Sanitation Capacity Building Program

TRAINING ON

INTEGRATED WASTEWATER AND SEPTAGE MANAGEMENT

TRAINING OF TRAINERS REPORT

NOV 23RD – NOV 25TH, 2017

ECOSAN SERVICES FOUNDATION

1st Floor, 24 Prashant Nagar,
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The training of trainers report is prepared to facilitate the coordination with Ecosan Service Foundation and National Institute of Urban Affairs. The report elaborates on the training given to the officials of Municipal Engineering Directorate (MED), Kolkata Metropolitan Development Authority (KMDA) and Urban Local Bodies (ULBs) on Integrated wastewater and septage management at Kolkata.

Prepared by;

Ecosan Services Foundation

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For

National Institute of Urban Affairs

1st & 2nd floor,
Urban Habitat Centre,
Lodhi Road, New Delhi – 110003, India

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Abbreviations

AMRUT	Atal Mission for Rejuvenation and Urban Transformation
CSTF	City Sanitation Task Force
DPR	Detailed Project Report
ESF	Ecosan Services Foundation
FSSM	Faecal Sludge and Septage Management
GoI	Government of India
LAP	Local Action Plan
NIUA	National Institute of Urban Affairs
RAS	Rapid Assessment Survey
SCBP	Sanitation Capacity Building Program
STP	Sewage Treatment Plant
ULB	Urban Local Body
IWSM	Integrated Wastewater and Septage Management

1 Introduction

The water and sanitation sector in India needs reforms if national and global benchmarks for service delivery are to be met with success. The current plight of the sanitation sector and the huge gaps faced by roughly 800 million Indians in accessing sanitation provisions. This highlights the need for not just institutional remodelling of the sector, but also for a novel approach, innovative ideas and urgent decentralization if the sanitation services are to reach the last common denominator. However, decentralization of treatment system (anaerobic process), leads to generation of faecal sludge. These systems need to desludged at a regular interval to maintain their performance.

Faecal sludge management (FSSM) refers to the removal, treatment, and disposal of faecal sludge from holding tanks (septic or networked through sewerage pipes). Faecal sludge is different from overall sewerage and in that it contains mostly human bodily waste rather than the waste that drains from kitchens, etc.

The Government of India's (GoI) goal is for all cities to have networked sewerage connections, which would send faecal sludge to a central location for treatment and disposal. Presently, 95% of urban local bodies (ULBs) do not have this infrastructure. This means that septic tanks or pits have to be emptied and moved to a location that will process the faecal sludge. In higher end apartment complexes and business centres, there are on-site FSSM solutions; however, it remains a challenge even here where space and options for dumping the treated waste are limited. On the other hand, in poor settlements (slums), latrines are often built so the waste just empties directly outside it. This practice not only has the potential to contaminate the water sources and pollute the environment within the slum, but also the whole surrounding area.

There is little regulatory power to monitor whether faecal sludge is processed according to environmental and health standards. Most cities in India lack the capacity to regulate treatment and dumping of waste. There is also a lack of approved sewage treatment plants (STPs) in the country to safely and effectively treat faecal sludge, if it is actually collected and able to be sent there. Twenty-Seven Indian cities have only primary treatment facilities and 49 have primary and secondary treatment facilities. Due to the lack of functioning STPs and adequate enforcement of regulations, untreated faecal sludge is disposed indiscriminately into water bodies,

drains, landfills, and vacant lands. In Bhubaneswar, Orissa for example, untreated faecal sludge is often dumped directly into the sea. As with the on-site FSSM options, city wide STPs often still have the problem of responsibly dealing with the treated sludge.

Given these issues of collection, treatment, and disposal, it is exciting that innovators are starting to look to this waste as a resource rather than burden. While there is value of innovation at each level of the sanitation chain, mostly due to the human resource and health potential in infrastructure building and collecting waste, there is additional value add in turning the faecal sludge matter into an environmentally beneficial and profitable resource.

