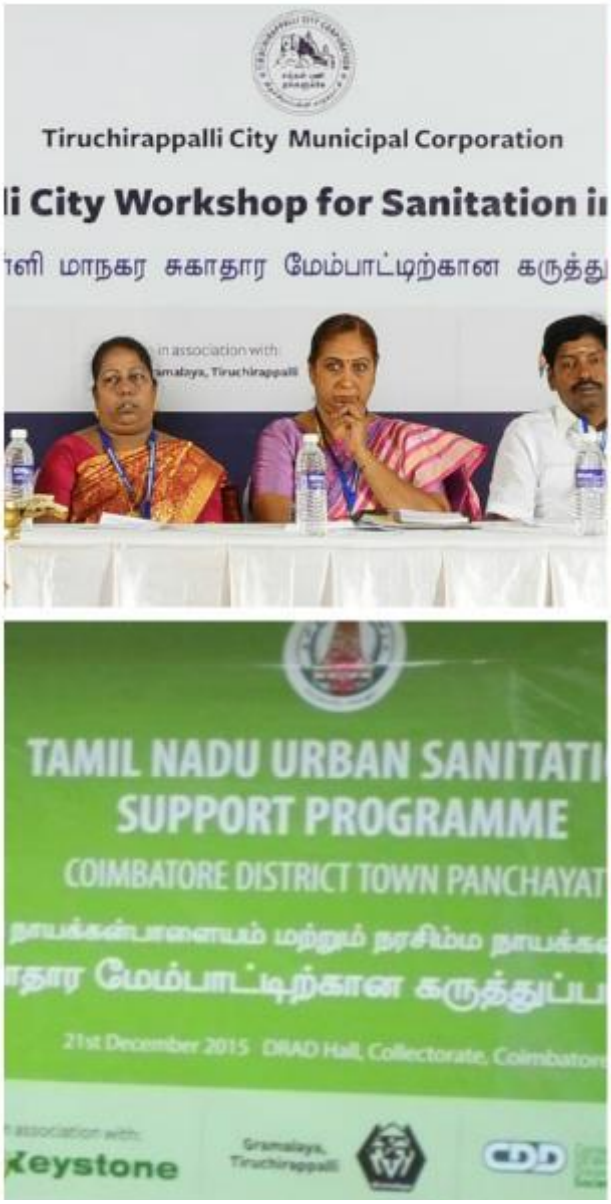


Launch Workshops on Sanitation in Urban Areas of Tamil Nadu: Chennai, Coimbatore, and Trichy

Summary of Proceedings

December 2015

TECHNICAL SUPPORT UNIT:

iihs™
INDIAN INSTITUTE FOR HUMAN SETTLEMENTS

IN ASSOCIATION WITH:

Gramalaya | Keystone | CDD Consortium for DEWATS Dissemination Society

Table of Contents

List of Tables

List of Figures

Abbreviations

AMRUT	Atal Mission for Rejuvenation and Urban Transformation
BMGF	Bill and Melinda Gates Foundation
CBO	Community Based Organisations
CDD	Consortium for DEWATS Dissemination
CSP	City Sanitation Plan
CSR	Corporate Social Responsibility
DEWATS	Decentralised Wastewater Treatment Systems
DPR	Detailed Project Report
DRDA	District Rural Development Agency
FSM	Fecal Sludge Management
GoTN	Government of Tamil Nadu
GPS	Global Positioning System
IEC	Information, Education and Communication
IIHS	Indian Institute for Human Settlements
MAWS	Municipal Administration and Water Supply
NGO	Non-Governmental Organisation
NNP	Narasimhanaicken-palayam
ODF	Open Defecation Free
PNP	Periyanaicken-palayam
SCOPE	Society for Community Organisation and People's Education
TNUSSP	Tamil Nadu Urban Sanitation Support Programme
TSU	Technical Support Unit
UGD	Underground Drainage

1 State Level Workshop on Sanitation in Urban Areas in Tamil Nadu

1.1 Background

Lack of adequate sanitation poses one of the greatest barriers for Tamil Nadu in achieving her full development potential, and ensuring high standards of public health for her citizens. The Government of Tamil Nadu (GoTN) has been a pioneer in not only recognising multiple challenges as core to improved standards of public health, but has also prioritised the sanitation value chain, including the strengthening of septage management as an economical and sustainable complement to network-based systems.

In order to achieve the Tamil Nadu Sanitation Mission, the Municipal Administration and Water Supply (MAWS)department of GoTN aims at scaling up access to safe and sustainable sanitation in all urban areas. Tamil Nadu envisions in becoming a fully sanitised and healthy state, substantially eliminating open defecation, achieving improvements through the entire sanitation value chain, safely disposing an increasing proportion of its human excreta, and re-using/recovering resources therefrom.

The Bill and Melinda Gates Foundation (BMGF) is supporting the GoTN to achieve this Mission. A Technical Support Unit (TSU) set up under this support is assisting in implementation of state-level and city-level initiatives. A consortium led by the Indian Institute for Human Settlements (IIHS) is responsible for programme implementation via the TSU. Two urban locations, Tiruchirappalli and Coimbatore, are selected to demonstrate implementation of innovations and approaches to improve the entire sanitation value chain. The learning from these two urban areas will be used to scale-up and implement programmes in urban areas across the State.

In this context, the first State-level Stakeholders' Workshop was organised on 06 November 2015 in Chennai. This report summarises the key proceedings and discussion points from the workshop.

2 Proceedings of the Workshop, Chennai

2.1 Inaugural Function

2.1.1 Welcome Address: Mr. G. Prakash, IAS, CMA

The Commissioner of Municipal Administration, Mr. G Prakash, IAS, welcomed all participants to the workshop. In his address, he stressed on the importance of such a project to improve the current status of urban sanitation in India and Tamil Nadu. He reminded the gathering that India was lagging behind in sanitation outcomes when compared to other SAARC countries. He emphasised that septage management had become more relevant for ULBs in the current context, and urged the audience to pursue the management of wastewater and fecal sludge as a serious business. He reiterated the government's involvement as well as the role played by public, private and non-governmental organisations in making the Honourable Chief Minister's 'Vision Tamil Nadu 2023', a reality.

Figure 2.1: Welcome address by Mr. G. Prakash, IAS, Commissionerate of Municipal Administration

Source: TNUSSP, 2015

2.1.2 Keynote Address: Mr. Phanindra Reddy, IAS, Principal Secretary, MAWS

The Principal Secretary of the MAWS department, Mr. Phanindra Reddy, IAS, delivered the keynote address at the workshop. He spoke about the adverse impacts of inadequate sanitation on the economy as well as the health of the citizens. 'It is, therefore, necessary for the government and public to focus on improving sanitation conditions in the State', he said, adding that the Honourable Chief Minister had introduced various measures for an Open Defecation Free (ODF) State. These included construction and improvement of infrastructure across the State such as renovating old toilet structures, building new individual, community and public toilets and introducing the concept of low cost Operations & Maintenance (O&M) toilets such as 'Namma Toilets' amongst others.

Figure 2.2: Keynote Address by Mr. Phanindra Reddy, IAS, Principal Secretary, Municipal Administration and Water Supply

Source: TNUSSP (2015)

Mr. Reddy said that technological interventions must focus on reducing the O&M and making infrastructure user friendly. He also noted that there were several constraints faced by conventional toilets including the lack of user-friendliness, ventilation and cleanliness. These issues lead to reduced usage of toilets and, therefore, increased open defecation, he said.

The Principal Secretary also talked about fecal sludge management in detail and pointed out that Tamil Nadu was the first state in the country to issue guidelines on septage management. He also referred to other initiatives taken by the State such as introduction of co-treatment of septage at Sewage Treatment Plants (STPs). He added that progress was needed especially in the development of additional Fecal Sludge Treatment Plants (FSTPs), licensing and regulation of de-sludging operators, reducing leakages across the sanitation value chain, and the conversion of insanitary latrines to sanitary ones. He opined that the focus of the sector should be towards developing low cost O&M technologies, resource recovery models and user-friendly designs. He said there was an expectation of increased technical support to solve problems in the field, from the Tamil Nadu Urban Sanitation Support Programme (TNUSSP). He also called for ULBs to work their way towards declaring their towns and cities as 'Open Defecation Free'.

2.1.3 Special Address: Mr. Vikram Kapur, IAS, Principal Secretary/Commissioner of Chennai Corporation

Following the keynote address, Mr. Vikram Kapur, IAS, Commissioner of Chennai Corporation gave a special address at the consultation. He provided a brief description of the Swachh Bharat Mission, including its key intervention areas like building sanitary latrines, community and public toilets, solid waste management, behaviour change and capacity building. He reported that the programme entails an investment of nearly Rs.2 lakh crore over the next five years to construct 12 crore toilets in the country, of which Tamil Nadu has received Rs.12 crores. He pointed out that the Mission had started to bring in initial improvements in sanitation.

Mr. Kapur said that one of the key issues faced in sanitation interventions was unavailability of land. The Commissioner reiterated the importance of septage management, explaining the city is ever growing and not all areas are covered by underground drainage (UGD) systems. 'Therefore, a comprehensive approach of integrating septage and sewerage must be adopted,' he said.

Figure 2.3: Mr.Vikram Kapur, IAS, Principal Secretary and Commissioner of Chennai Corporation delivering the Special Address

Source: TNUSSP, 2015

2.1.4 Introductory Speech: Mr. Hari Menon, Deputy Director, BMGF

Mr. Hari Menon, Deputy Director of the India Programme, BMGF, briefly introduced the programme. He also provided a quick overview of the work done by BMGF around the world, and in India.

