutions.*

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This paper explains about the people institutions promoted by DHAN Foundation around tanks and the efforts taken to sustain the nested institutions structure.

1.0 INTRODUCTION

Tanks are the traditional water harvesting structures, formed many centuries ago by the Kings or local chieftains for storing rain water. Tank Irrigation is one of the traditional irrigation systems particularly suited to the topography and rainfall pattern of Peninsular India. These tanks play a major role in day to day life of the rural people. Tanks occupied a prominent place in rural economy and in times of drought, served as the main source of irrigation. There are approximately 0.50 million tanks in India. These tanks were maintained by the user communities following the traditional method of “Kudimaramath” (voluntary labour contribution) system.

Irrigation tanks are our heritage handed over to us by our ancestors. Tanks are small irrigation structures predominantly serve small and marginal farming communities to sustain the agriculture production by supplementing the monsoon rains. The tanks, which had conferred benefits on humanity for over centuries since the beginning of history, are now in a bad shape. A proper maintenance of the tanks will prevent famine, starvation and unemployment and bring in prosperity.

1.1 Status of Irrigation Investments in India

The investment on irrigation by the Indian Government has been high and always on the rise ever since the first Five Year Plan of 1950s. However, the investment for the tank sector has not been on the same scale as for major and medium irrigation sectors. This is perhaps because of the perception of the concerned authorities considering the tanks as minor sources with low importance as compared to large dams, reservoirs and canals.

Table: Investment in Irrigation through Various Five Year Plans (Rs. in millions)

Plan period	Major and Medium Irrigation	Minor Irrigation	Other Miscellaneous Water Resources	Total Irrigation Investment
I Plan 1951-56	3800	660	140	4600
II Plan 1956-61	3800	1420	680	5900
III Plan 1961-66	5810	3280	2010	11100
Annual Plans 1966-69	4340	3260	2790	10390
IV Plan 1969-74	12370	5130	8330	25830
V Plan 1974-79	24420	6310	12010	42740
Annual Plan 1979-80	20560	4970	8060	33590
VI Plan 1980-85	75160	18020	25550	118730
VII Plan 1985-90	113430	32280	56820	202530
Annual Plans 1990-92	53200	18090	11330	82620

Plan period	Major and Medium Irrigation	Minor Irrigation	Other Miscellaneous Water Resources	Total Irrigation Investment
VIII Plan 1992-97	224150	59770	41330	325250
Total (1951-1997)	541040	153190	169050	863280

(Source: As cited by A. Vaidyanathan (2001), Tanks of South India, CSE, New Delhi.)

The bulk of even this investment under minor irrigation was used for the development of groundwater wells and lift irrigation. The development / rehabilitation of tanks received the least priority among the minor irrigation sources and they have been neglected.

1.2 Trends in net irrigated area by various sources

Commensurate with the investments made on irrigation in India, the total area irrigated by all the sources has increased by more than 20 million hectares (91.26%) during the four decades from 1950 to 1990. The increase has been spectacular under well irrigation and canal irrigation and moderate in other miscellaneous sources. On the other hand minor irrigation (tanks as the source) had shown a sharp decline in the net area irrigated as may be seen from the particulars presented in the following table.

Table: Trends in Net Irrigated Area (NIA) by various sources in India from 1950 to 1990. (in million hectares)

Category of Irrigation	Sources	1950-60	1960-70	1970-80	1980-90
Major and medium	Government and Private canals	9.186 (41.2%)	11.189 (41.9%)	13.768 (40.1%)	16.314 (38.3%)
Minor	Tanks	4.150 (18.6%)	4.781 (19.9%)	3.810 (11.1%)	3.071 (7.2%)
Minor	Wells and Tube wells	6.632 (29.8%)	8.377 (31.3%)	14.405 (41.9%)	20.786 (48.8%)
Miscellaneous	Other sources	2.319 (10.4%)	2.387 (8.9%)	2.378 (6.9%)	2.543 (6.0%)
Total	NIA	22.287 (100%)	26.734 (100%)	34.361 (100%)	42.626 (100%)

(Source: As cited by A. Vaidyanathan (2001), Tanks of South India, CSE, New Delhi.)

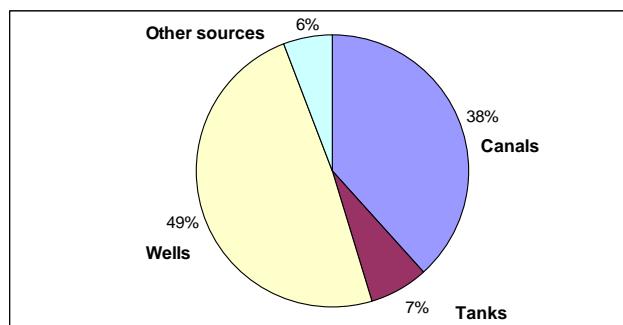


Fig: 1 Net Irrigated area (1990) Total = 42.626 million ha.

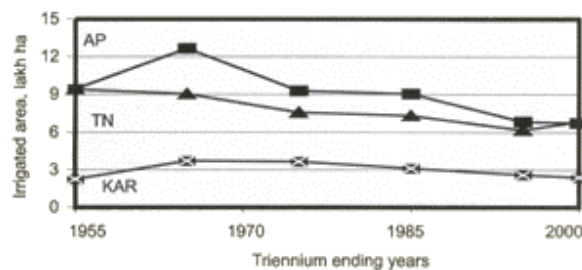


Fig:2 Declining performance of tank System in South India

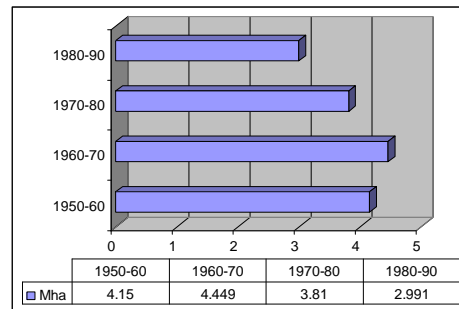


Fig:3 Trend in net irrigated area by tanks in the last 5 decades: All India figures

There is an urgent need for rehabilitating tank irrigation system infrastructure. Physical strengthening and improvements in the inflow, storage and distribution system are needed. Water users in tank commands need to be involved in planning and implementing the rehabilitation strategies. Tanks' performance as traditional water harvesting structures, conservation and recharging of ground water besides irrigation and several other ecological functions within the villages have to be restored and their maintenance to be sustained.

