



सत्यमेव जयते

Ministry of Housing and Urban Affairs
Government of India

Sustainable Cities Integrated Approach Pilot in India (SC-IAP)

Partnerships. Knowledge Management and Capacity Building

Final Report



Vijayawada



Guntur



Mysuru



Bhopal



Jaipur





Ministry of Housing and Urban Affairs
Government of India

Sustainable Cities Integrated Approach Pilot in India (SC-IAP)

Final Report

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Task:
**Final Report on Sustainable Cities Integrated
Approach Pilot in India (SC-IAP)**

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Acronyms

DPR	Detailed project report
FSSM	Faecal Sludge and Septage Management
GEF	Global Environment Facility
GHG	Greenhouse gases
IUWM	Integrated urban water management
MoHUA	Ministry of Housing and Urban Affairs
NGO	Non-governmental organization
NIUA	National Institute of Urban Affairs
NNGJ	Nagar Nigam Greater Jaipur
O&M	Operations and Maintenance
POS	Point of Sales
PPE	Personal Protective Equipment
RFID	Radio-Frequency Identification
SBM	Swachh Bharat Mission
SC-IAIP	Sustainable Cities Integrated Approach Pilot
SDGs	Sustainable Development Goals
SWM	Solid Waste Management
Tadox	TERI Advanced Oxidation Technology
TANA	Training and Assistance Need Analysis
ToT	Training of Trainers
ULB	Urban Local Body
UNIDO	United Nations Industrial Development Organization
URMP	Urban River Management Plan
WASH	Water, sanitation and hygiene
WSUD	Water Sensitive Urban Design

Brief of the Project

The world is urbanizing more rapidly than ever before, and cities in developing countries are growing at an even higher pace. Recognizing that cities are key to achieving global environmental and sustainability goals, the Global Environment Facility (GEF) launched the Sustainable Cities Integrated Approach Pilot (SC-IAP) in 2016 as part of the GEF-6 cycle (2014-2018).

The Sustainable Cities Integrated Approach Pilot (SC-IAP) aids 28 cities from 11 countries to address the challenges posed by megatrends of global environmental degradation, in an integrated manner. The project aims to promote an approach to urban sustainability among participating cities, guided by evidence-based, multi-dimensional, and broadly inclusive planning processes that balance economic, social, and environmental resources.

SC-IAP in India

The SCIAP project in India has been implemented in five pilot cities since 2019, aiming to integrate sustainability strategies into urban planning and management and create a favorable environment for investment in infrastructure and service delivery. The 5 cities under SCIAP in India are- Bhopal, Jaipur, Mysuru, Vijayawada, and Guntur.

The three main project components of the project are-

1. Sustainable Urban Planning and Management handled by UN-HABITAT
2. Investment Projects and Technology Demonstration handled by UNIDO
3. Partnerships and Knowledge Management Platform handled by NIUA

The project is being implemented by UNIDO in close cooperation with the Ministry of Housing and Urban Affairs (MoHUA), Government of India. The GEF grant, through UNIDO as the implementing agency, invested in solutions to decarbonize and enhance municipal services and promote integrated and compact cities with resilience at its core.

In the five pilot cities of India- Bhopal, Jaipur, Mysuru, Vijayawada, and Guntur, the project focuses on three sectors, Water Supply Management, Waste Water Management and Solid Waste Management. Incorporating the 3 three components of the project in these 5 cities, the aim is to support the Sustainable Development Goals (SDGs) and the 2030 Agenda.

Components



5

CITIES

- Bhopal
- Guntur
- Jaipur
- Mysuru
- Vijayawada



3

SECTORS

- Solid Waste
- Used Water and Septage
- Urban Water



3

STAKEHOLDER GROUP

- Senior Officials
- Mid-level Officials
- Ground Functionaries

Domains



Research



Partnerships



Scaling-Up



Capacity Building



Technical Assistance

Role of NIUA

The primary role of NIUA is to undertake the implementation of Component 3- Partnerships, Knowledge Management and Capacity Building. As a part of this component, a Training and Assistance Needs Assessment (TANA) was conducted from February 2020 to August 2020 for the ULBs of five cities- Bhopal, Jaipur, Mysuru, Vijayawada, and Guntur to assess and identify the needs of the ULB officials and to further prepare the training modules. Through TANA, set of two stakeholders were identified for whom training modules have been prepared- mid and senior level officials, and ground functionaries.

Based on the results of TANA, five training modules have been developed by NIUA for the mid and senior level officials of Urban Local Bodies (ULBs). These have been finalized in coordination with experts and officials from the five pilot cities.



Figure 1: Discussion with experts as a part of SCIAP project at NIUA

Based on the training modules and TOTs developed, NIUA conducted in-person capacity-building workshops in each of the pilot cities (Bhopal, Mysuru, Jaipur, Guntur and Vijayawada) for the ULB officials and ground functionaries. The trainings have been organised separately for the two groups: mid and senior-level ULB officials and ground functionaries.

ULB officials at the mid and senior levels received training in solid waste management, used water management, and urban water management. Experts from the three sectors gave presentations on topics based on the knowledge requirements identified by TANA.

Training for ground functionaries was provided as per NIUA's Training for Trainers (TOT) and was delivered by selected partners who were familiarized with the local context. To suit the requirements of the ground functionaries, the workshops were conducted in the vernacular languages of the respective cities.

The image below depicts a timeline of activities carried out by NIUA as part of the SC-IAP project. The activities are covered in detail in the following chapters.

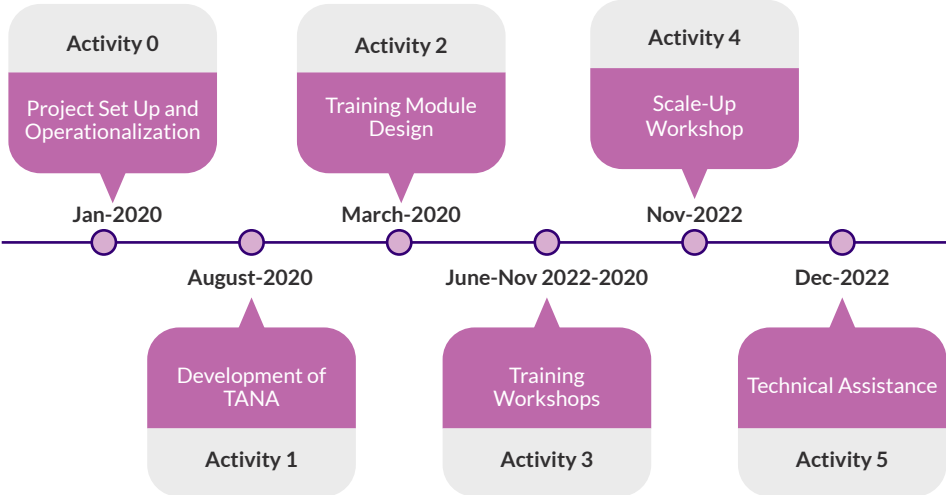


Figure 2: Timeline of activities undertaken by NIUA

Training and Assistance Need Analysis (TANA)

TANA is designed and developed in coordination with UN-HABITAT and UNIDO. TANA was conducted from February 2020 to August 2020 for the ULBs of five cities - Bhopal, Jaipur, Mysuru, Vijayawada, and Guntur to assess and identify the needs of these ULBs in the field of sustainability, with particular reference to water, sanitation, and solid waste management. The results were shared with UNIDO and UN-HABITAT for review, approval, and finalization.