Figure 2.4: Hari Menon, Deputy Director of the India Programme, Bill and Melinda Gates Foundation making the Introductory Speech

Source: TNUSSP, 2015

He added that financial limitations prevented full coverage of urban areas with sewerage systems and that hybrid operating models, such as the one envisaged under the current project, should be focussed upon to improve sanitation outcomes. He praised the efforts of the GoTN towards the introduction of septage management and hoped that the State would be a role model in septage management for other states across the country. It was this vision and initiative on part of the government, aided by its responsiveness towards innovations, which led to the project being situated in the State, he said.

2.1.5 Inaugural Speech: Mr. S.P. Velumani, Hon'ble Minister for Municipal Administration, Rural Development, Law, Courts and Prisons, Government of Tamil Nadu

Figure 2.5: Honourable Minister S P Velumani addressing the audience

Source: TNUSSP, 2015

The Honourable Minister for Municipal Administration, Rural Development, Law, Courts and Prisons, Mr. S.P. Velumani, in his inaugural speech, spoke about the State's lead role in improving water and sanitation outcomes in the country and outlined the various interventions started under the Honourable Chief Minister's Mission of ODF State. To achieve this mission, 1224 new community toilets have already been constructed and existing toilets are being renovated. He concluded by wishing to fulfil the 'Vision Tamil Nadu 2023' of the Chief Minister and hoped for the success of the project, while emphasising the State's commitment towards sanitation.

2.1.6 Vote of Thanks: Mr. K. Maharabushanam, IAS, Director of Town Panchayat

Mr. K Maharabushanam, IAS, Director of Town Panchayats, once again welcomed everyone to the consultation, and thanked all the participants, and speakers of the inaugural session.

2.2 Urban Sanitation in Tamil Nadu: Issues and Innovations

Mr. G Prakash, IAS, CMA made a presentation on the state of urban sanitation in Tamil Nadu. The session began with a brief description of the demography of the State. It was noted that out of the State's total population of 72 million in 2011, 48 per cent was urban, and this is expected to grow to 67 per cent by 2030.

However, with the growth in urban population, the issue of inadequate sanitation would also grow. Tamil Nadu is one of the leaders in the country in terms of Gross Domestic Product, Per Capita Income and literacy rates. However, it falls behind in the case of sanitation. There have been improvements in the situation, with the non-availability of toilets falling from 31 per cent in 2001 to 21 per cent in 2011; it is further expected to go down to 15 per cent by 2021 and finally reach the target of universal access to toilets by 2040. However, this process needs to be expedited.

The provisioning of underground drainage (sewerage) networks for all urban areas might not be realized due to high financial costs. It is in this context that the importance of decentralised systems become critical. The key advantages of such systems are their simplicity, cost-effectiveness and the ability to have smaller facilities spread over large cityscapes.

Mr. Prakash also recommended some steps as the way forward. He asked engineers to discuss ideas for technical development and also check for the efficiency of decentralised systems. He urged the audience to work towards eradication of open defecation, and said that around 32,000 community toilets needed to be renovated and brought back into operation. He also pressed for increasing the coverage of individual household toilets to eradicate open defecation.

The CMA spoke of the importance of communication and referred to the efforts made by the MoUD in this direction. He stressed on the right mix of advertisements and promotions for the same, as well as the importance of documentation. Effective strategies to sensitise people and create awareness were needed, he added.

Mr. Prakash spoke of the Swachh Bharat Mission and said that sanitation has now become a priority for both the Central and State Governments. While 75 per cent of toilets for households have been built, the emphasis would be on the remaining 25 per cent, now. He said that building six lakhs toilets in a span of five years could be easily achieved as the State had already built nearly 7 lakh toilets in two years. Apart from individual toilets, 59,000

community toilets are also expected to be built in the next five years. However, community toilets have been a nightmare for the ULBs in terms of O&M. He urged the audience to take Gramalaya as an example, especially in the context of O&M. He also listed the major achievements of the CMA, which included launch of 'Namma Toilets', retrofitting of existing toilets (and manuals for the same) and the implementation of the urban school sanitation programme in the State.

To fulfil the mission of ODF Tamil Nadu, the Commissionerate of Municipal Administration has worked out an elaborate IEC strategy that focuses on user-centric solutions to eliminate open defecation. The IEC strategy includes

1. Provision of user-friendly public and community toilets that are, and will be constructed and maintained by ULBs.
2. Advertising through posters and banners to spread messages on hygiene and awareness, focussed on different user-groups.
3. A video footage that captures the sanitation needs of the users and the user's feedback and experience after using the user-friendly toilets.
4. An Engineer's Manual on Retrofitting existing public toilets in urban Tamil Nadu, and
5. Toilets for All Document: a global design approach to eliminate open defecation in urban Tamil Nadu.

The presentation was concluded with a hope to achieve SBM targets by March 2017.

In his presentation, Mr. K Maharabushanam, IAS, DTP, also shared the Chief Minister's Vision 2023 to make Tamil Nadu ODF and 'Garbage Free'. He said that currently the focus was still on building toilets and not on other aspects. He mentioned that Rs. 697 crores have been spent so far on renovation of existing toilets, while acknowledging that maintenance was a major issue in the case of community toilets. Given that 80 lakh people live in urban areas in the State, he said that significant attention had to be paid to this constituency.

The Director of Town Panchayats also mentioned that two major technologies have been used so far in the State—underground sewerage systems and fecal sludge management. He advocated for greater analysis of sewerage systems and their efficacy, while calling for more learnings in the field of FSM. While technologies have been improved thanks to partners such as BMGF, improving communication and information dissemination is also a must to eradicate open defecation, he said. Mr. Maharabushanam closed the session by saying that documentation needs to be given more importance.

2.3 Best Practices in Urban Sanitation

Mr. Ganapathy from Exnora made a presentation on best practices in urban sanitation. He said today both the Central and State Governments were supportive of interventions in sanitation, especially septage management. He spoke about various capacity building initiatives that Exnora has been doing across various ULBs on this issue. He recommended DEWATS as a successful model to be used as an alternative to networked systems. Quoting the example of East Devadhanam in Trichy, he said that DEWATS when owned and operated by the communities themselves can become a successful model, overcoming the problems related to its operations and maintenance. Mr. Ganapathy also spoke about the importance of solid waste management, as it forms an integral part of sanitation.

Mr. Tamilchelvan from Masatra Managaratchi made a presentation on Solid Waste Management (SWM) in Tiruppur Corporation. He explained about the SWM operation

(Structural dumping of waste - an eco-friendly model) that has been introduced in Tiruppur, and is in use for the last two months. 'It is a simple sanitary landfill which acts as a bio-reactor. No organic wastes are added but residues of organic wastes are added. It has a technology of leachate collection and gas collection," he said, and suggested the use of such simple methods in SWM techniques, which are feasible economically and scientifically.

2.4 Break-out Group Discussions

2.4.1 Technology and Management Options for Septage Management

Mr. Joseph Ravikumar, Consultant, Water and Sanitation Programme (WSP) laid out the context for the importance of septage management in India. He talked about various interventions that are possible and technological options available for these interventions. He also presented various factors that have to be considered while choosing an appropriate intervention.

Mr. Andrews Jacob from CDD Society made a presentation on the FSTP set up by the CDD Society in Bangalore. He explained the technology used and discussed the concerns related to its cost and efficiency.

Mr. A. Mathuram from the Directorate of Town Panchayats spoke about septage management in Madurai. He also quoted experiences from other countries on various technological options available for treatment of fecal sludge.

Figure 2.6: Group Discussion on Technology and Management Options for Septage Management

Source: TNUSSP, 2015

The presentations were followed by an open discussion. The key points of the discussion are listed below:

1. The impacts of improper septic tanks were discussed first. Overflow from septic tanks can pose a threat to the health of communities located nearby. Percolation into the ground can contaminate soil and underground aquifers.
2. The participants said that FSM interventions should not burden the poor. While designing solutions, the participation and willingness to pay from the economically weaker sections must be considered.
3. It was agreed that FSM implementation would take a lot of time; and hence short-term action goals should be prepared by the implementing body. As an initial intervention, a

treatment plant must be established, as this is lacking in the existing FSM value chain. Private operators should also be incentivised to bring the sludge to the treatment plant. This could be done through financial incentives or through regulations.

4. It was noted that the government had rolled out various schemes till date and efforts must be made to integrate the outcomes and learning from previous schemes and build upon them. The participants also discussed the need for convergence of schemes related to health and sanitation.

The discussion ended with the question: Can septage management be a viable alternative to the underground sewerage systems? This received a few mixed comments to support both sides of the debate. However, the participants concluded that given the constraints in building the sewerage infrastructure, septage management should be considered as a viable alternative.

2.4.2 Community and Public Toilets

Mr. Kandasamy, Deputy Commissioner (Works), Chennai City Corporation started the session with his presentation on public toilets. Different technology options for public toilets were showcased, ranging from e-toilets costing Rs. 4.80 lakh to 'Namma Toilets' made of polyethylene, which could be rented out. The rental for the public toilets is paid from the Chennai City Corporation funds on a monthly basis at Rs. 12,500 per unit. The participants said it was unviable to pay a rent on toilets as it resulted in a heavy recurring cost. The e-toilet had facilities such as incinerator and indicators on whether the toilet is ready for use or occupied, etc.

The participants also said that toilets maintained on a contractual basis were not maintained properly. Space was listed as one of the key constraints in providing accessible toilets. It was suggested that focus should be more on individual toilets rather than on public toilets. The participants also enquired about plans for increasing toilet coverage for homeless people, which elicited a positive response.