2.0 DHAN FOUNDATION

DHAN (Development of Humane Action) Foundation is a Non – Governmental Development Organization has been implementing “Tankfed Agriculture Development Programme” with people participation since the year 1992, mainly to serve the small and marginal farmers in the rain-fed tank areas. The programme concentrates on the tank-fed area farmers who have no access to larger irrigation systems and who are depending upon the vagaries of the monsoons for their livelihoods. The programme envisages that local management of tanks could be a better way to promote the livelihood opportunities of the poorer farmers. So, it aims with the short term objective of people participatory tank rehabilitation, medium term objective of stabilizing tankfed agriculture and long term objective of regeneration of local farmers management beginning with building their stakes through their contribution and active participation in planning and implementation of the tank development activities.

DHAN Foundation strongly believes that the long term objective can be achieved only by closely working with the various agencies concerned. DHAN has therefore made efforts to collaborate with other development actors like state and central Government agencies, research institutions, international donor agencies and policy makers.

The approach has established people’s organizations to execute the work, mobilized contribution from the people. The contribution was mobilized either through cash or labour and the people organization has mobilized 25% of the total estimate cost as their contribution. The remaining amount is mobilized from the Government agencies or any other donor agencies.

2.1 Tank Programme in Different Contexts

Tanks are found in different forms and contexts in most of the regions, providing water for agriculture, drinking and other domestic needs apart from environmental uses. The tanks that are taken up for development fall into four broad zones:

- Areas where tank is the only source of water.
- Areas where there exists conjunctive use of tanks and wells.
- Areas where tank is the source of recharge.
- Tank based watersheds.

In taking up conservation and development of tanks, the Foundation made two broad approaches, depending on the local context and the amount of funds made available under different programmes of the Government funding. They are:

- Isolated tank development works
- Tank cascade development works

2.2 IMPORTANCE OF TANKS

Though Irrigation works are found everywhere in the world, nowhere are those as important as in monsoon Asia, stretching from India to Japan. Its unique rainfall pattern distinguishes the monsoon Asia from the rest of the world. Hence the course of development of agriculture has been different in monsoon Asia and the rest of the world. To attenuate temporal variability of rainfall, these countries had followed from time immemorial, a policy of conserving rainwater for subsequent use through innumerable tanks and small storage structures like ponds, built owned and managed by the local people through community organizations. Tank systems developed ingeniously and maintained over the centuries, have provided insulation from recurring droughts and floods and vagaries of monsoon, and provided the much needed livelihood security to the poor living in the fragile semi-arid regions.

3.0 INSTITUTIONAL CONSTRAINTS FOR VILLAGE TANKS

After the advent of British rule, many changes were introduced in the land tenure system and the irrigation tanks were vested with the Government. Tank maintenance was also undertaken by the revenue officials (Maloney and Raju, 1994). Consequently, the traditional Kudimaramath system gradually disappeared. Even after independence, the Indian Government gave first priority to constructing large scale irrigation systems (Palanisami & Williams, 1991). As low priority was accorded to Minor Irrigation systems, it resulted in its' total neglect both by the Government and the farmers. Many tanks got silted up, were encroached upon and their condition deteriorated.

The main reason attributed to this situation is the 'Institutional Constraint'. If the tanks are surviving and still performing, it is by and large due to the local organizations and

farmer's initiatives which are mostly informal. We consider that "Institutional Constraints and Alternatives" should be a prime question to be addressed as that of rehabilitation itself. We are in a situation that we need to establish the stakes of the farmers through innovative ways. DHAN Foundation's programmes aim at building the stakes of farmers by raising a part of the tank renovation cost as contribution from them, in the tank development programme from the planning to implementing stages. DHAN Foundation's approach mainly relies upon the regeneration of Farmer's management by establishing their organizations and involves them in the rehabilitation works. From our experience of working on tank rehabilitation programme –

- At the macro / regional level, there should be separate multi-disciplinary bodies / agencies to take care of tanks
- At the micro level, local farmers initiatives should be encouraged by way of promoting Tank Associations (WUAs) with increased roles, responsibilities and powers.
- These locally formed Tank Associations should be federated on the basis of their hydrologic linkages and provided with necessary financial and legal support
- In the long run, these bodies can become part of local Panchayat institutions
- At the administrative taluk and district levels, these associations should be federated as a solidarity group to safeguard tanks and tank-fed agriculture

3.1 Institutional perspectives

Unless local farmers are involved in all kinds of tank development works including rehabilitation, management and future maintenance, tank programme will not yield full benefits. Promotion of Tank Associations at the level of tanks in the villages becomes fundamental to tank management activity. As most of the tanks are hydrologically located in a chain or cascade, they need to be looked as an integral part with a common interest. So, we need to promote federal bodies of these Tank Associations or Tank Cascade Associations and Tank federations. Since all the administrative decisions and supports related to tanks are done through the district administration, there should be federal bodies of Tank Associations (WUAs) which work at the district level to make demand on administration, to monitor the performance of WUAs.

DHAN Foundation pursues such an approach for building local institutions from the villages to the district level. Each tier of farmers associations will have distinct identifiable roles, responsibilities and resources.

3.2 People centered planning and implementation is very much essential in the rehabilitation of traditional water bodies (tanks) for the following purposes –

- To build stakeholder ownership on the water resources
- It ensures sustenance of the resources through their regular maintenance and management of tanks
- It makes individual more responsible to conserve water by way of establishing a new management regime

- It helps in prioritizing the items of rehabilitation works based on importance and relevance to the local context
- It helps to mobilize a minimum of 25% of contribution from the stakeholders
- Being a common property, it resolves conflicts or vested interests arising during planning and work implementation stages
- It evolves public consensus in future maintenance and management