NIUA has been supporting the MED, KMDA and ULB government officials from West Bengal in developing capacity building with respect of Integrated Wastewater and Septage. As one of the activity, the Training of Trainers will be organized which can give an opportunity to the designated government officials to understand the training modules of integrated wastewater and septage management and which will help them to develop and document the management systems for Urban Local Bodies. The objectives of this activity were to provide training to the officials about the integrated wastewater and septage management at city level and to produce case studies which can be potentially be used to state urban local bodies.

2 List of Participants and Staff

The following table presents the details of the officials, staff with whom we have discussed about the details of the Integrated Wastewater and Septage Management.

TABLE 1: LIST OF PARTICIPANTS AND STAFF

Sr. No	Name	Designation	ULB, Organisation/Company	Mobile	Email
1	Sankar Majumder	S.A.E.	Bongaon Municipality	9002997440	bongaonp.w.d.@gmail.com
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17	Ashis Nandy	UIE- AMRUT	Raipur Sonapur Municipality	9883266560	ashisar2010@gmail.com

18	Subarna Kumar Dutta	AE	Dum-Dum Municipality	9038724595	rsubarnam@yahoo.com
19	Probir Mukhopadhyav	AE	Titagarh Municiplaity	8433106749	pbmttg@gmail.com
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24	Amit Kumar Sarkar	AE	ME Dte	9775174064	sarkaramit5007@gmail.com
25	Saikat Biswas	SAE	Halisahar Municipality	8981450470	saikatbiswaskolkata@gmail.com
26	Sujay Barman	JE	CD KMDA	9804609758	sujay.barman2011@gmail.com
27	Krishna Pada mondal	AE	ME Dte	9749909956	krishnamondal84@gmail.com
28	Bani Brata Gupta	AE & AMRUT	Khardan Municipality	8334909509	bauibratagupta@yahoo.co.in
29	MD. Raheed Zaman	JE (MED)	ME Dte	8001056982	raheedzaman07@gmail.com
30	Doab Singh	Programme Officer	NIUA, New Delhi	9818019491	doab@niua.org
31	Kaushik Ghosh	Assistant Professor	Administrative Training Institute, WB	9830419290	urbanmanagementcentre.ati@gmail.com
32	Dhawal Patil	Sr. Resource Person	ESF	9403682008	dhawal.patil@ecosanservices.org
33	Saurabh Kale	Sr. Resource Person	ESF	9665590631	saurabh.kale@ecosanservices.org

3 Agenda of the Training of Trainers

The following table represents the details of the scheduled discussion sessions, site visits

TABLE 2: AGENDA OF THE TRAINING OF TRAINERS

Time	Day 1: November 23rd, 2017
9.30 am-10.00 am	Registration
10.00 am-10.45 am	Introduction, setting ground rules! Understanding expectations, aims and objectives.
10.45 am-11.00 am	*Coffee Break*
11.00 am –11.45 am	Water and Sanitation
11.45 am – 1.00 pm	Sustainable Sanitation and Water Management (SSWM)
1.00 pm - 2.00 pm	Lunch
2.00 pm- 3.15 pm	SSWM Group work: Define boundaries, identify sanitation components of your system/city
3.15 pm- 3.30 pm	Coffee Break
3.30 pm- 4.30 pm	Designing of Sanitation System

Time	Day 2: November 24th, 2017
10.00 am - 11.00 am	Sanitation Systems and Technologies
11.00 am - 11.15 am	Coffee Break
11.15 am - 12.30 pm	Wastewater Treatment Technologies
12.30 pm – 1.00 pm	Group Work: Conceptualising Wastewater Treatment Systems
1.00 pm - 2.00 pm	Lunch
2.00 pm – 3.15 pm	Non-Technical Aspects
3.15 pm - 3.30 pm	Coffee Break
3.30 pm – 4.30 pm	Group Work: Stakeholders Analysis

Time	Day 3: November 25th, 2017
10.00 am -10.45 am	Need of Faecal Sludge and Septage Management
10.45 am -11.00 pm	Coffee Break
11.00 am- 12.15 pm	Faecal Sludge and Septage Management (FSSM) Planning Process
12.15 pm- 1.00 pm	Financing of Faecal Sludge and Septage Management (FSSM)
1.00 pm- 2.00 pm	Lunch
2.00 pm- 3.00 pm	Group Work: FSSM Planning Process
3.00 pm- 3.15 pm	Coffee Break
3.15 pm- 3.45 pm	Wrap-up and Feedback Session

4 Sessions

Day 1, November 23rd, 2017

The three-day training program started off with a formal inaugural session chaired by Mrs. Apala Sett, Additional Director, ATI, Kolkata. In her address, she welcomed all the participants and highlighted the importance of the need of integrated wastewater and septage management.

