

Social capital for integrating Microfinance and Water

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1. About DHAN Foundation

DHAN Foundation is a development organization working with the major purpose of providing opportunities for professionally qualified young people to work at grass roots and also to transfer the suitable & needed technologies to the poor for their economic development, mainly to create an impact on poverty. In the poverty reduction initiative, the major approach followed by DHAN Foundation is "Promotion of people institution around a particular theme and making the institution as a people owned, controlled and managed institution. In the process, the people institution called as federation will take form as a civic institution by becoming a strong demand stream and by setting agenda for the government institutions and for policy making bodies. At present, DHAN Foundation has promoted 173 federations around Microfinance theme of which 108 have become autonomous, and 93 federations have started civic programmes like health (Reproductive and Child Health, Malaria control, HIV/AIDS, curative care services), sanitation, safe drinking water, education and building community infrastructure. Kalanjiam Foundation has been promoted as a subsidiary of DHAN Foundation to scale up the microfinance theme namely Kalanjiam Community Banking. Over one million poor households have been reached out through Kalanjiam programme.

2. What is Social Capital?

Social capital refers to features of social organisation, such as trust, norms, and networks that would shape the quality and quantity of a society's social interactions. It includes social resources on which people draw in pursuit of their common goals. That is,

- ✘ Networks and connectedness, either vertical or horizontal that increase people's trust and ability to work together and expand their access to wider institutions, such as political or civic bodies;

- ✘ Membership of more formalised groups which often entails adherence to mutually agreed or commonly accepted rules, norms and sanctions; and
- ✘ Relationships of trust, reciprocity and exchanges that facilitate cooperation, reduce transaction costs and provide the basis for informal safety nets amongst the poor.
- ✘ Social capital is not just the sum of the institutions, which underpin a society - it is the glue that holds them together.

3. Self Help Groups and Social Capital

Self Help Groups (SHGs) are self managed groups of poor men and women which have come into existence to mobilise financial resources through their own savings and lend the same amongst themselves to meet the credit needs of their members. A stable, secure and equitable financial system is a precursor for sustainable growth. Poverty reduction requires effective financial organisations and instruments at the household, village and national level. Social capital can affect both formal and informal financial systems.

At the global level, the SHGs have become movement and fast growing. It has proved its success in terms of effective financial management, reaching the poorest segment, ensuring the reach of benefits and building democracy at the grassroots. It has become an effective demanding system on mainstream institutions, especially financial institutions. These SHGs act as strong local financial intermediary at the village level. SHGs establish their own networks by promoting supra structures to strengthen their efforts, to sustain SHGs for generations through promoting clusters and federations. They act as a local social capital to draw resources and participate extensively in the credit markets. The success is more evident because:

- ✘ they operate based on mutually liable, self-regulating mechanisms

- ✗ SHGs contribution to building social capital - they build relationships, networks, and link with formal financial institutions and government departments.
- ✗ SHGs - as microfinance institutions with its supra structures also influence how markets operate, and they shape the relationships between civil society, the state, and the markets
- ✗ Repeated borrowing and repayment creates a credit record, strengthens the links within the group, and builds up social capital, contributing to broad-based growth.
- ✗ NGOs contribution in promoting and sustaining democratically managed SHGs by building their capabilities through trainings.
- ✗ Expansion of SHG movement by SHGs themselves.

4. Experiences of DHAN Foundation in building social capital

The experience of DHAN Foundation's Kalanjiam Community Banking Programme shows the success of building social capital on microfinance - by promoting and building People's institutions - Kalanjiam . It has been an accepted fact that building People's institutions is to achieve significance; able to make difference in the lives of poor; able to influence the overall well being of local constituents considerably both in terms of qualitative and quantitative aspects. It is an effective strategy to impact poverty.

The foremost element of Building Financial Social capital for poor involves promotion, nurturing and sustaining them. In Kalanjiam Community Banking Programme, it follows the following principles in building the localised social capital with unique supra structures:

4.1 Design the primary units (SHGs) and build them

first: It is very critical to define the size, structure and the details of local governance and management systems of the 'primary units' to begin with. Once these details are worked out, suiting to the local context, a lot of efforts need to be put to promote and nurture these primary building blocks to develop institutions from the grassroots.

4.2 Building 'Network Institutions' of the poor at multiple levels (Supra structures) Creation of

people's institutions at different levels is critical to address the issues of powerlessness and isolation, which are two important causes of poverty. The local community, through building of local leadership, should manage these institutions.

These institutions created at each level compliment the role of the other and each one acts as an independent institution with interdependence on each other for sustainability. These local institutions could be hosted into superstructures. In addition to acting as local financial social capital, these institutions would build a strong demand system at the local level to address the issues of poverty collectively. They could influence both the local banks and the government system in their favour. **Primary groups** promote **secondary groups** (cluster associations and federations) for the following purposes:

- ✗ Co-learning
- ✗ Sharing the leadership capacity
- ✗ Sharing the local worker
- ✗ 'Scale' advantage: Because of cluster and federation, primary groups would have the following 'scale advantages':
 - Secondary groups could represent their demands to local government, banks and other mainstream institutions as a collective.
 - Mobilising resources on behalf of primary groups from banks and the government.
 - Secondary groups could initiate many new scale related activities like the Public Distribution System for a village or a group of villages. It could also promote business activity groups.
- ✗ Solidarity and Sustainability
- ✗ Self-governance and 'own' development programs

4.3 Encourage good governance and effective management practices from day one:

Growth of the federations is greatly influenced by the good governance and quality management systems and practices in place. Identifying good leaders and encouraging the rotation of leaders would help in sustaining the local management, while placing high quality professional staff would ensure high standards with growth. Promotional institutions need to play a critical role in evolving good practices

and sustaining them, in addition to providing a pool of quality manpower to be employed by federations.

4.4 Promoting demand driven financial products: The financial services include savings, credit and insurance and all these services are integrated. Primary groups provide all these services and directly transact with the individual members. Poor have multiple financial needs and the needs vary from family to family influenced by the context and life-cycle stages. Standardised financial products will never address the developmental needs. In Kalanjiam Groups, the members have the right to decide on purpose for which financial services should be offered.

'Savings first': Savings is an essential and foremost service offered by the primary groups. 'Kalanjiam' have demonstrated that savings would bring sustainability for the microfinance programme. The total own funds mobilized contributes 60-70% of the total funds lent out to members. The purposes for which this savings is contributed includes education, marriage, festivals, social obligations, purchase of jewel, business, assets and housing. . A total savings of (including the reserves) of **INR.2,554 million** is mobilised by members as on March 2011.

'Credit next': Primary groups would also provide a range of products to meet a variety of credit needs of poor including consumption, debt redemption, health, education, social obligation, business, asset creation, income generation and shelter. Small consumption loans are provided primarily out of the funds mobilised as savings from members. The loans range from Rs. 100 - Rs. 2000 and repaid over six months to one year. The interest rates range from 15-24% per annum depending on the internal decision by each Group. The support for income generation includes credit for either supporting an existing activity or initiating a new activity. As part of the support loans are provided for both working capital and asset creation. As the own savings are not sufficient to meet, these loans are provided by groups through linking with local banks. The repayment period and terms of repayment vary with the type of activity and the interest rates vary from 24-36% with repayment periods ranging from six months to three

years. A cumulative loan of **INR.13,580 million** is made available to group members till date.

'Insurance must': Federations offer insurance services to the members and their families. The insurance services cover **576,008** members and their families. The types of insurance products include life insurance for member and husband, health insurance for family, livestock and housing. The federations identify the local needs and design suitable products in consultation with the mainstream insurance companies. As many as 21 federations have evolved self managed mutual insurance programmes, providing insurance services suiting to the local developmental needs.

4.5 Addressing larger developmental issues-Going beyond microfinance: Providing financial services is a very effective and powerful entry programme to organise the community and bring out their inner potential. The ultimate focus is to make the people to set the agenda for their own development. Many of the development issues like health, education, and other village level issues need to be addressed to achieve comprehensive development. The Kalanjiam SHGs and their federations have a huge potential to go beyond financial services and integrate other developmental themes. These institutions are self-sustainable and offer need-based services to poor people. The existing social capital can be effectively utilised for implementing the other developmental interventions. The following are advantages in providing 'unified services' or parallel services through integrating microfinance with other interventions.

- ✘ Demand driven programmes can be implemented through the existing social infrastructure
- ✘ The same microfinance structure can be used with additional technical persons, reducing the cost of implementation.
- ✘ Since the community network is strong, people owned programmes can be implemented.
- ✘ Learning for the poor in collaboration with financial institutions has been positive; similar mechanisms can be adopted to motivate other mainstream institutions to work with the poor.
- ✘ Self-financing by People Institutions is possible

✎ "Economies of Scope" i.e. packaging services, reduces the delivery and management support costs, and maximizes the variety of benefits for people's multiple needs and wants; this can be achieved through the integration of microfinance and other developmental interventions.