The objectives of the TANA were:

- To assess the organizational functions and human resource competencies with respect to water, wastewater, and solid waste management.
- To assess the training needs of Government officials at different levels top management or decision-makers, middle and ground functionaries of the Urban Local Bodies.
- To formulate customized capacity building and training programmes for the officials and staff as per the assessed needs.

For the preparation of TANA, stakeholders were mapped and classified into three categories based on the organizational structure of each city: senior officials, mid-level officials, and ground functionaries. Following that, a thorough collation and analysis of relevant secondary information on the cities, as well as primary data was gathered through personal interviews and focus group discussions with all stakeholders. To bridge the gap, an outline of a customized training curriculum for water management, wastewater management, and solid waste management for three stakeholder groups has been prepared for each city, based on their job responsibilities and future aspirations.

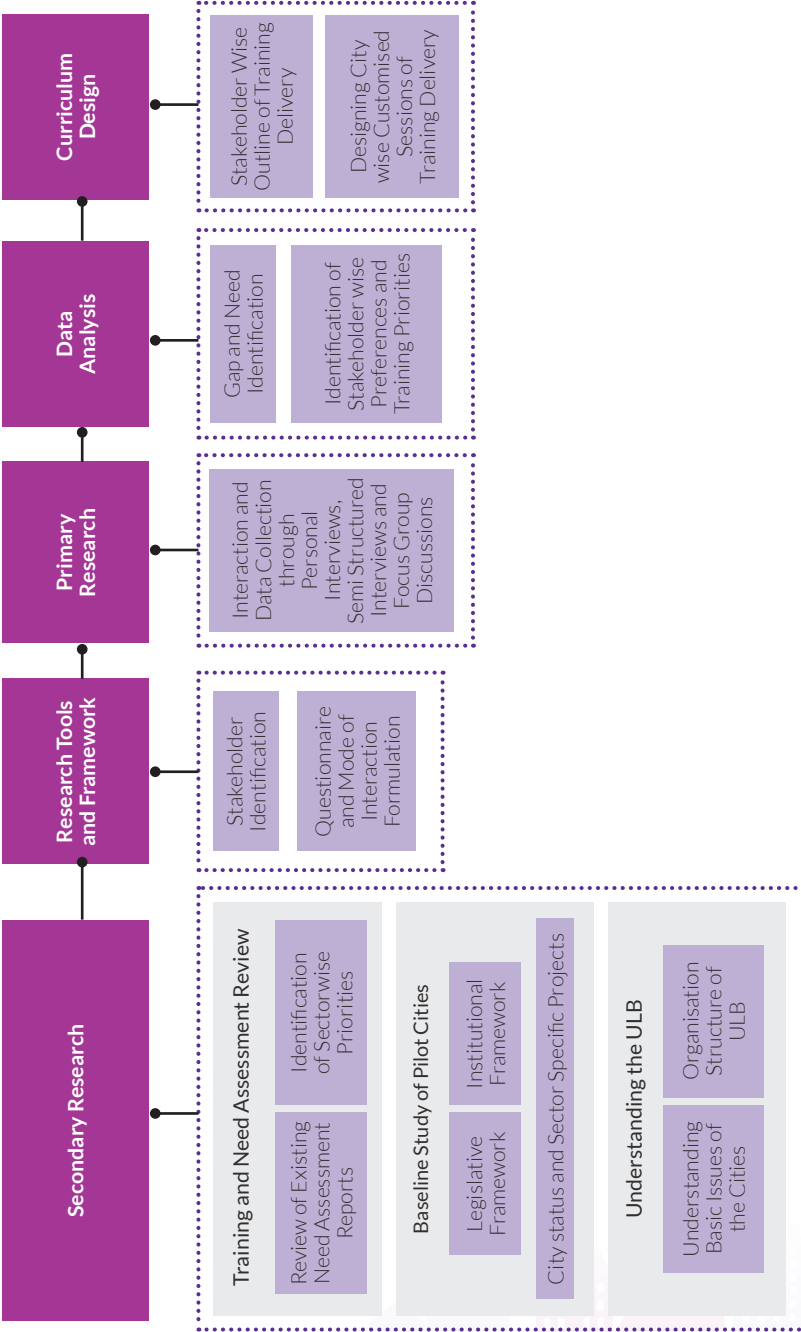


Figure 3: Methodology of the TANA Study

According to the analysis, decision makers in the majority of the five cities prioritized solid waste management over wastewater management and water management, as seen in the figure below.

Table 1: Methodology of the TANA Study

CITY	FIRST	SECOND	THIRD
GUNTUR	Solid Waste Management	Waste Water Management	Water Management
VIJAYAWADA	Waste Water Management	Solid Waste Management	Water Management
MYSURU	Water Management	Solid Waste Management	Waste Water Management
BHOPAL	Solid Waste Management	Waste Water Management	Water Management
JAIPUR	Solid Waste Management	Waste Water Management	Water Management

Learning

The TANA preparation process provided insight into the fundamental issues that cities face in the solid waste, used water, and urban water sectors. Though each city faces unique challenges, the expectation is that sustainable strategies need to be implemented to achieve the desired outcomes.

The approach of TANA showed that primary and secondary data collection, stakeholder identification, and comprehensive data analysis are required to understand the current scenario in a city. Engagement of the target group for whom the module is meant is crucial at this stage.

The soft copies for the above-mentioned knowledge products can be accessed at



SCAN ME

Training Modules and Training of Trainers

The next activity after the preparation of TANA was developing training modules for senior officials, mid-level officials, and ground functionaries of the ULB's. Modules on Solid waste management, Waste Water Management, and Water Management have been developed for training the mid and senior level officials while modules on Occupational Health, Social security and Enhancing leadership, have been developed for training ground functionaries.

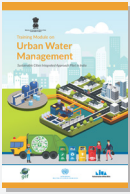
The modules prepared by NIUA are the outcome of the following tasks:

- On the basis of TANA findings, training modules were prepared for relevant stakeholders
- For developing the module and pedagogy, NIUA has synergized the experience of practitioners and subject experts.
- The modules have been finalized in coordination with experts and officials from cities.

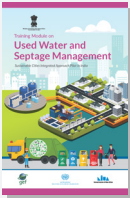
Following are the modules developed by NIUA:



The current state of Solid Waste Management (SWM) at the national and international levels has been thoroughly discussed, including existing and ongoing waste management policies and programmes. The module can help cities develop a detailed management and action plan for a SWM. It also explains the components of a DPR and how cities can prepare Request for Proposals for SWM projects. Case studies have also been discussed to highlight successful waste disposal practices in Indian cities. Finally, the importance of information, education, and communication in SWM is discussed.



The module aids in understanding the water supply sector in urban India, its connections to health and climate, and aspects that need to be revisited in order to achieve sanitation goals. It describes the relevant provisions of schemes, acts, policies, and standards for urban water supply in India. It also discusses the urban water cycle, the IUWM concept, and water sensitive urban design. Potential strategies for managing urban water demand are also discussed. Finally, the module assists in comprehending the methods of conducting a water audit as well as concepts such as a water balance chart, non-revenue water, and water reuse.