The day was started with the initial introduction and objectives of the training program under Sanitation Capacity Building Program. Initially, Mr. Doab Singh, Programme Officer introduced the participants about the Sanitation Capacity Building Program and its objective. After initial introduction of the SCBP, the introduction round session was hosted by Mr. Saurabh Kale, Sr. Resource Person. In the introduction round, every participant introduced themselves. After introduction round, Mr. Saurabh Kale briefed about the overall agenda of the training of trainers, information of the training material in the kit and ground rules set for the training.

Presentation Session

Presentation 1: Water and Sanitation

After the introduction session, Mr. Saurabh Kale, Sr. Resource Person presented the first module water and sanitation. Mr. Saurabh Kale initiated the session with some discussion about the scenario of water and sanitation worldwide and the goals set under section 6 in Sustainable Development Goals (SDGs). The key objective of this presentation was to provide brief about environmental health, water supply and environmental sanitation. It also focused on the current challenges in urban region with respect of water management and sanitation. The session covered the following components:

- Environmental health
- Water supply and environmental sanitation
- Resource and waste streams
- Urban challenges

Presentation 2: Sustainable Sanitation and Water Management

The second session was started with the presentation on Sustainable Sanitation and Water Management. The key objective of this presentation was to provide an overview of concept of sustainable sanitation and its management. It also focused on the ecological sanitation and closing the loop. The session was facilitated by Mr. Dhawal Patil, Sr. Resource Person covering the following components:

- Waste Products – black water, grey water, excreta, faecal sludge, domestic wastewater and stormwater
- Parameters for characterizing the wastewater – solids, organic constituents, nutrients, pathogens and other parameters
- Understand your system
- Ecological Sanitation – hygienically safe, economical and closing the loop
- Resource Management – centralized and decentralized approaches
- Planning of sanitation systems
- Closing the loop – urban water cycle, urban nutrient cycle loop


After this session, participants worked on the group exercise on understand your system. In this activity, Mr. Saurabh Kale, instructed the participants about methodology of the exercise and distributed the participants in four different groups. In this activity, participants defined the boundaries of the respective city, identified the natural and build infrastructure of the system and identified the components of water and sanitation. All participants, actively participated in the group activity and raised many queries about the system.

After the identification of the components of water and sanitation, Mr. Saurabh asked few questions to the participants about the system, mainly the problems in water and sanitation perspective for their city. This group work gave participants a comprehensive understanding of the local water and sanitation cycle by identifying the components (source, transport, use, etc.) and the existing links between them. In the discussion with the participants, each component is discussed with the participants and scenario of the cities were discussed with groups.


Presentation 3: Designing of Sanitation Systems

The next session was started with the presentation on Designing of Sanitation Systems. The key objective of this presentation was to provide a brief overview of the sanitation systems and functional groups. It also focused on the decentralised systems and the systematic planning approach required in the designing. The session was facilitated by Mr. Dhawal Patil, Sr. Resource Person covering the following components:

- Designing of sanitation systems – functional groups, the ideal system, the appropriate system
- Decentralised system – shift in paradigm, limitations of centralised systems, features and constraints of decentralised systems
- Systematic planning – need of systematic planning, the best planning model, framework for strategic planning

Day 2, November 24th, 2017

Presentation 4: Sanitation Systems and Technologies

This second day session was started with the presentation on Sanitation Systems and technologies. The key objective of this presentation was to provide a brief overview of the different sanitation systems and its objectives. It also focused on the emergency sanitation infrastructure. The session was facilitated by Mr. Dhawal Patil, Sr. Resource Person covering the following components:

- Sanitation and its objectives
- Functional Groups – User Interface, Collection and storage/treatment, conveyance, semi centralised treatment, use and/or disposal
- Sanitation systems
- Emergency sanitation infrastructure