3.3 The following process steps are evolved in the rehabilitation work –

1. Formation of Tank Associations (WUAs) – Villagers / Ayacutdars are organized together to form a Tank Association (Water Users Association) with the prime objective of rehabilitation of their tank and future maintenance by themselves. Written down byelaws are evolved with members' consensus.
2. Opening of joint account – Among the executive committee, three persons will operate the bank account in a nationalized bank in the name of Tank Association.
3. Participatory process of planning – Based on priorities of works to be done, the estimates are prepared. Ways of mobilizing people's contribution, work plan, implementation schedule are finalized in the Tank Association meetings
4. Contribution mobilization – The Tank Association will evolve member's consensus in mobilizing contribution from individual farmers. It will be mobilized either through cash or voluntary labour.
5. Work implementation and completion plans – The work will be executed by the Executive Committee of the Tank Association. Based on the type of works, the executive committee shall distribute their responsibilities among the members by forming different sub-committees like purchase committee, supervising committee, measurement committee and fund management committee is formed. These committees supervise the work and they are responsible for maintaining the quality of work and completion of work as per the time schedule. After completion of the works as per the estimate, a complete measurement statement will be prepared and it is placed before the Tank Association for approval.
6. Maintenance of accounts – Separate set of books such as cash book, ledger and voucher will be maintained in each Tank Association apart from muster rolls, beneficiaries list, estimates, etc.
7. Endowment creation – Endowment fund is created at every Tank Association level for ensuring future maintenance and institutional sustainability. The association mobilizes corpus fund with matching grants given by government agencies, philanthropic institutions.

4.0 APPROACHES ADOPTED FOR TANK REHABILITATION

4.1 Tank based watershed approach : In tank based watersheds, we are including tanks as a part of watershed for treatment and the major thrust will be as follows -

- Rehabilitation of existing small scale water bodies like ponds, tanks and construction of new water harvesting structures are carried out in the project area.
- Taking up insitu soil and moisture conservation measures to prevent soil erosion and to induce moisture conservation in the soil.
- Horticulture development and Afforestation works in order to improve vegetative cover, thereby addressing ecological balance.

4.2 Rehabilitation in a cascade approach (chain of tanks): Tanks act as flood moderators and drought mitigators. Isolated tank rehabilitation approach will not yield fruitful results in a watershed treatment. To make tank rehabilitation effective, we cover all the tanks in a chain to have complete treatment which leads to the conservation of all the rain water and ensures the filling of all the tanks in the chain, which will also, saves crop loss during floods.

4.3 People’s Organizations in a nested institution model: To create an effective demand system across all levels we promote institutions at different levels, through which we can address their demands and issues effectively.