The second presentation was made by Ms. Geetha from Gramalaya on community toilets maintained by women groups in Tiruchirappalli City Corporation on the 'pay and use' model. The emphasis was on the process involved in preparing and mobilising the communities in establishing 'pay and use' toilets in slums and gradually making the slums ODF with the help of the Tiruchirappalli City Corporation, ward councillors, elected representatives and other voluntary organisations. The slums were made ODF over the last 15 years and the Women's Action for Village Empowerment (WAVE) Federation has been taking the ownership of the project after the withdrawal of Gramalaya. She further mentioned that the WAVE Federation is now responsible for maintenance of community toilets including repair and renovation.

The discussion, following the presentations, centred on the following points:

1. 'Namma Toilets' are preferable in cities, which already have underground sewerage networks. It is also advantageous in areas with space constraints. For areas without space constraints, individual toilets could be built.
2. Participants said that the PPP model could be explored in providing basic amenities like community toilets and public toilets.
3. O&M is the biggest issue when it comes to community and public toilets. Contractors in charge of constructing the toilets should also take the responsibility for maintenance. The other option is to go for community managed toilets.
4. For town panchayats constructing community toilets, the size of the pit should be calculated depending on the number of users. The number of seats would also depend on

the same. User committees should be constituted at the start of the planning process to ensure their participation in the O&M and design aspects.

5. It was suggested that adequate awareness and information campaigns were required to prevent OD. Simple IEC materials should be developed to motivate the communities in proper usage and maintenance of the community assets created in their areas. Rather than depending on sanitary inspectors for monitoring, engaging residents of the neighbourhood would prove to be more fruitful.
6. Incinerators facility should be made mandatory in the women toilet complexes. Separate complexes for men and women might also be considered. Promoting household toilets in the areas will increase the toilet usage among the communities, thereby reducing open defecation.
7. The NUSA toolkit developed by WaterAid in assessing the functional status of the community toilets could be useful. The same toolkit was used for repairing 100,000 toilets in six months.
8. Many town panchayats and municipalities are interested in introducing the community managed toilet systems like those in Tiruchirappalli city.

2.4.3 Law and Regulations for Improving Urban Sanitation

The session started with a presentation by the Additional Director of Municipal Administration on the various laws and regulations that are currently in force in Tamil Nadu. These included regulations such as the Tamil Nadu Public Health Act, the Tamil Nadu Municipal Act (1920 and its subsequent amendments in 1939,1993), the Manual Scavenging Abolition Act (1991) amongst others. These helped to lay down the exact roles and responsibilities of the ULB, such as provision of public toilets, adequate management of solid waste, and enforcement of the various rules prohibiting manual scavenging. Emphasis was laid on the fact that municipal agencies have been provided with a wide range of powers to implement and enforce the various Acts and Rules regarding sanitation, especially the prohibition of manual scavenging.

The presentation also said that if wastewater is disposed of directly into drains, the corresponding toilets are treated as unsanitary and the respective agency can fine the violator for the same. The laws also prohibit manual cleaning of drains and prescribe for very harsh punishments on the violating ULB. However, it was pointed out that while strong rules and acts are in force in the State, the implementation of the same has been negligible due to political considerations. This was followed by discussions on strengthening implementation of the laws and rules discussed above.

The participants also discussed in detail, various steps involved in fecal sludge management. The need for registering all de-sludging operators was emphasised. One of the participants shared his experiences on fecal sludge management from Trichy. The District Collectorate along with the Regional Transport Officer had put together a data base to identify all the de-sludging operators in the district. The district administration then engaged with the de-sludging operators to identify their issues and resolve them.

Based on these discussions, the participants put forward suggestions, such as the use of Self Help Groups (SHGs) in the regulation of de-sludging operators and confiscation of unlicensed vehicles. The need for improved IEC (Information, Education and Communication) for elected representatives, households and masons, to explain concepts like sanitary and insanitary latrines, the linkages between sanitation and public health, and proper construction of septic tanks was recognised by the participants.

The moderator summarised the key points discussed – the updating penal provisions in the various rules and acts; the need for a time-bound process for ULBs to pass byelaws; the introduction of social audits for enforcements and the necessity of advocacy with different stakeholders such as politicians, masons, households, etc.

Figure 2.7: Presentation on Law and Regulations for Improving Urban Sanitation

Source: TNUSSP, 2015

Following this, a presentation was made by Ms. Susmita Sinha from CDD Society, Bangalore on their experiences on piloting a fecal sludge management programme in Devanahalli town on the outskirts of Bangalore. CDD Society had, with the help of stakeholders in both government and non-government agencies, come up with a draft operative guideline for fecal sludge management. This was sought to be operationalised in the town of Devanahalli, with the help of the ULB. The presentation threw light on the various aspects of the project and the challenges that it had faced so far. The Director of Municipal Administration participated in the session and identified the need for similar interventions in bigger towns and smaller cities.

2.4.4 Behaviour Change and Communication

Ms. Sonalini Mirchandani from The Communication Hub, Mumbai made a presentation on the various aspects of Behaviour Change and Communication (BCC). She emphasised that the purpose of the exercise was to engage with various communities. Discussing in the differences between urban and rural sanitation, she said that similar outcomes might be seen in both areas, but the reasons for certain behaviours were very different between the urban and rural populations.

The presentation spoke about the linear model for behaviour change, where behaviour change is a process involving different actors and audiences engaging with each other.

This was followed by exercises to showcase how a holistic approach should work and what would happen in the absence of proper communication. It was noted that the various barriers amongst audiences needed to be taken into consideration before communication strategies are prepared.

Figure 2.8: Presentation on Behaviour Change and Communication

Source: TNUSSP, 2015

Long term changes need three essential components – behaviour change and communication, social mobilisation and advocacy. Despite the seeming simplicity, it was emphasised that behaviour change is a complex process, having cognitive changes, changes in action, behaviour and values as its components. As one goes down this chain, the process of communication also becomes progressively difficult. At the same time, there are also multiple channels of communication that exist; choosing the appropriate channel depends on the role it is envisaged to play in the process.

Following the theoretical discussion, the session moved on to ground realities. The participants discussed the various kinds of platforms that would promote continuous community engagement. The role of local elected representatives and school-based campaigns were highlighted here. It was also shown that when communities are involved in creating a practice from scratch, the adoption rate is higher as a sense of ownership is prevalent. This was seen in the case of 'Namma Toilets' in Trichy.

The discussion concluded with a recap of the key takeaways from the session.

2.4.5 De-sludging Operators' Meeting

The role of the de-sludging operators in the successful implementation of the project is paramount. Recognising the same, the workshop had a session where de-sludging operators were invited to discuss the challenges faced by them in their work. Seven de-sludging operators from Chennai, Trichy and Coimbatore participated in the session.

The operators said that they usually collected septage and disposed it in the agricultural lands and coconut groves on the request of the farmers. They also took it to treatment plants during the monsoon. They contended that the timings imposed for collection of septage and the location of the disposal areas placed severe restrictions on their operations. Treatment plants were usually located far from their place of operation, while pumping (decanting) stations did not have the facility for disposal. Most of them agreed that they wanted disposal sites near the collection spots.

It was also mentioned that there were several non-registered operators who worked for lower costs and disposed of the septage into open lands and water-bodies. This adversely affected the environment, as well as the business of registered operators. However, the de-sludging

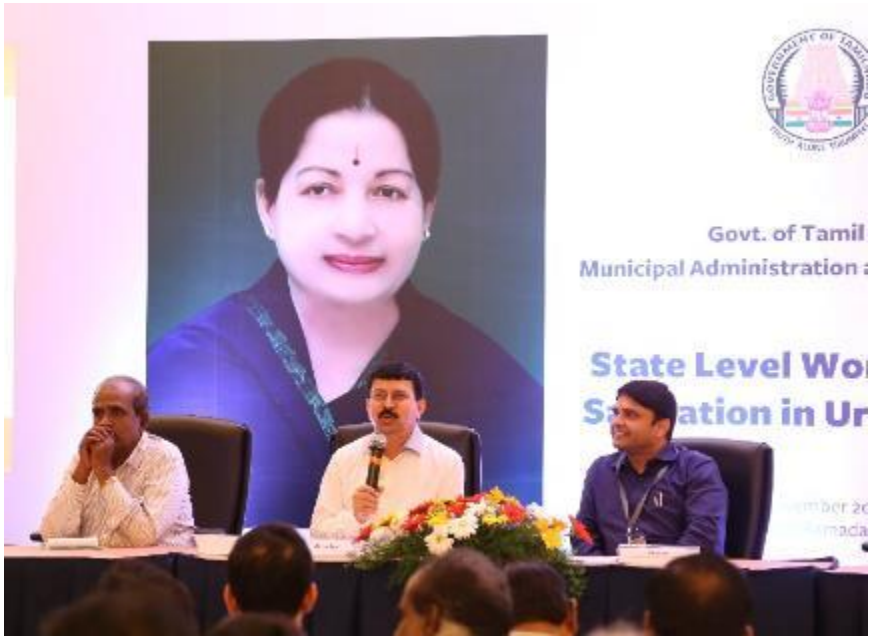
operators acknowledged that several registered operators also disposed of their waste illegally. They also requested for a reduction of the annual deposit rate (Rs. 18,000 per vehicle) for de-sludging operators.

The de-sludging operators were able to give an insight into the various kinds of septic tanks they encountered, suggesting that the rate of filling up of the tanks is low due to seepage. They felt that regular cleaning of septic tanks should be made mandatory.

2.5 Session V: Brief Observations from Break-out Group Discussions

Following the break-out group discussions, the groups presented their salient points of the discussion to the larger audience.