Presentation 5: Wastewater Treatment Technologies

This session was started with the presentation on wastewater treatment technologies. The key objective of this presentation was to provide a brief overview of the basics of wastewater treatment and different technologies for the wastewater management. It also focused on an appropriate treatment system and treatment chain. The session was facilitated by Mr. Dhawal Patil, Sr. Resource Person covering the following components:

- Wastewater treatment basics – quantification of sewage, quality of sewage, treatment process, design parameters, stage of wastewater treatment.
- Primary treatment

- Secondary treatment
- Tertiary treatment
- Appropriate treatment system
- Treatment chain

After this session, a group activity was carried out on conceptualizing wastewater treatment systems. This group activity helped the participants to design the wastewater treatment system with different treatment units. In this activity, participants were distributed in four groups and they have given three cases of treatment systems a) Conventional Treatment System with Activated sludge process, b) Wastewater Treatment System with Trickling Filters c) Natural Wastewater Treatment System (DTS and Constructed Wetlands). Participants analysed their own city group wise and visualise the current status of sanitation. After visualisation, they have proposed the appropriate wastewater treatment system for their city. After the initial group activities, each group presented their own points and Mr. Dhawal facilitated the final group activity discussions.

Presentation 6: Non-Technical Aspects

This session was started with the presentation on Non-technical aspects. The key objective of this presentation was to provide a brief overview of the enabling environment and non-technical aspects involved in the sanitation systems. It also focused on institutional, political, economic and financial aspects. The session was facilitated by Mr. Dhawal Patil, Sr. Resource Person covering the following components:

- Involvement of Stakeholders
- Enabling Environment – government support, legal framework, institutional arrangements, capacity building, financing
- Institutional and political aspects
- Economic aspects
- Financial aspects

After this session, a group activity was carried out on non-technical aspects as the stakeholder's analysis which is conducted by Mr. Saurabh Kale. This group activity helped the participants to carry out the stakeholder's engagement or involvement in the successful implementation of sanitation and wastewater management projects.

In this activity, participants were asked to identify the list of stakeholders which can be involved in the wastewater and septage management activities. In the next step, Mr. Saurabh Kale, asked the participants to visualise the engagement of stakeholders in the different part of planning process and degree of involvement. After this, facilitator asked the participants to categorise the stakeholders by degree of interest and influence. Participants categorised the each identified stakeholder in the interest and influence and points were discussed about its placement. After the detailed discussion, participants understood the stakeholder's involvement in the different activities of wastewater and septage management.

Day 3, November 25th, 2017

Presentation 7: Need of Faecal Sludge and Septage Management

This third day session was started with the presentation on Need of Faecal Sludge and Septage Management. The key objective of this presentation was to provide a brief overview of the sanitation facts in India and current need of faecal sludge and septage management. It also focused on the sanitation value chain. The session was facilitated by Mr. Saurabh Kale, Sr. Resource Person covering the following components:

- Sanitation facts - India
- National Programs and Policies – Swachh Bharat Mission (Urban), National Policy on FSSM, FSSM in AMRUT
- Introduction to Faecal Sludge and Septage Management (FSSM) - Sanitation systems – Sanitation Systems, Faecal Sludge – Septage and its characteristics, FSSM, Sanitation value chain
- Need and Challenges of FSSM

Presentation 8: Faecal Sludge and Septage Management (FSSM) Planning Process

The next session was started with the presentation on Faecal Sludge and Septage Management (FSSM) Planning Process. The key objective of this presentation was to provide a brief overview of the current situation and stakeholders analysis, stakeholders engagement in faecal sludge and septage management. It also focused on the planning of Integrated faecal sludge management. The session was

facilitated by Mr. Dhawal Patil, Sr. Resource Person covering the following components:

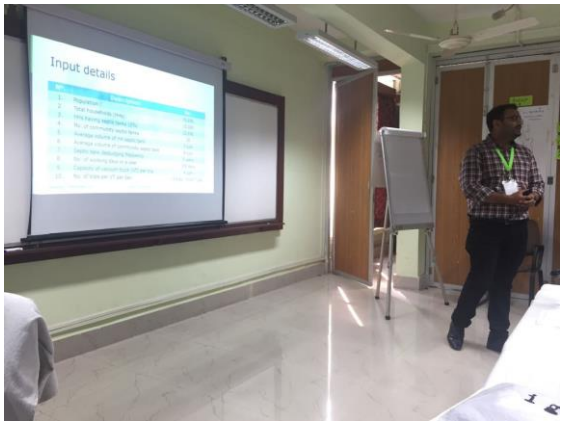
- Assessment of initial situation – tools and methods for data collection, characterization, evaluation and selection of treatment sites
- Stakeholders analysis – identification of stakeholders, characterization of stakeholders and influence and interest.
- Stakeholders engagement – participation levels, involvement tools, milestones and cross cutting tasks, distributing and formalising roles and responsibilities
- Planning of IFSM systems – need for an integrated approach, proposal of a planning approach and logical framework, selecting context - appropriate technical options.

Presentation 9: Financing of Faecal Sludge and Septage Management (FSSM)

The last session was started with the presentation on Financing of Faecal Sludge and Septage Management (FSSM). The key objective of this presentation was to provide a brief overview of the assessment of financial requirements in FSSM, potential sources of financing and stakeholders involvement in financial transfers. It also focused on the types of financial transfers and different financial flow models. The session was facilitated by Mr. Dhawal Patil, Sr. Resource Person covering the following components:

- Assessment of financial requirements
- Potential sources of financing
- Stakeholders involvement in financial transfers
- Financial transfers
- Financial flow models

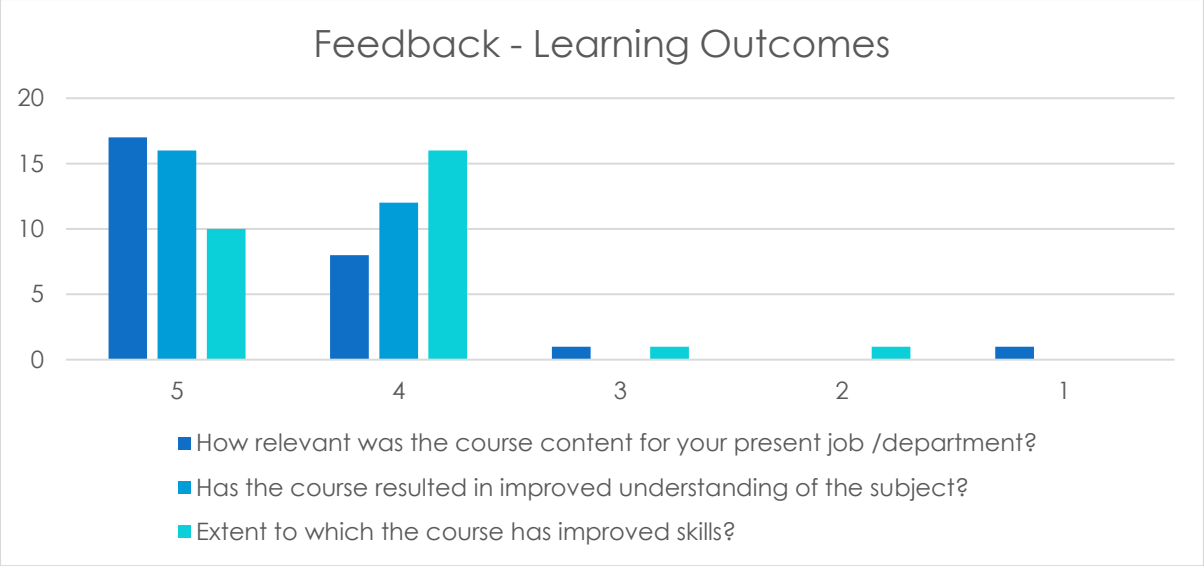
After this session, a group activity was carried out on Faecal Sludge and Septage Management planning process which is conducted by Mr. Saurabh Kale. This group activity helped the participants to understand the estimations of capacity of Faecal Sludge Treatment Plant, Number of vacuum trucks required to service the city. operation and maintenance cost of conveyance, treatment and property tariff calculations. The participants actively involved in the activity and carried out the calculations for the faecal sludge and septage management requirements.



