

REPORT

On Field Training on ECOLOGICAL SANITATION FOR NGOS

Venue: Sacred Heart College, Shenbaganur, Kodaikanal

Period: 17-19 March 2009

Organised and Conducted by

Water, Sanitation and Hygiene (WASH) Institute

Kodaikanal, Tamil Nadu.

Supported by

WaterAid

Coordinated by

Plan India, New Delhi &

REAL, Dindigul

Introduction:

Ecological sanitation (ECOSAN) is an approach that offers many advantages over and above sanitation provision, an otherwise much neglected issue by closing the nutrient and water cycles. Ecosan recommends that human excreta and household organics be sanitized and the nutrients be applied in agriculture. Ecosan is a less understood concept in India. The dissemination of this knowledge at various levels especially with decision makers and all stakeholders of the Total sanitation campaign can greatly help in environment friendly options. A movement and campaign on ECOSAN is seen as the demand and need of the coming times.

A three days training on Ecological Sanitation for NGOs of South India was organized by Water, Sanitation and Hygiene (WASH) Institute with the financial support from WaterAid. The three day training included theoretical and practical knowledge sessions with games and films on the subjects for two days (17th & 18th March-09), while the third day (19th March-09) was spent in visiting field in Musiri town panchayat area for ecosan individual toilets, community toilets, waste management, DEWATS (Decentralised Wastewater Treatment System) and visit to Banana field research areas. It also included a visit to the SCOPE office and Mr.Subburaman's house, where Ecosan measures such as waterless urinals, urine collection and application to the kitchen garden and household waste management using EM Solution (effective micro organism) were seen.

The Participants:

The participants representing from seven states of India, majority of them from Southern States of Tamil Nadu, Andhra Pradesh, Karnataka, Kerala and Puducherry. A total of 42 persons, including participants and resource persons attended this training. The participants list is enclosed as Annexure 1.

Day 1:

Inauguration: Mr. Arumugam Kalimuthu, Technical Advisor, Water and Environmental



Interactive game: Participants find their group by reading the Slips on the forehead

Sanitation, Plan India welcomed all the participants and briefly explained about WASH Institute and its major activities. The program began with an ice breaking session where participants introduced themselves and shared their interests, by means of a game where various slips of paper with topics related to water sanitation, were placed on each participants' forehead and they identified the individuals with similar topics and formed a group. The groups then got to discuss their knowledge on the topics which was presented. After tea break, the session on F charts (**Faecal oral transmission, and Technical Options, difficulties in existing sanitary options**) were presented by Mr. Arumugam Kalimuthu. The detail route of transmission

from faeces, by flies, fields, fingers, fluids and fresh host and how they operate in spreading

diseases was explained. A film on this was presented. The reasons why the F diagram is important, the transmission route, the barriers needed to be created for prevention were dealt. The knowledge of F chart is like the bible which every person in water sanitation should be aware of.

Introduction to eco-san Mr. Arumugam Kalimuthu was made **on the various existing sanitation options and the limitations.** The key features of Ecosan, NPK (Nitrogen, phosphorous, Potassium) levels of Ecosan products, urine separation, double vault ecosan toilet, decomposition, biogas connection with toilets and community ecosan toilets were introduced with pictures. Participants asked doubts on offsite and onsite pit latrine. In acute water scarcity areas like Rajasthan where school children wash their plates using sand due to non-availability of water, ecosan is a wonderful option as it is a water scarce area and also in various parts of the country which experiences water scarcity especially during summer. The flood situation is also a reason where people can go for ecosan models as there is no need to use water for flushing in an already water logged area. Besides, the advantage of ecosan is that faeces is converted to manure that is very superior manure and good soil conditioner.



Mr. AK explaining the value of urine and Eco sanitation concepts

Noon Session

After lunch the **Construction of Ecosan toilet was demonstrated** by K.Y. Babu. The presentation contained WASH Institute's technical assistance to various states for construction of Ecosan toilet and screening a film, which helped the participants to visually understand the step by step process involved in the construction. This included site selection, casting of squatting slab and construction of the twin chambers, casting of roof, materials required and other aspects of construction besides way of using was explained.