Figure 2.9: Break-out Group Discussions



Source: TNUSSP, 2015

The key points presented during the session included:

2.5.1 Technology and Management Options for Septage Management

1. There is a strong need to have incentive mechanisms to attract private operators.
2. It should be ensured that the lower income groups are also being involved in septage management interventions.
3. There is a need to build on old schemes and programmes rather than reinvent the wheel.
4. More focus should be placed on integrating health and sanitation.
5. The experiences of the pilot fecal sludge management programme by the CDD Society in Devanahalli (town near Bangalore) was shared.
6. Learnings from the Madurai Corporation were also shared.

2.5.2 Behaviour Change and Communication

1. Due to the presence of multiple stakeholders in the sector, communication becomes a major problem.
2. The example of 'Namma Toilets' in Trichy was highlighted as it included community involvement in creating a behavioural practice from scratch.

3 Proceedings of the Stakeholders' Consultation, Coimbatore

3.1 Inauguration Programme

3.1.1 Welcome Address

Mr. Pratim Roy, Director, Keystone Foundation, welcomed all the participants to the Stakeholders' Consultation. Following this, the District Collector Ms. Archana Patnaik IAS lit the lamp and inaugurated the meeting. Mr. Tha Murugan, Project Director, DRDA, Mr. Ganeshram, Assistant Director of Town Panchayats, Ms. Kavita Wankhade, Team Leader, TNUSSP and Ms. Snehlata Nath, Director of Programmes, Keystone Foundation accompanied the Collector in lighting the lamp.

3.1.2 Inaugural Address

In her inaugural address, Ms. Archana Patnaik IAS, reiterated that this programme had been launched for improving urban sanitation in the two town panchayats of Periyanaicken-palayam and Narasimhanaicken-palayam in Coimbatore District. Welcoming the officers from the two town panchayats along with NGOs and private sector participants, the District Collector asked the participants to take inputs from the resource persons in the programme. She requested the Chairmen of the two town panchayats and the Executive Officers to involve themselves in the programme and help in improving the sanitation status in these panchayats.

Figure 3.1: Inaugural Address by Ms. Archana Patnaik, IAS Collector

Source: TNUSSP, 2015

3.1.3 Sanitation in Coimbatore Corporation

Dr. K. Santhosh Kumar, City Health Officer, Coimbatore Corporation gave a brief insight into the organogram of the Corporation, the details of the wards, population data and details of technical equipment used by the Coimbatore Corporation for solid and septage waste management, UGD management and the sanitation status within the city. He also discussed some successful projects like 'SUNYA Project—Zero Waste Project', 'Awareness Programme through Pamphlet Distribution', efforts taken in collaborating with the ITC to collect plastic wastes and Guinness Programme on Solid Waste Management. Dr. Kumar stressed on the importance of Engineering Solutions and Technologies to improve sanitation, health of

employees in the sanitation sector, and the necessity of following the 3Rs (Reduce, Reuse and Recycle) principle.

3.2 Introduction and context of the project

Ms. Snehlata Nath, Director, Keystone Foundation, said urban sanitation in most parts of the State including Coimbatore district needed considerable attention and improvement. She said the GoTN had demonstrated pioneering leadership in recognising the urgent need for stopping open defecation in the State, and understanding the financial and technical constraints involved in extending the Underground Drainage (UGD) to all areas.

Ms. Nath also gave a detailed overview of TNUSSP as well as the condition of sanitation in Tamil Nadu, the status of open defecation, UGD system in the state and the necessity of designing proper septic tanks. She highlighted the steps taken by the GoTN like the Chief Minister's Vision 2023, ODF State, 'Namma Toilets', Septage Management Operative Guidelines, and involvement in the Smart City programme, AMRUT programme and Swachh Bharat Mission of the Government of India.

3.2.1 Innovations in the Sanitation Sector in Coimbatore District

Mr. Tha Murugan, Project Director, DRDA, recounted the experience of the district in promoting sanitation in rural areas, and more recently in reducing open defecation and improving liquid and solid waste management under the Swachh Bharat Mission. He also highlighted the State's experience with innovative technologies in human excreta management in specific types of terrains including water-scarce and waterlogged areas.

Mr. P. Ganesharam, Assistant Director Town Panchayats, Coimbatore, gave an overview of the sanitation status of Coimbatore town panchayats, especially on the composting practices of solid wastes. He also extended his support towards TNSSUP.

3.2.2 View from ground

Mr. Anandan, Chairman Narasimhanaicken-palayam, discussed the issues and challenges in improving sanitation in peri-urban areas of Coimbatore and the different initiatives taken up till date. He appreciated the efforts made by the Government to support the Town Panchayat in achieving sanitation goals.

Mr. Ravi, Panchayat President, Kurudampalayam Village Panchayat gave a brief insight into the initiatives taken up by the Self Help Groups (SHGs) to handle solid wastes. He said that the SHGs had launched a self-reliance programme through sale of recovered resources like compost, vermi-compost and panchakaviya. The village panchayat is working towards latrine-linked biogas systems to support community kitchens, he added.

3.3 Introduction to TNUSSP

Ms. Kavita Wankhade (IIHS), Team Leader of the TNUSSP, detailed the approach of the programme and its support to the State and select urban locations. This programme will demonstrate the institutional, social, technological innovations in the two Town Panchayats of Coimbatore, apart from providing support in preparing a City Sanitation Plan (CSP) and assisting in its funding and implementation, she said.

3.3.1 Community Participation in Slum Improvements: Experiences from Gramalaya, Trichy

Mr. Elangovan, Executive Director of Gramalaya, Trichy shared his experiences on 'Community Participation in Slum Sanitation and its Improvements'. He explained about the various projects and schemes in which Gramalaya had worked in the area of urban slum sanitation, including the efforts undertaken in creating an ODF area in Trichy. The various trainings organised for the SHGs, Community Based Organisations (CBOs) and Community Management Structures were also mentioned.

Mr. Elangovan touched upon the work done by the WAVE Federation and the role of different stakeholders of the group. He highlighted the achievements of Gramalaya which included effecting changes like setting up functional toilets, increased coverage of households, exclusive toilets for children, ensuring people's participation in the CBO activities, etc. He also said that the SHGs had successfully demonstrated a revenue generation model through maintenance of community toilets.

3.3.2 Technology Innovation in Sanitation Sector

Mr. Ganapathy, SCOPE emphasised on the importance of sanitation in human development. He spoke about the existence of various types of toilets such as twin-pit latrines, toilets with septic tanks and some modern technologies like ECOSAN and DEWATS. He also stressed upon the need for proper treatment and disposal of septage in urban areas. He detailed the construction methods, working principles and advantages of twin-pit latrines.

3.3.3 Open Discussion

A variety of issues came up during the open discussion which included clarifications on the type of technologies used for construction of septic tanks, need for training masons, lack of sanitary workers as well as the need for proper behaviour change communication.

Dr. Murali from Multiversal Technology sought clarifications on the new technologies for sanitation. Mr. Ganapathy gave an example of Eco-san toilets, which have openings used alternatively, where solid waste and urine from one pit gets separated to make manure, while the other is in use. Dr. Murali sought clarifications on the ergonomics of Eco-san and its problems, as it is difficult to shift for washing. Raw urine needs to be sterilised also to avoid infections, he added.

Mr. Kanagaraj, E.O. of Periyanaicken-palayam wanted to know how to construct proper septic tanks, to which Mr. Ganapathy replied that this could be made possible by giving training to the masons on construction and design.

Mr. Pratim from Keystone Foundation and Mr. Somnath Sen from IIHS outlined the importance of BCC and said that attention should be paid to this aspect to effect a real change.

The Assistant Director, Town Planning said that there was no proper implementation of new techniques, which was one of the main reasons for lack of sanitation. Attention is paid to exposure visits and paper work of the visits, but there are huge gaps when it comes to implementation, he said.

Giving the example of an area where open defecation was being practiced, he said that this area had now been converted into a park with a public toilet and incentives were being offered to encourage people to use the toilet. The Assistant Director Town Planning also said that more attention had to be paid to the maintenance of public toilets, water supply and towards creating awareness among the people using the facility.

The Chairman of, Narasimhanaicken-palayam town panchayat mentioned the shortage of sanitary workers and also suggested weekly de-sludging of the public and community toilets. Ms. Selvanayaki from the Tamil Nadu Institute of Urban Studies (TNIUS) suggested that the 'pay and use' system in public toilets should be stopped as people were not able to afford it on a daily basis. Mr. Ganapathy responded by saying that the maintenance of a community toilet depended on its being a 'pay and use' facility, to which Sanitary Inspector of PNP asked why the government which gave other basic amenities like fans, grinders, mixers, TVs free of cost was promoting the idea of a paid toilet.

The Additional Director/Project Officer, DRDA recommended that a baseline study to be done to understand the situation on the ground, after which appropriate technology can be identified based on the need. This was necessary because any one kind of technology was not suited for all places. He also encouraged the nodal agency to study the available technologies and identify the one that could be implemented at a practical level generating the best results.

Ms. Gayatri said that the construction of a common toilet was not an ideal solution in the long run and emphasised the need for individual toilets. The Additional Director/Project Officer, DRDA clarified that space constraint was the reason why people opted for public/community/mobile toilets. He said that septage management, illegal disposal of septage are some of the issues that need to be addressed.

Mr. Rajiv Raman, Advisor, IIHS asked the officials of both the town panchayats, if there was adequate staff for sanitation.

The open house concluded with the Additional Director/Project Officer, DRDA instructing the stakeholders to continue with the baseline study. He said that the primary and secondary data would provide all the required details.

3.4 Innovations in Sanitation

Participants from the two town panchayats gave an overview of the sanitation facilities in their respective areas.