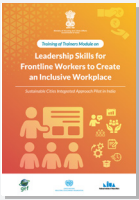
The module explains the current state of sanitation at the international and national levels, as well as the importance of achieving sustainable sanitation. It discusses sanitation legislative instruments at the national and state levels, domestic wastewater management, the sanitation value chain, and aspects governing wastewater management in order to plan sanitation systems more efficiently. It then elaborates on the approaches and technologies for user interface and collection and conveyance. The module explains in detail the concept of Faecal Sludge and Septage Management. Lastly, it discusses waste water management technologies, sewage treatment plants, and the benefits of reusing water, as well as its models and complexity.



The module on GHG estimation and Climate adaptation assists in comprehending the impact of climate change on urban sanitation services. It also assists in estimating emissions from solid waste and wastewater management and elaborates on water sector adaptation strategies as well as legal instruments addressing climate change impacts on water resources.

The module on the use of geospatial tools in municipal waste management explains why GIS mapping is required for urban services. It explains how GIS can be used to understand land suitability for waste management, waste collection route optimization, and real-time manhole monitoring systems

A set of Training of Trainers (TOT) Modules and Handbook are developed based on the findings of TANA that was conducted for the ground functionaries. It comprises the following:



The module covers sections on the self-recognition of workers, and their contribution to making the city clean and functional, awareness about various provisions and responsibilities of ground functionaries, importance and usage of safety equipment, gender sensitization, and ways to cope with stress at work. Awareness of all these aspects creates space for an individual to unfold their leadership potential. Sessions on gender sensitivity will also contribute to an inclusive workplace, where workers do not look down upon each other. This module can be used for training of ground functionaries like sanitation workers, door-to-door collectors, waste-pickers, street sweepers, de-sludge operators and others.



This module covers the occupational health and safety of ground functionaries in detail. The purpose of the training is that the workers know various work-related injuries and infections, they are aware of the ways they can safeguard themselves by using Personal Protective Equipment (PPE). They are informed about the various kinds of PPE available in the market. This module can be used for training of ground functionaries like desludging operators, dry waste collectors and operators, sanitation workers, door to door waste collection workers, waste pickers, street sweepers, cleaners of public toilets and other ground functionaries.



This module aims to train the workers about various social security provisions and schemes available for ground functionaries. The participants will learn about Employee State Insurance, Employee Provident Fund and pension, credit and other social security programmes in India. This module can be used for training of ground functionaries like sanitation workers, desludging operators, waste pickers, street sweeper, cleaners of public toilets and other ground functionaries.



A handbook, which is a complementary document to be read along with the Training Module on 'Social Security Provisions and Schemes for Ground Functionaries' is also provided in both Hindi and English for a better understanding.

Learning

Through the course of module preparation, it has been found that training modules should be need-based. Furthermore, while theoretical knowledge sharing is important, the module's solutions and recommendations must be implementable and practical. Therefore, a number of good practices have been included in all modules.

Capacity Building Workshop for

Mid and Senior Officials



Vijayawada / Guntur

26th to 28th July 2022
Lemon Tree Premier,
Vijayawada



Mysuru

24th - 26th August, 2022
Administrative Training
Institute (ATI), Mysuru



Jaipur

14th-15th
September 2022
Rajasthan Institute Of Public
Administration, Jaipur



Bhopal

29th-30th November, 2022
RCVP Noronha Academy of
Administration, Bhopal

Quick Overview



56
Sessions



383
Male
Participants



40
Speakers

46
Female
Participants

Workshop Sessions

Capacity building workshops were conducted for all five pilot cities on the topics, Solid Waste Management, Urban Water Management and Used Water Management. A scale-up workshop was also conducted to impart the knowledge to an additional 45 ULBs. The technical sessions were delivered by subject experts from WASH sector. The technical sessions were based on the topics covered in the training modules developed by NIUA. The following table is the summary of various topics covered in various workshops conducted under the project.

Table 2: Summary of Technical Sessions on Solid Waste Management

SOLID WASTE MANAGEMENT				
Sl. No	Session Name	Speaker	Cities	Remarks
1	City-wide strategy and planning for SWM - Value Chain for SWM	Ms. Zigisha Mhaskar	Vijayawada Guntur Mysuru Jaipur Bhopal Scale-Up	It covered in detail the entire process of long term planning for SWM at the city scale – from baseline assessment, to visioning exercise and target setting, strategy formulation and selection of technologies, and lastly the framing of the strategy plan
2	Circular Economy in dry waste management & business models	Ms. Sunitha Jayaram	Vijayawada Guntur Mysuru	The session elaborated on the types of dry waste, dry waste value chain, dry waste processing, and the challenges of recycling. Various dry waste management interventions and business models were also discussed
3	Integrating Waste pickers for Sustainable Solid Waste Management - Case Studies	Ms. Sunitha Jayaram	Vijayawada Guntur	In this session, the current scenario regarding waste pickers in the SWM system and the key requirements for their integration were discussed. Various case studies showcasing successful models of integration of waste pickers in the SWM value chain were also presented.
4	Waste Management and Climate Change • SW-APT tool for GHG estimation • DPR formulation	Mr. Pravinjith KP	Vijayawada Guntur Bhopal Scale-Up	In the session the use of SWAPT to calculate GHG emissions from SWM was explained. This session also included the DPR preparation process wherein elements of a good DPR, common mistakes in formulation of DPR, technical aspects in preparation of DPR, and use of technical scrutiny checklist were discussed.

SOLID WASTE MANAGEMENT

Sl. No	Session Name	Speaker	Cities	Remarks
5	Management of legacy waste – Challenges, Solutions and Case Studies	Mr. Pravinjith KP	Vijayawada Guntur Mysuru	The challenges and solutions in management of legacy waste through examples.
6	E-waste management – Innovative practices in India	Mr. Pravinjith KP	Vijayawada Guntur	It covered the e-waste scenario in India in terms of the informal and formal recycling scenario, technologies adopted, and the way forward.
8	E-waste management, Plastic waste management – Innovative practices in India	Ms. P. Bineesha,	Mysuru	The session covered a basic overview of plastic waste generation in India, the effects it has on biodiversity, the challenges of recycling, and the responsibilities as well as legal requirement, management systems such as plastic waste segregation, storage, upcycling, recycling, and reprocessing, the concept of waste-to-energy, and adopting sustainable consumption practises. An introduction to E-waste- classification and composition, its effects on the environment and the advantages of recycling it were covered.
9	Construction and Demolition Waste Management	Mr. Pradeep Khandelwal	Mysuru Jaipur Bhopal Scale-Up	The session the composition of C&D waste, and its estimation and processing. The key policies and guidance documents available for C&D wastes with reference to India were also discussed.
10	Integrated Decentralised SWM Model (Sanitation Park) -Nathuawala, Dehradun	Mr. Ajay Sinha	Jaipur	The session included the procedures involved in setting up a sanitation park in Nathuawala and the various process and activities being carried out within the park were elaborated. He also pointed out how effectively waste can be reused.
11	<ul style="list-style-type: none"> • Role of IEC in Waste Management • SLRM Model of Ambikapur 	Ms. Paramita Datta Dey	Jaipur Bhopal Scale-Up	The session elaborated on the case study of Solid Liquid Resource Management (SLRM) centre in Ambikapur and how community engagement helped the city to showcase a successful solid waste management model