Feedback and Wrap-up Session

The participants were satisfied with the overall training of trainers and they found it to be very helpful to develop and document the management systems for Urban Local Bodies or AMRUT cities, as evident from the feedback conducted by the participants. They were observed to be motivated to go back with a good understanding of the Integrated Wastewater and Septage Management. The participants were asked to evaluate the workshop on five parameters – content of the training, training methods, trainers, relevance of the training to their work and the venue.

In the closing session, Mr. Dhawal Patil Sr. Resource Person, ESF thanked all the participants and the National Institute of Urban Affairs for their support on successfully organising the training of trainers at ATI, Kolkata. The participants also thanked the organizers, NIUA for the very useful training. The participants were awarded certificates for their participation. Mr. Dhawal Patil, Sr. Resource Person, Mr. Kaushik Ghosh, Assistant Professor, ATI and Mr. Doab Singh, Programme Officer, NIUA felicitated the participants with Certificate of Participation. They thanked the participants for their active participation and making the training of trainers a success.


Feedback - Learning Outcomes
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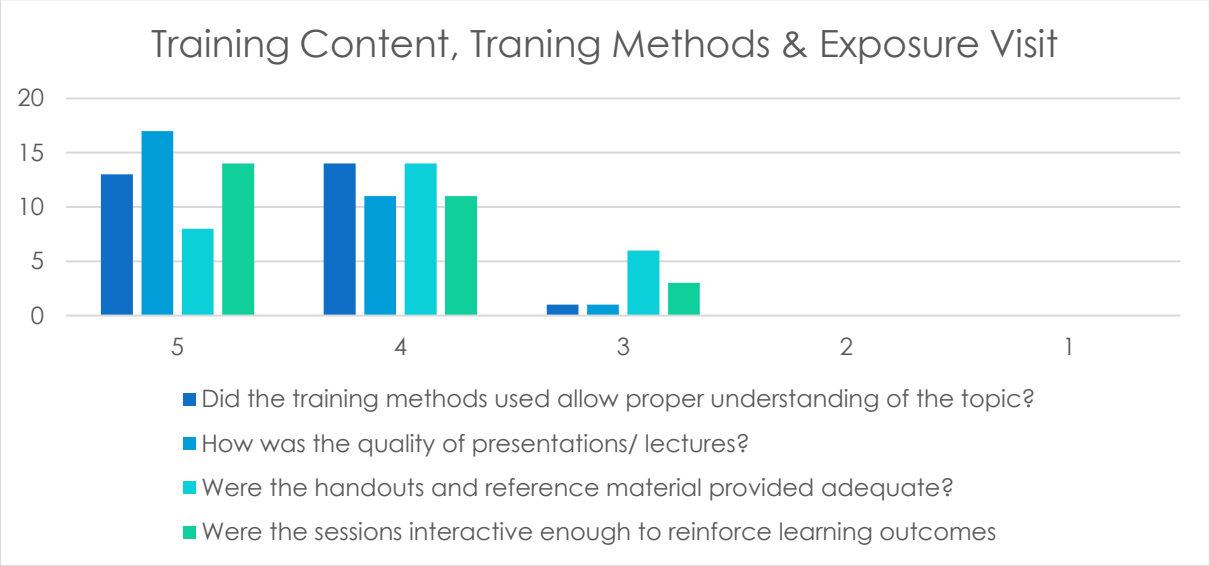
How relevant was the course content for your present job /department?
Has the course resulted in improved understanding of the subject?
Extent to which the course has improved skills?