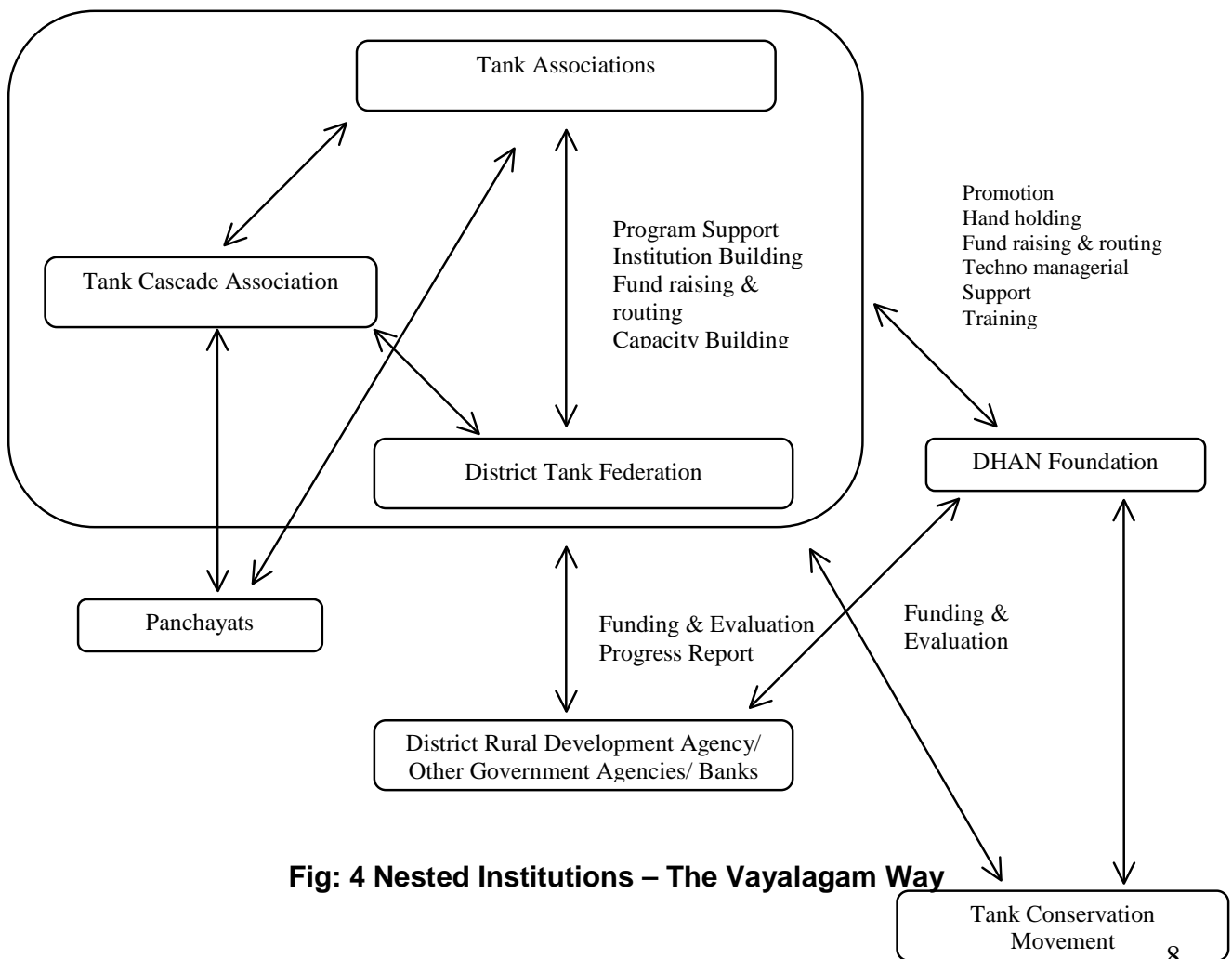


Fig: 4 Nested Institutions – The Vayalagam Way

- a) **Tank association (TA) or User Group:** It is a primary farmers' association formed at habitation or village level by including all the members in the village both direct and indirect beneficiaries. All the activities related to the tank will be channelised through this association. The prime focus of the Vayalagam (village level association) is to involve all the people in planning, implementation and future maintenance of the developmental works. The role of tank associations are as follows:
- ◆ Enrolling the farmers having land and the other interested groups in the village under the command area, as members
 - ◆ Planning and implementing development works like tank rehabilitation, community well construction and on-farm development
 - ◆ Maintenance of tank systems and their management including water distribution
 - ◆ Undertaking activities such as Pisciculture, tree planting and brick making as a measure of generating revenue for the tank associations
 - ◆ Building up a corpus or endowment for the tanks for maintaining and managing the tanks through the revenue generated
- b) **Tank Cascade Association (TCA) or Watershed Association:** This is at cascade or micro watershed level. This association comprises representatives from all the village level associations. It will take up development issues at cascade level. The roles of Tank Cascade Associations are as follows:
- ◆ Formed with the Tank Associations as members across the cascade
 - ◆ Resolving conflicts among the Tank Farmers Associations in water sharing and maintenance
 - ◆ Mobilizing funds across villages for the betterment of the tank irrigation systems
 - ◆ Providing improved services on agriculture and water management
- c) **Tank Farmers Federation (TAFF):** By including all the village level institutions, a Mandal / block level Farmers' Federation will be organized by registering it under Indian Trust act. This federation would promote and nurture all other people's institutions for self-management. The main objectives of this federation are
- ◆ Formed with the Tank Association as members
 - ◆ Organizing the tank farmers Federation in the administrative district level
 - ◆ Mobilizing funds for the rehabilitation of tanks from various sources including the District, State and Central government administrations
 - ◆ Organizing training Programmes on tank related aspects for the TAs, TCAs
 - ◆ Monitoring the operation & maintenance of rehabilitated tank systems and the performance of TAs and TCAs
 - ◆ Promotion and nurturing people institutions
 - ◆ Policy advocacy at mandal and/or district level

4.4 DEVELOPMENT PHASES OF FARMERS' ORGANIZATIONS: Regeneration of farmer management in tank-fed agriculture: DHAN's Approach

1	Phase	Stake building and trust building	Standardization phase	Integrated Tank system development	Self management of tank system
2	Content	<ul style="list-style-type: none"> • Tank selection • Formation of Water Users' Association • Leader(s) • Farmer contribution 	<ul style="list-style-type: none"> • Farmer planning • Farmer implementation • System repairs • Encroachment eviction 	<ul style="list-style-type: none"> • Catchment treatment • Integration with other tanks • Water management • Conjunctive use and crop production 	<ul style="list-style-type: none"> • Ongoing operation and maintenance • Endowment fund • Institution building • Turnover
3	Process	<ul style="list-style-type: none"> • PRA methods • Exposure visit • Farmer sub group meeting 	<ul style="list-style-type: none"> • Sharing of experiences • Specific training • System design and implementation 	<ul style="list-style-type: none"> • PRA methods • Handholding of WUA • Integration of catchment and command area farmers 	<ul style="list-style-type: none"> • Review process • Capacity building training • Setting up of self renewal mechanisms

5.0 CONCEPT AND FOCUS

DHAN Foundation's program on tanks would continue to have the following focus in tune with the set objectives.

5.1 Tank based Livelihoods to stabilize farm incomes of the marginal and poor people: The farmers dependent on tanks are either small or marginal landholders having paddy as their staple crop. Most of them own less than an acre of fertile farm land for their survival. Their crop production is primarily used for their own sustenance. Other than the direct beneficiaries women and landless have equal dependence in the tank system revival because of its multi-users and multiple uses. So stabilizing tankfed agriculture will be a boon for their food security, apart from their livelihood enhancement in the drought prone areas. As Poverty alleviation program the tank works would aim at stabilizing their incomes and save them from falling into the trap of poverty.

5.2 Gender and fish rearing: Self help groups of women are given high importance in all aspects, including inland fisheries by giving fishery rights of Panchayat water bodies by motivating them in inland fisheries was initiated in some places. Still need to be given focus to involve more women groups in action for nutritional security in their villages. Only women can do in achieving nutritional security of their family.

As a result of this, increased per capita consumption of rural people which will help to develop the future generation extra smart and healthy by providing fishes in fresh

condition and intensification this activity through creating more demand on fishes for consumption in rural areas.

5.3 Tank silt as organic manure: Tanks are interspersed in the landscape and are accessible by one and all. They have large deposits of silt useful to improve both soil quality and water holding capacity of crop lands. That is, they have an important role to play in self-sustaining land use plan through recycling huge silt deposits that serve as an organic amendment for improving soil quality and water productivity. Based on the nutrient content, the rate of application of silt for different crops on recommended scale helps the farmers to substitute partially the external input (Fertilizer) and thus, enabling them to share the responsibility of rejuvenation not only on recycling of tank silt but also, bringing about dynamic changes in the land use pattern.

Rejuvenation of tanks is really an ideal solution not only for insuring against the risks of vagaries of monsoon but also stabilizing production and productivity of crops in addition to transferring benefits of research to farmers in watershed villages in the country. The experience of farmers indicates that the crop lands that receive tank silt are able to withstand prolonged dryspells and mitigate droughts.

5.4 Efficient use fo Tank bed / Tank foreshore areas: Tank beds provide physical products like fodder, fuel, silt, space, etc. However, a mix of herbs, shrubs and trees tolerant to occasional water logging may be the best answer for efficient use of tank fore-shore areas. They generate income and employment during drought periods by creating productive off-farm opportunities and have a large implication on the sustainability of land use pattern.

5.5 Conservation of Village Ecosystems for the well being of rural poor: Tanks as small water bodies provide numerous benefits to the local community including gender. They constitute a resource complex for multifarious uses. The most important among these are irrigation, provision of drinking water for people and livestock, water for other domestic needs, groundwater recharging, firewood, timber, fish farming, fodder development, provision of space and water for bird sanctuaries and construction materials (silt and sand) for housing. Therefore, DHAN Foundation pro-actively considers that the neglect of tanks will result in the loss of all those benefits. From the ecological perspective conservation of tanks which have survived over several centuries of human history becomes imperative for the sustained welfare of the rural communities and improves their quality of life in their respective villages.

5.6 Institution Building for Common Properties like Tanks and Water resources: Due to centralization of tank administration by the “State”, coupled with paucity of funds and lack of involvement of either farmers (or) village assemblies in their upkeep and maintenance have resulted in the steady degradation of tanks. DHAN Foundation realizes that local village level institutions only can save these economic assets from decline. For this to happen, strong Tank Associations in the villages, Tank Cascade Associations based on their hydrologic linkages in a watershed and Tank Federations at

the District / Mandal level are must. These Institutions would safeguard and develop the tanks and help the dependent farmers for a better living.