SOLID WASTE MANAGEMENT

Sl. No	Session Name	Speaker	Cities	Remarks
12	E-waste and Plastic waste management	Ms. Himani Tiwari	Jaipur	The session briefed about how E-waste and plastic waste are harmful, how they differ from other categories of waste and required more careful steps for their treatment.
13	Management of legacy waste – challenges, solutions and case studies	Mr. Pradeep Khandelwal	Jaipur	The session explained on the challenges and solutions in management of legacy waste through the case of Delhi. He explained the impact of legacy waste, the policy framework, methodology for dumpsite remediation and processing of legacy waste.
14	E-waste management, Plastic waste management – Innovative practices in India	Dr. Brijesh Dubey	Bhopal Scale-Up	This session elaborated upon the types of plastics, issues arising due to plastic waste, and plastic waste generation and management in Indian cities. It further discussed techniques like mechanical recycling, feedstock recycling, and sanitary landfilling, which can be adopted in treating plastic waste and unconventional practices like utilizing plastic waste in roads, pavement blocks etc
15	Bio remediation and scientific closure of Bhanpur dump site, Bhopal	Mr. Saurabh Sood	Bhopal Scale-Up	This session discussed the challenges Bhopal City faced in treating its legacy waste, as well as the steps involved in the bio-remediation process, such as waste surveying, quantification, profiling, and categorization
16	Integrated Decentralised SWM Model (Sanitation Park) -Nathuawala, Dehradun	Mr. Lakhwinder Singh	Bhopal Scale-Up	This session elaborated on the concept of sanitation parks and presented case studies of Budhni, Malanpur. It also explained the procedures used in a sanitation park like the composting zone, e-waste zone, and recyclables zone were explained in detail
17	SBM Journey of Indore city	Mr. Shrigopal Jagtap	Bhopal Scale-Up	This session described how the city started with a pilot project in two wards, which was then scaled up for door-to-door waste collection and segregation, and infrastructure for the entire city was developed. It also elaborated on other concepts used by Indore City in their SBM journey, such as 6-bin segregation, steps to a bin-free city, NGO deployment, and spot fine.



Figure 4: Session on 'City-wide Strategy and Planning for SWM' (Vijayawada & Guntur)



Figure 5: Session on E-waste management & Plastic waste management (Mysuru)



Figure 6: Session on 'GHG emissions from solid waste and the SW-APT tool' (Bhopal & Scale Up)

Table 3: Summary of Technical Sessions on Urban Water Management

URBAN WATER MANAGEMENT				
Sl. No	Session Name	Speaker	Cities	Remarks
1	Need for Integrated Urban Water Management in India (Group Exercise)	Mr. Victor R. Shinde	Vijayawada Guntur	The session emphasized on the need for IUWM in India and the difference between traditional water management and IUWM
2	Drinking Water Security in Urban Odisha	Mr. Chinmaya Tripathi	Vijayawada Guntur Mysuru Bhopal Scale Up	The session elaborated on the current drinking water scenario and challenges, questions that ULBs should address, and changes in water policy that have positively impacted the drinking water situation in Odisha
3	Water Sensitive Urban Design (Group Exercise)	Ms. Vishakha Jha	Vijayawada Guntur	This session covered the concept of WSUD - benefits, areas of application, and examples from different site conditions and scales
4	Water Demand anagement (Group Exercise)	Dr. Uday Bhonde	Vijayawada Guntur	This session also involved a group exercise where participants were asked to identify structural and non-structural measures of water demand management for their respective municipal corporations
5	Water Management and Climate Adaptation	Ms. Mary Abraham	Mysuru	The session gave insight on the concepts of climate change, mitigation, adaptation, resilience, vulnerability, greenhouse gases (GHGs), and why they are all relevant today. It also discussed the effects as well as risks of rising temperatures and climate change on ecosystems, humans and cities in general
6	Framework for an Urban River Management Plan (URMP)	Mr. Rahul Sachdeva	Mysuru	The session focused on the elements of a river management plan, vision components, objectives necessary to achieve the vision, plan financing, and how cities can combine their existing master planning and water management measures with the River Management Plan
7	<ul style="list-style-type: none"> • Rejuvenation of Waterbodies (Nature Based Solutions - Indian Case Studies) • Lake Rejuvenation and Restoration 	Mr. Krishna Swaroop	Bhopal Scale-Up	This session elaborated on the challenges and various procedures involved in waterbody rejuvenation, emphasizing the importance of community and stakeholder engagement in the process. Various waterbody rejuvenation case studies from Indian context were also discussed.



Figure 7: Participants engaged in group activity on Water Sensitive Urban Design (Vijayawada & Guntur)



Figure 8: Technical Session on 'Waterbody Rejuvenation' (Bhopal & Scale-Up)



Figure 9: Session on 'Water Management and Climate Adaptation' (Mysuru)

Table 4: Summary of Technical Sessions on Used Water Management

USED WATER MANAGEMENT				
Sl. No	Session Name	Speaker	Cities	Remarks
1	Used water Management <ul style="list-style-type: none"> • Policies and Legislations • Brief overview of value chain components • Treatment Technologies • O&M related Challenges • Case Studies from Indian Cities implementing effective Used water management strategies 	Mr. Dhawal Patil	Vijayawada Guntur Bhopal Scale-Up	These sessions covered various aspects of used water and septage management – policies and legislations, value chain components, treatment technologies, O&M related challenges, and case studies from Indian cities implementing effective strategies
2	Business Ecosystem Models for Used water Reuse - Case Studies (Interactive session)	Mr. Praveen Nagaraja	Vijayawada Guntur Mysuru	These were interactive sessions on 'Business Ecosystem Models' for used water reuse and across Faecal Sludge and Septage Management (FSSM).
3	Estimating GHG emissions for Used water Treatment technologies	Mr. Pravinjith KP	Vijayawada Guntur	This session started with a brief overview of the internationally accepted GHG Protocol for quantifying (accounting and reporting) GHG emissions. The session covered the methodology for calculating GHG emissions for different treatment technologies based on a list of common input data required
4	Used water Management <ul style="list-style-type: none"> • Brief overview of value chain components • Used water management Upflow Anaerobic Sludge Blanket Technology • City Sanitation Action plan and DPR preparation as per SBM 2.0 	Dr. Swapan Kumar Sinha	Mysuru	The session included characteristics of used water, institutional setup in water supply & sanitation services, standards and guidelines related to waste water and detailed explanation on components of wastewater management systems. Further, the session covered sewage treatment systems like centralised and decentralised as well as on-site and off-site.
5	Innovative Wastewater Management through Nature Based Solutions	Mr. Andrews Jacob	Mysuru	It covered the key principles and approaches to waste water treatment technologies and nature based solutions that can be adopted. A detailed overview of nature based waste water treatment (DEWATS) was given wherein each step was explained

USED WATER MANAGEMENT				
Sl. No	Session Name	Speaker	Cities	Remarks
6	Used water Management <ul style="list-style-type: none"> Brief overview of value chain components Safe Reuse of Treated or Used Water - Case Study Surat and Chennai 	Dr. Girija K Bharat	Jaipur Bhopal Scale-Up	The session covered various aspects of Used water management including a brief overview of value chain components and a case study of safe reuse of treated or used water. She explained about various steps in the value chain analysis, viz., value chain mapping, value chain analysis, planning and implementation and performance measurement
7	Innovative Technologies in Waste Water Management	Dr. Nupur Bahadur	Jaipur	This session gave insights on gaps and challenges in industrial and municipal wastewater treatment. It also explained how Tadox (TERI Advanced Oxidation Technology) provides efficient treatment of used water
8	Faecal Sludge and Septage Management - Technologies	Dr. Pawan Jha	Jaipur	This session explained value chain of FSSM along with the characteristics of faecal sludge/ septage. It also covered various technologies that can be adopted for the treatment of solid- liquid and liquid wastes
9	<ul style="list-style-type: none"> Discussion on Preparing and Appraising DPRs (Used Water) O&M related Challenges 	Dr. Pawan Jha	Jaipur	The session talked about the general and engineering components of DPR. It also briefed about the different components for the operation and maintenance of various technologies used for used water treatment.



