REPORT

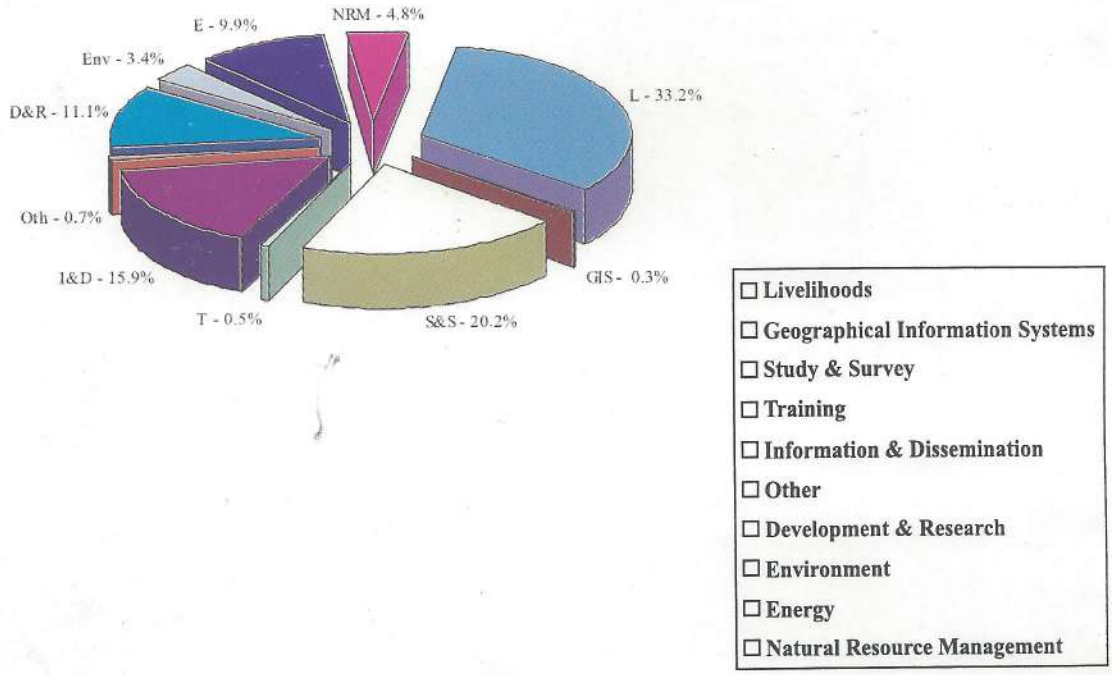
2006

Technology Informatics Design Endeavour

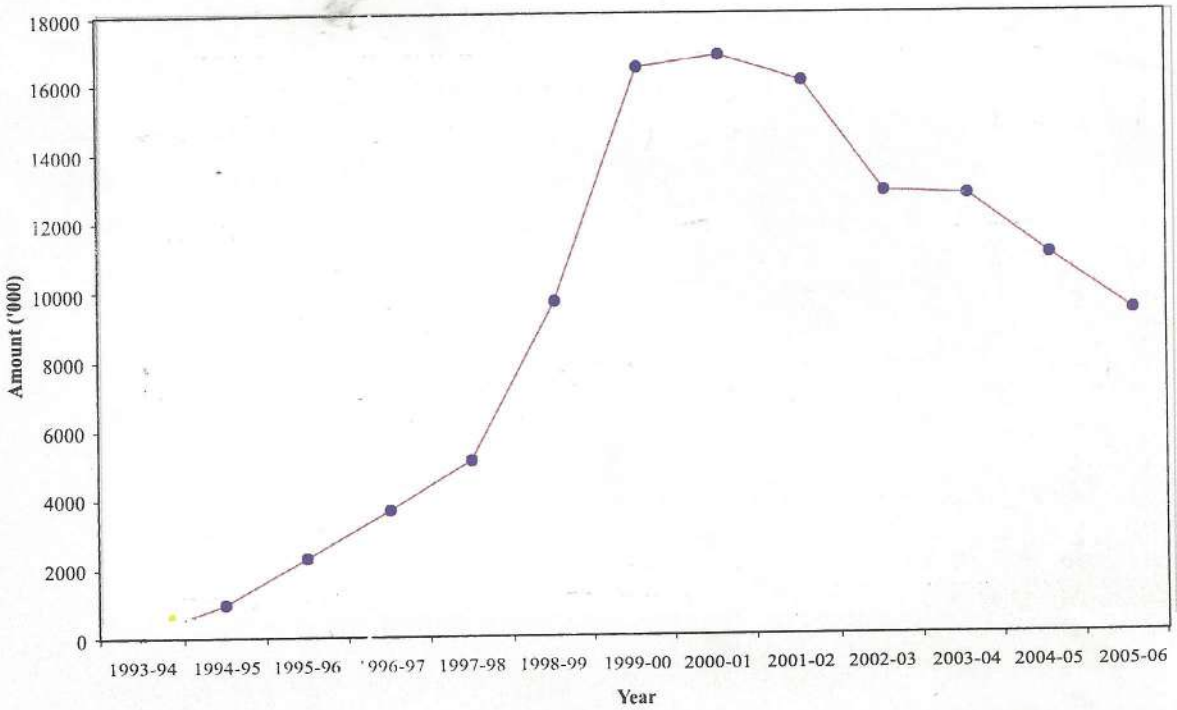
Catalysing Change Through Technological Interventions