Kalanjiam federations existing for more than 3 years have initiated many social development programs which include housing, infrastructure, health, education, sanitation, drinking water, skill building, insurance and dairy, herbal marketing, agriculture and vocational skill building.

Activity based livelihood interventions: Exclusive business associations namely Primary Producer/Primary Marketing Groups from among the members of primary Kalanjiams on selected activities are promoted in order to achieve scale advantage and significant impact. Need based vocational skills are imparted to the members through an initiative namely Livelihoods enhancement with Functional Education (LIFE) to enhance the productivity and inculcate entrepreneurial attitude among the poor. Interventions are made to create a linkage between the business associations and market players to reduce exploitation and ensure higher market margins for the primary producers. Business interventions have been made on activities such as dairy, charcoal making, coir making, agricultural products marketing, terracotta making etc. The activity based livelihoods interventions have reached out to over 10,000 primary producers.

Health interventions: The matured Kalanjiam federations have undertaken interventions on reproductive and child health (RCH), curative care, malaria control, HIV/AIDS, sanitation and safe drinking water. These interventions primarily aim at enhancing health seeking behaviour of the poor through behavioural change communication approaches and building linkage with the mainstream agencies. An evaluation on the practice changes related to anaemia has brought out the fact that 34 per cent of the adolescent girls and 26 per cent of pregnant mothers came out of anaemia. Through health interventions 3.84 lakh persons have been covered. SUHAM (Sustainable Healthcare Advancement) Hospital a multi-specialty centre has been promoted by Kalanjiam Groups in two districts SUHAM strives to reduce the burden of health expenditures of low income families and at the same time provide high quality healthcare services. The Hospital with its

extensive network serves to population of more than 1 lakh in rural areas and urban slums of Madurai district.

5. Safe Drinking Water and Sanitation Programme of Kalanjiam Federations

Water is an essential component of our every day life. Only 0.01% of total water is available for human use while the remaining fresh water is in unusable forms like, ice cap, glaciers etc. Water, while giving us life, being a universal solvent, becomes a cause for many human and animal diseases. For every 15 seconds, a child dies due to water related diseases in the world; about 1.8 million children die every year (about 4900 per day) due to diarrhea. Adults are also affected severely by diseases like flurosis, Cancers of different organs, jaundice, cholera, typhoid etc due to consumption of unsafe water. Hence availability of water is not the only concern. Making the water safe to consume is all the more important. While talking about safe drinking water it requires a comprehensive approach involving water purification, sanitation and personal hygiene.

Sanitation is the prime issue of rural India. The experience and studies in our federations shows that the awareness level on sanitation is very poor. Sanitation includes personal hygiene, housekeeping, construction of lavatories, maintenance of drainage structures and garbage cleaning etc. The project on sanitation will provide education on all issues related to sanitation and demonstrate the low cost construction of toilets in project areas. The project will promote self health governance among the community at village, cluster and federation level to take up sanitation as one of the main agenda in each and every meetings. The project aims to demonstrate the access to safe drinking water among the community. Following activities will be undertaken under this component.

With this background Kalanjiam Foundation starts focusing on safe drinking water and sanitation intervention (WASH) among Kalanjiam families through promoting community health structures. WASH is being implemented in 50 covering 2 lakh families in associated with Kalanjiam Federations. The intervention aims

✎ To increase the knowledge and attitude on safe drinking water, sanitation & personal hygiene and change in practice towards safe drinking water, sanitation and personal hygiene through behavioral change communication as a strategy.

- ✘ To build the linkage between Kalanjiam members/ Kalanjiam and service providers for education and infra structure development on safe drinking water, sanitation & personal hygiene.
- ✘ To promote the self health governance to take up this safe drinking water, sanitation and personal hygiene as the permanent agenda in Kalanjiam Self Help Group meetings.

Components of the intervention

- ✘ Promotion of village level health committees to take forward the agenda of safe drinking water, sanitation and health. Nearly 3,000 office bearers of Kalanjiam SHGs form part of these village level committees. These committees take responsibility of educating families and interface with government departments to get the schemes available for the families.
- ✘ Education and awareness through BCC materials to the member families on various safe drinking water usage, cost effective bio-sand filter, health, nutrition and sanitation aspects using SHG meetings as a forum. Communication materials to ensure practices on safe drinking water, hand washing and usage of toilet have been developed in consultation with resource persons in the field. Education for the members has been done adopting different mechanisms. Different campaigns and demonstrations have been conducted in the villages to educate the members on safe drinking water and sanitation. As a result, 8,530 SHG members have constructed toilets in their houses.
- ✘ As a part of safe drinking water initiative, usage of bio sand filter was encouraged among the members. In the project locations, benefits of the filter were demonstrated at federation and cluster levels. Due to the continuous education at group level and demonstration there is an increasing demand for the filter among the members. So far, bio sand filters have been installed 3,835 member households. Credit facility to the members for purchase of the filter was provided by the respective SHGs.
- ✘ Building linkage with government agencies for construction of household sanitary toilets and awareness creation on safe drinking water and sanitation. In regions namely Madurai rural, Dindigul, Theni, Kancheepuram, Thanjavur, Vellore and Tumkur efforts were taken to link the members with the Total Sanitation Programme implemented by the district administration.

6. Renovating Irrigation ponds in Tribal Areas

The Kalanjiam Programme is being implemented in 42 tribal locations of India. We adopt an integrated approach for development of tribal families. In these areas other developmental themes like water, health, etc. are implemented from day one of SHG promotion. Presently we have undertaken a pilot on integrating microfinance with water in Mayurbhanj district of Orissa.

The terrain and the topography of tribal locations in Orissa are characterized by the presence of many ponds of varying sizes. Each hamlet will have minimum 4 ponds to maximum 12 ponds. These ponds serve multiple uses like domestic use, drinking water for livestock, recharging of ground water which in turn used as drinking water through hand pumps, inland pisciculture etc. These proposed locations are also fall into high rainfall zones exceeding 1,500 mm average annual rainfall, most of them received during South West Monsoon period starting July to September every year. Paucity of financial allocation, absence of local management made these precious water resources becoming ineffective or poorly managed. Water based livelihoods are therefore at stake. Many agricultural fields used to get complimentary irrigation from the ponds during scarce period.

As part of the initiative we identified potential ponds in each hamlet where Kalanjiam are promoted with tribal women folks. Along with the women and their spouses, associations are promoted at every hamlet as vayalagams. The members of vayalagams are involved in the planning process to chart of their needs in renovating the ponds and the needs are prioritised. So far, renovation works were undertaken 35 ponds in Betnoti and Moroda blocks of Mayurbhanj district. Base level works such as identification of ponds, entering into agreement with the village panchayat, preparation of estimate for pond renovation, formation of SHG/farmers' association, training to the farmers, depositing funds in the bank accounts of the SHGs/farmers' association etc. Pond renovation through involving the farmers' association/SHG has been completed in 35 ponds. Local people have contributed 10 per cent of the total estimated cost of renovation either in form of cash or labour or kind.

Fish rearing activity was introduced in the renovated ponds. Initially, an exposure cum orientation programme was organised for the members for these associations in the nearby locations through support of agricultural department. A technical training programme was organised in Central Institute of Freshwater Aquaculture (CIFA), Bhubaneswar, in which 45 persons comprising of members of farmers' associations and staffs of the project locations participated. It was designed like a training of trainers programme and these trained persons now train members from other groups who are interested to take up fish rearing activity. In all the four ponds where fish rearing has been taken up one cycle of rearing has been completed in which 800 kg of fish has been harvested and sold in the local market.

7.0 Conclusion

- ✘ A comprehensive approach is needed integrating microfinance, health, safe drinking water and sanitation.
- ✘ Microfinance is now established as an important poverty reduction tool, but it is only a beginning and provides partial solution - if not integrated with enabling the poor. Building community organizations around microfinance and making community responsible for the development process could result in sustainable development solutions.
- ✘ Access to financial services provides a good platform to organize the poor and helps in building other social and development interventions successfully.
- ✘ Improvements in healthcare, safe drinking water and sanitation and the social awareness can be sustained only when the households especially women have increased income and have control and access over resources.
- ✘ There is no universal model for convergence, context based and need based models to be developed involving the community as major stake holder. People organizations need to become a strong demand system to integrate and work with mainstream national government programme and health infrastructure.
- ✘ Savings, credit and insurance with a focus on addressing various health needs of the poor can enhance the coping abilities of the poor to reduce their vulnerabilities. Product development has to

involve the clients and their needs to be addressed with flexibility.