Figure 10: Interactive session on 'Business Ecosystem Models' (Vijayawada & Guntur)



Figure 11: Technical session on 'Innovative Technologies in Waste Water Management' (Jaipur)



Figure 12: Technical Session on 'Used Water Management' (Bhopal & Scale-Up)



Figure 13: Session on 'Innovative Wastewater Management through Nature Based Solutions' (Mysuru)

Participation Statistics

A total of 435 participants attended the various capacity building workshops conducted in various cities as part of SCIAP project. The participants were mid and senior level officials from the water, used water and solid waste management departments of various ULBs.

Table 5: Participation Statistics of Mid and Senior Officials

City	No of Participants		Total
	Male	Female	
Vijayawada	91	15	106
Guntur	88	13	101
Mysuru	57	15	72
Jaipur	45	0	45
Bhopal	40	1	41
Scale up	68	2	70
Total	389	46	435

Participation Statistics

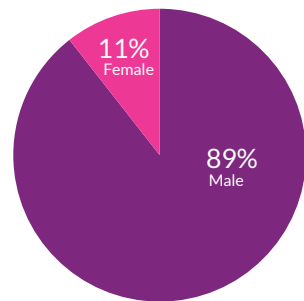


Figure 14: Male Female distribution of Workshop Participants



Figure 15: Group photo with the participants from Vijayawada and Guntur Municipal Corporations



Figure 16: Group photo with the participants from Mysuru Municipal Corporation



Figure 17: Group photo with the participants from Jaipur Municipal Corporation



Figure 18: Group photo with the participants from Bhopal Municipal Corporation and Other ULBs for Scale-Up

Resource Persons

Resource persons who were invited to deliver lectures and conduct technical sessions at the workshop were practitioners from the WASH sector with hands on experience in the field. This included consultants, experts from government organizations, companies and NGOs. The sessions included both theoretical as well as practical examples, demonstrations, exhibited videos, group exercises and discussions.



Victor Shinde



Vishakha Jha



Chinmay Tripathi



Pravinjith KP



Dhawal Patil



Praveen Nagaraja



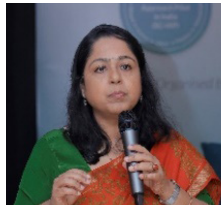
Sunitha Jayaram



Zigisha Mhaskar



Uday Bhonde



Paramita Datta



P. Bineesha



Mr. Ajay Sinha



Rahul Sachdeva



Swapan Kumar Sinha



Pradeep Khandelwal



Andrews Jacob



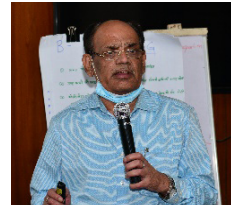
Mary Abraham



Dr. Girija K Bharat



Dr. Himani Tiwari



Dr. Pawan Jha



Dr. Nupur Bahadur



Shrigopal Jagtap



Lakhvinder Singh



Dr. Brijesh Dubey



Krishna Swaroop

Workshop Outcome

The aim of the training program was to enhance the knowledge level of the officials in the sectors of solid waste management, water management and used water management. To evaluate and understand the impact of training, forms were distributed among the participants viz., one feedback form and two learning progress evaluation forms.

Feedback Form

The participants were asked to provide their feedback on the workshop. This was done with the help of a standardized feedback form across all workshops. The goal of this exercise was to understand the overall experience of the attendees as well as to assess the quality of the sessions delivered. As per the feedback received, around 40% of the participants found the training extremely useful. Overall, more than 90% of them found the sessions useful.

Overall Usefulness of the workshops

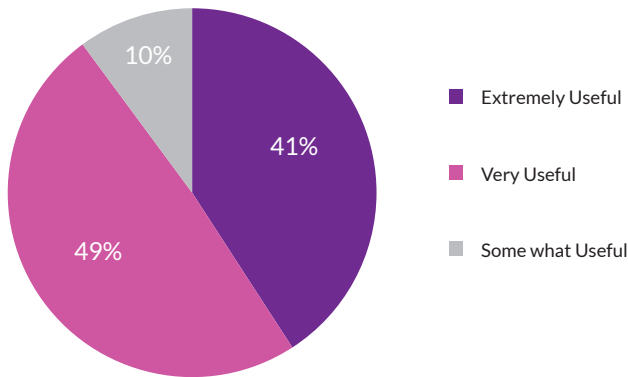


Figure 19: Graph depicting the overall usefulness of the capacity building workshop sessions

Learning Progress Evaluation Form

The pre and post workshop questionnaires were designed to assess how the training improved the participants' knowledge on various topics covered during the two-day sessions. The analysis of this showed there was a positive change in the knowledge level of participants in all the sectors.

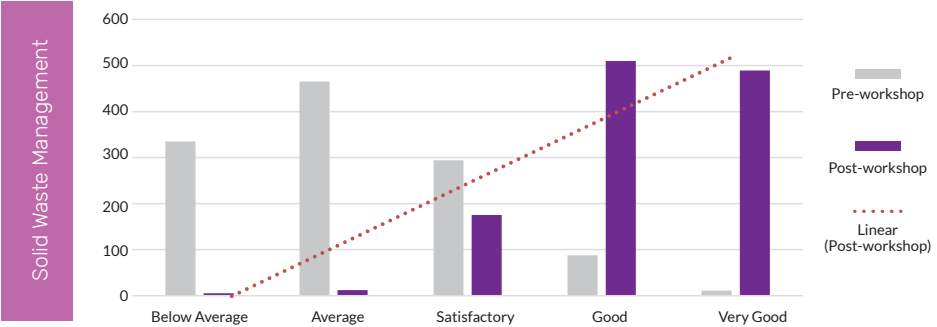


Figure 20: Graph depicting the learning progress for all the workshop sessions on solid waste management

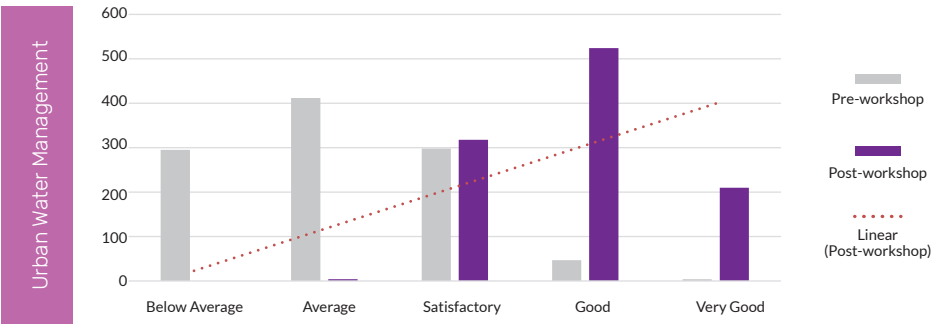


Figure 21: Graph depicting the learning progress for all the workshop sessions on urban water management