TIDE AT A GLANCE

Area Wise Project Expenditures



Total Expenditure for the period 1993-94 to 2005-06



Technology Informatics Design Endeavour (TIDE)
19, 9th cross, 6th main, Malleswaram, Bangalore - 560 003.
www.tide-india.org

ANNUAL REPORT 2006

Contents

TIDE - An Overview

TIDE will be stepping in to its fifteenth year in May 2007. The last year has been quite noteworthy. We have been showered with accolades. We were one of the four finalists of the Social Entrepreneur of The Year Award. We were featured on the pages of Rediff during the Pan IIT conference. Press as well as electronic media covered our programmes. We have also been facing challenges. On the challenges side, our grantors, entrepreneurs, and well wishers are asking us to scale up and reach many more locations, user groups and markets. There is also a challenge of institutionalizing, what we believe to be a 'TIDE' model for entrepreneurship based sustainable technology dissemination.

When we launched TIDE fourteen years ago, we firmly believed that creative ideas emanating from Indian Research Institutions have the potential to spread and improve livelihoods in a sustainable way. We believed conversion of excellent ideas, concepts and prototypes emerging from exalted institutions in to replicable, deliverable and sustainable devices, methods and tools were the most important link in the innovation chain. Once this development was achieved the technology would spread using the genius of the small entrepreneur.

Mission of TIDE then is to identify innovations and complete the innovation chain by developing them in to forever sustainable products and to identify, mentor and nurture entrepreneurs who would earn their living by dissemination and who will do the technology proud.

We also believed that the financial resources required to carry out this process could be mobilized from the users themselves by charging some kind of royalty. Thus the work of TIDE could become self-sustaining.

Fourteen years is a long enough time to take stock. There have been significant achievements and equally significant failures. Achievements include development of a number of technologies, devices and methods that have found wide acceptance among users. A number of entrepreneurs have been spun off and are doing well. The turnover of enterprises using TIDE's knowledge base has exceeded Rs Twenty Million in the last year. It is indeed gratifying to note these achievements and warmly thank all those who have contributed to this great story.

We face two major challenges today. One is to find ways and means to deepen and broaden the user base of our technologies. The potential is immense. We seem to be groping for an appropriate strategy to scale up and reach a majority of potential customers. The second challenge is to institutionalize our processes in such a way that they get embedded in to the organizational memory. We are striving to make our organization person independent. A great scourge affecting most of the non-profit organizations in India is that they become founder/CEO dependent for strategy, for raising resources and for public interface. Organizations find it difficult to cope up when founder/leader departs. The challenge is to build a sustainable organization that carries the vision of the founders and further enhances its value to society. At Tide we have been inducting eminent new members in to Council of Management. At the expiry of a term of the Council, two members step down and two new members are elected in their place. We are also bringing in to Council, members from Academia, NGOs and technology enterprises. We believe active co-operation from these three sectors may help us in overcoming the challenges mentioned above.

I would like to place on record my gratitude to the TIDE team, the institutions who provided us funds, our advisors and finally the users of our technologies, for the enjoyable, memorable fourteen-year long journey.

Dr. S Rajagopalan

Chairman

Water resource management in peri-urban areas

(Supported by Science and Society Division, Department of Science & Technology, Govt., of India)

The project areas identified are two small villages namely Nimbekayapura and Bendiganahalli on the outskirts of Bangalore City, in Mandur Panchayat of Bangalore East taluk, Bangalore districts. where the residents are mostly socio-economically weaker sections. The total area of the villages is about 700 acres. These and surrounding villages had a traditional system of over 25 large open wells that catered to all the water requirements of the village. However, the advent of farm houses and formation of residential site and layouts in the vicinity of the villages has resulted in over extraction of the ground water and these open wells have become dry.

