



Annual Report 2021-22

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Consortium for
DEWATS
Dissemination
Society



Annual Report 2021-22

Consortium for DEWATS™ Dissemination Society, Bengaluru

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President's Message

Everyone has been touched by the pandemic; however, we all realize that it has struck vulnerable and marginalized communities the hardest, revealing deep inequities across society.

At the same time, we see rays of hope — we can envision a world wherein people come together around common challenges and nature is prioritized. In the rise of the movement around climate change, adaptation and mitigation, the voices of climate activists and environmental defenders, a growing wave of people are standing up for a better, more equitable future.



As the chairperson of CDD Society's Board, along with other Board members, we are responsible for ensuring that the organization is on sound footing and guided by a clear strategic vision. This holds true more so during these difficult times. Over the past year, CDD Society has continued to focus on the interrelated challenges at the heart of its mission: climate, nature, water, sanitation and human development through inclusive nature-based solutions. Of course, the team also had to adapt their working style — and they all did. Thanks to the generosity and dedication of our partners and donors, who stuck with us through these difficult circumstances, the organization pivoted quickly.

We learned many lessons from the past year — about vulnerability and resilience and the importance of strong institutions and global cooperation. These lessons are increasingly embedded in CDD Society's strategy and programs. Inclusion and equity have always been important to CDD Society; now we are making sure they are fully integrated into every aspect of the organisation's interventions and research.

As we look beyond the pandemic, we envision a world that has closed the gap in access to sustainable and inclusive water and sanitation solutions, thereby reducing inequity and improving quality of life and help nurture the environment with measures for better management and conservation of natural resources including significant reduction in GHG emissions..

We are grateful to all our partners and especially the donors who continue to generously support CDD Society on this journey. Together, shall endeavour to work towards achieving our goal of a better and brighter future.

With best regards,

Latha Raman Jaigopal

Abbreviations

ABR	Anaerobic Baffled Reactor
ADB	Asian Development Bank
AF	Anaerobic Filter
AIIB	Asian Infrastructure Investment Bank
BMWSSP	Bangladesh Municipal Water Supply and Sanitation Project
BRRP	Bhadravati River Rejuvenation Project
CAC	Covid Action Collaborative
CEPT	Centre for Environmental Planning and Technology
CMC	City Municipal Council
CSR	Corporate Social Responsibility
CWIS	City-wide Inclusive Sanitation
DMA	Directorate of Municipal Administration
DIS	Diageo in Society
DPHE	Department of Public Health Engineering
DPR	Detailed Project Report
FSM	Faecal Sludge Management
FSTP	Faecal Sludge Treatment Plant
GEF	Global Environment Facility
GHG	Greenhouse gases
GHSD	Green House Solar Driers
GGGI	Global Green Growth Institute
GoWB	Government of West Bengal
GP	Gram Panchayat
HUL	Hindustan Unilever Limited
IGSSS	Indo-Global Social Service Society
IIHS	Indian Institute of Human Settlements
JMC	Jammu Municipal Corporation
KTCDA	Karnataka Tank Conservation and Development Authority
KLD	Kiloliters Per Day
LWM	Liquid Waste Management
MPUSIP	Madhya Pradesh Urban Services Improvement Project
MonEv	Monitoring and Evaluation
NABL	National Accreditation Board for Testing and Calibration Laboratories
ODF	Open Defecation Free
O&M	Operation and Maintenance
OSS	On-Site Sanitation
P&RD	Panchayats and Rural Development
Q&Q	Qualities and quantities
RDW&SD	Rural Drinking Water and Sanitation Department
SIUD	State Institute of Urban Development
SLWM	Solid and Liquid Waste Management
STP	Sewage Treatment Plant
TA Hub	Technical Assistance Hub
TAT	Technical Advisory Team
TMC	Town Municipal Council
ULB	Urban Local Body
UNICEF	United Nations Children's Fund
UNDP	United Nations Development Programme
WASH	Water, Sanitation and Hygiene
WBR	Waterbody Rejuvenation
WWF-India	World Wide Fund for Nature, India

About CDD Society

CDD Society's vision is to help create healthy and happy communities by ensuring a clean and sustainable environment around them.

Our Mission:

- To innovate, demonstrate and disseminate decentralized nature-based solutions for the conservation, collection, treatment and reuse of water resources and management of sanitation facilities.
- To deliver technical expertise grounded within the socio-economic context, through consulting, training and capacity building of government and non-government agencies, communities and other stakeholders in the water and sanitation ecosystem
- To be a workplace of choice for talent interested in social and environmental impact. We aim to attract the best talent in the environmental and social impact space and develop future leaders for the ecosystem.