- ✘ All health care needs can not be addressed by poor. Especially high cost tertiary care can not be afforded by poor hence the support from the state or other philanthropy organization is essential. ■

Development News

New Market for Cluster Bean

India's much neglected and little-known Cluster Bean (guar gum) now has a big export market. The cheapest legume, grown in dry and arid lands by poor farmers in Rajasthan, Haryana, Gujarat and Madhya Pradesh is priced low till few years back. Even now it is sold at less than Rs10/kg in some parts of India, where the farmers do not know its real market potential. Consumed as a vegetable and not so popular for its taste, the cluster bean also used to be a binding and thickening agent in edible products like ice creams and salad dressings. The present new market is due to the multibillion shale and oil gas drilling business in U.S, which has found the gel or hydrocolloid produced from cluster beans to be an excellent lubricant for the 'fracking' process. Fracking is used to extract gas trapped some 6,000 to 10,000 feet beneath the surface making hard shale rock more porous. Large amounts of water, typically three to five million gallons, are mixed with small amounts of chemical additives, sand and pressure injected into holes in the well bore forcing cracks in the surrounding rocks, allowing much more gas to flow back into the well bore. This has created a new market for cluster beans, benefiting thousands of small-scale farmers in India who produce 80 % of the world's bean. The guar gum now sells for anything between Rs 10,000

- Rs 30,000 a quintal. Jodhpur, In Rajasthan is the market center for guar bean and currently farmers of Rajasthan are reaping the benefits of this new market. A lot of contract farming options also has emerged, but the future depends how far the prices will remain to be high, since oil companies have already started looking for a cheaper alternative.



FPARP for enhancing crop productivity

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1. Background:

Based on the recommendations of the Sub Committee on "More Crop and Income per Drop of water" set up by the Ministry of Water Resources under the Chairmanship of Dr.M.S.Swaminathan, GoI has sanctioned the Farmers Participatory Action Research Programme (FPARP) for demonstrating the technologies available on shelf to the farmers for increasing the productivity and profitability of agriculture through generating synergy among water, crop, agronomic practices, soil nutrients, crop variety and implements etc. DHAN Foundation was one among the 63 Institutions, comprising Agricultural Universities / ICAR institutes / Engineering colleges / Water and Land Management Institutes including three NGOs selected for facilitating 5000 such demonstrations throughout the country. DHAN Foundation, a professional development organization working with one million poor families in 12 states for poverty alleviation is facilitating conservation and development of small scale water resources through its water thematic arm "DHAN Vayalagam(Tank) Foundation" for more than a decade. It focuses on effective rain water harvesting, efficient use of stored water and sustainable agriculture through nested people institutions organized for the purpose.

As proposed by DHAN Foundation, the ministry, has accorded sanction for conducting 88 demonstrations on five technologies for two crops seasons during the years 2008-2009 and 2009-2010. This paper brings out the significance of DHAN's approach in conducting these demonstrations successfully, their outcomes and DHAN's further efforts in facilitating the adoption of successful technologies by more farmers in nutshell.

2. Technologies selected for demonstration under FPARP and the approach:

DHAN Foundation striving for the uplift of poor intended to make use of the FPARP in favour of farmers engaged in rainfed agriculture characterized by poor



crop yield and intermittent crop losses and those served by rainfed tanks. Also, DHAN has considerable experience of facilitating the conservation and development of more than 1000 small scale water bodies such as tanks and ponds, and more than 100 watershed development works by organising nested people institutions. Hence, DHAN proposed to demonstrate the technologies to enhance the productivity and profitability of rainfed agriculture in addition to the technologies for the judicious use of water under rainfed tank systems. To ensure effective participation in practicing the selected technologies precisely and maintaining data on the cultivation practices including their costs, the farmers selected for demonstrating the technologies were required to share the cost of demonstration. The block level Farmers' Federations functioning with the techno-managerial support of DHAN were entrusted with the task of selecting the demonstration farmers, collection of farmers' share and arranging for disseminating the technology to more no. of farmers. The details of technologies demonstrated, unit cost and the farmers' share are furnished in the Table below.

The demonstrations were conducted in different parts of Tamilnadu and Andhrapradesh which are suitable for adopting the technologies and to cover wide range of farmers for picking up the technology. The locations of technologies demonstrated and the number of farmers exposed to the demonstrations are furnished in the table below.

Table: Details of technologies demonstrated and their unit costs

SI No	Description of Technology	Unit	Unit Cost (Rs.)			No. of units
			MoWR Share	Farmers' share	Total unit cost	
1	Identifying Nutrient enhanced Tank Silt by soil sampling & testing to apply in rainfed lands along with soil moisture retainers	ha	7,000	7,000	14,000	25
2	Land Reclamation to uproot Prosopis juliflora and Cynadon dactylon and to introduce Deep Ploughing	ha	8,750	10,000	18,750	19
3	Construction of farm pond and Integrated fish rearing	One Pond	34,800	10,000	44,800	40
4	Establishing rain gun in mobile unit to be used in community wells for practicing conjunctive use	ha	35,000	10,000	45,000	2
5	Introducing micro irrigation in rainfed tanks	ha	34,866	10,000	44,866	1

The demonstrations were conducted in different parts of Tamilnadu and Andhrapradesh which are suitable for adopting the technologies and to cover wide range of farmers for picking up the technology. The locations of technologies demonstrated and the number of farmers exposed to the demonstrations are furnished in the table below.

Table : Spread of demonstration locations

Technology No.	No. of demos. conducted	Blocks	District & State	No. of other farmers benefitted by visiting the demonstration areas
I	25	T.Kallupatti & Sedapatti Punganur Chityal	Madurai(TN) Chittoor (AP) Nalgonda (AP)	752
II	19	Mudukulathur, Kadaladi, Thiruppulani T.Kallupatti & Sedapatti Vilathikulam & Pudur	Ramnad(TN) Madurai (TN) Tuticorin(TN)	498
III	40	T.Kallupatti & Kottampatti Singampunari & Manamadurai Punganur	Madurai(TN) Sivagangai(TN) Chittoor(AP)	1075
IV	2	T.Kallupatti	Madurai (TN)	19
V	1	Mudukulathur	Ramnad (TN)	40

1. Response of farmers about the adaptability of technologies

a) Application of tank silt and soil moisture retainers in agriculture lands:

This is a traditional technology in rainfed agriculture; but not practiced for more than 4 decades due to risk of more loss in lieu of additional investment on tank silt and farm yard manure during the drought years. We have facilitated 25 demonstrations (15 in dry lands and 10 in lands having supplementary irrigation facility) on this traditional technology. For adopting this technology, 9 Cum. of FYM / 50 Cum. of coir waste along with 150–200 Cum. of tank silt (depending upon the location of the tank) per ha. were spread over the land area and ploughed. The crops raised were Bajra, Maize, Cotton, etc., mixed with pulses in dry lands. In garden lands ground nut, tomato, etc., were raised. The additional net income was in the range of Rs. 3000 /- to Rs. 7000/- per ha. in dry lands, while it was in the range of Rs.6000/- to Rs. 20000/- per ha. in garden lands. The application of tank silt with FYM also resulted in increased yield in the next crop season also. The results were much encouraging and healthier growth of crops (when compared to the nearby fields where no slit was applied) was visibly seen by the farmers who visited the demonstration fields. Additional yield of about 15% in dry lands and about 25% in irrigated lands have been noticed by the farmers. All the farmers in whose fields the demonstrations were conducted will follow this practice in future also. Many farmers who have seen the results expressed difficulties in procuring required quantity of farm yard manure locally due to reduction in household cattle population. They also demanded for subsidy for such technology to be practiced in rainfed agriculture involving risk of crop failure during drought years.

b) Land reclamation by taking up deep ploughing after the removal of prosophis / Cynadon dactylon for raising agricultural crops:

On this technology, 19 demonstrations (against the proposed 20 numbers) were conducted. Among these, 2 lands were supplemented with bore well irrigation. As the prosophis is cut for making charcoal once in 3-4 years, the average income per ha. per year ranges from Rs. 3000/- to Rs. 4500/-. By raising annual crop, the net annual income has raised to the range of Rs.