The project area is characterized by poor vegetative cover, dry and loose top layer of soil, poor soil moisture content and lack of structures for harvesting water resulting in low agricultural productivity. This has forced migration of villagers to the urban area. There are no opportunities for income generation and a high percentage of families live below poverty line especially in Nimbekayapura village. The villagers, especially women and children are keen to participate in the water management initiative of TIDE.

In the project TIDE has demonstrated rooftop rainwater harvesting system in 9 individual houses on a cost sharing basis in Nimbekayapura village. Stree Shakti groups were involved in this activity. The households contributed labour during the installing. Presently, all the houses are harvesting and collecting rainwater. In some house, the overflow of the water is diverted to the underground sump. The water is mainly used non-potable purposes. In the past year roof top harvesting of rain water was also demonstrated in school building and community centre.

Two drinking water bore wells were repaired and recharged including construction of apron around one of the hand pump to prevent percolation of grey water from an adjacent drain.

Street plays on water conservation, rainwater harvesting, and bore well-recharging methods was demonstrated to increase the awareness of the community.

SHGs of both the villages visited the TIDE Technology park in Bendiganahalli village. The villagers studied different water harvesting, water management, and improved agriculture practices such as polyhouse cultivation and energy efficient technologies.

Vertical electrical soundings (Resistivity survey) survey was conducted to understand the litho-units and resistivity ranges of different litho logical layers. Depth and thickness of aquifers was assessed in the Bendiganahalli villages. TIDE had carried out aquifer test for the existing wells and assessed the aquifer characteristics for estimation of safe yield in Bendiganahalli.

In the coming year, the project intends to design, demonstration and collect data on polyhouse cultivation with roof water collection system and cultivation of commercial / vegetable / horticulture crops in the polyhouse and domestic grey water treatment systems. It is also planned to design and implement agriculture bore well recharging in Bendiganahalli village for augmenting groundwater resources. Farmers and other interested community will be trained in the above technologies (Rooftop RWH, bore well recharging, polyhouse cultivation etc.,). Five farm ponds would be constructed in the project area. Project documentation will include GIS database and scope for replication of the project components.

Low cost charcoal making from waste biomass and its effective utilization

(Supported by the young scientist scheme of the Science and Society Division, Department of Science and Technology, Govt. of India)

TIDE is currently in the final stages of this three-year project (Sept 2004 - Aug 2007). The objectives of the project are:

- To review and assess environmental friendly and energy efficient techniques of small-scale charcoal making from waste bio-mass / wood
- To develop, adopt to local conditions, test and demonstrate the technology of making solid charcoal pellets by effective use of volatile evolved during char making.
- To install two demonstration units for charcoal making unit in user location.
- To develop a prototype of a gasifier using charcoal as fuel.

In the past two years the project developed charcoal kiln designs that used the volatiles released for water heating. The yield of char was 25% of the weight of the firewood. The special feature of the kiln besides using the heat content in the volatiles was the fact that good quality char could be made even from very small twigs (diameter of 2 - 3 cms).

During this year the bench scale charcoal gasifier design (1 kg of charcoal per hour) was developed and tested. The testing enabled generation of data that was used to design a bigger gasifier (capacity of 7.5 kg / hr of charcoal). This gasifier is currently undergoing testing with the charcoal produced in the charcoal maker. Data that would be collected includes composition and calorific value of the producer gas and its suitability for various thermal applications.

Additionally charcoal briquettes have been made with powdery charcoal and stoves fabricated and tested for the use of charcoal briquettes for cooking. The economic viability of the products would be established after the laboratory trials are completed.

Rainwater Harvesting Projects During The Year 2006

During 2006, TIDE has carried out Rooftop Rainwater Harvesting System for Kishkinda Trust, Anegundi, Koppal District funded by and two schools in Chickmagalur district under the

1. Kishkinda Trust:

The trust, which operates from the Anegundi settlement, wanted to understand the concept and the potential of rooftop rainwater harvesting for various kinds of structures/buildings in the settlement. TIDE carried out a feasibility study for the Office block (sloping roof), Café (thatched roof) and Banana fiber cottage industry (sloping roof) and explained the potential for RWH at each of these locations. Implementation was demonstrated for the office block. Local artisans were involved in the implementation activities.

2. Integrated water plan for Dhondenling Tibetan Settlement

TIDE was asked to present an Integrated water plan for Dhondenling Tibetan Settlement in Kollegal Taluk. The settlement consists of 22 villages having about 30 houses each and covering a total area of 3000 acres. The objective was to develop an integrated water conservation, management and utilization for the settlement. A detailed study of the water

resources was done and various technological interventions like introduction of rooftop rainwater harvesting system, construction of water harvesting structures and eco-san in the household level was suggested. Also, use of polyhouse with RWH system was recommended for growing crops with the optimum utilization of water.