5.7 Gender and Water Resources: The goal of tank development is also to establish gender balance in poverty reduction programs, and that all poor water users should participate and benefit. In this perspective, DHAN Foundation will initiate programs aimed at developing water as a tool for both gender balance and poverty reduction.

5.8 Tankfed Agriculture Development: Tankfed agriculture is a gamble as the tanks depend on adequate and timely onset of monsoon rains for their water storage. During scanty / deficit rainfall years or during the years of delayed onset of monsoon or early withdrawal, the farmers in tank command face difficulties in cultivating the crops. In order to mitigate this difficulty, provision of community dug or tube wells in the tank command or in nearby wastelands or in the water spread areas is made wherever needed and these assets would be helpful to farmers to ensure crop production, by supplementing tank water and by practicing conjunctive use. This is subject to the availability of funds, technical feasibility of having a well and agreement of the farmers to operate, maintain the community well on their own and share the water.

Field demonstrations and crop diversification are put on in a number of areas from high water requiring food crops like paddy to low water requiring commercial trees like coconut, cashew, and crops like pulses, chillies and vegetables. This approach enables the farmers to build their confidence and to strictly plan their cropping pattern based on water availability in the tanks. The farmers are provided with appropriate advice regarding the crops and cultivation.

Under this component, Vayalagams or Plant Clinics are promoted at tank cascade / block level. These centres disseminate information and train farmers on improved water management and agricultural technologies, integrated pest management, bio-fertilizers, organic farming etc. Apart from this, farmers are encouraged to go for seed production and exchange of seeds among themselves to minimise their input costs.

5.9 Minimum Drinking Water Facilities in the Villages through improvements to Traditional Ponds: The magnitude of the drinking water problem in few districts in South India is such that the women in the households walk miles together for potable drinking water in the summer. This phenomenon is common and needs immediate attention to relieve women from this drudgery by way of providing water storage through tanks and ponds. This would be made possible by organizing the women for undertaking tank development exclusively for drinking water ponds through simple means of earth work excavation and purifying arrangements.

5.10 Networking for Enabling Policies on Tank Administration: DHAN Foundation will sustain its networking efforts at state level in Tamilnadu, Andhra Pradesh, Karnataka and Pondicherry for policy advocacy, allocation of financial resources and usufruct rights, turnover of operation and maintenance of tank systems to farming communities. Nonetheless, as a driver agency for establishing network for Village Tank

Management under Global Water Partnership, DHAN Foundation is working towards building stronger network of similar organizations in South Asia.

5.11 Endowment and Resource Base in the Tank Associations: DHAN Foundation firmly believes that the effective management and sustainability of people's institutions over the years are the solutions to conserve and develop the endangered species – tanks, because they time and again enhance the livelihood of the under privileged. Endowment fund or corpus funds are maintained in each Tank association for the sustainability of the association and for the future maintenance.

5.12 People's contribution: Without people's participation and contribution, the future maintenance of any development work will be questionable. In order to enlist the active participation of the people, DHAN Foundation ensures community contribution at least 25% of the total cost either in cash or kind forms. This has led to greater sustainability and ownership among the people.

6.0 MECHANISMS FOR SUSTAINABILITY OF THE TANK NESTED INSTITUTIONS

6.1 Promotion of Micro Finance Groups (MFGs) among tank users: For keeping the tank associations active round the year (through regular meetings) and to support the farming community in agriculture development, we are promoting Micro Finance Groups (MFGs) among farmers through savings and credit. Through these MFGs we provide micro credit for agriculture development, business initiatives etc. The source of micro credit is savings in MFG and the corpus at village level and in collaboration with mainstream institutions and banks. Apart from meeting their own needs, these MFGs are contributing some portion of their common fund for the maintenance of the rehabilitated water resources like tanks and ponds.

6.2 Micro Finance Activities (MFAs): Intensive activities of tank programme with the farmers are undertaken during the rehabilitation works. The farmers participate in the meetings, labour work, purchases, problem solving etc., during the rehabilitation of water resources period. The period ranges from 3 to 6 months. However the intensity of their collective action needs to be kept throughout the year. Therefore, it is identified that Micro Finance Group activities would become the platform for bringing farmers together at frequent intervals with a meaningful purpose. These groups are formed with the tank farmers as members and they are encouraged to save, lend, and take loans from banks under any credit project.

6.3 Agriculture development through Vayalagam Agriculture Development Centers (VADC): After completion of tank and watershed development works, the immediate action should be on conserving the water and its effective usage. To serve this purpose, we have initiated agriculture development centers at Panchayat or cascade level and provide the services like technical guidance, awareness creation, input supply, building marketing linkages etc., to sustain the crop production. These associations are concentrating in the revival of the traditional water management

practice called “Neerkatti system of irrigation” (irrigating the tank command area with common irrigator) for efficient water use for agriculture.

6.4 Creation of Endowments and corpus fund for tanks: DHAN Foundation mobilizes the support of philanthropists to create endowment funds to be made available at the villages through the Tank Associations for conservation and development of these common properties. Sir Ratan Tata Trust (SRTT), Mumbai had donated ₹. 5 million to this programme for establishing endowments in 500 small tanks. An equal amount is being mobilized by the villagers for the same tanks as their share to form a corpus fund. The fund would become a rallying point for the villagers and the interest accrued from it would be available for small repairs and development works. DHAN Foundation also expects that other philanthropists interested in water resources would come forward in a big way to support these efforts.

6.5 Social security for tank farmers: To address the issue of vulnerability and risks, we mobilise farmers towards micro insurance for human, livestock and crop, in collaboration with the mainstream insurance firms like LIC, Birla, MetLife, ICICI, etc.,

6.6 Cost coverage: It is one of the most prominent activities that we are creating among the tank associations to have sustainable institutions. People are sharing a part or total of the management service cost for the services provided by the people institutions. The services rendered include micro finance, agriculture related like input supply and produce marketing, social security, etc. This is expected to help the institutions to be on their own in a sustainable way without depending on external support for the future requirements for administrative purposes.