3.4.1 Sanitation in Periyanaicken-palayam

Mr. Kanagaraj, Executive Officer, Periyanaicken-palayam, presented the map of the town panchayat, statistics, demographic report, SBM report and steps taken to ensure the usage of public toilets. He also presented the various awareness campaigns undertaken with the help of NGOs against insanitary toilets, giving information on the correct ways of constructing toilets as well as the various government schemes and aid available to help build toilets. Mr. Kanagaraj said that the septage collected was being used as agricultural manure with due permission from farmers. He added that those guilty of illegal disposal of septage were being fined.

'There is a very good practice of solid waste management in this town panchayat, with 80 per cent of people segregating and disposing the waste. Also the biodegradable wastes are turned to compost, which is sold at the sales center,' he said. The presentation also mentioned the new equipment being provided to sanitary workers, to help them carry out their work effectively.

3.4.2 Sanitation in Narasimhanaicken-palayam

Mr. Ravi, Executive Officer, Narasimhanaicken-palayam, presented the statistics of the town panchayat. He also flagged the problem of finding land for a large-scale solid waste

management project and said that the solid waste was being dumped in a small area of about 30 to 40 cents, at present. The septage from all public and common toilets was being de-sludged by private de-sludging operators, he added.

Figure 3.2: View from the ground: Narasimhanaicken-palayam by Mr. M.Anandan, Chairman Narasimhanaicken-palayam

Source: TNUSSP, 2015

3.4.3 Water Resources and Drainage

Mr. T. Balachander, Programme Co-Ordinator, Keystone Foundation, in his presentation, spoke about the encroachment of fresh water sources, dumping of solid wastes into water bodies and illegal discharge of effluents into rivers and lakes.

3.4.4 Sanitation Finance

Mr. Paul Sathyanadhan, CEO, Guardian, explained about the world's first microfinance project exclusively for water and sanitation. He gave a clear idea on the process of providing financial support to individuals for sanitation infrastructures at a low interest rate of 21 per cent. He offered his company's support to TNUSSP.

3.4.5 Challenges in Environmental Conservation

Mr. Mayilsamy presented the initiatives undertaken by Siruthuli (a local NGO) towards environmental conservation, aimed at providing clean and sustainable use of water resources. He said the citizens of Coimbatore are highly concerned about conserving their environment.

3.5 Suggestions for Improvements in Urban Sanitation in Periyanaicken-palayam and Narasimhanaicken-palayam Town Panchayats

Some of the issues that were flagged by participants, which could be part of the project were:

3.5.1 Rules and Regulations

i. Insisting on individual toilets
ii. Strict enforcements of existing rules
iii. Provision for accepting suggestions from the public
iv. Monitoring of existing rules
v. Cancellation of licenses for those indulging in indiscriminate disposal of septage.

vi. GPS tracking of the de-sludging trucks.

3.5.2 Technology Improvements

i. Establishing partnerships between local bodies, local government, private enterprise for technology dissemination and design
ii. Promoting location specific methods
iii. CSR support for implementation
iv. Training of stakeholders
v. Establishing a pilot model
vi. Use of biogas for sanitary napkin incineration
vii. Using urine as liquid fertilizer
viii. Making charcoal from faeces
ix. Construction of multi-storied toilets
x. Collectivisation of the cesspool operators
xi. Medical check-up for desludging operators
xii. Undertaking techno-feasibility studies during the course of the project.

3.5.3 Behaviour Changes and Communication

i. Awareness programme campaigns
ii. Empowerment of women and children
iii. Innovative IEC methods
iv. Tools for innovation such as puppet shows
v. Understanding basic problems and finding solutions based on the specific problems
vi. Conservation of water bodies
vii. Basic knowledge of overall sanitation to all age groups through creative ideas
viii. Basics of sanitation to be added in the academic curriculum.

3.5.4 Community Toilets and Public Toilets

i. Review the concept of pay and use toilets
ii. Usage and maintenance of public conveniences
iii. Ensuring adequate water supply
iv. Statutory warning for misuse of toilets
v. Involve CBOs in the O&M of public and community toilets
vi. Micro grants/loans for building individual toilets
vii. Turn toilets into assets rather than liabilities
viii. Aesthetic look for community and individual toilets
ix. Reuse and recycle water
x. Provision of water and electricity in community and public toilets
xi. Sanitary napkins, incineration using biogas

3.6 Discussion on Overview of Urban Sanitation in India

Mr. Somnath Sen, Chief of Practice, explained the routes and pathways of fecal-oral contamination and its result on the environment and human life. He briefly discussed the full cycle of the urban sanitation such as containment, de-sludging, conveyance, treatment and safe disposal/re-use and stated that the practice of unsafe disposal of septage is not only dangerous to human life but also has an impact on the human health-development-intelligence index. During the session, Mr. Sen also mentioned about successful models of sanitation in various places in India, and how those could be incorporated into the TNUSSP.

He also interacted with the government officers and sought their views on the different regulatory mechanisms to be taken into account at the two town panchayats.

3.7 Concluding Remarks and next steps of the programme in Coimbatore

Ms. Kavita Wankhade shared the plan of action for the next three months. She explained the process of setting up the City Sanitation Task Force for monitoring the sanitation project, conducting stakeholder consultations and training programmes on sanitation, undertaking a baseline survey geared at understanding house typologies, institutions and how the full cycle of sanitation worked in both the town panchayats.

4 Workshop Proceedings, Trichy

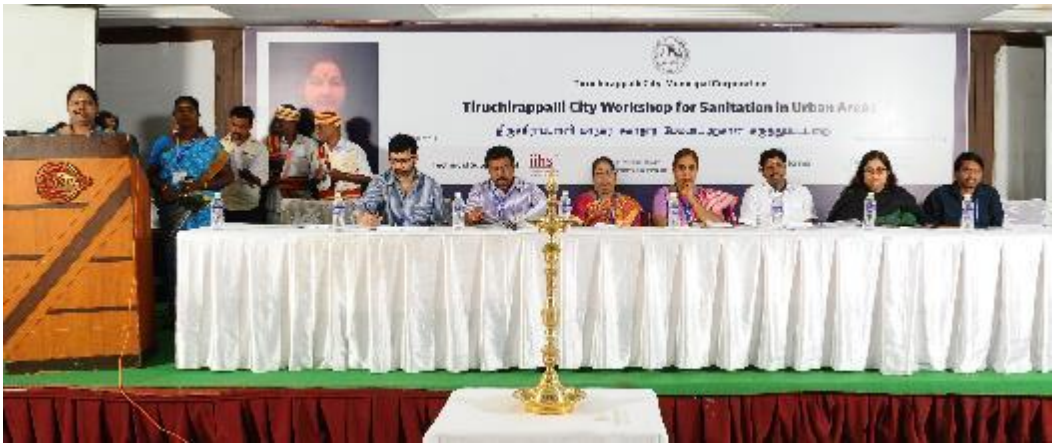
4.1 Inaugural Session

Ms. Geetha Jegan, WATSAN Specialist of Gramalaya, welcomed the dignitaries to the one-day workshop. In the inaugural address Ms. Vijayalakshmi, Commissioner, TCC emphasised that the TCC, NGOs, and all other stakeholders should join hands to improve sanitation and make Tiruchirappalli the cleanest city in India. The Commissioner extended her complete support to the TNUSSP programme.

The presidential address delivered by Ms. Jaya, Honourable Mayor, highlighted the role played by Gramalaya in improving sanitation in Tiruchirappalli. She also mentioned that without the support of the Self Help Groups (SHGs), ground staff and NGOs the mission of keeping the city clean would not have been possible. In his keynote address, Mr. Srinivasan, Deputy Mayor, TCC explained the initiatives taken by the city corporation in the area of sanitation.

The objectives of TNUSSP, strategic approach and organisation structure were introduced to the participants.

Figure 4.1: View Inaugural Session



Source: TNUSSP, 2015

4.2 Urban Sanitation in Tiruchirappalli: Select Highlights

The Executive Engineer TCC presented the current situation of sanitation in Tiruchirappalli City. A summary of the present situation based on TCC presentation and Census data is provided in this section.

The area of Tiruchirappalli city is 167.23 sq.km. The City is subdivided into four Administrative Zones and 65 Wards for effective administration. An overview of Tiruchirappalli City is provided in the Table 4.1 below.

Table 4.1: Tiruchirappalli City Overview

Total No. of Zones	4
Total No. of Wards	65
Area in Sq. Km	167.23

Table 4.1: Tiruchirappalli City Overview	
No. of Households	2,07,794
2011 Population	9,16,674
Decadal Growth Rate	9.5 %
Population Density (per sq. km)	5482
No. of Public/Community Toilets	424
No. of Toilet seats	**4723**
Source: Census (2011)	

According to the 2011 Census data, Tiruchirappalli has a population of 847,387. With the recent addition of five wards to the TCC, the total population has gone up to 916,674. The TCC conducted a detailed survey in 2015, and as per this survey the population within the corporation limits is 991,999. The Tiruchirappalli urban agglomeration has a population of 1,022,518, and was ranked the fourth largest in Tamil Nadu and the 53rd in India as of 2011.

There are a total of 286 slums in the corporation area of which 211 are notified and 75 un-notified. The slum population is 1,80,112, which is 19.60 per cent of the total population of the city corporation. The work force contribution of slum dwellers is 34.87 per cent

The major source of drinking water in the city is through the municipal piped system from a treated source, which covers about 83 percent of the households. Few households depend on tube wells (7 per cent), some use piped water from an un-treated source (5.6 per cent) and the rest depend on various other sources. The major source of drinking water is from the Cauvery & Coloroon rivers.

As per the Census 2011 data, 81 per cent of the households in the City have access to individual toilets, 14 per cent depend on public toilets and 5 per cent resort to open defecation. There are 424 public and community toilets.