KY Babu on the methodology of construction process

This was followed by a session on **Manipur Model, Facts about Sanitation and Reuse of decomposed Waste and Economic value of Human Waste** by Mr.Arumugam Kalimuthu. This was a completely new and interesting topic for most participants, who gained

new knowledge. On an average a person generates 500 litres of urine and 50 kg of faeces a year. This is a valuable resource and not waste. It was explained that human faeces is rich in the elements Nitrogen, Phosphorous and Potassium.

Various models of Ecosan toilets in India and around the world were shown by photographs displayed through a presentation. Bamboo reinforcement and clay soil has been used for the chamber, which has reduced the cost considerably as in the Manipur model of ecosan. Mr. AK pointed out that it is important to give the concept to people and not so much insist on any

stereotypic model. Modern Ecosan concept came about 50 years ago. However it was earlier used by Japanese even before Second World War, while in China it is as old as 3000 years.



Participants listen to Mr. AK with rapt attention on the finer aspects of construction.

Ecosan system is environment friendly and aims at closing the loop. The faeces and urine will not be discharged into environment and instead, it will decompose and get reused as fertilizer so that the environment cycle is maintained. Ecosan is suitable for all. In recent times in India Ecosan was first demonstrated in Kerala in 1995, now there are about 2000 of the 3000 ecosan toilets, most of which are constructed only in Tamil Nadu. One of the main advantages is that it stops environmental pollution, and is very useful to agriculture. Thus he traced the history of Ecosan its concept and advantages.

After the tea break all the participants made a visit to the Ecosan toilet construction site where live demonstration of twin chamber Urine Diverted Dehydrated toilet techniques explained to all the participants.

The doubts about the construction and other technical aspects were clearly explained by Mr. AK and Mr. K.Y. Babu. After which the day one of the programme came to a close.

Day 2 :

Since the participants wanted to see the tourist attractions of Kodaikanal in the evening, the day's session started by 8.00 am. with a recap of first day sessions. This was followed by a detailed topic ***Dos and Don'ts in Ecosan*** demonstrated by pictures by Mr.AK . This included aspects like prevention of water entry in the pits and use of ash as a decomposition material. Mr. AK covered the topic ***Ecosan in urban areas China experience*** by showing a short film on urban ecosan incentives by china, various models and techniques from other countries and in particular the China model was shown. Need for a policy level change for ecosan by advocacy at government level.



Participants present group views on Ecological sanitation

This was followed by a presentation on ***Ecosan case study from South India by Mr. M. Subburaman, Director of SCOPE***, which was on the concepts, the problem of pits and septic tanks. Earlier ecosan toilet cost was only Rs.4000/, now cost has escalated due to overall raise of material and labour cost. Various models constructed all over Tamil Nadu were shown which included those in schools, community toilets and individual household models, toilet models for physically challenged and vaults with sloping cases to help quick decomposition. As more ecosan toilets has to be

constructed strategies like conducting a beauty toilet contest was made so as to motivate people

were done by SCOPE. A comparative cost of toilets, showed higher value and sustainability for the ecosan toilet especially in terms of social and economic costs.



Group work on Eco sanitation

Mr. Subburaman also shared their project experience on “**Use and get paid ecosan Toilet**”. The urine collection in the public toilets was a notable and innovative feature. Here the user gets paid for using the toilet or urinating, instead of the normal practice of pay and use. This was done so as to bring awareness among the people on the value of urine as a fertilizer. The collected urine was used in the research project to study the dosage required for various types of plants like paddy and banana which was part of the field visit. He also explained that the research on banana showed a higher yield with

application of urine. Further related studies are in process with the association of Tamil Nadu Agricultural University. At SCOPE office, the application of Maple EMI floriculture liquid which was microbial inoculants was used for hasten the process of decomposition. This liquid was added to one kg. Jaggery with 25 litres of water and kept in an air tight container. Maple liquid is added to this mixture and used for decomposing the manure faster.