6.7 Vayalagam Movement: We have initiated Vayalagam Movement (People movement to stress the Tank conservation) in order to spread the importance of self management of farmers in tank system or water conservation & development through people themselves in a way “build people to build people”. The movement also includes financial support from the benefited families to initiate tank development programmes in other areas where it is desperately needed. As a part of movement we conduct Pada yatras, seminars and workshops at different levels.

6.8 Safe drinking water interventions: More than 86% of the diseases in the country are directly or indirectly related to water for which atleast 25 – 35% of family’s income is drained due to water borne diseases. Around 220 million Indians do not have access to safe drinking water. Safe drinking water is one of the good tools to arrest the leakage of money spent on health issues. Awareness creation about safe drinking water is considered as an important pre-requisite for the prevention of water borne diseases.

6.9 Ooranis (ponds) – The most preferred source of drinking water: In the rural coastal districts like Tuticorin, Ramanathapuram, Sivagangai, Chengalpat of Tamilnadu (India), ooranis still continue to be the primary and preferred source of drinking and domestic water needs, since these areas have no rivers to supply drinking water. Also, the ground water is saline. Hence the rehabilitation of drinking water / domestic ooranis

with the provision of filtering mechanism is taken up with people's participation through their associations. Till now, 75 such ooranis were developed with the fund support from CAPART, State departments, philanthropies.

6.10 Promotion of simple and affordable household water filters: In addition to protecting the ooranis from the physical and chemical impurities through village associations, awareness is created about safe drinking water for promoting the use of affordable household and community water filters. Innovative household filters like biosand filters are introduced to the community by getting the technology of fabricating biosand filters from the Canadian development organization named Centre for Affordable Water and Sanitation Technology (CAWST), Canada. Till now, we have manufactured and distributed of around 2,500 biosand filters in around 85 villages in Tamilnadu and Andhra Pradesh States and to around 300 schools in Andhra Pradesh. Water quality monitoring is done continuously for effecting the changes if any required in the filters.

6.11 Tank based Watershed Development: DHAN Foundation has implemented watershed development programmes with people' participation in around 45 watersheds under National Watershed Development Project for Rainfed Areas (NWDPR) sponsored by Govt. of India, in 14 watersheds under Watershed Development Fund (WDF) sponsored by NABARD in Andhra Pradesh and Tamilnadu States in India, 15 watersheds under Drought Prone Area Programme (DPAP) in Chittoor district of Andhra Pradesh. Though these projects are implemented as per the Govt. guidelines, our focus is also on the preservation of the tanks through the Watershed Development programmes by adopting the concept of tank based watersheds. Further, we also implemented 10 tank based watershed projects in collaboration with M/s. ITC under Corporate Social Responsibility (CSR) concept. Such initiatives facilitate the integrated development of the rural areas for poverty alleviation and sustainable development.

6.12 Panchayats partnerships: Panchayat Government would be a focal point for future partnership of water conservation. Corporates and NGOs with panchayats may show a new way of Public – Private partnership at grassroots level. Because of small size and constitutional autonomy, there is a social, economic and development space for Public – Private partnership, more so for conservation and development of small scale water bodies like tanks, ponds, streams and springs.

6.13 Creation of 'Water Conservation Fund': There remains a greater need to establish water conservation fund at local level, state level and at central level to initiate pilot demonstrations to create 'Pull' effect for conservation from Publics, Corporates and State. Corporate houses could come in a big way to create the Water Conservation Fund.

6.14 Facilitating water philanthropy: In the current context, Corporates and enlightened public could lead the way in facilitating water philanthropy in a big way. Number of Corporate houses and individual philanthropies came forward in this initiative.

6.15 Placing 'Water' under civil society domain: Increasingly civil societies are taking initiative for sustainable use of water at their level. State has to come forward in an explicit way that they are keeping the options in 'Water Sector' open to civil society domain for setting – up sustainable use of water for all purposes including drinking water, domestic use, industrial use and other purposes.

6.16 Initiating 'Water Watch' Movement: In the similar lines of 'People Watch' for ensuring Human Rights, 'Water Watch' could be initiated with the participation of Public, Corporate, NGOs, Academia, State and others. Nodal institutions could be created to anchor 'Water Watch' with adequate facilities to monitor water quality and conservation of tanks and ponds. A task force could be constituted by agency concerned to develop the Charter and / or guidelines for the Water Watch Forum at different levels and also their networking as a single unit.

6.17 Water Expertise and Training Centre (WETC): WETC is established to act as a training centre, technical resource and network hub for local NGOs and Govt. agencies in household water treatment, sanitation, hygiene and domestic rain water harvesting. This centre focuses on water quality monitoring and creation of awareness about safe drinking water.

6.18 Capacity building, trainings and consultancy services: Our staff members are experienced in social and technical aspects of tank rehabilitation and other water related development with high level technical trainings imparted to them.

7.0 Achievements & outcome

The achievements made so far since the inception of the tank development project are as follows:

Around two thousand tank associations and thirty block level tank farmers federations have been organised. The tank users were provided with technical and managerial support by DHAN, through capacity building, exposure visits, Participatory Rural Appraisals (PRAs) and diagnostic analysis of the status of tank structures. Besides, they were motivated to mobilise a minimum contribution of 25 percent of the estimated cost of rehabilitation, in order to build their stake in the programme and to implement it themselves without any contractors. The local communities, through their TAs were able to plan, implement and sustain the maintenance of 1,200 minor irrigation tanks, drinking water ponds, community wells and additionally 90 tank based watersheds are under development by the watershed development associations themselves. In addition to people's contribution by way of cash, labour, construction materials and their transport, the mainstream institutions which support the communities' efforts are the government agencies, Council for Advancement of People's Action and Rural Technology (CAPART) and National Bank for Agriculture Rural Development (NABARD), besides several national and international funding organisations like Sir Ratan Tata Trust, NOVIB & The Ford Foundation. The people's contribution was ` . 45 million while the

funds mobilised from other agencies were ` . 150 million. Additionally the TAs were able to mobilise ` . 3.5 million as a corpus fund and a matching grant of ` . 3.5 million from local philanthropic organisations & funding agencies for the maintenance of the rehabilitated tanks. More importantly, 650 first level leaders and 60 higher level leaders emerged from among the active members of the community during the rehabilitation process. The formation of 2,430 micro finance groups (MFGs) from among the tank users has been an innovative activity which commits the people to save and meet regularly to discuss the various operational and maintenance issues and solve the conflicts that sometimes arise.