Training Content, Traning Methods & Exposure Visit
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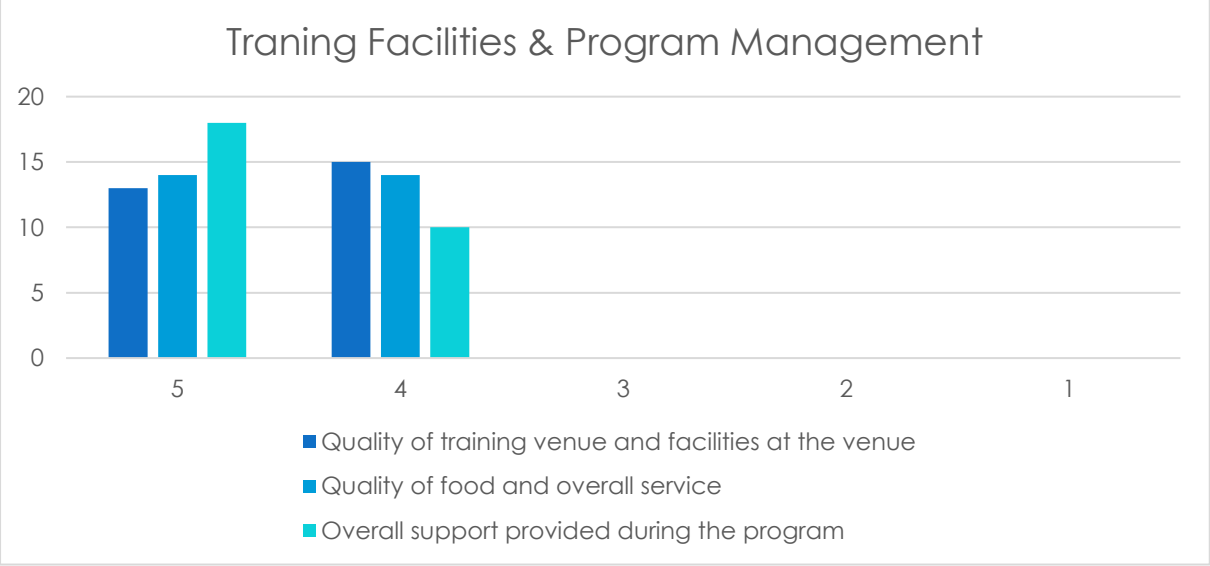
Did the training methods used allow proper understanding of the topic?
How was the quality of presentations/ lectures?
Were the handouts and reference material provided adequate?
Were the sessions interactive enough to reinforce learning outcomes


Traning Facilities & Program Management
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1
Quality of training venue and facilities at the venue
Quality of food and overall service
Overall support provided during the program


Sanitation Capacity Building Platform


Sanitation Capacity Building Platform


MAIN BUILDING

ANNEXURES

Attendance Sheet

National Institute of Urban Affairs

Integrated Wastewater & Septage Management

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Sr No.	Name	Organization	Signature		
			Nov 23rd, 2017	Nov 24th, 2017	Nov 25th, 2017
1	SANKAR MAJUMDER	Bongaon Municipality	25/11/17	24/11/17	25/11/17
2	SUMAN KUMAR NARU	M.E. Dte, Jal Diva	23/11/17	24/11/2017	25/11/2017
3	TARAK NATH BANERJEE	KMDA	23/11/17	24/11/17	25/11/17
4	MD SOLEMAN SK	M.E. Dte. West circle, Bwdwan	23/11/17	24/11/17	25/11/17
5	SUNIL GHORAI	MED	23-11-17	24-11-17	25-11-17
6	PRASANTA SHAW	MED, North 24Pgs Divi	23.11.17	24.11.17	25.11.17
7	ASIS KUMAR SAMANTA	M.E. Dte.	23.11.17	24.11.17	25.11.17
8	GOBINDA ROY.	M.E. DTE	23.11.17	24.11.17	25.11.17
9	PRANAB DASGUPTA	K.M.D.A	23.11.17	24.11.17	25.11.17
10	AMIT DAS	K.M.D.A.	23.11.17	24.11.17	25.11.17