5000/- to Rs. 10000/- per ha. The crops raised were cotton, chilies, maize and etc., Farmers could get more income during the subsequent years. All the farmers who have implemented this technology and who have visited the demonstration areas agreed that the raising agricultural crops in their lands would give more income than the prosophis. But, they are worried about the risk due to monsoon failures and dearth of agricultural laborers. All the farmers who have started cultivating agriculture crops will continue to raise agriculture crops in their fields without allowing them to become fallow. The farmers of Ramanathapuram district where there is good market for charcoal made out of prosophis are still hesitating to adopt this technology. In Madurai & Tuticorin districts, the other farmers are willing to adopt this technology if subsidy is given to meet the high initial cost of removing the prosophis/ Cynadon dactylon.

c) Farm pond construction & integrated fish rearing:

For this technology, 40 demonstrations were conducted with active participation of farmers, and each one contributed Rs.10, 000/- expecting a good income from fish rearing in addition to farm income. The farm ponds were designed to a capacity of about 1000 Cum. with a minimum depth of 2 meters. But only about 15 farmers were able to harvest fishes to earn additional income, since the period of storage of water in Farm ponds was not sufficient to grow fishes to reach their normal weight. The Fish varieties reared were catla, rohu, mrigal and common carps. In the successful cases, the fish yield ranged from 70 to 210 kgs. The cost of fish rearing ranged between Rs. 1800 to Rs. 3700/-. But only about 15 farmers were able to harvest fishes to earn additional income, since the period of



storage of water in Farm ponds was not sufficient to grow fishes to reach their normal weight. In both the years of project period, the fish rearing period had to be extended in many ponds which received water due to the rains received during the month of January. Poaching has also become a problem in a few ponds. In general, though the results were not encouraging in a few ponds in the last 2 seasons, most of the farmers are hopeful of getting good additional income through fish rearing in future as they have learnt the techniques.

Since the farmers felt difficulties in lifting water from the farm pond for irrigating perennial or annual crops, the Farmers Associations have decided to purchase portable kerosene pump sets for the use of needy farmers by paying nominal hire charges. Accordingly, 17 such portable pump sets have been purchased from the contributions made by the farmers and they are used for irrigating crops in addition to rearing fish wherever possible.

The inference is that the fish rearing can be taken up only in farm ponds which can get adequate storage



of water for at least about six months from the nearby streams even during the years of normal rainfall. Otherwise ponds have to be used for dry land Horticulture development by supplementing irrigation from farm ponds.

d) Rain gun installation in community wells in the tank command areas for practicing conjunctive use of ground and surface water:

For practicing conjunctive use of surface and ground water, sprinkler system was installed to cover 2.00 ha owned by 9 farmers with close proximity to the community well rehabilitated by DHAN Foundation in the command area of K.Meenakshipuram tank in Madurai district by availing the free electrical power supply for 5 HP pump set. The sprinkler system was preferred than the rain gun due to the reasons i) Rain gun is to be operated with 7.5 HP pump set, but the available power supply was only for 5 HP ii) The farmers objected to the provision of rain gun as the force of its spray may be harmful to the crops in their flowering stage.

Though the system was installed in time, due to technical problems, the system could be put into use only during the second crop season. Out of nine farmers covered under this demonstration, two have kept their land fallow fearing crop failure during that year. So trial was done with 7 farmers by giving 3-6 irrigations through sprinklers with initial 3 irrigations from the tank. The farmers were able to get successful harvest though the tank went dry with effect from 10.11.2009 when the crops were nearing milking stage.

The farmers felt happy about the use of the system as it can cover more area with available water in the well in addition to saving of water in the tank. But this facility could be provided only to a part of the command area in the head reach and hence the uncovered farmers become aggrieved. However, they are also satisfied as the water saved in the tank because of conjunctive use could be useful for them. If the community wells are located in the tail reach of the command area, the micro irrigation system will be useful for tail end farmers who suffer many times for want of irrigation in the fag end of the crop period.

Initially farmers faced difficulties in shifting the portable pipes and sprinklers from one area to another. In due course the system will be useful both directly

and indirectly as the farmers are more enthusiastic about the utilization of the system by working out an agreeable rotational water supply schedule.

It is suggested that private well owners in the tank command area are to be motivated for installing micro irrigation systems for their wells for practicing conjunctive use of water for enhancing the water use efficiency in the tank command areas.

e) **Introduction of Micro Irrigation in rainfed tank system:**

The farmers were highly interested in the introduction of micro irrigation in their tank system due to inadequate water resource, and fully participated in laying PVC main pipes and sub mains below the ground covering the entire command area of 23 acres owned by 40 farmers. But the system operated with 8 HP diesel engine pump set could not function satisfactorily due to high turbidity of tank water all the time in addition to high operational cost. Farmers prefer to adopt this technology if electrical power connection could be provided to the pump set in addition to finding a solution for reducing the turbidity of tank water.

4. **Facilitating the adoption of proven technologies by more farmers**

In general, all the farmers including those who visited the demonstration areas were convinced about the advantages of the first three technologies demonstrated since the users were able to get more crop yield and additional income. They are willing to adopt these technologies, if adequate subsidy is given because of the additional investment cost to be incurred in the risky rainfed agriculture. Many farmers (both irrigated and rainfed) justify their demand for subsidy with the following reasons:

Prices of their produces have not increased in line with the prices of other commodities and goods they consume. So, their net income will not be improved inspite of additional crop yield obtained by adopting the technologies. Also they have to incur more losses because of the additional investment made for adopting the technologies during drought years.

Because of the implementation of MG NREGA, a new labour force has emerged and they earn more wages for lesser work. As such, cost of agricultural labour has gone up very high and farmers could not get

adequate farm labourers in the time of need at reasonable wages.

Taking note of the economic problems faced by the farmers, DHAN has made efforts to popularize the use of the proven technologies by arranging easy loans to willing farmers through the Farmers' Federations. Making use of the Umbrella Programme on Natural Resources Management (UPNRM) extended by NABARD, DHAN has facilitated the sanctioning of loan to 307 farmers (Rs.38.53Lakhs) for taking up tank silt application, to 846 farmers (Rs.128Lakhs) for land development, and to 16 farmers (Rs.1.45Lakhs) for constructing farm ponds. After seeing the results, few other farmers also adopted these technologies by making their own financial arrangements. Such enthusiasm of the farmers to avail loans for adopting the technologies is an indicator for the success of the demonstrations facilitated by DHAN Foundation under FPARP.

5. **Way Forward**

Since the dry land farming is associated with inherent risk of crop failures depending upon the monsoon rains, Government may provide subsidy for adopting proven technologies which require additional investment. Further research is needed to devise a mechanism for reducing the turbidity of tank water and appropriate micro irrigation techniques suitable for tank irrigation systems. ■

Development News

Funds for Youth Skill development

Government is implementing a scheme for skill development in the youths of left wing extremism affected areas in the country. The scheme is being implemented in 34 districts of nine states at a cost of around Rs 233 crore. These states include Andhra Pradesh, Bihar, Jharkhand, Odisha, Chhattisgarh, Madhya Pradesh, Maharashtra and West Bengal. Around Rs 69 crore have already been released to eight states under the scheme. The programme has been formulated by the Directorate General of Employment and Training of Labour and Employment Ministry and it came into operation in the financial year 2011-12. Under the scheme, 34 ITIs and 68 Skill Development Centers are proposed to be established with central assistance to provide long term and short term training.

Reviving traditional foods

M. Karthikeyan* & M. Palanisamy **

Background

India is known for "silent hunger", a catchy phrase meaning nutritional insecurity, especially in its poor and rainfed areas. Fortunately nutritious small millets are grown in such areas and these crops have immense potential for providing nutrition to poor under-nourished people and for improving the general health of the public. Unfortunately, consumption of these millets is decreasing due to various socio-economic factors and changes in agriculture scenario. These crops have been less promoted and researched when compared to other crops. One of the important reasons for decline in consumption of small millets is shift in preference towards other food crops, especially by the current and young generation. It is a challenge to any entity involved in promoting small millets for addressing silent hunger, to bring the attention of the consumers towards food products made of small millets.

In this endeavour, the logical starting point is understanding the small millet recipes currently available and those that were present in the recent past, in the areas where promotion is planned. Further understanding the small millet recipe in a particular place is important because recipes epitomize how a community values a particular food crop/plant, in terms of its functional value (as staple food, snacks, medicine, religious value, etc.) under the prevailing climate and with reference to availability of this and other companion food items. As the ecology and worldviews related to these factors change over the years, the recipes in vogue are also going through various changes. A study of the prevailing and recent past small millet recipes helps in understanding these factors and thereby creates a background understanding for promotional efforts. For this reason and given that knowledge of these recipes--which are part of indigenous knowledge of women--is eroding over the years, documenting the recipes is by itself important. Further, the results of such a study can feed into research activities needed regarding promotion of nutritious recipes for addressing silent hunger. One of the methods of documenting the recipes

in an area is recipe contest, which was conceptualized and implemented by the Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI), mainly for documenting the medicinal values of recipes.