3. Roof -top Rainwater Harvesting System Training for Dhondenling Tibetan settlement at Kollegal taluk:

A five-day training program on RWH was conducted by TIDE to the Tibetan community at Dhondeling settlement in Kollegal taluk. Training was imparted to 15 participants from Tibetan settlements all over the country. The program also increased the awareness on water conservation and management of water resources of the trainees. The training followed a hands-on approach for the construction of the RWH system.

4. Implementation of Roof-top rainwater harvesting system for schools in Chikmagalur District under the Swarna Jala program of the Rural Development and Panchayat Raj department

TIDE has under the Swarna Jala scheme implemented RWH at two schools in HPS Hukkunda and HPS Adishakthinagara, in chickmagalur Taluk. This improved the access to water for the 378 school children in these schools.

Energy conservation in small sector tea processing units in south India

(Supported by UNDP-GEF)

The PDF-A phase of the project was a grant to carry out all activities necessary for the formulation of a project proposal that would be submitted to UNDP-GEF for funding. The project carried out several activities in the year 2005 to develop the project proposal. In this year, TIDE developed the project proposal and submitted the same to UNDP-GEF for funding.

As this was a medium sized project, the proposal had to go through several rounds of review. TIDE is happy to report that the project has received the technical clearance and has been re-endorsed by the Govt. of India. TIDE is currently planning for the implementation phase that is expected to commence shortly. The detailed project document (which is different from the project proposal has been developed) and presented to the UNDP. The detailed project document breaks up the project deliverables into outcomes and outputs and lists the activities that would be carried out each year to achieve the outcomes and outputs. An annual activity based budget has also been developed and parameters have been defined for monitoring and evaluation.

Activities are currently on going to get commitments from various competent partners for the implementation phase. Meetings have been held with the Tea Board and the representatives of the tea factories to discuss the contents of the project document. The various developments taking place in the tea industry are also being tracked by the project team.

Rural Livelihoods Capacity Building among Community Based Organizations: Household level cashew processing by Women's Neighbourhood Help Groups (NHGs) in Kasargod district, of Kerala.

(supported by the Small grants scheme under the British High Commission)

This was an extended one year project that began in April 2005 and ended in November 2006.

The objectives of the project were to:

(a) develop capacity of 3 groups of women belonging to Self Help Groups leading to the establishment of a sustainable household / neighbourhood level cashew processing industry

(b) develop awareness among women's groups about household cashew processing to motivate more groups to take up this activity in the following years.

The project set up one training cum production centre in Pallikere, Kasargod with two sets of processing equipment. This would serve also have a demonstration effect for other groups to understand the activity. Cashew processing requires thermal energy for steaming the nuts and drying the kernels. In order to ensure energy security for these operations a biomass fired steamer and a low capacity biomass fired dryer was procured and used successfully in cashew processing

Of the three groups trained in the first year of the project, the women of two groups, came together to jointly set up a unit called Vijay Cashew Unit. As the working capital requirement is high, the project assisted the groups in procuring raw cashew and in the use of equipment in the training centre in the first year. This helped them to build their confidence in running an enterprise. The groups processed about 4 tons of raw cashew and produced 700kg of cashew kernels in the first year. They earned Rs. 40000/- as labour.

Market linkages to two wholesale dealers were developed for the Unit. They were trained to sell the cashew in the retail market and participated in exhibitions in Kerala to sell the cashew. They were also trained in producing value added cashew products. The project has initiated activities to register the cashew units with relevant tax authorities to enable them to find wider markets outside Kerala. A rural marketing agents meet was held to create linkages for the units.

The Vijay Cashew Unit has obtained a bank loan of Rs 2.5 lakhs, 50% of which has been subsidized by the Kudumbashree poverty alleviation mission of the Govt. of Kerala. TIDE provided assistance in generating appropriate documentation and in complying with the various requirements. The unit has bought equipment and has started the second year of cashew processing.

Awareness meetings were held at the training centre where other groups were exposed to the household processing of cashew. Following this, women belonging to two groups were trained and formed a second cashew unit. They were also provided with raw cashew. They have processed one ton of cashew so far.

NABARD approached TIDE for a proposal to train more women's groups in household cashew processing.

A manual describing household processing of cashew as an income generating activity - beginning with the selection of raw cashew and ending with book keeping has been prepared in English and in Malayalam. Simple language has been used interspersed with pictures. A film on household processing of cashew has been made.