The City has an Underground Sewerage System (UGSS) implemented under different schemes between 1987 and 2008. The length of the exiting sewerage system is 330.60 km with 19 pumping stations, and 25 lifting stations. The total number of house service connections as on date is 43,727. The collected sewage is treated in the Sewage Treatment Plant (STP) located in Panjappur. The STP has a Facultative and Waste Stabilisation Pond with a total treatment capacity of 90 MLD. On-going work covers Srirangam omitted area and proposed work covers erstwhile Tiruchirappalli omitted area and newly added areas. Two new STPs at Kelakalkandar Kottai-32 MLD, and at Kulumani-24 MLD are proposed to augment treatment capacities for the newly covered areas.
Toilets in areas uncovered by UGSS (about 65 per cent) dispose waste into septic tanks. Ward-level details on UGSS coverage and septic tanks are provided in the Table below.

Table 4.2: Ward level details on UGSS coverage and septic tanks					
Sl. No	**UGSS Coverage**	**No. of Wards**	**No. of households**	**No. of UGSS Connections**	**No. of Septic Tanks**
1	Wards Fully Covered	25	56488	18882	29731
2	Wards Partially Covered	25	78559	24845	39958

Table 4.2: Ward level details on UGSS coverage and septic tanks					
3	Wards not Covered	15	52010	0	38564
Total		**65**	**187057**	**43727**	**108253**
Source: TNUSSP Scoping Study (2015)					

The TCC has machines and vehicle to de-sludge, collect and convey septage such as mini jet rodder, mini de-silting vehicle, jet rodders, and gulper and septic tank desludging vehicle. Because of the inadequate coverage by UGSS, and limited infrastructure and services by the TCC, there are close to 40 private operators who provide septic tank desludging services to households. There are arrangements to empty the collected septage into the STP either through pumping stations or directly at the STP.

The TCC has envisaged a long-term implementation plan for septage management. As a first step, the TCC has evaluated deficiencies and opportunities in the current management system. The key features of the plan are:

1. Enumeration of improper septic tanks
2. Enforcement to avail UGSS connections
3. Regulation of private sewage truck operators
4. Restoration of storm water drains
5. Prevent mixing of sewage into storm water drains
6. Issue of notices to defaulters
7. Enforcement of penal action
8. Training and Capacity Building programmes
9. Extensive IEC activities

The TCC is working closely with local communities, and has implemented sanitation projects that are led by the communities.

4.3 Innovations in Urban Sanitation

This section summarises presentations made on good practices and innovations in urban sanitation, during the workshop. The speakers presented cases, technologies, and enterprise models.

4.3.1 Waterless Urinals, Multiversal Technologies

Dr. S. Krupakar Murali, Chief Scientist said Multiversal Technologies has developed waterless urinals that have better hygiene features and have options to recover useful products from treated urine. These urinals have an Ozone-based disinfection system, which has advanced patent pending Ozone generator (NoSmell). The Ozone generated could also be used for other purposes where de-odouring and sterilisation are required such as vegetable and air cleaning processes, etc.

Multiversal Technologies has also developed Svatch, self-cleansing urinals; Vyuh, mechanical odour trap; Sangraha, a urine collection unit that sterilises and recovers nutrients; MPOT, an android application that can control electrical appliances, and innovative female squatting type waterless urinals. As a pilot Multiversal Technologies has implemented 60 waterless

urinals in a school in Chennai. For low income households it has developed a dry compost toilet—Trisan.

4.3.2 Community toilets, Gramalaya

In her presentation, Geetha said that Gramalaya has worked in the urban slums intervention programme, in association with the TCC and local communities, and supported by Water Aid and Arghyam. The community managed toilets under the 'pay & use' system was first introduced in this programme. New community toilets were constructed and managed by local the CBOs such as WAVE, AWASH, and SHE.

Significant achievements of the programme are:

1. First 100 per cent Open Defecation Free (ODF) slum in India announced.
2. 179 slums declared as ODF with the support of TCC.
3. Around 8,000 individual toilets constructed with the support of banks and micro-finance institutions.
4. WAVE and AWASH Federation are working continuously, and sustaining themselves even after withdrawal of support from Gramalaya.

Key problems faced by the CBOs are:

1. Open defecation in un-notified slums and from floating population.
2. Frequent renovation and maintenance.
3. Power failure resulting in inadequate water supply.
4. Problems from elected representatives.
5. Blockage in drainage connections leading to major repair expenditure.

4.3.3 Recent trends in Urban Sanitation, SCOPE

Mr. V. Ganapathy, in his presentation, discussed the successful implementation and operation of decentralised waste treatment system for community toilets.

Two cases of DEWATS in Tamil Nadu: one in the TCC area in East Devadhanam, and the other in Musiri Town Panchayat were discussed. The DEWATS treats blackwater from community toilets, and the treated water is used for gardening and in compost plants. The treatment system also generates biogas which can meet the cooking energy needs of a household. ECOSAN toilet design, advantages and success stories such 'user paid money' were also discussed.

4.3.4 Wastewater Treatment and Management, NIT-Tiruchirappalli Speaker

Dr. ST Ramesh, in his presentation, Dr. S T Ramesh discussed the harmful impacts of untreated wastewater. He also spoke about the conventional and advanced wastewater treatment technologies and the need to look at wastewater as resource. The challenges for effective implementation of wastewater management are:

1. Strong governance
2. Financing investments
3. Cost recovery
4. Economic benefits

4.3.5 Water Credit for Sanitation, Guardian

D Paul Sathianathan from Guardian, a not-for-profit Microcredit Finance Institution (MFI), said that his company envisions poorer societies having easy access to household water and sanitation facilities through microcredit. The first MFI in the world exclusively started for water and sanitation, Guardian operates in six districts of Tamil Nadu. Loan products and

credit details, and its outreach were presented and discussed. Paul said that Guardian planned to cover 1 million toilets in ten districts of the State by 2020 with funding potential of close to Rs. 1400 crores. The MFI is planning to mobilise funds through institutions like NABARD, banks under BC/BF model, social investors and other nationalized/ private banks.

4.3.6 'Namma Toilet', TCC

The TCC has constructed public toilets with the following features:

1. Aesthetically appealing and modern pre-fabricated units which also have solar photovoltaics to meet the lighting energy requirements of the toilets
2. Integrated sanitary complexes
3. Temporary urinals and toilets at places of huge gatherings
4. Mobile toilet units
5. Disabled friendly toilets

These toilets have increased a sense of ownership among users, increased usage and reduction in incidences of waterborne diseases.

4.4 Suggestions for Improvements in Urban Sanitation in Tiruchirappalli

After the presentations, the workshop participants were divided into four groups and were assigned specific themes to discuss and come up with possible solutions to the issues presented. The discussions were anchored by moderators. The themes, key questions and key points for discussions are summarized below:

Group 1: Rules, Regulations, Institutional and Financial

Key Questions:

1. What are the current rules and regulations related to sanitation in the city?
2. What is the institutional framework for sanitation services?
3. What are the main sources of funding for urban sanitation?

Key points from discussion:

1. Current rules and procedures in the TCC, challenges for implementation
2. Responsibilities for enforcement of rules and regulations
3. Gaps in rules and regulations, suggestions on changes

Group 2: Technology Improvements: containment, conveyance and treatment/safe disposal

Key Questions:

1. What are the current technologies in use for safe containment, conveyance, treatment and disposal of septage?
2. What are the current O&M practices for each of the above technologies?

Key points from discussion:

1. Technology options for safe containment, types of toilets constructed in urban Tamil Nadu and their drawbacks
2. Technology options for safe conveyance, current de-sludging practices, areas of improvement
3. Key issues and problems with septage disposal and treatment
4. Capital and O&M costs for different options for septage management
5. Lessons from other cities or countries

Group 3: Community and Public Toilets

Key Questions:

1. What are the key differences between Community and Public toilets? What are the different models available in Tiruchirappalli?
2. What are the key issues and problems with Community and Public Toilets?
3. What are the common reasons for not being used and their maintenance?

Key points from discussion:

1. Kind of toilets needed and O&M management models
2. Revenue/business models
3. Key issues and suggestions for improvements
4. Experience of community toilets in the city

Group 4: Behaviour Change Communication

Key Questions:

1. Why do we need behaviour change (for sanitation)? Who are the key stakeholders?
2. What is the role of communication in bringing the necessary change?

Key points from discussion:

1. Stakeholders, their current perceptions, beliefs, and practices
2. Knowledge gaps
3. Needs and the stimuli for change, role of communication

The outcome of the group discussion is provided in the Table below:

Table 4.3: Thematic group discussion: Problems and suggested solutions for urban sanitation

Group I: Rules, Regulations, Institutional and Financial	
Issues/Problems	*Solutions*
1. Poor enforcement of the existing rules and regulations, especially with relation to on-site disposal system construction specifications, disposal of septage waste/de-sludged material, health and safety of workers involved waste disposal 2. Underutilisation of funds/soft loan from various funding sources such as IUDM, ODF fund, SBM, IHHL, Corporation Development Fund 3. Inadequate staff, absence of ward level technical assistance and manual handling of data	1. Training for masons, engineers, builders, sanitation workers and other employees involved in sewage management has to be made mandatory, and should be regulated by the TCC. 2. The Sanitary Officers and Civil Engineers should check and verify if proper sanitation conditions are available for all existing buildings; there should be an increased frequency of visits by the officials. 3. For new buildings, joint inspection by the planning and health departments prior and post implementation of septage management infrastructure, collection of refundable deposits at the time of building plan approval 4. Strengthen staff by recruiting people with appropriate background, and enable digitisation of data.
Group II: Technology Improvements: Containment, conveyance and treatment/safe disposal	
Issues/Problems	*Solutions*