Access to water and sanitation remains one of the most facing problems across the globe. The availability of low cost WASH solutions which can be built with local resources remain key to solving the problem at scale. It is equally important that contextualised innovations factor in relevant socio, economic, political and environmental aspects which ensure low setup and maintenance costs of the solutions.

With growing urbanization and depleting resources in urban & peri-urban areas, the urgency to innovate and then scale these solutions is extremely critical.

This thinking around these holistic solutions should also be disseminated among different stakeholders

in the water and sanitation ecosystem across the country in an effective manner to be able to have maximum impact and reach.

At CDD, we believe that "nature-based solutions" are more robust, sustainable and affordable. However, for specific contexts, we also realize the need for hybrid solutions that integrate natural systems and modern technologies appropriately. We exist to innovate, demonstrate and disseminate integrated and decentralized nature-based solutions for the growing water and sanitation management issues in communities across India and South Asia, thus improving health and well being in these communities.

Our Sectors:

- Wastewater Treatment
- Faecal Sludge Management
- Waterbody Rejuvenation
- Solid Waste Management

Our Services:

- Technical Solutions
- Capacity Building
- Applied Research
- Knowledge Publications & Dissemination

Wastewater Treatment

We commissioned 4 DEWATS™ projects this year. These projects, collectively, are treating approximately 72.5 KLD of wastewater daily, benefitting approximately 20,000+ people from the nearby community.

i) At a large family home on Richmond Road:

We set up a DEWATS™ for a large family home at Bengaluru's Richmond road. Though the building does not require an STP as per the current guidelines, the owners wish to install one in order to be prepared for any future change in regulations and also to explore the possibility of reusing the wastewater.



The DEWATS™ at Richmond Road

ii) At Valley School on Kanakpura road:

Bengaluru's Valley School (run by the Krishnamurti Foundation) had a reed-based greywater treatment system. However, the system had been facing numerous operational challenges and not been working for a while. It also needed to be modified to meet the new wastewater discharge standards. We have modified the system to incorporate a DEWATS™. The system is now completely operational and safely treating 18KLD of wastewater daily, in line with the new discharge standards.



Greywater treatment system at Valley School

iii) At Chengalpattu Government Medical College and Hospital:

Chengalpattu Government Medical College and Hospital is the oldest college-cum-hospital and the busiest hospital in Chengalpattu District, Tamil Nadu. Its campus is spread over 265 acres. Due to a lack of proper liquid waste management, septic tanks were overflowing in many blocks across campus and many registers & pipes were broken too. This was creating an unhealthy sanitary situation within the hospital campus. The hospital also faces water shortage during the dry months.

We designed and implemented a 40 KLD DEWATS™ on request of World Vision, Chennai who is supporting the hospital in providing a sustainable treatment system. We also provided suggestions for further polishing treatment systems for reuse of treated wastewater.



DEWATS™ at Chengalpattu Government Medical College



DEWATS™ at Chengalpattu Government Medical College

iv) **At Unilever's Suvidha Center:** We designed a hybrid DEWATS™ at Hindustan Unilever's Limited's (HUL) Suvidha Center (at the N-Ward slum at Ghatkopar) in Mumbai. As part of its CSR, HUL plans to put in place Suvidha centres across Mumbai. Suvidha is a sustainable community centre that addresses the hygiene needs of low-income urban households, which lack sanitation infrastructure and facilities. Each Suvidha centre provides flush toilets, handwashing facilities with soap, clean showers, safe drinking water and state-of-the-art laundry operations – all at an affordable cost. Sustainability is ensured through a circular approach by reusing wastewater from activities like brushing teeth, bathing, handwashing and laundry for toilet flushing.



Suvidha Center at Ghatkopar, Mumbai

We have set up a 36 KLD capacity DEWATS™ to treat wastewater upto effluent standards that permit reuse for toilet flushing. Our system will help save 10 million liters of water and provide sanitation access to over 20,000 people annually. The facility was inaugurated by the Cabinet minister of Tourism and Environment (Government of Maharashtra), Aditya Thackeray.



Inauguration of Suvidha Center at Ghatkopar, Mumbai by Aditya Thackeray

9 more projects are either already under construction or soon to begin construction (as designs for the same have already been submitted). Once completed, these systems will prevent an additional ~591.5 KLD of domestic wastewater from harming the environment and public health.

Two of these are for individual houses where the house owners are very supportive of trying out new types of construction materials. This will go a long way in helping us reduce our material cost and making DEWATS™ more affordable. It is a subtle indication that people are becoming aware and more accepting towards nature-based solutions.