Dr. G. Sridevi of GKVK Bangalore made a presentation **on Urine Application for Crop Production and Protocol**. She referred to the need for yellow revolution, which meant the wide use of urine liquid. She explained relationship of four Ps - population, poverty, production and pollution. Urine as excellent source of fertilizer, Pollution of water bodies due to human waste, the mineral content in urine and how it can be used. Urine application on spinach by Mr. Peter Morgan in Africa and his study results, application on maize crops, use on banana were some of the topics presented. She explained that no fertilizers were used till 1950s, after which fertilisers and government reduced the cost of fertilizers affordable to the common farmer. Soon of required phosphates will be an issue as it is element in short supply produced only by few All our activities results in contamination bad health of the people. If urine is harvested whole country we can harvest 1500 tones of which means surplus can be exported, which revelation. Hence urine is found to be a wholesome fertilizer from the research carried out. Waste water also needs to be treated. We can thus avoid all nutrients reaching the sea finally. There is need to separate urine and faeces and use it for agriculture. Urine can be used as a liquid fertilizer and faeces as a soil conditioner. Ecosan should be taught in all colleges and universities besides roof water harvesting techniques. The human urine was more superior to the animal urine. Storage, use and application of urine were further explained in detail from her own Ph.D studies on Urine application to Crops.



fertilizers were used to make it availability a key countries. leading to by the nitrogen was a

Ecosan Hygiene issues were discussed by Ms. Berna Mary. In this presentation she explained about the **key hygiene messages** to be followed and how to maintain the ecosan toilet hygienically. She explained about how the cultural practices and religious customs affect hygiene practices. She narrated the hygiene needs of disabled, hygiene and gender, The ten key hygiene behaviours elaborately discussed. The importance of Hand Washing at critical times and how to maintain ecosan toilets also explained.

This session followed by **Community Mobilisation for Ecosan Promotion** by Mr. L.Peter of REAL, Dindigul. He shared his experience of REAL in the promotion of ECOSAN in the tsunami hit villages of Nagapattinam district. The process in the promotion of ecosan like community awareness through cultural media, focus group discussion, exposure visit to nearby ecosan adopted villages, mason training, the discussion with beneficiaries for their contributions were presented. The challenges in the promotion of ecosan was also shared by Mr.Peter.

A short film on Victims of garbage dump was shown. This was a heart-rending documentary showing the tragic state of adults and children engaged in this hazardous job of collecting wastes to make a living.

Mr. A Kalimuthu then presented the **Integrated approach of water sanitation and hygiene** needs to be followed in this sector of activities. Need for demand generation by raising awareness is still an issue. Other aspects discussed were the importance of menstrual hygiene management and safe disposal of napkins. Schools are the place where villages take refuge at times of flood. Hence schools should have better facilities and infrastructure, urbanization, and problem of perennial rivers becoming seasonal.

Day 3:

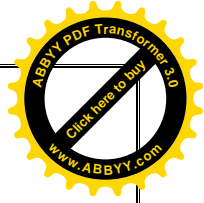
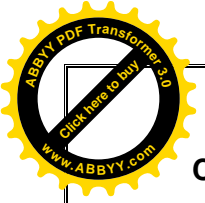
Field visit to Musiri: Participants visited the community toilet at Saliyar street Musiri. It had 300 users per day for 7 ecosan toilets each for men and women and maintained excellently by community. Here the users get paid ten paisa per use and last month SCOPE paid more than Rs.1400 and harvested urine taken to the farm for use in agriculture. The participants taken to a site, where DEWATS (Decentralised Water Treatment Systems) and Solid waste management



Participants visit the site of urine application in Agriculture

programme is implemented. Three tones of waste from town were collected, segregated and sold. This was generating income, besides cleaning up the town form hazardous wastes. They were composting using EM solution and the waste products were segregated with the help of a machine before selling. The next site of visit was the Government Banana Research Farm where urine application was seen.

The closing of the training by a simple function was held where all participants were given certificates. Kodaikanal Municipal Commissioner Mr. Vijaya Kumar was the chief guest who awarded the course certificate to the participants. Mr A Kalimuthu gave his concluding speech on the training and the activities of WASH, besides one participant presenting his feedback on the training. The training ended with a vote of thanks to all participants.

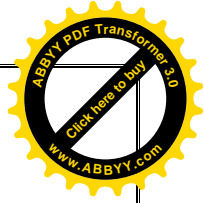
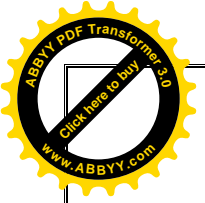


Conclusion:

There were active participation and learning by the participants. It was found that they were all interested to use the knowledge in their field. Reaching out more NGOs with Ecosan was required, as many more requests were received. WASH felt the training was found to be very useful to participants. It also helped in the construction of the first ecosan model toilet in the tourist destination of Kodaikanal.