A recipe contest is a participatory method of bringing to the public and giving visibility to the individual knowledge holders of the recipes in a particular area. It is an event where the knowledge holders on recipes are motivated to compete with each other in sharing their knowledge by presenting their recipes, and where their knowledge would be acknowledged in public by the organizers and other participants. Further, the recipe contest also serves as a platform for affirming the role of women as holders of important knowledge on food and nutrition, for facilitating cross learning on recipes across the participants, and for impressing on the local community the importance of the traditional recipes.

Recipe contest in RESMISA project

The purpose of Revalorizing Small Millets in the Rainfed Regions of South Asia (RESMISA), an action research project, is to enhance the production and daily consumption of nutritious small millets and associated pulses and oil seeds (SMACs) in rainfed regions of India, Nepal and Sri Lanka, to address the nutrition insecurity rampant in these regions. It proposes to do this by using participatory research approaches to understand and address social, economic, environmental and cultural constraints related to SMACs production, distribution, and consumption. Given this purpose and approach, any research for promoting consumption has to build on the existing knowledge base, an important one being indigenous knowledge of the community itself where promotion is expected to happen. It is expected that the indigenous knowledge of the community related to recipes are expected to feed into some of the research activities planned further like understanding the health benefits and standardization of traditional recipes, prioritising traditional recipes for popularizing in the sites and research on new healthy recipes. For this reason, the recipe contest is considered as an important research

method in the RESMISA project. A small millet recipe contest was organized in Anchetty, Dharmapuri District, one of the sites identified for RESMISA project in Tamil Nadu. The contest was organized with the following objectives:

- a) To document the traditional SMACs recipes in terms of their composition, method of preparation and use value.
- b) To facilitate knowledge exchange among project participants.
- c) To promote awareness about small millets and the benefits of their consumption.
- d) To motivate women by acknowledging them as knowledge holders of traditional small millet recipes.

Process followed

The local community was given the message about the recipe contest and invited to participate through communication in group meetings, announcements through loudspeakers in auto rickshaws and distribution of pamphlets. Further efforts were taken to identify knowledgeable women and motivate them to participate in the contest. The message was that the participant with large number of SMAC recipes will be honored in the event. Mr. Vivekanandan, SEVA, and Dr. Shaileshkumar Shukla, University of Winnipeg, supported the DHAN Foundation team in conceptualising and conducting the event. The event was organized in an easily reachable community hall in Anchetty. Local knowledgeable persons were selected as jurors for the competition before the event. Display tables, cups and plates were arranged to facilitate easy display and visual documentation. A documentation team was set in place for timely documentation of the recipes displayed. The Centre for Development Communication team of DHAN was invited for video documentation of the event.



A welcome and introductory speech was made to orient the participants about the purpose of the recipe contest, share the agenda, and get their oral consent. The participants displayed their recipes, which were numbered and had their names displayed in English and regional language. Documentation related to composition, method of preparation and use value was taken up by the documentation team. Simultaneously jurors evaluated the recipes. The jury gave scores on a maximum scale of 10 each for 3 selected criteria: quality of ingredients, use of recipes, and taste of recipes. Based on scores (out of 30) winners were chosen for distributing prizes. After the evaluation, the participants were allowed to taste the recipes displayed by the contestants. Simultaneously, an FGD with the participants was conducted. After the display session, there was a discussion about the recipes displayed and the recipes that were not displayed in the event. The overall process, number of participants, number of entries and number of recipes were briefed to the participants. The significance of the results and the follow up activities needed were shared to the participants. Then the winners were announced by the jury and they distributed prizes to the winners. The recipe contest ended with thanking the contestants and enjoying a sumptuous SMAC meal.

Recipes displayed in the contest

In Anchetty there were 115 displays comprising 75 recipes by 14 contestants and 102 participants, which included participants from Kodihalli, a nearby village in Karnataka. Of the total 75 recipes displayed, 42 were prepared using SMACs. Recipes of finger millet (ragi), horsegram (kollu), field bean (avarai), niger (uchel), other millets and cereals were displayed. The displayed items can be categorized in many ways as given in the table below.



Table 1 Classification of recipes

Aspect	Type	Modernity	Prevalence	Main ingredients
Classification	☒ Meal	☒ Traditional	☒ Ordinary	☒ Finger millet based
	☒ Snack	☒ Modern	☒ Rare	☒ Horsegram based
	☒ Side dish			☒ Niger based
	☒ Sweet			☒ Other millets and cereals based

Table 2 Type and main ingredient of recipes displayed in Anchetty recipe contest.

Crop	Type	Name of recipe
Finger millet	Meals	Ragi rotti, Ragi dosa, Idli, Kali, Puli kali, Idiyappam, Uppuma, Onion dosa, Kara rotti, Rotti made of sieved flour, Ragi koozh, Sandhu kali, Kulukaladai, Ragi mavu
	Snack	Ragi murukku, Ragi kolukattai (Karam), Onion bajji, Potato bajji, Bonda, Pakoda
	Side dish	Ragi kootu
	Sweet	Halwa, Kolukattai, Nei mavu, Ragi ellurundai
Field beans	Snack	Avarai kottai, Avarai paruppu
	Side dish	Avarai kolambu, Avarakottai and Palakai poriyal, Avarakottai and Palakkai kulambu, Avarai poriyal
	Sweet	Avarakottai payasam, Avarakottai + poosanikai payasam
Horsegram	Snack	Sundal, Moringa greenleaves and Horsegram sundal
	Side dish	Kollu chatni, Kollu paruppu kolambu - fried
	Sweet	Kollu + jaggery flour
Niger	Side dish	Uchel chutney, Uchel podi
Proso millet	Meals	Pani varagu puli choru
Others	Meals	Muthucholam koozh, Pulungalarisi cholam koozh, Kamban koozh, Kambarisi, Kotta nel arisi soru
	Snack	Sorghum popped grains, Kadalai sundal, Fried kernels of groundnut, Redgram sundal, Cowpea sundal, Vilangai, Ellu kollukattai, Puliankottai fried, Redgram moringa sundal - fried, Mixed sundal - kollu, cow pea and redgram
	Side dish	Kadalai chutney, Kadalai kottai podi, Pavu - coconut milk, sugar, Puli Kolambu, Puli saru, Molaga kolambu, Redgram kolambu, Rasam
	Sweet	Redgram payasam, Redgram+jaggery mavu, Cowpea+vellam mavu, Ellu kolukattai, Kadalai+ vellam, Sesame ball, Mixed cumbu+sorghum+Rice - sweet mix, Sorghum sweet ball

The winner of the contest, Mrs. Kaliaamma from Bedrahalli village, needs a special mention here, as she brought large varieties of SMACs recipes. She was selected for the first prize among 14 contestants by a 3 member jury constituted with one school teacher, one herbal healer from Devanthotti village (Mr. Thappa Koolappa) and one knowledgeable woman from the community. The following table depicts the recipes displayed by the first prize winner and their translated names.

Table 3 List of recipes displayed by the winner of the contest

No.	Name of recipe	Common name
1	<i>Cholakoozh</i>	Sorghum gruel
2.	<i>Kammankoozh</i>	Bajra gruel
3.	<i>Ragi urundai</i>	Ragi ball
4.	<i>Vilangai</i>	Vilngai pod vegetable curry
5.	<i>Ragi nei mavu</i>	Ragi + ghee flour
6.	<i>Ragi yel urundai</i>	Ragi+gingelly balls
7.	<i>Boli (- Thadanikottai - Kollu)</i>	Boli – Cowpea & horse gram
8.	<i>Ragi pavu</i>	Ragi sweet
9.	<i>Thadanikottai Sabji</i>	Thadanikottai (Cowpea vegetable)
10.	<i>Yellu kolukattai</i>	Gingelly + ragi kolukattai
11.	<i>Puliyangottai</i>	Boiled tamarind seeds
12.	<i>Avaraikottai poriyal</i>	Field beans curry
13.	<i>Kollu sundal</i>	Horsegram steamed
14.	<i>Solappori</i>	Sorghum pori
15.	<i>Palakkai kolambu</i>	Jackfruit curry
16.	<i>Ragi rotti + Uchellu chutney</i>	Ragi sappathi + Niger chutney
17.	<i>Payaru koottu -4 types</i>	4 types of pulse curry
18.	<i>Kambarisi</i>	Bajra rice
19.	<i>Varagu choku</i>	Kodomillet rice
20.	<i>Kottainel soru</i>	Ordinary rice from Traditional Paddy variety (Kottainel)
21.	<i>Kadalai + vellam urundai</i>	Groundnut + rice + jaggery ball
22.	<i>Thuvaramkottai + Murungai keerai</i>	Redgram + Moringa leaves green vegetable
23.	<i>Verkadalai fried</i>	Groundnut roasted
24.	<i>Avaraikottai paruppu</i>	Field bean fried prepared after soaking in water
25.	<i>Santhukali</i>	Ragi stringhopper
26.	<i>Uchellu powder</i>	Niger + gram powder
27.	<i>Ragi puliurundai</i>	Ragi + Tamarind ball

Outcomes

The following were the outcomes of the recipe contest in Anchetty:

- 1) The event helped in documentation of more than 75 traditional recipes of which 42 were SMAC recipes.
- 2) There was a sensitization among the community regarding the small millet recipes. The event served as a platform for women to display their knowledge.