Table 4.3: Thematic group discussion: Problems and suggested solutions for urban sanitation	
1. The existing underground drainage (UGD) covers only 40 per cent of the area, household and organisational septic tanks cover 50 per cent and remaining 10 per cent of the septage is directly discharged into open drainage. 2. The underground drainage systems are getting blocked due to dumping of solid wastes into the drains and improper management of waste in domestic and commercial areas, especially during the monsoon. 3. DEWATS—decentralised wastewater treatment system—is currently operational in only one place in the Devadhanam area. 4. The existing septic tanks are not properly constructed, and efficiently maintained in many places in Tiruchirappalli city. 5. Illegal disposal of septage by septic tank cleaners needs to be checked. Desludging operators are not using safety equipment during the desludging process.	1. The UGD system should be developed in all residential areas with proper design and carrying capacity. Sewage should not be discharged into the open drains and storm water drains. 2. Sewage should be properly treated and recycled. 3. Disposal of solid wastes into UGDs should be prohibited and stringent action should be taken against commercial establishments such as hotels. 4. DEWATS should be scaled-up and implemented in suitable locations. 5. Septic tanks should be constructed properly, and through authorised consultants. 6. The septage should be treated in the STP at Panjappur and discharge of septage into waterbodies and unauthorized zones should be prohibited. 7. Manual handling of faecal waste should be prohibited. 8. All septic tank cleaners should wear proper safety gear during collection and disposing of septage.
Group III: Community Toilets and Public Toilets	
Issues/ Problems	*Solutions*
1. There are over 19 toilets, 292 community toilets which are accessible round the clock. The rest of the toilets are 'pay & use'. Rs. 5/- is being collected for both urine and solid defecation, and in spite of the high user fee sanitary standards are very low. 2. The number of existing toilets are not enough and maintenance becomes a challenge in case of high usage by the floating population. 3. Lighting and safety measures in women's toilets is inadequate. 4. Many public toilets lack proper ventilation, and cleaning materials. 5. Many toilets do not have a provision for safe disposal of soiled sanitary napkins.	1. Renovation of toilets should be carried out with the help of experienced workers and contractors. 2. Ergonomic toilets with good flooring, ventilation and facilities like liquids soaps for washing hands along with good source of water supply must be arranged round the clock. 3. Cleaning materials such as bleaching powder, phenyl and acids should be provided sufficiently to the cleaners. 4. Toilets should have a ramp facility for the aged and the physically challenged; western style toilets are preferred to Indian style toilets. 5. Separate user fee for urine and defecation, for e.g., Rs.2/- for urine and Rs.5/- for solid excreta should be collected. 6. Doors of the toilets should open outwards rather than inwards and hooks for hanging clothes should be provided.

Table 4.3: Thematic group discussion: Problems and suggested solutions for urban sanitation	
	7. Periodic cleaning and proper maintenance of toilets is essential. Cleaning should be monitored with mobile alerts to JEs of the TCC if toilet is not cleaned regularly. 8. The TCC should construct high-class toilets with mirrors, especially for women. 9. To motivate the contractors, the TCC should conduct competitions for maintenance contractors of all public toilets.
Group IV: Behaviour Change Communication	
Issues/ Problems	*Solutions*
1. Tendency to dispose waste in vacant plots without proper treatment. 2. Despite existing awareness, there is a huge gap when it comes to knowledge and practice. 3. Sense of ownership/responsibility for proper disposal of waste is completely lacking. 4. Public toilets are operated properly, but maintenance is poor. 5. Use of liquors in and around toilets. 6. Indiscriminate disposal of septage by desludging operators.	1. Women in the family have a significant role in inculcating good sanitation practices; providing them with small incentives will help in developing cleaner habits. 2. Role of school children has to be recognised, insisting on good habits, right from childhood at home and in schools; better hygiene practices have to be imparted as a part of primary school education. 3. Awareness creation using pamphlets, education, media, announcements and notices. 4. Ward-wise surveys and ranking, awards to Ward Councillors. 5. Orientation and training programs on sanitation for SHGs, desludging operators, engineers, apartment and builders' associations, school teachers, anganwadi workers and Ward Councillors. 6. Proper sanitation training has to be arranged for workers by the contractors who hire them.
Source: TNUSSP (2015)	

4.5 Conclusions and Next Steps

There was a general consensus on the need and relevance of septage management for Tiruchirappalli. IIHS proposed a plan for the next six months under different components which is provided below:

1. Enabling Environment and Governance:
    1. Formation/Revival of City Sanitation Task Force

2. Preparing Short-term Action Plan (immediate steps for improvement) at the city level
3. Inputs for strengthening of MIS for urban sanitation at state and city level
4. Support to relevant urban sanitation programmes including SBM-Urban, etc.

2. Engineering and Planning:
    1. Review of tools and methods, and promotion of improved solutions available (e.g., options for individual and community toilets and containment, de-sludging, etc.)
    2. Preparation of City Sanitation Plan (CSP)

3. Behaviour Change and Communication
    1. Preparation of communication strategy draft
    2. Preparation of communication materials (first round)
    3. Roll out of communication campaign in select towns or for key segments.

4. Enterprise Development
    1. Landscaping of potential private sector and micro-enterprises based on some existing work being done in the State by BMGF partners and others.

5. Capacity Building
    1. Detailed capacity building needs assessment and strategy preparation
    2. Delivery of orientation programmes and basic training modules.

6. Monitoring Learning and Evaluation
    1. Baseline studies at state and city level: households, establishments, institutions - along the entire sanitation value chain
    2. Development of MLE Framework at the State and city level

7. Knowledge Management
    1. Compilation of existing and new thematic and area studies on Urban Sanitation such as Community toilets, sanitation financing, existing innovations in selected urban locations.
    2. Draft Knowledge Management and Exchange Strategy
    3. Mapping of Knowledge Gateways and Communities of Practice.

The TSU team members explained the programme time frame, and the activities and sought the co-operation and guidance of the TCC on the implementation plan. The workshop concluded with a vote of thanks by the TSU.

Annexures

Annexure 1: Programme Schedule, Coimbatore

Tamil Nadu Urban Sanitation Support Programme
Coimbatore District Town Panchayats

Periyanaicken-palayam and Narasimhanaicken-palayam
Stakeholders' Consultation Workshop

Date: 21 December 2015 Venue: DRDA Hall, Collectorate, Coimbatore

Schedule	Details
9:00 am to 9:30 am	Registration
9:30 am	Invocation
9:35 am to 9:40 am	Welcome Address Mr. Pratim Roy, Director, Keystone Foundation
9:40 am to 10:00 am	Inaugural Address Ms. Archana Patnaik, I.A.S., Collector, Coimbatore District
10:00 am to 10:15 am	Sanitation in Coimbatore Corporation Dr. K. Vijayakarthikeyan, IAS, Commissioner, Coimbatore City Municipal Corporation
10:15 am to 10:35 am	Introduction & Context of the Project Ms. Snehlata Nath, Keystone Foundation
10:35 am to 10:45 am	Innovations in Sanitation Sector in Coimbatore District Mr. Tha Murugan, Project Director, DRDA
10:45 am to 10:55 am	Need for interventions in two Town Panchayats Mr. P. Ganesharam, Assistant Director of Town Panchayats, Coimbatore
10:55 am to 11:05 am	View from the Ground Mr. P.R.G Arunkumar, Chairman Periyanaicken-palayam Town Panchayat
11:05 am to 11:15 am	View from the Ground Mr. M. Anandan, Chairman Narasimhanaicken-palayam Town Panchayat
11:15 am to 11:35 am	Tea & Coffee Break
11:35 am to 12:00 noon	Introduction: Tamil Nadu Urban Sanitation Programme Translation by Ms. Priscilla Joshua, (Project Manager: TNUSSP) Keystone Foundation Ms. Kavita Wankhade, Team Leader, TNUSSP
12:00 noon to 12:15 pm	Community Participation in Slum Sanitation Improvements: Experiences from Gramalaya, Trichy Mr. S. Damodaran, Founder, Gramalaya
12:15 pm to 12:30 pm	Technology Innovations in the Sanitation Sector Mr. V. Ganapathi, SCOPE

12:30 pm to 1:00 pm	Open Discussion Coordinated by Mr. Robert Leo, (Deputy Director: Technical) Keystone Foundation
1:00 pm to 1:30 pm	Lunch Break
1.30 pm to 1.40 pm	**Innovations in Urban Sanitation** Sanitation in Periyanaicken-palayam Mr. K. Kanagaraj, Executive Officer, Periyanaicken-palayam
1.40 pm to 1.50 pm	Sanitation in Narasimhanaicken-palayam Mr. R. Ravi Executive Officer, Narasimhanaicken-palayam
1.50 pm to 2.00 pm	Water Resources and Drainage Mr. Balachander, Programme Co-ordinator, Keystone Foundation
2.00 pm to 2.20 pm	Sanitation Finance Mr. Paul Sathyanathan, GUARDIAN, Tiruchirappalli
2.20 pm to 2.30 pm	Challenges in Environmental Conservation Mr. K. Mayilsamy, Siruthuli
2:30 pm to 3:45 pm	**Suggestions for Improvements in Urban Sanitation in the Two Town Panchayats:** **Group-work:** **Groups:** 1. Rules and Regulations, Institutional and Financial aspects 2. Technology Improvements: Containment, Conveyance, Treatment and Safe Disposal 3. Community Toilets and Public Toilets 4. Behaviour Change Communication
3:45 pm to 4:00 pm	Tea & Coffee Break
4:00 pm to 5:00 pm	Presentation by 4 groups (each 5 minutes) Followed by discussions. Suggestions Improvements in Urban Sanitation in Coimbatore Group Discussion and Presentations Moderated by IIHS and Keystone
5:00 pm to 5:15 pm	Concluding Remarks: Mr. Robert Leo, Keystone Next Steps of the Programme in Coimbatore - Ms. Kavita Wankhade, IIHS.