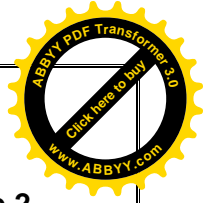
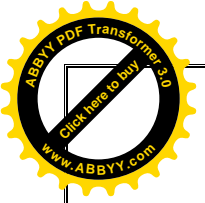
Annexure:

- 1. Evaluation sheet : Qualitative sheet one**
- 2. Evaluation Sheet : Quantitative**
- 3. Training Schedule**
- 4. List of Participants**



Feedback by participants on What they learned

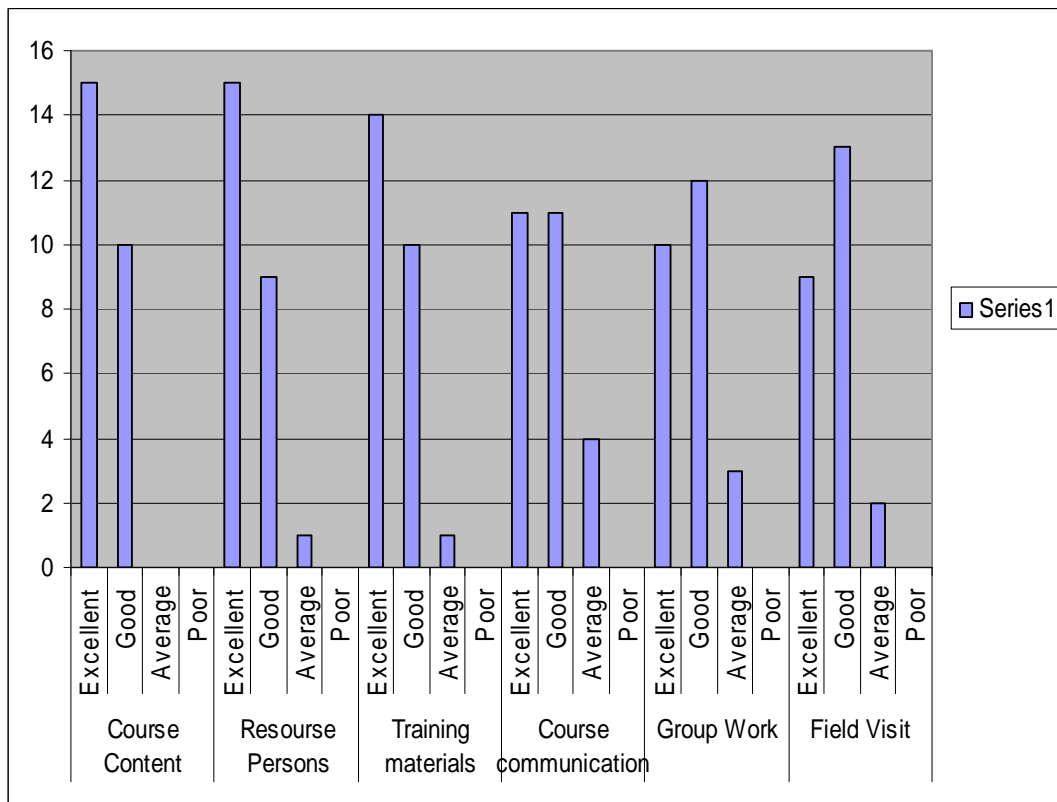
- Economical way of Ecosan Construction
- Use of Human Waste for Agriculture
- Hygiene- Diseases due to open defecation.
- Urine- A liquid gold
- 'F' Diagram
- Basic concept of Ecological sanitation
- Do's and Don'ts of Ecosan
- Types of construction of ecosan toilet
- Nutrient value of human wastes
- Three rules of safe and hygienic use of Urine and Compost faeces
- % of NPK in Urine
- Different types of Water born, Water washed, Vector Borne diseases.
- Difficulties of present method of toilets
- How Resources Wasted through improper disposal of Human Waste.
- Advantages of UDD
- Every Human is a moving fertilizer
- Water Scarcity has blessed in bringing of Ecosan. A BOON TO MANY
- Implication of unmanaged human waste.
- Closing the loop and additional benefits in ecological way
- Technical Options for ecosan Toilet
- Cats are better than human Beings
- Always there is Scope for learning Better ways of building ecosan.
- Safe distance of toilets from drinking water source: Horizontal & Vertical
- NPK Values
- Disadvantage of using flush toilet
- Manipur Model using low cost materials for building Ecosan toilets
- Urban examples of Ecosan- pros & con