8.0 Impact of the Programme

The findings of an impact study made of the tank development programme are as follows:

1. **Increase in utility and efficiency:** The physical rehabilitation of tank has increased its utility and efficiency. The inflow into the tank is increased due to proper rehabilitation and maintenance of feeder channels. Desiltation of tanks has helped to increase the storage capacity of the tank. This work has generated 3-4 additional wettings for the first paddy crop; before rehabilitation they were able to store water only for two to three months, but later they could store for four to five months. The present type and quantum of work has not been done in the past two decades. The farmers feel that with periodical maintenance on their own, there will be no need for rehabilitation works for the next two decades.
2. **Regular maintenance of these structures** is undertaken by the tank associations. For example, the association has done feeder channel cleaning works during the past few years by themselves and maintained the other tank structures. Also, the clearance of Juliflora jungle on the tank bund is periodically carried out by the association, which was not done by the tank farmers in the earlier years.
3. **Impact on groundwater recharge:** Increased inflow and increased storage have helped in better groundwater recharge. Several wells in the tank commands got recharged. This was not possible before rehabilitation. Before rehabilitation, these wells were able to supply water for 3 to 5 hours a day during Jan-Feb and 30 min to 45 min during summer. They are now providing 5 – 7 hours supply during Jan-Feb and 2 hrs in summer during normal rainfall years. The water table in the area is also increased from 10 – 15 m. below ground level to 8 to 10 m. below ground level consistently in most of the wells.
4. **Increased crop area:** The area cultivated before the rehabilitation was less than 50% of the total tank command. Presently, the entire area (100% of tank command) in many of the rehabilitated tanks are irrigated. Paddy used to be the main crop raised prior to rehabilitation. Additional crops like cotton, groundnut, maize, ragi and vegetables are also grown now with tank and well water.

5. **Crop diversification:** Before rehabilitation, cultivation in the tank command was not quite stable due to water scarcity; but now there is enhanced water supply through tank and the community well. This has helped the farmers to take one assured crop, without the risk of crop failure. Cultivation of second crop has also become possible in many places. During the good rainfall years, some farmers had raised a third crop also, which was not possible in the previous 20 years.
6. **Increase in crop productivity:** The intervention on water and crop management produced an impact on agricultural productivity. Organic farming and farm field schools conducted in the villages helped in reducing the input cost and increasing the productivity by about 40 to 60 percent.
7. **Impact on average net income per family:** Farm field schools conducted in the villages have helped the farmers in reducing the input cost and increased the crop productivity. Along with the increased water availability, the average crop yield has increased from 1200 kg/acre of paddy to 1700 to 1900 kg. This has resulted in an average additional income of ` 5,000 per acre in a season. Through in the second crop, they earn around ` 3000 – 4000 per acre. Apart from this, most of the families involved in agriculture had more employment opportunities within the village.
8. **Land value:** Land value has a direct relationship with the condition of the tank indicating the reliability of tank system. After the rehabilitation and construction of a community well, the land value in tank command has increased significantly. The land value which was ` 350-400 / cent before renovation, has become ` 800 / cent in the very next year and presently the command area lands are sold at ` 1000 / cent. In other rehabilitated tanks too, the value of land has gone up to ` 1000 / cent whereas, in the nearby villages 2 to 3 km away, the land value of ` 350 / cent has not changed.
9. **Migration and alternate livelihood:** Through increased cropping intensity, seasonal migration is mostly arrested. Many villagers who used to move to other districts for at least 2 – 3 months in a year for transplanting, harvesting charcoal making, coir industry etc. are now staying in their own villages due to assured irrigation and promotion of allied activities like coir making.
10. Before the tanks rehabilitation works, at least 10 – 20 percent of families shifted from agriculture to other vocations and now they have come back to agriculture.
11. **Impact on Tank Community:** Promotion of tank associations helped the people to evolve common norms to protect and manage the common property resources. As a group, they decide about what to do in protecting and managing these assets and are disciplined to respect the decision taken by the association. Today, the associations negotiate with the government agencies and Panchayat regarding sharing of usufructs from the trees and inland fishing in the tanks. As a result of tank rehabilitation works we observe a good impact on the individual and

the community as a whole. We could find an attitude change in their outlook. They do not want to depend upon government doles and responses. Their self-confidence and self reliance are visibly increased. Their cohesiveness to work for common good in the village is strengthened.

9.0 CRITICAL ISSUES

9.1 Non inclusion of tanks in watersheds: Even though water harvesting is one of the components in watershed development programmes, the major focus is given to construct new structures rather than rehabilitating the existing traditional structures mainly the tanks and ponds

9.2 Overlapping of schemes: Overlapping of various schemes with different guidelines will affect the community organizations and also lead to malpractices.

9.3 No rights on usufructs: Even though the primary stakeholders viz. tank user groups are contributing and implementing the tank rehabilitation works, they are not in a stage to utilise the income out of tank system. Still the ownership is with the State. Transfer of rights over the usufructs in tanks will greatly help those groups to maintain the rehabilitated works in good shape year after year.

9.4 No collaboration between local panchayats and tank associations: Lack of collaboration among the tank users and local panchayats has created a gap which in turn affecting the overall development of the tank systems or village development.

9.5 Limited coordination between tank associations and line departments: This is a major issue from the time of implementation to management of tanks. This needs to be improved for effective rehabilitation and the sustainability of these small scale water resources – the life line for the livelihood of the people.

9.6 Lack of mainstream recognition for the people institutions: However these tank associations are contributing for the tank rehabilitation works, regular maintenance of tank systems and protection of the tanks from the encroachers. Still the government does not recognize these people institutions as a formal one. Many times these associations are facing the difficulties to prevent the tank rehabilitation work implementation by the government through contractors. These associations do not have legal rights to protect the tanks from the encroachers.

9.7 Difficulties faced by the farmers during droughts / floods: Because of the floods and droughts, temporary migration of the tank farmers to the nearby urban areas are common. This will result in the cash flow problem of the farming families and the tank associations. Risks and vulnerabilities are very common in the rainfed tank areas. But, there is not a simplified weather or crop insurance schemes in place.