The project has demonstrated that household cashew processing has the potential to develop into a neighbourhood level small industry, as women's groups have the interest and the abilities to harness the micro-credit facilities available to them. The importance of training women not only in cashew processing skills but also in enterprise management skills has been the major learning of the project.

Fluorosis mitigation through technical intervention and community participation in Karnataka

(Women scientist scheme of the Department of Science and Technology)

Fluoride is known to contaminate groundwater reserves and affect the health of individuals drinking fluoride-contaminated water. Sporadic incidence of high fluoride content in groundwater has been reported from India, China, Sri Lanka, West Indies, Spain, Holland, Italy, Mexico, and North and South American countries. In India, its occurrence in top aquifer system is endemic in many places of Andhra Pradesh, Tamil Nadu, Karnataka, Gujarat, Rajasthan, Punjab, Haryana, Bihar and Kerala.

Fluorosis caused by high fluoride intake predominantly through drinking water containing fluoride concentrations greater than 1.5 mg/l, is a chronic disease manifested by mottling of teeth (dental fluorosis) in mild cases and changes in bone structure (skeletal fluorosis), ossification of tendons and ligaments, and neurological damage in severe cases. Today increasing concern is being expressed that these adverse effects of fluorosis are irreversible.

The present study investigates defluoridation filters using activated alumina for their efficiency and efficacy and as a possible solution for fluoride mitigation.

Present Work

The project is being executed in Kittapanadoddi, Kabbal gram, Kanakpura Taluk. A baseline study was conducted to understand water supply and consumption patterns for domestic purposes. This was used to prepare the regeneration table for different household sizes.

Bi-weekly water samples from the households were collected before and after filtration and analyzed for fluoride content. 10 water samples from the bore well and 360 water samples after filtration covering all the fifty households have been collected and analyzed. Data compiled shows that during the pre-monsoon months the fluoride concentration in the bore well ranged from 2.45 to 1.8 mg/l with an average of 1.92 mg/l. The filter reduced the fluoride concentration from 0.075 to 0.5 with an average of 0.145 mg/l. For the first 1000 liters of water passed through the filter, the efficiency of fluoride removal was 97 %.

Regeneration table for different household size

Family size	Water consumption per day for drinking and cooking in liters	Regeneration period in days
6	48	105
4 -5	36	140
2- 3	24	210

The following characteristics of fluoride removal by activated alumina have been determined.

1. The fluoride uptake capacity of the activated alumina is directly proportional to the volume of water filtered. It was observed that the activated alumina reached a saturation point after about 5000 liters of water was filtered
2. Optimum removal of fluoride occurs in the range of pH 5 to 8
3. The filtration rate is 10 lts/hr
4. Efficiency of filter after regeneration is 94%

Future work

Future work would focus on studying the presence of residual alumina in the treated water. Rooftop rainwater harvesting is another option for defluoridation that has been tried in the project area and data would be collected. A simple cost effective method of determining fluoride in water at the field level is being replicated and solar desalination are other technological interventions that would be explored.

Core Support

(Supported by the Science and Society Division of the Department of Science and Technology)

In the year 2005, the core grant of DST to TIDE had enabled it to develop three new products - the polyhouse (a green house with a poly ethylene film) with rain water harvesting and drip irrigation, the low capacity brick kiln and the fuel efficient jaggery pan and stove. This year TIDE has focused on demonstration and field adaptation of these new technologies.

TIDE has successfully taken the poly house outside the research stations of the University of Agricultural Sciences and demonstrated the same in a peri urban area. The brick kiln has been demonstrated at the site of an NGO (Association for Biomass Conservation and Energy Efficient Technology) in the Tsunami affected district of Nagapattinam. The NGO has been registered and is supported by a local brick maker to work with local self help groups in the production of bricks using the low capacity brick kiln. The production of the bricks would be out sourced to the women's groups and the marketing would be the responsibility of the brick maker. This activity would commence as soon as the monsoon recedes in coastal Tamil Nadu. A brick maker from Puducherry has also paid for the brick kiln constructed at his site and for trials.