The participants enjoyed the various recipes made out of millets and the plates were almost empty at the end of the event as all participants tasted the recipes. All participants enjoyed the event both intellectually and as a ‘taste’ event.

- 3) Women were motivated by being honored for their knowledge and skills on small millet recipes.
- 4) There was exchange of knowledge about recipes among participants, especially with youth.
- 5) The contest has created a knowledge base for further research, which can look at the suitability of the recipes documented for further promotion in the site and in other sites.

Important insights

- ✘ There are huge possibilities of shortlisting of the displayed products for promoting attractive products. For example the product “*averoti*” (meaning “steam boiled roti”) can be stored for few days, indicating the possibility of long shelf life ready-to-eat meal types of millet based recipes. Similarly, tongue tingling dishes like “*ragi nei mavu*” (meaning “finger millet ghee flour”) could be developed into commercial products and health products for children.
- ✘ The efforts put up by the individual contestant for such an event is very high. The winner had brought 27 recipes by 10 AM, which means she and her family would have worked late the night before the event. There were four other contestants who had brought more than 15 recipes each. It is an indication that people can do much for a social cause and for social recognition. Further, it sparked creativity among the participants in making new recipes of finger millet, which were not present earlier like the “ragi onion bajji”.
- ✘ The recipes displayed indicated the immense ability of people to use different ‘permutation combinations’ of (a) ingredients and (b) preparation methods for meeting various needs like (a) main food, (b) side dish, (c) sweet and (d) snacks.
- ✘ The recipes displayed by the contestants are only part of the rich knowledge base of women in the site, as the participants were from few villages. The outcome of the contest could have been different if

conducted in a nearby locality. It shows that there is much more to explore on the indigenous knowledge about recipes.

- ✘ There was difference in communication between the villages. In Kodihalli people were informed to “bring millet based recipes for display”, while in Anchetty people were informed to bring as many recipes as possible and a competition based on the number of recipes prepared was the main message. Hence people from Anchetty brought more recipes than Kodihalli. This underscores the need for uniform communication across the villages.
- ✘ The rare recipes not commonly used by the local community needed to be weighed more in scoring than the common recipes, as their contribution to recipe knowledge documentation of the community by the recipe contest is more significant.

Way forward

The recipes displayed by the contestants are only part of the rich knowledge base of women in the site on small millets based recipes and further exploration is needed to document the left out recipes. It was planned to have FGDs to understand the transmission of knowledge related to recipes with some of the contestants. The documented knowledge will be fed to the food and nutrition research team of RESMISA to help in their further research on standardization of traditional recipes, prioritising traditional recipes for popularizing in the sites and research on new healthy recipes. The event organized in Anchetty served as a prototype; based on that experience, templates for agenda,



Anaemia control through behavioral change

Camillus S Juliana*

The "Behavioural Change Communication for Anaemia Control among Adolescent Girls and Pregnant Women using Behaviour Change Communication as a Strategy" was initiated by the State Health Society, Tamil Nadu (TNSHS), of the Government of Tamil Nadu in five blocks: Bodinaickanur (Theni district), Kottampatty (Madurai district), Mudhukulathur (Ramanathapuram district), Shanarpatty (Dindigul district), and Thiruvidadimaruthur (Thanjavur district) of Tamil Nadu in October 2008. The implementation of this pilot project was entrusted to DHAN Foundation, Madurai. On completion of the project, the end-line evaluation was carried from the end of July until the middle of August 2011. Both the baseline and end-line evaluations were entrusted to Tata-Dhan Academy (TDA), Madurai on the approval from TNSHS.

A total of 1,770 adolescent girls and 1,378 pregnant women were the samples in the end evaluation survey selected through random sampling techniques. Information on haemoglobin (Hb) levels, and knowledge, attitude, and practices relating to anaemia among both adolescent girls and pregnant women were obtained in both baseline and end evaluation surveys using the same tools and techniques. The data collectors for this evaluation were selected from women who had completed 10th/12th standards and were living in the project blocks. They were specially trained for this evaluation. The findings of the evaluation are as given below.

Change in Anaemia Prevalence

Decrease in the prevalence of anaemia from 85.8% to 54.4% among adolescent girls indicating a decrease of 31.4 percentage points.

There was also a reduction of very severe anaemia prevalence among adolescents from 0.4% to 0.0% as well as a significant decrease of severe anaemia prevalence from 13.1% to 0.5% and a decrease of moderate anaemia prevalence from 40.9% to 14.0%.



There was a corresponding significant increase in normal Hb prevalence from 15.3% to 45.6% as well as a non-significant increase among mildly anaemia prevalence from 30.3% to 39.9%.

Adolescent girls in the end evaluation had their Hb assessment done before intervention; hence, their mean Hb was compared. The mean Hb among adolescent girls increased from 9.814 g/dl before intervention to 11.3 g/dl after intervention for the end evaluation subjects. The minimum Hb increased from 3.5 g/dl to 7.0 g/dl and the maximum Hb from 13.2 g/dl to 13.5 g/dl.

There was a significant decrease in anaemia prevalence from 86.7% to 59.4% indicating a decrease of 27.3 percentage points among pregnant women. There were no cases of very severe anaemia in either the baseline or end-line evaluation among pregnant women. There was a decrease in severe anaemia prevalence from 3.6% to 0.4% as well as a significant decrease in moderate anaemia prevalence from 58.7% to 13.4%. There was also a significant increase of mild anaemia prevalence from 24.5% to 45.7% among pregnant women.

Pregnant women in the end-line evaluation had their Hb assessment done before intervention. There was also an increase in the mean Hb among pregnant women

from 9.8 g/dl before intervention to 10.6 g/dl, with the minimum increasing from 6.0 g/dl to 6.5 g/dl and the maximum increasing from 13.5 g/dl to 14.0 g/dl for the end-line evaluation subjects.

Changes in Knowledge

Adolescent girls and pregnant women demonstrated a significant increase in knowledge relating to anaemia with particular respect to definition, method of detection, signs and symptoms for adolescent girls, causes, consequences for adolescent girls and pregnant women, and measures to be taken to prevent and cure anaemia; the increase was highly significant between the baseline and end-line evaluation. A significantly larger number of adolescent girls and pregnant women could state the normal Hb level and places where Hb is tested and weight is taken. They had increased knowledge on IFA tablets, the frequency of IFA tablets to be taken, places where it is obtained free, its side effects, and iron-rich foods. They had complete knowledge on entry of hookworm (HW) and understood the advantage in the use of footwear after the intervention.

Changes in Attitude

There were significant positive changes in attitudes relating to most areas of anaemia among both adolescent girls and pregnant women because of the intervention.

Changes in Practice

Although there were highly significant changes observed relating to knowledge on and attitude towards anaemia, varying levels of practice changes were observed. Significant changes were observed in antenatal care (ANC) registration, the number of ANC visits, Hb testing, weight taken, the month of starting IFA, wearing footwear while going out, and consumption of IFA. There was no significant increase in practices relating to using toilet among pregnant women in the prevention of anaemia. Consumption of iron-rich foods like greens, tomatoes, cabbage, ragi, dates, guava, jaggery, meat, and fish were found to have considerably increased.

Effectiveness of BCC Strategy

The behaviour change communication (BCC) strategy adopted in this project for adolescent girls and



pregnant women included methods such as education in village-level meetings of self-help groups (SHGs), meetings of adolescent girls' groups, cultural programmes in villages, family and individual counselling, and peer education. BCC materials such as flip charts, posters on anaemia concepts, hoardings with anaemia concepts, and handbills were used. The posters and hoardings were placed in all the Primary Health Centres (PHC) of each block. There was an exhibition booth covering all the anaemia concepts through pictures. A handbook on anaemia was prepared and circulated.