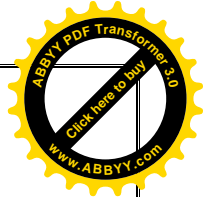
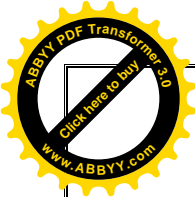


Annexure 2

Quantitative evaluation:

The evaluation on aspects of course content, resource persons, materials, group work, and field visit is depicted in the graph given. A majority gave a very positive feedback on the training.





Annexure 3

On Field Training on Ecological Sanitation for NGOs



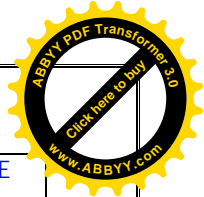
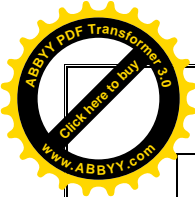
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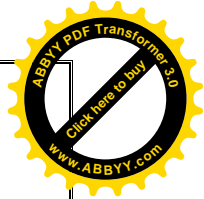
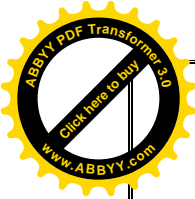
Venue: Sacred Heart College, Shenbaganur, Kodaikanal

Program Schedule

Day / Date	Time		Program / Activities	Resource Person
	From	To		
Tuesday 17.03.09	9.00	10.00	Registration	
	10.00	10.30	Inauguration	
	10.30	11.00	Introductory game	Arumugam Kalimuthu / KY Babu, WASH Institute
	11.00	11.15	Tea Break	
	11.15	12.00	F-Chart & Sanitation Technical options – difficulties in existing sanitary options.	Arumugam Kalimuthu
	12.00	12.30	Ecosan – An introduction	Arumugam Kalimuthu
	12.30	13.00	Ecosan – Participants Experience & Challenges	Group Work
	13.00	14.00	Lunch	
	14.00	14.45	Ecosan – Step by step construction techniques	KY Babu
	14.45	15.30	Manipur Model, Fact about Sanitation, Reuse of decomposed waste & Economic value of human waste	Arumugam Kalimuthu
	15.30	15.45	Ecosan - Hygiene Issues	Ms. Berna Mary
	15.45	16.00	Tea Break	
	16.00	17.30	Ecosan Construction site – visit & Practical Demonstration	KY Babu
17.30	17.35	Day One – Sum up	Arumugam Kalimuthu	
Wednesday 18.03.09	9.00	9.15	Recap	Arumugam Kalimuthu
	9.15	9.45	Dos & Don'ts in Ecosan/Ecosan construction across the country	Arumugam Kalimuthu
	9.45	10.45	Urban Ecosan – China Experience & Film	Arumugam Kalimuthu
	10.45	11.00	Tea Break	
	11.00	11.45	Urine application for crop production & protocol	Dr. Sri Devi, Researcher GKVK, Bangalore.



	11.45	12.15	Ecosan Case study from South India	Mr. M. Subburaman, SCOPE
	12.15	12.45	Use Ecosan toilet and get paid – SCOPE experience	Mr. Subburaman, SCOPE
	12.45	13.00	Victim of Garbage dump – A short Film	Arumugam Kalimuthu
	13.00	14.00	Lunch Break	
	14.00	14.30	Community Mobilization for Ecosan Promotion	Mr. L. Peter, REAL
	14.30	14.45	Need for integrated approach & Demand creation	Arumugam Kalimuthu
	14.45	15.00	Parking Issues – Question & Answer	Arumugam Kalimuthu
	15.00	115.25	Challenges –revisit & Action Plan	Group Work
	15.25	15.30	Field Visit arrangements	
	17.15	17.30	Ecosan Construction site - visit & Practical Demonstration	KY Babu
19.03.09	9.30	5.30	Visit to SCOPE rural & urban Ecosan project villages	Berna / KYBabu