Suvidha Center at Ghatkopar, Mumbai

Faecal Sludge Management

9 Faecal Sludge Treatment Plant (FSTPs) were inaugurated this year – through our direct as well as indirect involvement. 5 were the result of our association with the Indian Institute of Human Settlements (IIHS), 2 from our association with the Priyadhar Group, 1 with Water Aid and 1 with The British Red Cross, Swedish Red Cross and Urban Waters. Details in Annexure 1.

FSTP at the world's largest refugee camp: The Kutupalong refugee camp is the world's largest refugee camp. It is in Ukhia, Cox's Bazaar, Bangladesh, inhabited mostly by Rohingya refugees that fled from ethnic and religious persecution in neighboring Myanmar.

Camp 18, in Cox Bazaar plays host to about 22,000 refugees. Bangladesh Red Crescent with the support of British Red Cross, Swedish Red Cross, Urban Waters and CDD Society designed and constructed a Faecal Sludge Treatment Plant for the camp.

The plant was designed and construction was supported remotely. This is a great example of how when people are driven and motivated, stunning WASH infrastructure can be created no matter the distance. The FSTP is nature-based – it uses anaerobic digestion and unplanted drying beds coupled with a DEWATS™ – and has a capacity of 15,000 KLD. We also helped in its commissioning and continue to monitor its performance.



FSTP at refugee camp, Ukhia, Bangladesh

Monitoring and Evaluation (MonEv) of FSM Systems: With an objective to understand the evolving landscape of FSM, over the past two years, we have been visiting FSTPs setup across the country. We aim to understand:

- 1) The efficiency and efficacy of various FSM treatment technologies
- 2) The approaches that various towns are taking towards mainstreaming FSM
- 3) The status of onsite sanitation systems and their role in mitigating/contributing to pollution in stormwater drains
- 4) The approach of various vacuum truck operators in their day-to-day operations and the impact this has on the functioning of FSTPs
- 5) Identifying capacity gaps across the value chain

We conducted monitoring visits to 15 FSTPs – four last year and eleven this year. The FSTPs visited include – Sircilla, Siddipet, Khammam (Telangana), Unnao (Uttar Pradesh), Nandurbar (Maharashtra), Periyanaickanpalem (Tamil Nadu), Angul, Dhenkanal, Jatni (Odisha), Karanguzhi (Tamil Nadu), Devanahalli (Karnataka). We also visited a co-treatment site in Tonca, Goa.

We are now in the process of incorporating our observations and learnings from these monitoring visits – into the designs of upcoming FSTPs, as an upgrade to existing training documents and into white papers for others to learn from.

During the monitoring visits, we also collected samples from each FSTP with the aim of understanding performance with respect to pathogen inactivation. An analysis is now being conducted to understand the efficacy of various technologies with respect to pathogen inactivation.



Explaining to a women group about the operations and maintenance of the plant, at the Sircilla FSTP

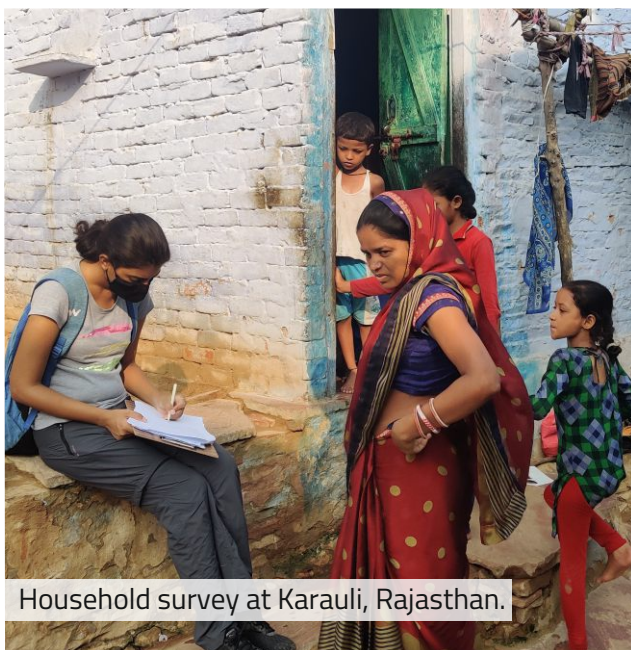
Waterbody Rejuvenation

It is pleasing to see the enhanced interest of corporates for Waterbody Rejuvenation projects across the country. 3 of our key waterbody rejuvenation projects too have been supported through CSR funds.

Bhadravati River Rejuvenation (NSE Foundation):

NSE Foundation has been working on health and education in the aspirational district of Karauli in Rajasthan for the past few years. The Bhadravati river, which is part of the Gambhir river basin, originates from Bugdar village, Mandrail block in this district.