10.0 POLICY RECOMMENDATIONS AND WAY FORWARD

- Irrigation systems especially minor irrigation need to be restored to the satisfaction of users along with simultaneous institutional development for effective transfer of the irrigation management
- Any funding for irrigation development with Central assistance should be linked with mandatory institutional development for smooth turning over of the system to the users.
- These institutions should be empowered to evict all encroachments in the water bodies with the support of Revenue Department
- All the vibrant tank associations should become an integral part of panchayats for effective management and maintenance
- While allocating funds for watersheds, tanks existing in that watershed needs to be considered and it should not be based only on acreage.
- The tanks should be considered as a village asset and the revival should takes place with Cascade / sub basin / basin approach and not in isolation
- There is a need to evolve exclusive projects for tank development like watershed development programme.
- Tank development plan should be made based on local practices and tradition and People's requirements and not based on guidelines

From cost effectiveness and sustainability point of view, implementing the rehabilitation project through farmer organizations with their contribution and not through contractors has demonstrated the viability of such procedures. Also, the selective use of machine and men is most cost effective as compared to men alone and such procedures can be adopted even in the other development schemes. Now the government is trying to channel its resources and funds through a number of government departments such as PWD, Forest, Revenue, Fisheries, Panchayats and Rural Development. The importance of having one nodal agency to provide the support services is very much felt and is stressed. Ultimately, the tanks are to be turned over to tank associations for management and maintenance after empowering them to take decisions on tank related issues.

Tanks are too numerous and need very heavy investment to complete the work by the government alone in the near future. However, this can be expedited by decentralizing the rehabilitation work and handing it over to Gram Sabhas with adequate institution and capacity building and providing techno - managerial services through NGO's and financial incentives by government, philanthropic organisations & peoples own contribution. In this programme, the first and the foremost aim to be achieved is awareness creation and capacity building of all stake holders involved in tank rehabilitation project. Also if integrated tank based watershed development is going to be the model, then we need to test this model further and tag it on to a training institute. At present, no such institute exists to provide a field oriented training to all those who are involved in water resources development. There is a need for the establishment of an institution with provision to implement integrated tank based watershed development programme under the aegis of a competent NGO or other agency.

Involvement of all stakeholders is the key to sustainable development and management of water resources in a river basin. Participation is however, not a substitute for a political process. Political decisions are necessary wherever local wishes are in conflict with the basin interest. Another important component is the sound socio-technical appraisals and advice on solution to problems. If the above three – Participation, Political will and socio-technical appraisals – are in harmony, it will promote trust among the users and a consensus may evolve on environmentally and ecologically sustainable water management. These three guiding principles should form the basis for sound and integrated tank development in the basin context.

Through all these changes we can rebuild the relationship of the communities with the water resources they use, mainly the tanks; and can restore the practice of “Kudimaramath” and like “Neerkatti” system. This would make the people’s institutions around water bodies sustainable for generations. Development of institutional frameworks for an efficient use of existing and expanding supplies is central to enhance and sustain the economic and welfare contributions of scarce water resources in India. Policies to reform irrigation sector are already evolving in different states.

11.0 IMPACT OF A FARMER: THE CASE STUDY OF MUDUPU CHANDRA REDDY

Mudupu Chandra Reddy (51) is a farmer living in Aipur village, Chityal Mandal, Nalgonda district of Andhra Pradesh in India. He settled in this village after his marriage to Manamma from the same village. They have two daughters and a son. The daughters are married while his son (15) is in the tenth standard at a school in Choutuppal.

Chandra Reddy owns half an acre in the Ayacut of Oora *kunta*, the village tank. He also owns 6.3 acres of dry land in the outskirts of the village. The *kunta* that his forefathers had built was small. Over the years, the tank was enlarged which increased the ayacut. The government used to do some renovation work earlier but after some time the maintenance stopped and no one cared about the tank.

The tank used to be dry during most of the year. During southwest monsoon, the water would be available for 15 days up to sluice sill level. There would be some water in the pit of the tank for another month. During northeast monsoon, water would be available for 30 days up to sluice level and for another 30 days in the pit.

Chandra Reddy recalls, “in the well the water would be available only for a few days. With that we could farm only one-fourth the ayacut land and on the remaining land we grew castor and red gram. We kept three bags of rice and three kgs of red gram for our own use and sold three bags of castor for ` . 1500. It was bad time for us. Many times we left our land fallow because there was no water.”

The DHAN team then came to rehabilitate the tank. They discussed these issues with the farmers and insisted on them to form a Tank Association (TA). “We did not believe them first, but they visited us regularly for a year, and finally we agreed to form the

sangam,” said Chandra Reddy. He was one of the first to understand and accept the idea and played an active role in setting up the TFA. “People hesitated to contribute for the work. But Purushotham Reddy and I collected rupee by rupee from the members,” he said.

The Aipur villagers formed Sri Rama Sangam (SRS) and Jyoti Vayalaga Podupu Sangams (JVPS) to provide savings and credit facilities to the farmers. Chandra Reddy’s wife Manamma has become a member of the JVPS, while Chandra Reddy joined the SRS. After seeing his hard work, financial discipline and leadership qualities, the members chose Chandra Reddy as the group’s treasurer. “Credit was a major problem we faced. During farming seasons we need money. Earlier we borrowed from the moneylender at 60-72 per cent interest a year. Now we are able to borrow from the *sangams* at 24 per cent interest a year. So far we have borrowed Rs.35,000 from the Vayalaga Podupu Sangam and repaid them on time. We have also repaid our debt with the moneylender. Now we have a savings of Rs.2,300 in our *sangams*,” said Chandra Reddy. Manamma says, “We are 15 members in JVPS. Monthly we save Rs. 50. We took a loan of Rs.20,000 from the *sangam* for our daughter’s wedding. We repaid it and got another loan of Rs.10,000 to buy a buffalo. Earlier we had only one buffalo that yielded three litres of milk. Now we get six litres of milk and earn Rs.1000 a month. I take care of them. We get fodder from our field.” Chandra Reddy is the first try out any new idea discussed in the TFA. He played a key role in the collective purchase and distribution of seeds and fertilizers last year. “The problem with paddy cultivation is the availability of quality seeds. We discussed this in our association and gave foundation seeds to Malla Reddy who cultivated it and supplied to us.

Similarly during the last season we bought fertilizers through our association and supplied to the members. For the rabi (Yasangi) season too we have done like this,” says the entrepreneurial farmer. “With the support of DHAN Foundation in our village we were able to achieve this. We are growing together along with our *sangams*. We believe we will be better off in the coming years,” said Chandra Reddy.

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