The core grant team at TIDE is working actively with jaggery makers in the Belgaum district of Karnataka. TIDE demonstrated the finned jaggery pan to the community last year for saving fuel and time. While accepting that the jaggery pan saved fuel, the jaggery makers were not comfortable with the increased weight of the pan and it created problems in lifting the pan when the jaggery was made. To overcome this problem, TIDE introduced the two pan jaggery making unit in the region. While the design development did not take time, the jaggery makers had to get used to the new design and this took time. TIDE went through a phase of extensive participatory technology development. Some of the issues tackles during the standardization of a two pan design were:

1. Managing the air fuel ratios and the burning rate for a two pan system
2. The jaggery maker learning to cope with managing evaporation and scum removal in two pans simultaneously
3. Issues relating to thick scum formation in the second pan which does not boil as vigorously as the first pan where scum removal traditionally takes place.
4. Issues relating to colour of the jaggery when the scum is disturbed.
5. Ash deposition under the second pan affecting flow of flue gases
6. Wet fuel as the bagasse is stored in the open

TIDE is currently interfacing with the jaggery maker in Hirehotiholi village to manage the changing labour relations because of more profits and increase in productivity. A pilot project from Deshpande Foundation USA has been sanctioned to continue this work next year.

Activities for interaction with field based NGOs is an ongoing of the core grant and this year TIDE reached out to newer NGOs in south India. It demonstrated the household stove construction in Dharmasthala in association with Sri Kshetra Dharmashtala Trust and an experience sharing workshop was organized in collaboration with them. Meetings were also held with other grass root level NGOs like (ABCEET, Tamil Nadu) the Pallikere panchayat, etc. Staff of TIDE was invited to conduct technical training programmes for the Integrated Rural Energy Project of the Govt. of Karnataka. They were also invited by the local television channels for two phone in sessions on rural technologies.

Interaction with field based NGOs has exposed TIDE to newer technology challenges for rural areas. These are interventions for efficient use of irrigation water, need for technology development enabling local production of bio-pesticides, water quality testing kits, fuel use efficiency in boilers used for essential oil extraction and for tyre retreading. The poor working environment in some rural industries and homes is also a health hazard and TIDE would like to explore and if possible, quantify the linkage between poor technology and exposure to health hazards in rural processing units.

Capacity building for existing networks of NGOs / CBOs and SHGs for environment linked income generation activities

(Supported by the India Canada Environment Facility)

This 3 year project is due for completion in January 2007.

The goal of the project is to contribute to the capacity building of NGOs, CBOs and SHGs to improve the local environment. The project concentrated on awareness creation and capacity building in the first year, followed by enterprise building in the second year. This year the focus was on demonstration, dissemination and documentation.

Awareness Campaigns:

The technologies were divided into three themes- water (rainwater harvesting, drip irrigation, farm ponds, botanical treatment system of waste water), energy (household stove, charcoal from loose biomass, bioreactor) and livelihoods (vermi-composting, household processing of cashew, production of dried products using a biomass based dryer). Awareness campaigns on environment friendly technologies mentioned above were conducted covering about 1600 people from over 200 SHGs from the 3 states.

Capacity Building of SHGs/CBOs: 176 people, belonging to 42 groups were trained in various technologies in Karnataka, Kerala, Madhya Pradesh and Tamil nadu. Of these, 50 women are active and earning sustained incomes through 13 environment friendly services/ micro-enterprises. They have earned a total income of Rs 216,572/-.

The following table gives the details of groups and individuals, their activities and the income earned.

Activity	No of groups	Achievement
KARNATAKA		
Household stoves construction	Trained: 108 individuals	1747 stoves

	(20groups) Active: 13 belonging to 13 groups.	
Training in Household stove construction	Women trained as master trainers: 9	30 persons trained by 5 master trainers under IREP of Panchayats and other women wanting to take up stove construction.
Charcoal from waste biomass	5 groups of 32 women	Only one group is working, produced 10 kg of charcoal pellets from sugarcane waste as a part of training. Will continue activity in the next season
Vermicompost	4	Compost collected three times from pits. Bag composting also in progress
Bore well recharge	1 NGO	Water levels increased by 0.5 m to 2.0 m and salinity decreased by 200 ppm compared to control bore wells
Drying of vegetables and fruits	1	Training in drying of figs, onions, tomatoes and garlic. New project sanctioned to explore entrepreneurship
KERALA		
Household Cashew processing	1	1036 kg of cashew produced and sold from April 2004 to April 2006. 2100 kg of raw cashew also purchased and being processed
Coconut chips	1	2150 packets of 50 g each sold
Vermicompost	4	3330 kg compost produced
TAMILNADU		
Polyhouse with rainwater harvesting and drip irrigation	3	Nutritious vegetables (spinach, beetroot, ladys fingers, beans) harvested and sold to schools mid day meal programme.
Low capacity brick kiln	1 NGO	Low capacity brick kiln constructed and demonstrated. Entrepreneurship to be developed in 2007
MADHYA PRADESH		
Household Stoves	2	65
Bath Water stoves	2	13

Improved Brick kiln	1	12000 bricks produced

Handholding for the groups was done to develop markets for their products/ services. Various promotion strategies were adopted to generate markets and link them to the groups.