About a decade ago, the Bhadravati river downgraded from a perennial to a seasonal river. Several reasons lead to this - drastic reduction in forest cover, over-extraction of ground water, shift away from agriculture, change in cropping patterns, and increase in population. In order to revive its natural ecosystem, The Bhadravati River Rejuvenation Project (BRRP) with an outlay of Rs.30 crores was sanctioned by the Government of Rajasthan in 2020-21. The larger project led by the Government of Rajasthan aims to transform the river, through catchment area treatment and other interventions, from a seasonal to a semi-perennial river. Working in collaboration with NSE Foundation, we realized any intervention to treat the large quantum of wastewater currently entering the river would be a beneficial plug-in for the larger river rejuvenation work.



Household survey at Karauli, Rajasthan.

We were thus entasked to develop a comprehensive River Rejuvenation Strategy and Plan for pollution mitigation in the Bhadravati river, specifically around the Pharkote (Fort) area.

We have proposed interception and diversion structures, existing drain refurbishments, modification of existing wastewater treatment facility, improvements in emptying and transportation of sludge services, solid waste management and capacity building of residents. The strategy report has been submitted and is expected to be taken up for implementation in the near future.

Rejuvenation of Thimmappane Lake (Diageo):

Diageo is India's leading alcohol beverage company. Through their CSR Programme – Diageo in Society (DIS) – they are supporting communities, protecting and preserving natural resources. One of the ways they support communities is through water replenishment and WASH interventions - especially targeted at those living in areas around their beverage plants in Bengaluru. Currently, they are working with the non-profit organization, Indo-Global Social Service Society (IGSSS), for the same.

One of Diageo's beverage plants is located in Kumbalgodu in South Bengaluru. Kumbalgodu's *Thimmappane kere*, which is a lake spread over 2.5 acres, has been short-listed for a water replenishment initiative.

The initiative aims to make a positive impact on the water ecosystem in and around the lake, by replenishing 35,000 m³ of water annually. It also includes community-led sustainability activities aimed at making the communities there more resilient and empowered too.

As technical partners for this project, we conducted a feasibility assessment and developed a detailed project report for the rejuvenation of the lake. The feasibility assessment included: conducting a topographical survey, bathymetrical analysis, household survey and wastewater and sediment analysis. Based on the data collected, we developed a comprehensive rejuvenation strategy for the lake too. On-ground implementation has started with dewatering and desilting of the lake and clean up of all inlet drains.

Kammasandra Twin Lake Rejuvenation (HT Parekh Foundation): We are currently working with the Hebbagodi City Municipal Council (CMC) and HT Parekh Foundation to develop a plan for the ecological rejuvenation of Kammasandra twin lakes, which lie close to Electronic City, near Bengaluru. The lakes currently are facing the brunt of urbanization - wastewater inflow, degraded biodiversity, solid waste accumulation and dilapidated hydraulic structures.

We conducted a detailed assessment of both lakes and have proposed a rejuvenation plan for approximately INR 18 crores, which includes: dewatering, desilting, treatment wetlands, bund refurbishment, inlet drain refurbishment, construction of a surplus weir, development of community spaces around the bund and biodiversity enhancement. We intend to implement all these components for one lake first, which will be undertaken in the next phase of the project. This will benefit the areas around the lake with clean water, a good community space, enhanced biodiversity, and reduced urban heat island effect.

The DPR is currently being reviewed by the Karnataka Tank Conservation and Development authority (KTCD).



View of Kammasandra Twin Lake

Town-level strategy for rejuvenation of 62 ponds in Jammu City: The city of Jammu is spread over an area of approximately 240 kms. The existing underground drainage network serves approximately 40% of the city, whereas the remaining 60% depend on onsite sanitation systems, like septic tanks. The city also has a network of stormwater drains of approximately 35 kms in length. However, these have improper sections and slopes and are usually choked with solid waste – primarily because greywater and supernatant from on-site sanitation systems is discharged into these stormwater drains – without any treatment, posing a risk to the health of people as well as the environment.

This greywater and septic tank effluent eventually flows into the numerous ponds located across the city – many of which are dilapidated due to years of silt deposition from the greywater and septic tank effluent. Some of these ponds are also plagued by weed manifestation, disposal of solid waste including construction and demolition waste and rampant encroachments. This has drastically reduced the carrying capacity of the ponds. Jammu Municipal Corporation (JMC) has shortlisted 62 of the city's ponds for rejuvenation work.