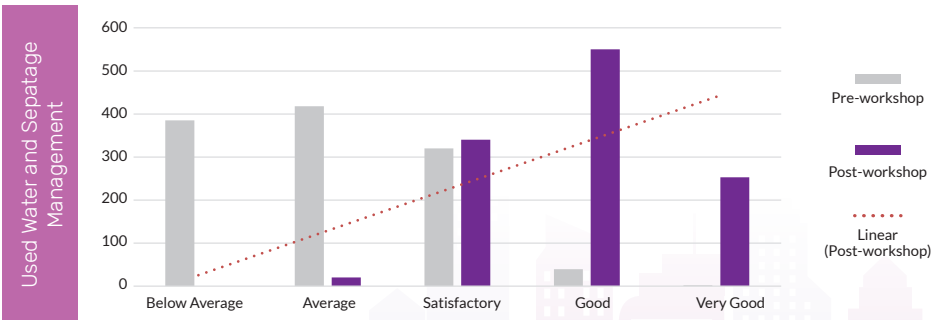


Figure 22: Graph depicting the learning progress for all the workshop sessions on used water management



Capacity Building Workshop for Ground Functionaries



Vijayawada

14th - 16th June, 2022
Press Club, Vijayawada



Guntur

30th June - 2nd July, 2022
Jashuva Vignana Kendram,
Guntur



Mysuru

6th - 8th July, 2022
Administrative Training
Institute (ATI), Mysuru



Jaipur

12th - 13th Sept, 2022
Rajasthan State Institute of
Public Administration, Jaipur



Bhopal

1st - 2nd Nov, 2022
All India Institute of Local Self
Government, Bhopal

Quick Overview



54
Sessions



141
Male
Participants



22
Speakers

51
Female
Participants

Workshop Sessions

Capacity building workshops were conducted for ground functionaries working in waste management sector for all five pilot cities. The sessions were based on the topics covered in the training modules developed by NIUA. The following is the summary of various modules and sessions delivered.

Table 6: Summary of Modules and Sessions for Ground Functionaries

Sl. No	Module	Session	Remarks
1	Leadership Skills for Ground Functionaries to Create an Inclusive Workplace	Importance of Self-Identification	To help participants understand the need for the training and learn about each other's work and be proud of their contribution to the life and well being of the city.
2		Awareness Building regarding various provisions and laws	To inform the ground functionaries about labour welfare, social security and work-related provisions.
3		Enhancing Communication skills for social mobilisation and community engagement	To sensitise the ground functionaries towards various forms of social mobilisation and community engagement undertaken by waste-pickers, desludging operators and others.
4		Gender Sensitization	To help participants to realise the personal bias of gender roles. The discussion aimed at being considerate of gender diversity at the workplace
5		Stress Management	To help learn ways to cope with work related stress.
6	Social Security Provisions and Schemes	Introduction to Social Security	To introduce the topic of social security for the discussion throughout the day and set the context for the following sessions.
7		Quiz on Social Security Programmes	Learning about the existing knowledge of participating workers on social security, before sharing the details of social security programmes
8		Snapshot of Social Security Schemes	To inform the participants about the various social security schemes in India that are available for the workers.
9		Application Process of Social Security Programmes	To make the participating workers aware of the application process and the documents required for the same.

Sl. No	Module	Session	Remarks
10	Occupational Health and Safety	Familiarising with Personal Protective Equipment (PPE)	To familiarise the participants with PPE by letting them touch and feel the PPE, and allowing them to try it on.
11		Introduction and Group Building	To facilitate the interaction between participants by promoting introduction and connection with the fellow participants
12		Understanding Why Workers Do Not Like to use PPE	To understand the issues and challenges participants face in usage of PPE by sharing their preconceived notions about PPE and those notions are put to question.
13		Informing Workers About the Usage of PPE	To familiarize the participants about the purpose and benefits of using PPE. The link between the illnesses and its preventions with the use of PPE will be elaborated. In addition, training them to understand which PPE is suitable and beneficial for their work needs.
14		Retrospection and Winding Up	To consolidate the lessons learned through the workshop on PPE.



Vijayawada

 14

 21

No. of Participants

 14

Sessions

06


Speakers

Around 35 sanitation workers (ground functionaries) attended the workshop from Vijayawada Municipal Corporation. The three-day workshop covered various from the ToT (Training of Trainers) modules developed by NIUA.



Figure 23: Group photo of participants from Vijayawada



19

21

No. of Participants

14

Sessions

09



Speakers

Around 40 sanitation workers (ground functionaries) attended the workshop from Guntur Municipal Corporation. The three-day workshop covered various from the ToT (Training of Trainers) modules developed by NIUA.



Figure 24: Group photo of participants from Guntur

Mysuru



08



33

No. of Participants



09

Sessions

03



Speakers

Around 37 sanitation workers (ground functionaries) attended the workshop from Mysuru Municipal Corporation. The three-day workshop covered various from the ToT (Training of Trainers) modules developed by NIUA.



Figure 25: Group photo of participants from Mysuru



Jaipur



02



26

No. of Participants



Sessions

02



Speakers

Around 34 sanitation workers (ground functionaries) attended the workshop from Jaipur Municipal Corporation. The two-day workshop covered various from the ToT (Training of Trainers) modules developed by NIUA.



Figure 26: Group photo of participants from Jaipur

Bhopal



01



46

No. of Participants



08

Sessions

02



Speakers

Around 40 sanitation workers (ground functionaries) attended the workshop from Guntur Municipal Corporation. The three-day workshop covered various from the ToT (Training of Trainers) modules developed by NIUA.



Figure 27: Group photo of participants from Bhopal



Testimonials

"The workshop was enriching and informative where I could gain a lot of knowledge regarding various concepts in the area of Solid Waste Management. It was really inspiring to listen to various case studies of how various cities are implementing better waste management strategies"



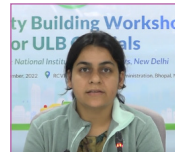
Mr. Suresh Dabodiya
Sanitary Inspector
Jaipur Nagar Nigam,
Rajasthan



Ms. Abhilasha
Safai Karmachari
Jaipur Nagar Nigam,
Rajasthan

"I found the training quite informative and insightful. It enhanced my knowledge on various topics including social security provisions and benefits that are applicable to frontline workers like us"

"The session on 24x7 Water Supply was very informative and will be useful in developing new water supply policies in Bhopal. The reuse of wastewater by tertiary treatment and how revenue modeling can be used to manage wastewater expenses were also insightful topics that can be used in holistic city planning. Finally, the session on Water Body Rejuvenation was extremely beneficial, as the BMC is already working on city lakes."



Ms. Shalini Singh
Asst. Engineer
Bhopal Municipal
Corporation,
Madhya Pradesh



Mr. Ashish Kumar Singh
Urban Planner
Amroha Nagar Palika,
Uttar Pradesh

"The Solid Waste Management sessions were informative, and the case studies discussed provided many implementable ideas for our city, particularly the Bio-remediation of the Bhanpur dumpsite in Bhopal. The second day's session on Water Body Rejuvenation was extremely detailed and beneficial for cities with lakes and ponds."