Technology Parks have been set up in Bangalore and Kasargod. These technology parks have working models of the environment friendly technologies disseminated by TIDE that can be used to earn incomes. Posters have also been put up to explain the technologies and their potential to generate incomes. The technologies are being demonstrated to SHG members/NGOs and various other stakeholders, when they visit the park. It is expected that these technology parks would help in dissemination of the technologies.

The documentation under the project so far includes a film on household processing of cashew, process documentation on dissemination of household stoves, brochures on household stove dissemination, household processing of cashew, and production of dried products using biomass-based dryers.

The project has led to the introduction and understanding of technologies that TIDE had not tried before, i.e. polyhouse with rainwater harvesting, cultivation within a polyhouse, two methods of charcoal production, and household processing of cashew. The benefits of these technologies to the environment and their potential as income generating options have been understood. The project has led to more proposals and projects on technologies and livelihoods.

TIDE organised a National level workshop to discuss the issue on unsubsidised household stove dissemination in October 2006 in Bangalore. Experiences of organisations from across India were shared. The road ahead for household stove dissemination was discussed and documented.

Extension of the technical training in household stove construction and pilot training in charcoal making from waste biomass

(Supported by ETC Netherlands)

The focus of this project was the technical training of women to facilitate their emergence as stove builders and master stove builders. The project also had a component of pilot training on charcoal making from waste biomass. This project and the project supported by ICEF for capacity building of women for environment friendly income generation were conceived as complimentary projects as they were both addressing the same issues. This enabled training of a larger number of women through the ETC funds.

The objectives were:

- Creation of job opportunities for rural women through training activities
- Introduction of clean energy technologies in rural / urban areas
- Improvement of health of women (users of these clean technologies)

Household stove Construction

The project had committed to train 30 women in the technical and entrepreneurial aspects of stove construction. About 100 women and 30 men were trained. 1474 stoves were built in the project in three districts of Karnataka (Tumkur, Chikmagalur nd Hassan). Rs. 65418/- was the total earned as labour by all the stove builders.

The project has identified 17 trained personnel as active stove builders, 9 of whom are women. The women are building 4-5 stoves each every month, on an average. They built 765 stoves and earned about Rs.38250/- as labour during the project period.

The project has established that women can handle all aspects of smokeless stove construction and are deriving incomes in addition to their traditional income as agricultural labour. It is now accepted in the area of operation of the women stove builders that they build better stoves than men and are also able to understand the needs of other women who want smokeless stoves constructed.

Training master builders in stove construction

The second output of the project was the training of five women as master builders. The project trained 12 women as master builders. At least six of these women have taken up training seriously and made efforts to identify and train other women in stove building. The master builders have earned Rs. 2800/- during the project period by training others under the IREP scheme. This linkage continues even beyond the project period. More importantly the government supported household stove construction schemes have accepted the project methodology of training women in household stove construction

Training in charcoal production and marketing

The third output of the project was training four women as entrepreneurs in the technical and market related aspects of charcoal making. While six groups of women have been trained in two methods of charcoal production, only one group of women shows promise of continuing the activity.

The project has experienced the reality that no biomass is really 'waste' or 'free', after mechanisms have been evolved for their collection and productive use. The project has also encountered resistance to women's claim and access to the biomass collected by them for productive purposes.

Documentation under the project:

1. Four manuals. They are:

- An training manual on construction of stoves for master builders
- Pictorial manuals on stove construction and
- Manuals on the production of charcoal using each of the two kinds of equipment.

All these manuals have been translated into Kannada

2. A slide show giving step-by step construction of household stoves.
3. A process documentation of household stoves dissemination.
4. A paper on stove dissemination was published in Government of India's renewable energy journal, IREDA News.
5. A brochure highlighting TIDE's strategy in the dissemination of smokeless household stoves was prepared and distributed.

TIDE s gain from the project

TIDE has developed contacts with a number of NGOs in four districts. It has also developed a linkage with the IREP and the Department of Rural Development and Panchayat Raj, Government of Karnataka. TIDE has gained insights on SHG concepts in Karnataka and the process to be adopted when self help groups make the transition from savings and thrift to income generation.

Through this project and presentation of its results in various meetings TIDE has been able to promote its strategy of gender friendly household stove construction enterprises among a larger audience and the same is slowly gaining acceptability.