Annexure 4

LIST OF PARTICIPANTS

Mr. SIETI BANU IMMANUEL
Environmentalist Research Team
People's Action for Development
Rojapalayam, Vembar
Tuticorin
Mobile: 90473-30823

Mr. ABRAHAM. V.A.
(Red-R India)
Coorg, Karnataka
94498-30504

Ms. YLLAYLEE DAS
Programme Coordinator
Plan India, New Delhi
99100-32185

Ms. AMALORPAVA JOTHI
EKTA, Bethal Nagar
Bible Bhavan Street, Ponmeni,
Bye pass road, Madurai 625 016

Ph: 0452-2381309

Ms. P. SUMATHY
Technical Officer, ECO-PRO
Aurosarjan Complex, Auroshilpam
Auroville 605 101
Ph: 0413-2906487 / 2622469
epoffice@auroville.org.in

Ms. S.Pushpalatha
Chairman, EKOVENTURE
21 Kamarajar Street, Kadirkamam
Puducherry 605 009
Mob: 94434-59366

Ms. S. KAVITHA
EKTA - Nambikkai Centre
Kalainger Nagar, Muzhukudurci Road
Killai
Cuddalore

Mr. THAMARA KANNAN. T.
DEEPS
BDO Office Road, Pennagaram
Dharmapuri District

Mr. V. SRIKANTH
CHERU
Vellapommanpatti, Vadamadurai
Dindigul District 624 802 Ph: 04551-
238469
E-mail: cherudgl@hotmail.com

Mr. V. CHINNAIA
ROSE Trust
2/598 Kurinji Nagar 2nd Street, EB Colony
Dindigul 624 004
Ph: 99942-01056 E-mail:
rosengo2008@gmail.com

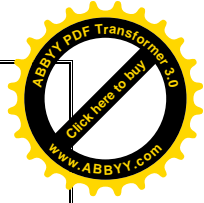
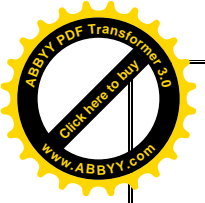
Mr. G. RAMESH
Sector Manager
ASM - Plan PU
Vijayawada, Andhra Pradesh
Mob: 99487-64363

Mr. T. JAGADISH
Admn. & Programme Officer
Arthik Samatha Mandal
Gandhi Vidyalayam
Jangaon Road
Suryapet 508 213, Andhra Pradesh

Mr. SUBRAT KUMAR PANDA
Programme Coordinator
Plan India
Secunderabad

Mr. N. SUNDARA RAJAN
Secretary - AGRID
Sarvodaya Illam
MP Nagar, Vadipatti 625 218
Madurai District

Mr. G. VENKIDUSAMY
Vice Chairman - Aditya Medical Trust
17 Parasakthi Street, Tirunagar
Madurai 625 006
amt.amt2007@rediffmail.com



Mr. N. PAUL TIMOTHY
World Vision India
16, VOC Main Road, Kodambakkam
Chennai 600 024 Mob: 99401-57556
E-mail: paul-timothy@wvi.org

Mr. A. VICTOR FERNANDES
League for Education and Development
(LEAD)
'8/40 Rayar Thoppu, Srirampuram
Srirangam, Tiruchirapalli 620 006
Ph: 97913-19761 / 0431-2432803

Mr. B. RAJABOOPATHY
Project Coordinator - GREDS
No.70 Jayaram Nagar, Thiruvandarkoil
Puducherry
Ph: 0413-2640017 / 9600828921/
98421-09450

Dr. M.R. HUBERT
Director, Shabnam Resources
5 Buddha Street
Chennai 600 024
Ph: 044-24721379 / 64547089 / 64547091
E-mail: mrhubert72@yahoo.com

Mr. V. MUNICHANDRA REDDY
President - ROPE
519 Bairagipatteda
Tirupati 517 501 Andhra Pradesh
Ph: 93938-66778 / 0877-2246515