Being an Executive Officer, I look into the administrative works of all municipal wards. I would like to say that the course structure was well planned and presentations were specific and detailed. The team is very scientific and up to date. I believe that, municipalities whatever we had learned from this two-day training program, we will definitely try to incorporate into our daily work at the municipalities



Mr. Navadeep Changmai
Executive and Circle Officer
Udalguri Municipality,
Assam



Mr. Ishwar Reddy
Sanitation and
Environmental Secretary
Guntur Municipal
Corporation, Andhra
Pradesh

“The capacity-building workshop was very helpful in all aspects. The information shared is directly implementable and ULBs generally lack such information, an example being the session on the preparation of DPR for solid waste management.”

“The sessions on Solid Waste Management elaborated on new techniques and innovations in collection, segregation, treatment, and recycling waste and were very informative. The ULB will practice and implement these techniques in short-term, medium-term, and long-term ways in the city.”



Dr. Sridevi
Asst. Medical Officer
of Health
Vijayawada Municipal
Corporation, Andhra
Pradesh

Technical Assistance

Following the preparation of TANA and training modules, capacity-building workshops in all five Indian pilot cities of the Sustainable Cities Integrated Approach Pilot in India (SCIAP) project were successfully conducted with unstinted support from the ULBs, MoHUA and UNIDO.

After the successful completion of workshops, NIUA took a step further and offered technical assistance to the pilot cities.

Jaipur

Chief engineer of Nagar Nigam Greater Jaipur, Mr. Anil Singhal, communicated to the NIUA team that Jaipur needed assistance in reviewing the terms of reference for a door-to-door waste collection project. The project sought services from eligible bidders for the operation of door-to-door household waste collection, segregation, and transportation of household waste up to a secondary collection point through real-time monitoring using Geo-Fencing & RFID-based monitoring systems in all 21 wards of Vidhyadhar Zone of Nagar Nigam Greater Jaipur via an e-procurement portal.

The estimated cost of the project is Rs. 15.30 Cr for 3 years and is extendable up to 2 years (1+1 year) with the satisfaction of work by Nagar Nigam Greater Jaipur (NNGJ) and on mutual consent of Nagar Nigam Greater Jaipur and the bidder.

Recommendations and Suggestions:

Financial recommendations were provided by NIUA after a thorough reading and understanding the terms of contract.

1. It was suggested that the criteria for bidder selection be detailed, and that the bidder not be chosen solely on the basis of the lowest bid.
2. To increase the performance security to 5% from 3% of the first year contract value which shall be deposited by the bidder.

3. As the contract stated that NNGJ will have sole discretion to add new areas to the RFP, it was suggested that the geographical boundary of the Vidhyadhar Zone be clarified as it will impact transportation costs.
4. Apart from specifying the fixed route maps for door-to-door collection of waste, the number of persons employed for the task should also be specified as it affects the overall O&M cost.
5. The amount and frequency of user charge collection should also be specified.

Technical recommendations were also provided after understanding the terms of contract.

1. It is suggested that throughout the document a single identification be used for the bidder as using multiple like firm/bidder/contractor make it misleading.
2. Waste segregation categories, such as wet waste, dry waste, and hazardous waste, should be explicitly stated in the contract, as the responsible agency may not collect accordingly if not specified.
3. Waste collection vehicle specifications, such as capacity and fuel, should be clearly stated in the contract. Furthermore, in addition to specifying the vehicle's bin segregation, i.e. wet, dry, and hazardous, the constituents of these categories should be explained.
4. As the firm/bidder will provide all the equipment, POS machines, and RFID cards for the operation, it should make sure that its software is integrated with the NNGJ server.
5. Bid eligibility criteria should be specified precisely and elaborated to avoid discrepancies.
6. The bidder/firm should update the authority after every month or once in 2 months instead of every 15 days.

The above-mentioned recommendations were provided by NIUA as a part of technical assistance to Jaipur.



Annexures



Annexure 1: Learning Progress Evaluation Forms

To evaluate the learning progress, pre- workshop and post-workshop forms were distributed among the participants to assess the impact of training on each topic covered. The learning progress evaluation forms given for solid waste management is shown below.



Sustainable Cities Integrated Approach Pilot in India (SCIAP) Component 3: Partnerships, Knowledge Management & Capacity Building

Capacity Building Workshop For ULB Officials (यूएलबी अधिकारियों के लिए क्षमता निर्माण कार्यशाला) Bhopal (भोपाल)

on

Solid Waste Management | ठोस अपशिष्ट प्रबंधन

Dates: 29th to 30th November, 2022 | 29 से 30 नवंबर, 2022

Learning Progress Evaluation (सीखने की प्रगति का मूल्यांकन)

Dear Participant!

We kindly request you to answer the following questions so that we will be able to measure and report the learning effect of our capacity building program. You will be asked the same questions again after the workshop.

प्रिय प्रतिभागी!

हम आपसे निम्नलिखित प्रश्नों के उत्तर देने का अनुरोध करते हैं ताकि हम अपने क्षमता निर्माण कार्यक्रम के सीखने के प्रभाव को मापने और रिपोर्ट करने में सक्षम हो सकें। कार्यशाला के बाद आपसे फिर वही प्रश्न पूछे जाएंगे।

Name (नाम) : _____

Designation (पद) : _____

Rate your knowledgeable about: इसके बारे में अपने जानकार को रेट करें:	1 Average औसत	2 Satisfactory संतोषजनक	3 Good अच्छा	4 Very Good बहुत अच्छा	5 Excellent उत्कृष्ट
SW-APT tools for GHG estimation जीएचजी आकलन के लिए एसडब्ल्यू-एपीटी उपकरण					
City-wide strategy and planning for SWM (Group Exercise) एसडब्ल्यूएम (समूह अभ्यास) के लिए शहर-व्यापी रणनीति और योजना					
Role of IEC in Waste Management अपशिष्ट प्रबंधन में आईईसी की भूमिका					
Integrated Decentralised SWM Model (Sanitation Park) एकीकृत विकेन्द्रीकृत एसडब्ल्यूएम मॉडल (स्वच्छता पार्क)					
E-waste management, Plastic waste management - Innovative practices in India ई-कचरा प्रबंधन, प्लास्टिक कचरा प्रबंधन - भारत में अभिनव अभ्यास					
Construction and Demolition Waste Management निर्माण और विध्वंस अपशिष्ट प्रबंधन					
Bio remediation and scientific closure of Bhanpur dump site, Bhopal भानपुर डंप साइट, भोपाल का जैव उपचार और वैज्ञानिक बंद					
SBM journey of Indore city एसबीएम इंदौर शहर की यात्रा					
SLRM Model of Ambikapur SLRM मॉडल ऑफ अंबिकापुर					

Pre-workshop Questionnaire
प्री-वर्कशॉप प्रश्नावली

Thank you for your valuable feedback!
आपके बहुमूल्य फीडबैक के लिए धन्यवाद!