Annexure 2: Participants List, Coimbatore

S. No	Name	Designation	Address
1	E. Gokul Lakshmi	Junior Engineer	Narasimhanaicken-palayam
2	P. Ganeshram	Assistant Director	Town Panchayat, Coimbatore
3	K. Kangaraj	Executive Officer	Periyanaicken-palayam
4	Mathew John	Director	Keystone Foundation
5	Rajiv K. Raman	Consultant	IIHS, Bangalore
6	Kavitha Wankhade	Team Leader, TNUSSP	IIHS, Bangalore
7	Somnath Sen	Chief, Practice	IIHS, Bangalore
8	Pratim Roy	Director	Keystone Foundation
9	Snehlata Nath	Director	Keystone Foundation
10	T. Balachander	Program Coordinator: Water	Keystone Foundation
11	Sumin George		Keystone Foundation
12	Gokul	Additional Coordinator	Keystone Foundation
13	Paramasivam	Sanitary Inspector	Periyanaciken-palayam
14	Robert Leo	Deputy Director	Keystone Foundation
15	Sarasmeeta	Admin	Keystone Foundation
16	Dr. S. Kirubukar Murali	MD	Multiversal Technologies
17	Dr. K.Santhosh Kumar	City Health Officer	Coimbatore corporation
18	Sivakumar	CHO, PA	Coimbatore Corporation
19	R. Ravi	Executive Officer	Narasimhanaicken-palayam
20	R. Gayathri	Consultant	IIHS, Bangalore
21	K. Mahendran	Asst. Executive Engineer	Coimbatore Town Panchayat
22	Ashik Fareeth		Coimbatore Corporation
23	K. Koteeswaran	Health Inspector	Coimbatore Corporation
24	D. Paul Sathiyanathan	CEO	Guardian, Trichy

25	Elangovan	Deputy Director	Gramalaya
26	Ganapathay	Representative	SCOPE EXNORA
27	R. Ponnuraj	Asst. Director	Local Planning Authority, Coimbatore
28	R. Priya	Asst. Director	Gramalaya
29	Dr. Mahendran	Scientist	SACON
30	Anandan	Chairman	Narasimhanaicken-palayam
31	Arun Shankar		Coimbatore Town Panchayat
32	Shivram	Architect	IIHS, Bangalore
33	S. Natarajan	Chief, PR	LMW, Coimbatore
34	Dr. K.S. SelvaNayagi	Asst. Professor	TNIUS, Coimbatore
35	S. Balamurugan	Staff	Pricol, Coimbatore
36	K.V. Santhosh Raghavan	Senior Specialist	IIHS, Bangalore
37	Anantha Moorthy. U	Environment Engineer	Keystone Foundation
38	Vinitha	Environment Engineer	Keystone Foundation
39	Priscilla Joshua	Project Manager	Keystone Foundation
40	Ramakannan	Social Development Expert	Keystone Foundation

Annexure 3: List of Participants, Trichy

S. No.	Name	Designation	Organization
1	S Kannan	AEE	TCC
2	Padma Rani D	CO	TCC
3	B Joseph Raj	JE	TCC
4	K Srinivasan	JE	TCC
5	Loganathan A	AEE	TCC
6	Innachimuthu P	AC	TCC
7	Beulah Santhosham X	CO	TCC
8	Padma P	CO	TCC
9	Sivapallhen P	AEE	TCC
10	Jummakhan A	JE	TCC
11	Arun S	SI	TCC
12	Velmurugan M G	JE	TCC
13	Ganeshbabu A	JE	TCC
14	Geethanjali P	CO	TCC
15	Ravichandran S	TECH ASSIST	TCC
16	Jayanth J A	CO	TCC
17	Thangapandi S	CO	TCC
18	Amirthavalli S	EE	TCC
19	Ravindran T	AEE	TCC
20	Nallusamy A	SI	TCC
21	Balagurunathan	EE	TCC
22	Agesh S N	CE	TCC
23	Vijayalakshmi S	CO	TCC
24	Kumaresan G	AEE	TCC
25	Reguraman S	JE	TCC
26	Jayakumar	AEE	TCC
27	Srinivasan J	DM	TCC
28	Jaya A	MAYOR	TCC
29	Krishnan V S	AC	TCC
30	Rameshkanna	JE	TCC
31	Subramaniyan.P	PRO	TCC
32	Ramesh	JE	TCC
33	Lakshmana Murthy S	AEE	TCC
34	Geetharani M	CO	TCC
35	Sathya Priya K	DEO	TCC
36	Elangovan R	SI	TCC
37	Ibrahim K	JE	TCC
38	Parasuraman E	SI	TCC
39	Thalaivirichan P	SI	TCC
40	Jegajeevaraman K	JE	TCC
41	Alli B	MO	TCC
42	Balasubramaniyan K	AEE	TCC
43	Narasingam	JE	TCC
44	Jeyakumar M	JEE	TCC

S. No.	Name	Designation	Organization
45	Rajperiyasamy	JE	TCC
46	Pushpanath L	JE	TCC
47	Dhanabalan T N	AC	TCC
48	Prabhu Kumar M	AC	TCC
49	Karthikeyan S	SI	TCC
50	Anbu R		Ambigai Magalir
51	S. Chitra		Ambigai Magalir
52	S. Sahayamary		Ambigai Magalir
53	Geetha	WATSAN Specialist	Gramalaya
54	Md. Sheriff	Director	Gramalaya
55	S. Kuramsamy		Gramalaya
56	P. Rajamani		Gramalaya
57	P. Cross Mary		Gramalaya
58	P. Hycenth Leena		Gramalaya
59	A. Alagammal		Gramalaya
60	B. Shanmugavalli		Gramalaya
61	Rakesh		Gramalaya
62	Andrew		Gramalaya
63	Elangovan		Gramalaya
64	Priya		Gramalaya
65	Sk		Gramalaya
66	Shivaram	Sr. Associate	IIHS
67	Rajiv Raman	Advisor	IIHS
68	Kavita Wankhade	Team Leader	IIHS
69	Santhosh Ragavan	Sr. Specialist	IIHS
70	Somnath Sen	Advisor	IIHS
71	Vinitha M	Addl. Coordinator	Keystone
72	Robert Leo		Keystone
73	Krupakar Murali	Chief Scientist	Multiversal Technologies
74	V. Ganapathy		Scope
75	G. Sriram		Scope
76	J. Sahaya		WAVE
77	I. Gomathi		WAVE
78	A. Marlin		WAVE
79	N. R. Shanti		WAVE
80	M. Suguna		WAVE
81	K. Mallika		WAVE
82	S. Adaikalamary		WAVE
83	X. Selvamary		WAVE
84	S. Rukmani		WAVE
85	I. Manimegalai		WAVE
86	A. C. Ilanjiyam		WAVE
87	S. Angayi		WAVE
88	S. Geetha		WAVE
89	K. Sri		WAVE
90	Padhma. S		WAVE

Annexure 4: Workshop Agenda

Tiuchirappalli City Corporation

Tamil Nadu Urban Sanitation Support Program (TNUSSP)

Tiruchirappalli City Workshop for Sanitation in Urban Areas

திருச்சிராப்பள்ளி மாநகர சுகாதார மேம்பாட்டிற்கான கருத்துப்பட்டறை

30.11.2015 (10 am to 5.30 am) Hotel Breeze Residency, Tiruchy

Time	Sessions details	Presentor/ Moderator
09:30 -10:00	Registration	
10:00 -11:00	Inauguration of Workshop	TCC, DMA, IIHS and Gramalaya
11:00-11:30	*Tea/ coffee Break*	
11:30-11:50	**Innovations in Urban Sanitation** Sanitation Solution – Waterless Urinals	S. Krupakar Murali, PhD, CEO/ Chief Scientist, Multiversal Technologies
11:50-12:10	**Tamil Nadu Urban Sanitation Programme:** An Introduction	Ms.Kavita, Team Leader, IIHS, & TSU, TNUSP, Chennai
12.10-12.30	**Urban Sanitation in Trichy** : Situation Analysis	Ms. M.Vijayalakshmi, Commissioner, TCC
12.30-01:00	Open Discussions	
01:00-02:00	*Lunch Break*	
02:00-03.15	**Innovations in Urban Sanitation**	
	1. Community Toilets	Ms.J.Geetha, WATSAN specialist, Gramalaya
	2. Technology Innovations	Mr M.Subburaman, Director, SCOPE
	3. Namma Toilets	Mr. S.Raguraman, JE, TCC
	4. Waste Water Treatment and Mgt.,	Dr.S.T.Ramesh, Professor, NIT,Trichy
	5. WaterCredit for Sanitation	Mr D.Paul Sathiyanathan, CEO, Guardian.
03.15-04:00	**Suggestions for Improvements in Urban Sanitation in Trichy: Group Work**	**Groups:** 1. Rules and regulations, institutional and financial 2. Technology Improvements: containment, conveyance and treatment/safe disposal 3. Community Toilets and Public Toilets 4.Behaviour Change commuication
04:00-04:15	**Tea/ coffee Break**	
04:15-05:15	**Suggestions for Improvements in Urban Sanitation in Trichy:** Group Presentations followed by Discussions	Presentations and Open Session – moderated by IIHS and Gramalaya
05:15-05:30	**Concluding Remarks** and **Next Steps** of the Program in Tiruchy.	Mr. S. Damodaran, Founder, Gramalaya & Ms. KavitaWankhade, IIHS, Banglore

Technical Support Unit: iihs in association with: **Gramalaya, Tiruchirappalli** | Keystone | CDD Consortium for DEWATS Dissemination Society