Attendance Sheet

National Institute of Urban Affairs

Integrated Wastewater & Septage Management

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ecosan SERVICES FOUNDATION

			23rd Nov	24th Nov	25th Nov
11	SUBIR DAS	KMDA.	23/11/17	24/11/17	25/11/17
12	PARTHASARATHI CHAKRABARTI	KMDA	23/11/17	24/11/17	25/11/17
13	PRABIR KUMAR MONDAL	KMDA	23/11/17	24/11/17	
14	Susanta Kumar Halder	KMDA	SKHalder 23/11/17	SKHalder 24/11/17	SKHalder 25/11/17
15	Surya Kumar Mishra	KMDA	S.K. Mishra. 23/11/17	S.K. Mishra. 24/11/17	S.K. Mishra 25/11/17.
16	TAPABRATA BHOWMICK	KMDA	T. Bhowmick 23/11/17.	T. Bhowmick 24/11/17.	T. Bhowmick 25/11/17.
17	Snehashis Roy	M.E.Dte	Roy 23/11/17	Roy 24/11/17	Roy 25/11/17
18	Akash kr. Das.	M.E. Dte.	23/11/17.	24/11/17.	25/11/17.
19	PROBIR MUKHOPADHYAY	Titagarh Municipality	23/11/17	24/11/2017	25/11/17
20	SUBARNA KUMAR DUTTA	A.E. Dum Dum Municipality,	23/11/17	24/11/17	25/11/17
21	ASHIS NANDY	UIE Rajpur Sonarpur Municipality	23.11.2017	24.11.2017	25.11.2017
22	Saikat Biswas	S.A.E Halisahar Municipality		24.11.17	25/11/17.

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			23rd Nov	24th Nov	25th Nov
23	Dilyendu Hait	MED, SE(PW)	23/11/17	24/11/17	25/11/17
24	Sohan Banerjee	A.E. M.E.Dte.	23/11/17	24/11/17	25/11/17
25	Banilarata Gupta	A.E & Nodal officer. Khardah municipality	23/11	24/11	25/11
26	Amit Kumar Sarkar	A.E. M.E.Dte. Murshidabad Dist.	23/11/17	24/11/17	25/11/17
27	SUJAY BARMAN	I.E, CD, SS SWM, KMDA	23.11.2017	24.11.2017	25.11.2017
28	Md. Raheed Zaman	I.E M.E.Dte (East Circle)	23/11/17	24/11/17	25/11/17
29	KRISHNA PADA MONDAL	A.E. M.E.Dte. Cooch Behar Division	23/11/2017	24/11/2017	25/11/2017
30	DOAB SINGH	Programme Officer NIUA, New Delhi	23/11/17	24/11/17	25/11/17
31	~~Akash Kr. Dey~~	~~M.E.Dte~~	~~24/11/17~~		
32	Saurabh Kale	Sr. Resource Person, ESF			
33	Dhawal Patil	Sr. Resource Person, ESF			
34	KAUSHIK GHOSH	Assistant Professor, UMC, ATI			

National Institute of Urban Affairs

Training on
Integrated Wastewater & Septage Management

ATI, Kolkata

November 23rd – 25th, 2017

ecosan SERVICES FOUNDATION

FEEDBACK FORM

General Information	
Name	KRISHNA PADA MONDAL
Designation	Assistant Engineer.
Organization	Municipal Engineering Directorate (Govt. of W.B.)
City and State	Kolkata and West Bengal
Contact No.	9749909956
Email Id	Krishnamondal84@gmail.com

Learning Outcomes (tick for the appropriate option)	☺	🙂	😐	☹	😞
How relevant was the course content for your present job /department?			✓		
Has the course resulted in improved understanding of the subject?			✓		
Extent to which the course has improved skills?		✓			
Training Content, Training Methods, Exposure Visits (tick for the appropriate option)					
Did the training methods used allow proper understanding of the topic?		✓			
How was the quality of presentations/ lectures?		✓			
Were the handouts and reference material provided adequate?		✓			
Were the sessions interactive enough to reinforce learning outcomes		✓			

National Institute of Urban Affairs

Training on Integrated Wastewater & Septage Management

ATI, Kolkata

November 23rd – 25th, 2017

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Was the selection of the sites for exposure visit appropriate?					
Was the information provided at the time of site visits appropriate?					
Training Facilities and Program Management (tick for the appropriate option)					
Quality of training venue and facilities at the venue Convenience of location		✓			
Quality of accommodation facilities provided, if applicable		✓			
Quality of food and overall service		✓			
Travel and logistics management			✓		
Overall support provided during the program		✓			
Any other qualitative feedback regarding the training facilities and management	Training facilities are good enough, presentation also very good, interactive also.				