Sustainable Cities Integrated Approach Pilot in India (SCIAP)
Component 3: Partnerships, Knowledge Management & Capacity Building

Capacity Building Workshop For ULB Officials
(यूएलबी अधिकारियों के लिए क्षमता निर्माण कार्यशाला)
Bhopal (भोपाल)

Solid Waste Management | ठोस अपशिष्ट प्रबंधन

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Name (नाम) : _____

Designation (पद) : _____

Rate your knowledgeable about: इसके बारे में अपने जानकार को रेट करें:	1 Average औसत	2 Satisfactory संतोषजनक	3 Good अच्छा	4 Very Good बहुत अच्छा	5 Excellent उत्कृष्ट
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E-waste management, Plastic waste management – Innovative practices in India ई-कचरा प्रबंधन, प्लास्टिक कचरा प्रबंधन - भारत में अभिनव अभ्यास					
Construction and Demolition Waste Management निर्माण और विध्वंस अपशिष्ट प्रबंधन					
SLRM Model of Ambikapur SLRM मॉडल ऑफ़ अंबिकापुर					



Annexure 2: Feedback Form

Feedback forms were filled out by the participants on all three days of the workshop. They answered questions regarding various workshop components - technical sessions, course contents, lecture delivery, and the application/implementation of gained knowledge.



Sustainable Cities Integrated Approach Pilot in India (SCIAP)
Component 3: Partnerships, Knowledge Management & Capacity Building

Capacity Building Workshop for ULB Officials Mysuru on URBAN WATER MANAGEMENT

Date: _____

FEEDBACK FORM

Name of the Participant _____ (Optional)

Name of the Municipal Corporation _____ (Mandatory)

1. How useful was the workshop for you?

- Extremely Useful
- Very Useful
- Somewhat Useful
- Not so Useful

2. How would you rate the following workshop components from 1-5? (where 1 is Average and 5 is Excellent)

Workshop Components	1 Average	2 Satisfactory	3 Good	4 Very Good	5 Excellent
The overall training experience					
The training content for the day					
The balance between theory and practice					
The quality of materials, e.g. presentations, exercises, training modules					
The training's delivery and efficiency					
To what extent do you agree to the following:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The subject matter was presented effectively					
The lectures were structured and well organized					
The course contents met with your expectations					
The duration of the training program was sufficient for the topics covered					
As a result of this training program, I gained new knowledge applicable to my work					
I plan to apply what I learned in this training					

Annexure 3: Team Members

Below are the details of the team members involved in the project.



Paramita Datta Dey
Head, Resources and Waste

Ms. Paramita is a city planner with over 23 years of experience in urban development. She leads the Sustainable Cities and Water and Sanitation program at NIUA - National Institute of Urban Affairs, India. She has spearheaded the recently completed programme on “Capacity Building in Sanitation and Waste Management” as part of the Swachh Bharat Mission 1.0 (Urban), Govt. of India. She has worked to bridge the gap between infrastructure policy and practice through the South Asia Urban Knowledge Hub. She has helped create Innovation labs on Urban WASH solutions in Indian cities. Paramita has worked with several Ministries in India and with internationally funded projects of UNIDO, ADB, UNDP, CIDA, USAID, World Bank and with leading think tanks like the Centre for Policy Research (CPR) and the Centre for Science and Environment (CSE).



Kaustubh Parihar
Project Associate

Mr. Kaustubh is a Civil Engineer – Environmental Planner and is presently associated with the National Institute of Urban Affairs (NIUA), New Delhi as a Project Associate under Sustainable Cities Integrated Approach Pilot in India and Swachh Bharat Mission Exposure Workshop projects. With six years of rich exposure in Solid Waste Management and the WASH sector, he has been a part of the capacity-building program for more than 5000 Urban Local Bodies (ULBs) officials under SBM (Urban). He has been actively involved in strategizing and organizing workshops, preparing training modules, conducting technical training sessions during the training, and Project Monitoring & Evaluation. Prior to NIUA, He has worked on Sustainable Rural Development at Solidaridad Network, South East Asia where he contributed to developing an assessment framework for sustainable farming practice and conducted training for farmers. He was engaged with Urban Health and Climate Resilience Center, (under Surat Municipal Corporation) Surat as a Project Consultant for the development of the Vulnerability Assessment framework, Climate Change Resilience, and other ACCCRN research projects funded by the Rockefeller Foundation. He is a Civil Engineering graduate from RGPV University, Bhopal, and a Master’s in Environmental Planning from the School of Planning & Architecture (SPA), New Delhi. He also holds a PG Diploma in Urban Management and Environmental Law from WWF and National Law University, Delhi.



Sonali Mehra
Research Associate

Ms. Sonali is an experienced Development Practitioner with a specialization in Development Studies. She did her Bachelor’s in Economics from Delhi University and Master’s in Development Studies from Ambedkar University, Delhi. She has also completed a certificate course in Public Policy and Technology from Takshashila Institution, Bengaluru. As a practitioner, with 4 years of experience, she has worked on various projects at the State and the National levels. She has worked on several projects namely ‘Sustainable Cities Integrated Approach Pilot project (SCIAP), Safaimitra Suraksha Challenge (SSC), Swachh Bharat Mission (SBM) and Integrated Capacity Building Programme (ICBP) at NIUA. At NIUA, She has worked in various sectors such as Solid Waste, Used-Water, Water Management and Climate Change.



Gaurav Verma
Research Associate

Mr. Gaurav is an Architect- Urban Planner and is presently associated with National Institute of Urban Affairs (NIUA) as a Research Associate under Sustainable Cities Integrated Approach Pilot (SCIAP) in India. As a practitioner, with 3 years of experience, he has experienced in working with the State Government and Urban Local Bodies supporting central missions in the state and executing it on grounds. He has worked as a Development Specialist, largely to support the Panchayati Raj Department of Uttar Pradesh to provide technical and capacity-building support in Solid and liquid waste management for SBM-2.0. He was also formerly supporting the State Resource Center (SRC) for decentralizing Solid Waste Management for the Urban Development Department of the Government of Uttar Pradesh.

He has done his Masters in Urban and Regional Planning from CEPT University, Ahmedabad. His experience in the urban and rural development sector has inherited the great technical capacity building, leadership and communication skills. His research paper focused on exploring development based value capture strategies as a financing model for developing TOD areas in Delhi's land pooling zones.



Akshay S
Junior Research Associate

Mr. Akshay is an Urban Planner with Civil Engineering background and is presently associated with the National Institute of Urban Affairs (NIUA) as a Junior Research Associate under Sustainable Cities Integrated Approach Pilot in India. He completed his Bachelor's degree in Civil engineering from TKM College of Engineering and Master's degree in Urban and Rural Planning from IIT Roorkee. He has experience in preparing GIS based Master plans for 7 towns in Uttar Pradesh under the AMRUT scheme. He has been actively involved in the preparation of data analysis reports, GIS mapping and analysis, Stakeholder meetings and presentations.



Shubhi Chawla
Junior Research Associate

Ms. Shubhi is an Urban Planner with Architecture background and is presently associated with the National Institute of Urban Affairs (NIUA) as a Junior Research Associate under the Sustainable Cities Integrated Approach Pilot (SC-IAP) project in India. She completed her Bachelor's degree in Architecture from Maulana Azad National Institute of Technology, Bhopal and Master's degree in Urban Planning from CEPT University, Ahmedabad. She has two years of experience at L&T Constructions, where she actively involved in the development of technical drawings, project reports, and presentations for residential and airport projects. She conducted her research for her master's degree on the subject of Urban Climate Action Planning in Indian cities.



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