Meetings of adolescent girls' groups were conducted in monthly intervals. The project had developed systems to ensure the regularity of the group meetings and training programmes and to procure IFA from government health departments and distribute them to the target group. Conventions of adolescent girls were conducted in all the project locations. The Kalanjiam SHGs and their federations in the respective blocks were found to be taking an active role in disseminating knowledge regarding anaemia and inducing changes in practices.

The increase in knowledge is an indication of the effectiveness of the BCC methods used. The strengths identified were a clear-cut approach in design, committed financial and human resources, interaction by the government team, the DHAN infrastructure, rigorous, effective and regular training, and a good monitoring and review system. The BCC materials were very valuable.

Recommendations

The following are the broad recommendations arising from the findings of this evaluation.

1. The BCC methods used in the project are found to have a positive effect in changing the behaviours of the target group. The appropriate BCC materials, methods and approaches backed by proper monitoring could be adopted in other blocks of the state to ensure desired results in anaemia reduction.
2. The role of existing SHG federations in implementing the project activities was found to be crucial in the project locations. Familiarity and trust already built among the public by these community organisations have been critical in achieving desired behavioural changes. Similar projects in the future could be implemented by involving civil society organisations like SHG federations.
3. Efforts need to be taken to make the Village Health and Sanitation Committee active. To ensure the effective functioning of VHSCs, the Health Department should take advocacy steps within government policy making levels to ensure that there is periodic planning and review meetings; these should be monitored regularly by the District Collector supported by the Block Development Officer (BDO) and BMO jointly so that the prevention and control of anaemia is possible.
4. To ensure similar levels of impact on anaemia control in other areas, IFA tablets should be made available on time without any break especially for adolescent girls.
5. To assess whether pregnant women maintain normal Hb concentration at the time of delivery, the Hb concentration of individual pregnant women must be regularly measured preferably in the fourth month (early months) and after the seventh month.
6. Households in rural areas do not have toilet facilities (70%) and people use open air defecation. Hookworm infestation contributes to anaemia prevalence. The Health Department should utilize existing linkages in the Total Sanitation Programme for construction of household toilets. Simultaneously, toilet use must be promoted using creative approaches even while recognizing the repeated failure in constructing toilets.
7. Consumption of iron-rich foods must be promoted for adolescent girls and pregnant women by promoting kitchen gardens and growing trees and plants rich in iron such as, moringa, guava, mint, and green leafy vegetables. Frequent consumption of these items should be promoted. Mint is rich in iron, hence mint chutney may be used with rice, dosai, and idly.
8. Ragi is a good source of iron, but its use has declined over the years; it might be worthwhile considering making ragi available through the Public Distribution System (PDS). It is important to stress that ragi is an iron-rich food and to encourage people to use it as often as possible. Ragi can be used in making kulu, kanji, roti, dosai, puttu, laddu, and many other items. Ragi biscuits can be promoted through bakeries. This region of Tamil Nadu does not use ragi as much some other parts.
9. While health care delivery at the Health Sub Centre (HSC) level covers a number of areas which will have to be continued, anaemia control should be focused in planning and exclusively reviewed as a special component under the Reproductive and Child Health (RCH) project.
10. Based on the experience gained, a manual should be prepared clearly specifying the anaemia control programme to be implemented with objectives, methods of working, the records to be maintained, and the MIS developed for the programme. It should also include the BCC messages for adolescent girls and pregnant women separately. The roles and responsibilities of each government health worker for the prevention and control of anaemia should be defined; the lines of authority and support should also be defined. The various formats developed for different tasks should also be presented. Staff at different levels could be trained using this manual. This would facilitate for the replication of the pilot project.
11. This pilot project needs to be replicated throughout the state as the intervention resulted in more than 20% reduction of anaemia prevalence among both adolescent girls and pregnant women.

Draft National Water Policy 2012 - A review

S. Ramesh *

The Need for a National Water Policy

An incident that happened in 1995 remains afresh in my mind even after all these years. I and my friend were shopping in a busy area in Coimbatore. We happened to see a posh car stopping nearby and two hands came out of its window, one hand washing the other with a 1 litre can of mineral water freshly purchased by the driver from a shop. Rich can afford for mineral water, to wash their hands and even for taking bath. What if poor were made to pay for the water they use? The draft National water policy has gone into two revisions in May and then in July, after being tabled for first time in January due to much protest on treating water as an economic good and favoring privatization. Nevertheless the soul of the draft remains intact, except for few accommodations to satisfy those who voiced against favor towards private bodies. There is all likely- hood that water may become a rationed commodity in future. You have to pay for excess water, that you consume after meeting your basic domestic, sanitation and agricultural needs.

A national level legal framework to control water use and prevent interstate, intrastate and regional water conflicts is no doubt imperative. India with a population of above 1.3 billion (17% of the world population) has only 4% of worlds renewable water resources. The geographical area of India is 329 Mha of which is 180.6 Mha is arable. A total area of 142 Mha is net sown area, of which 57 Mha is irrigated area. India has the largest irrigated area in the world. The total drainage area of India is divided into 24 basins of which 13 major basins have a drainage area more than 20,000 km². As per present estimate, India receives on average annual precipitation of about 4000 Billion Cubic Meter (BCM), which is its basic water resource. Out of this, after considering the natural evaporation- transpiration, only about 1869 Billion Cubic Meter (BCM) is average annual natural flow through rivers and aquifers. Of this, only about 1123 BCM is utilizable through the present strategies, if large inter-basin transfers are not considered. Thus, the availability of water is limited but the demand of water is increasing rapidly due to growing population, rapid urbanization, rapid industrialization and economic development.



Courtesy: indiawaterportal.org

Dry rivers across the country and their pollution by solid waste, pollution by effluents, over exploitation of groundwater resources, inadequate sanitation, growing water conflicts, lack of holistic and inter-disciplinary approach in water management, improper decision making by public agencies, changing characteristics of catchment areas due land use and land cover changes, salinization and changing rainfall pattern due to climate change warrants such a regulation. Making the public aware about the water issues and use it judiciously is the need of the hour.

Table.1 Water Demands for Various sectors in 1998 and 2025 in India(Billion Cubic Meters)

Sector	1988	2025	2050
Irrigation	524	618	807
Domestic use	30	62	111
Industrial use	30	67	81
Inland Navigation	0	10	15
Power	9	33	70
Environment	0	10	20
Evaporation losses	36	50	76
Total	629	850	1,180

Source: Report of the NCIWRDP (1999)

What the National Water Policy draft 2012 says??

Highlights of the draft national water policy is given below

- ✿ Planning, development and management of water resources need to be governed by common integrated perspective considering local, regional, State and national context, and keeping in view the human, environmental, social and economic needs.
 - ✿ Water needs to be managed as a common pool community resource through a National level legal framework, under public trust doctrine to achieve food security, livelihood, and equitable and sustainable development for all. Existing water Acts may have to be modified accordingly.
 - ✿ Water is essential for sustenance of eco-system, and therefore, minimum ecological needs should be given due consideration.
 - ✿ River basins are to be considered as the basic unit of all hydrological planning. Inter-basin transfers of water to be considered on the basis of merits of each case after evaluating the environmental, economic and social impacts of such transfers.
 - ✿ Climate change adaptation strategies like increasing the water storage various means, better water use efficiency, proper demand management, incorporate coping strategies for possible climate changes during formulation of mega water projects and enhancing the capabilities of community to adopt climate resilient technological options is advocated.
 - ✿ Enhancing the water available for use through status assessment of water resources every five years, direct use of rainfall and avoidance of inadvertent evapo-transpiration , mapping of aquifers to know the quantum and quality of ground water, arresting exploitation of ground water and considering the river basins as basic hydrological units of all planning's is advocated in the policy.
 - ✿ Integrated watershed development activities with MGNREGA to extent possible to reduce sedimentation yield and increase water productivity.
 - ✿ Water footprints, and water auditing should be developed to promote and incentivize efficient use of water.
- 
- ✿ Recycle and reuse of water, including return flows, should be the general norm and incentives for the same to encourage practice.
 - ✿ Water saving in irrigation use is of paramount importance and heavy underpricing of electricity which results in both wastage of water and electricity to be regulated
 - ✿ The draft also says that "For the pre-emptive and high priority uses of water for sustaining life and ecosystem for ensuring food security and supporting livelihood for the poor, the principle of differential pricing may have to be retained. Over and above these uses, water should increasingly be subjected to allocation and pricing on economic principles"
 - ✿ A Water Regulatory Authority (WRA) should be established in each State to fix and regulate the water tariff system and charges(on volumetric basis). Water Users Associations (WUAs) should be given statutory powers to collect and retain a portion of water charges, manage the volumetric quantum of water allotted to them and maintain the distribution system in their jurisdiction.
 - ✿ Conservation of river corridors, water bodies and infrastructure by preventing encroachment and diversification of water bodies and restoring them to the extent feasible avoiding urban settlements in upstreams and controlling pollution of water bodies through stringent punitive actions.
 - ✿ In planning and implementation efficiency benchmarks to be prescribed, done in ecological, social and climate change perspective and they should be time bound to avoid economic losses. Local governing bodies like Panchayats,

Municipalities, Corporations, etc., and Water Users Associations, wherever applicable, should be involved in planning of the projects.