School and community horticulture enterprise: nutritional support for primary education

(Supported by Young Social Enterprise Initiative)

The project goal is to successfully demonstrate that a school and community horticulture enterprise can significantly contribute to providing the required nutritive quantity and quality in the mid-day meal scheme in primary schools and thus foster improved child enrolment, child health, primary education.

This 15 months project has the following objectives:

- To ensure that the mid- day meal has 65- 75 g of vegetables/ child/ day for 200 days/ year, thereby improving child health and increasing school attendance and enrollment in primary schools.
- To create environmental awareness and practice organic horticulture.
- To develop skills of mothers and community groups to increase economic opportunities

The project intends to identify community based organizations to initiate a community horticulture enterprise with the usage of a polyhouse. This enterprise would aim to increase the nutritional value of the mid-day meal given to the children and the excess vegetables grown would be sold in the market to earn additional income to the enterprise.

Activities are on going to identify of the project area (school/ community), identify and interact with the community based organization that would practice poly house horticulture as an entrepreneurial activity, design a low cost polyhouse and plan the cropping pattern to meet the nutritional requirements of school children. An information, communication technology component is also being developed to include the following:

1. A module to determine child nutrition requirement and mid-day meal requirement based on the number of children per institution
2. A module to design a polyhouse based on the agro climatic parameter specific to the place and plan the horticulture
3. A module to monitoring information system on child development education and health
4. A brochure highlighting the project methodology and deliverables is also under development

GHG emission reductions through use of energy efficient technologies by textile processing units in Tamil Nadu

UNOPS (Small Grants Project)

The textile processing clusters in Tamil Nadu account for 50% of the Indian textile mills, 42% of the cotton yarn production and 19% of the textile workers. Coimbatore and Erode districts, the project area has about 1000 bleaching, dyeing and sizing units requiring thermal energy for their operations. The source of this thermal energy is largely firewood that is transported over long distances.

Data collected by TIDE in earlier projects, show that the units are highly thermal energy inefficient with heat utilization efficiencies of 10-12%. There is therefore a great need for energy efficient interventions that would have beneficial impacts both globally (GHG emission reduction) and locally (improvement in the working environment and profitability of the unit.

This project of TIDE that has just been sanctioned proposes to demonstrate reduction of GHG emissions in the textile processing industry in the project area (Erode and Coimbatore districts) primarily by reduction in firewood consumption.

The project also aims to increase the awareness levels in the industry clusters by various means.

The strategy for achieving project objectives is as follows:

1. Understand the issues involved in acceptance of fuel efficient technology
2. Demonstrate the improved technology developed for reduction in firewood consumption by TIDE in earlier projects and ensure acceptance of the same.
3. Introduce solar water heaters into the sector for preheating water.
4. Work with industry associations and local entrepreneurs to evolve a local sustainable mechanism for product delivery
5. Understand the financial limitations for acceptance of new and innovative technology and work with financial institutions and industry associations to evolve financing schemes for availing new products

All these interventions would lead to the ultimate reduction of GHG emissions by the sector.

As the project has just been sanctioned, the activities carried out so far include visit to project sites and data collection.

Case study on waste water disposal practices and likely treatment options in textile processing units in Tamil Nadu

(supported by Arghyam Foundation)

Textile processing is highly water use intensive. Textile industries especially bleaching and dyeing yarn discharges a lot of effluents that affect people living in the vicinity of the textile clusters. Textile processing is spread over 6 districts in Coimbatore. Coimbatore district alone has 160 bleaching units, 486 dyeing units and 70 sizing units. Textile processing clusters exist in several states of India and the problem of water scarcity and untreated effluent exists in several handloom clusters in India. TIDE thought it appropriate to carry out an in depth analysis of effluent discharge in textile clusters and technological options for their treatment.

TIDE has recently embarked on this project

Objectives

1. To collect data on the effluent load being discharged from textile processing units for each operation (bleaching, dyeing, sizing)

2. To understand the current treatment and disposal practices and the implication of the options on ground and surface water

3. To review the technology options for reduction of pollution load to the limits recommended by the Pollution Control Board and conduct a techno-economic assessment of the options

4. To document findings and share them among a larger audience so that recommendations and conclusions can be drawn from the case study.

Early information collected by the project shows that the textile processing in the Tirupur cluster alone discharges effluent of 87 million liters per day, The 8 Common Effluent Treatment Plants (CETPs) totally treat 42.5 million liters per day or about half the effluent discharged. The effluent treatment is costly and roughly estimated to be 0.04 to 0.06 per liter of effluent treated.

The detailed case study would be shared with a larger audience and suggestions for intervention sought.