Ms. Y. SARALA
Health & Hygiene Educator
ROPE
519 Bairagipatteda
Tirupati 517 501, Andhra Pradesh

Ms. R.K. SANMUGI
Project Coordinator
MERG Trust, Thirunagar, Madurai
Mob: 98944-42003

Mr. P. ILANGEERAN
Director - NESAM Trust
24 Nachiyarkovil Road, 1st floor
Woraiyur
Tiruchirapalli 620 003
Mob: 93629-58031
E-mail: nesamngo@yahoo.co.in

Dr. P. VENKATESH
Assistant Professor - Dept. of Community
Medicine
Sri Siddhartha Medical College
Tumkur 572 107- Karnataka
E-mail: venkatpapu@rediff.com
Mob: 9901076994
vepa77@gmail.com

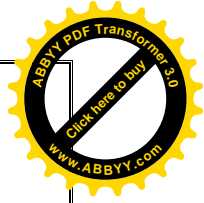
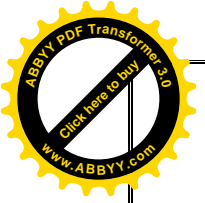
Mr. P. SOMESH BABU
Development Consultant
7/17 Vetri Vinayagar Koil Street
Sundar Nagar, Thirunagar
Madurai 625 006, Mob: 97917-94172
E-mail: someshbabu40@yahoo.com

Mr. M. PRABAKARAN
Coordinator
Florence Home Foundation
No.6 Muthumar Street, Pudupalayam
Cuddalore 607 001 Mob: 98657-75645

Mr. D.A. STEPHEN
Tamil Nadu Ecosan Initiative
Mannavalanallur
Eravancheri PO, Kudavasal Taluk
Thiruvarur District 609 501
Mob: 94424-22376

Mr. LIJO CYRIL
Consultant, FOHRD, Madurai
Thoonunkaparambil (H)
Kanjirathanam PO, Kottayam District,
Kerala Ph: 90489-45694

Mr. M. KARUPPAIAH
Vaigai Trust, Vilampatti PO
Nilakkottai Taluk. Dindigul District,
Tamil Nadu. Mob: 99439-43459



Mr. GANESH CHOUDHARY
State Coordinator, State Water &
Sanitation Cell
Government of West Bengal
SIPRD, Kalyani, Nadia, West Bengal
E-mail:
wbstatecoordinator.sanitation@gmail.com

Mr. DIPANKAR SARKAR
Technical Officer, State Water & Sanitation
Cell
Government of West Bengal
SIPRD, Kalyani, Nadia, West Bengal
E-mail: dip_tosiprd@yahoo.co.in

Mr. RAMESH S. KIKKERI
S.V.Y.M. SARGUR
H.D. KOTE, Karnataka
E-mail: ramsudha2001@gmail.com

Ms. SWAGATA SEN PILLAI
IMACS, New Delhi
E-mail: swagatapillai@gmail.com
Mob: 98100-52334

Mr. K.Y. BABU
Training Coordinator, WASH Institute
5-296, Anandhagiri 7th street
Kodaikanal 624 101, Tamil Nadu
Mob: 94447-39886
E-mail: babu@washinstitute.org

Ms. BERNA MARY IGNATIUS
Programme Coordinator, WASH Institute
5-296, Anandhagiri 7th street
Kodaikanal 624 101, Tamil Nadu
Mob: 99525-23665
E-mail: bernamary@washinstitute.org

Mr. ARUMUGAM KALIMUTHU
Plan India
E-12 Kailash Colony
New Delhi 110 048
Mob: 98688-88870
E-mail: Kalimuthu.Arumugam@plan-
international.org

Mr. L. PETER
Executive Secretary, REAL
M-2/179, 12th street, R.M. Colony
Dindigul 624 008
Mobile: 94430-43220
Phone: 0451-2432242
E-mail: real.nagai@gmail.com

Mr. M. SUBBURAMAN
Director, SCOPE
Tiruchirapalli Mob: 94431-67190
Off. Ph: 0431-2774744
E-mail: scopeagency86@rediffmail.com

Mr. D. CASTELLANO
WASTE, The Netherlands

Dr. SRI DEVI
Researcher
GKVK, Bangalore.