- ✱ Proactive measure like flood forecasting, coping mechanisms in place and relevant control measures to prevent flood and drought are to be planned
- ✱ Removal of disparity in water supply urban and rural areas, tapping surface water for urban domestic water supply and integrating water supply and sewage treatment schemes will be given priority.
- ✱ A permanent Water Disputes Tribunal at the Centre should be established to resolve the disputes expeditiously in an equitable manner. Apart from using the "good offices" of the Union or the State Governments, as the case may be, the paths of Arbitration and Mediation may also to be tried in dispute resolution.
- ✱ Water resources projects and services should be managed with community participation. Wherever the State Governments or local governing bodies so decide, the private sector can be encouraged to become a service provider in public private partnership model to meet agreed terms of service delivery, including penalties for failure.
- ✱ The draft facilitates international agreements with neighboring countries on bilateral basis for exchange of hydrological data of international rivers on near real time basis.
- ✱ All hydrological data, other than those classified on national security consideration, should be in public domain. A National Water Informatics Center should be established to collect, collate and process hydrologic data regularly from all over the country, conduct the preliminary processing, and maintain in open and transparent manner on a GIS platform.

Merits and demerits of the policy

Merits

- ✱ The policy deserves accolade for its ecological, climate change and conservational perspective.
- ✱ Adaptation to climate change and the statement that special attention will be given towards mitigation at micro-level by enhancing the capabilities of community to adopt climate resilient technological options is welcome.

- ✱ The revision of the statement "water, over and above the preemptive need for safe drinking water and sanitation, should be treated as an economic good so as to promote its conservation and efficient use" in the initial draft to "Water, after meeting the preemptive needs for safe drinking water, sanitation and high priority allocation for other domestic needs (including needs of animals), achieving food security, supporting sustenance agriculture and minimum ecosystem needs, may be treated as economic good so as to promote its conservation and efficient use" can be welcomed in the perspective that agriculture was given importance.
- ✱ The statement that "inter-basin transfers of water should be considered on the basis of merits of each case after evaluating the environmental, economic and social impacts of such transfers" seems to understand the difficulty in interlinking rivers and its possible negative impacts.
- ✱ Growing water conflicts warrant a permanent "Water dispute tribunal", which is taken care off in the draft.
- ✱ Underpricing of electricity is no doubt a reason for wastage of both water and electricity. Importance to regulate this is given in the draft which can be appreciated.

Demerits

- ✱ The policy sees water as a community resource, but also treats water as an economic good which is contradictory. Approaching water as an income generating resource by the government, must be executed very carefully. The policy allows for public private partnership model and also asks the states to exit the "service provider role" and play as a regulator, which will lead to distortion of access to water and the prices in long run. As usual with the other policies, the poor will be at the receiving end.
- ✱ Doing away with priorities mentioned in the earlier drafts (1987 and 1992 drafts lists the priorities as drinking water, irrigation, hydropower etc) will cause confusion in decision making process and facilitate the role of parties with vested interest (e.g., providing flexibility for allocating water for industrial use even at the cost of agriculture).

- ✱ The water policies were there in paper since 1987, but nothing much has been done practically to ensure judicious use of water, to prevent encroachment of water bodies or growing exploitation of ground water resources. For e.g., As per clause 3.3 of the 2002 policy, water resources development and management will have to be planned for a hydrological unit such as drainage basin as a whole or for a sub-basin, multi-sectorally, taking into account surface and ground water. "This has not translated into even one example of planning for a basin or even one instance of planning for surface and groundwater together," says Chetan Pandit, former member (Policy and Planning) of Center water Commission.
- ✱ Giving incentives for recycle and reuse of water is in the favor of industries. Instead of incentives, strict enforcement of punitive laws to punish those industries that neglect water and pollute it should be the ideal option
- ✱ The draft policy, also wants to take away proprietary rights on water, which means no one can take ownership of ground water in a private land. Though it seems a good move, practically it may affect use of water for agriculture also unless it is further clarified.
- ✱ Intra-state and inter-state water conflicts exist and the already constituted tribunals could not find a solution to this (Cauvery water tribunal for example). Water issues are very sensitive and unless proper understanding among people within states and inter states is created, conflicts will continue to occur.

To Conclude

Water, food and shelter are the basic amenities for every human being. Hence, drinking water and water for agriculture should be ensured as a right of every Indian. Though population growth is stated as the general reason for increased demand for water, there are many other basic reasons underneath like wastage of water, less importance to recycling, exploiting the natural resources and lack of attention to maintain water storage structures and other water harvesting technologies. Above all, the corruption that has rooted in the water management practices like in other departments remains as a potential threat to the water

security of the country. All living beings on the earth, live by using the existing resources. Man is the only animal, who lives by exploiting those resources. The result of continuous exploitation of these resources will result in a large social unrest in long run, leading to further conflicts, barbaric acts, growth in terrorism and large scale wars. The growth of conflicts over water in the recent years across states and terrorism in north eastern states were just examples. National Water Policy, will just remain as a resolution in paper, like the earlier ones if the government is not very serious about the issue. At the same time protecting the basic rights of the people is equally important.

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Electricity Saving Tips

Washing Machine

Use washing machine when there are enough clothes to fill the entire capacity, thereby you can minimize the frequency of washing. Also go for machines which consume lesser water. Depending upon the clothes and the dirt you can set the washing machine to minimum possible washing and rinsing programs. Go for hand washing if you have fewer clothes that has to be washed immediately.

Know your Heritage

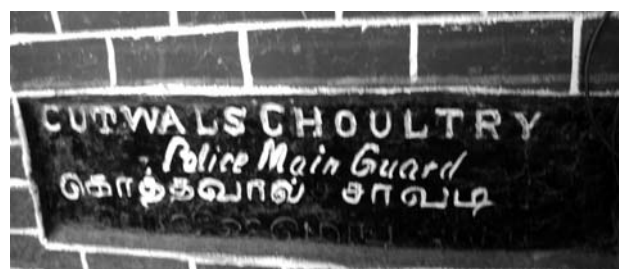
Madurai- Athens of the South

Of all the ancient cities of India, Madurai has a unique place with its literary efflorescence, puranic glories and continuous long history. Vilakkuththun (The Lamp Post), Cutwals Choultry & Elukadai Street still stands as a symbol of ancient madurai.

Vilakkuththun(The Lamp Post): There is a long metal Lamp post called Vilakkuththun in the meeting place of South Masi street and East Masi street, to the north of the Ten pillars. An inscription found here mentions that this Lamp post was installed in honour of John Blacburn the then collector of Madurai. It was he who in A.D.1840 ordered for the destruction of Madurai Fort and extended the Outer Streets (Veliveedhi). The old fort area was converted into public residential area. In respect of the expansion of the city limit the stone elephant was brought from the Thirumalai Nayak Palace and installed at Yanaikkal junction in memory of Blacburn.

Koththaval Chavadi (Choultry): There is a double storeyed building in the East Mast Street, to the north of Vilakkuththun. This was constructed by the British and utilized as a police station. An inscription of the British period, found on the South of the gateway of the building refers to the building as Kaththaval Chavadi Police Menguard.

Elukadal Street: There is an ancient street, running in front of the Chokkanatha shrine, called Elukadal Street (Affluence of Seven Seas). It was here, in this street, the stores which sold many essential goods existed. There was a large tank on the north of this street. Now it is destroyed and in its place a multi-storeyed building is erected to house the shops. A legendary story says that Kanchanamala, the mother of Goddess Meenakshi wished to take sacred bath in seven seas. When Lord Siva learnt this He miraculously brought water from seven seas to Madurai and formed a tank here to house the water, to help his mother-in-law, who had pleased and took bath in that tank. Hence the name Elukadal Street. Even to-day, one can see a Siva temple, on the western band of the tank, believed to have been worshipped by Kanchanamala along with her husband



Malayathuvasan. A stone slab inscription erected by the side of the tank mentions that one SaluvaNayaka, an officer of the Vijayanagara ruler Krishnadevaraya, in A.D.1516, renovated and reconstructed this tank and named it as 'Saptasakaram' (Elukadal).