We conducted a situation analysis and stakeholder consultations for these 62 ponds. We have also devised a strategy for their rejuvenation – by categorizing them based on their current pollution load, availability of physical infrastructure, status of biodiversity, current size, level of encroachment and siltation. Our suggested technical interventions are primarily nature-based and have been selected after understanding the unique rejuvenation requirements of these individual ponds. Many of our interventions will need to be detailed out (for each of the ponds) as and when they are taken up for intervention.

However, the interventions as a whole will aid the Jammu Municipal Corporation (JMC) to seamlessly integrate the ponds with the surrounding environment thereby creating vibrant neighborhoods and livable spaces around them.

Nallathanni River Rejuvenation: The Ministry of Environment, Forests and Climate Change and United Nations Development Programme (UNDP) through funding from Global Environment Facility (GEF) are supporting implementation of the project "Sustainable Livelihood and Biodiversity Conservation through multiuse Management of Anchunad and adjoining Landscape." The project aims to protect biodiversity of the southern Western Ghats in peninsular India.

The town-cum-hill station of Munnar lies 1,600 metres (5,200 feet) above mean sea level. At Munnar, the three rivers of the Mudhirapuzha, Nallathanni and Kundali rivers meet (infact, the name "Munnar" is believed to mean "three rivers").

Efforts under the project include analysis and improvement of the water quality of the Nallathanni river - as it has been observed that the river has been polluted due to commercial establishments, a solid waste dumping yard in the upstream and pesticides and fertilizers used in tea plantations nearby.



Landscaping along the Nallathanni River, near Munnar's main bridge



River cleaning campaign in a stretch along the Nallathanni River on World Water Day, 2022

As technical partners for the project, we are working to identify the root cause of pollution in the river through field investigations and water quality analysis; and shall recommend appropriate solutions to rectify the same. The solutions that we recommend shall be in line with our key principles - nature-based, wholistic and sustainable - ensuring improvement in the water quality as well as sustaining this improved quality in the long run. The systemic approach that we undertake shall also include a public place making approach in this case. We shall also demonstrate our recommendations along a pilot 2 km stretch of the river.

O&M of Mahadevapura Lake: After successful commissioning of the wastewater treatment system at Mahadevapura Lake in June 2019, United Way Bengaluru requested us to take up its O&M for two years. This was later extended till June 2022.

Being the first 1MLD DEWATS™ that we have implemented, we took on O&M with the purpose of increasing our understanding and knowledge of plants this size. Research conducted at this DEWATS™ has been detailed out in the section: Research Setup for Biogas Treatment.



Silt removal activity at Mahadevapura lake

Taking over O&M was also an opportunity to better understand challenges of open channel inflows; and did indeed face challenges requiring us to make some modifications. The existing sedimentation basin, for one, has been incorporated into the treatment module. It currently receives the secondary treated water from DEWATS™ and is passed through the vertical filters before entering the sedimentation basin. Second, the gabions used in the original design have been decommissioned.

We have also observed that the DEWATS™ can manage variations in inflow quantity and quality; and that the floating treatment wetlands require more frequent maintenance – trimming once in 3-4 months as against 6 months stipulated during the design phase.

Coimbatore Smart City Project: On-ground work continues on implementing the designs we submitted for the eco-restoration of 9 lakes in the city of Coimbatore. It will take another year for the work to be completed.



View of Ukkadam lake



View of Ukkadam lake

Solid and Liquid Waste Management:

SLWM Strategy for Talode with Ecofirst: The NSE Foundation has been working in Maharashtra's Nandurbar district for several years now. The district was declared open defecation free (ODF) under the government's *Swachh Bharat Mission (Gramin)* in April 2018.

In order to sustain these efforts, it was necessary to strengthen the SLWM situation in the district. The NSE Foundation thus collaborated with Ecofirst and CDD Society to conduct a rapid assessment of the town municipal councils in the district in order to understand the challenges around SLWM.

Six town municipal councils were surveyed – Navapur, Taloda, Shahda, Akkalkuva, Akrani (Dhadgaon) and Nadurbar. The preliminary assessment included – population of the towns, vulnerabilities related to SLWM, willingness from concerned ULBs and feasibility of interventions. Based on the findings, Taloda Municipal Council was short-listed for implementation of the pilot interventions that will address critical SLWM gaps in the town and serve as a pilot to scale the same across the other towns.

We submitted a detailed situation assessment report that highlights the current status of water supply, sanitation and SLWM situation in the town; and recommends interventions that would address the SLWM gaps. We proposed six key interventions and provided detailed schematics and cost estimates for the same. These are:

- (1) Install an interception and diversion structure
- (2) Refurbish the community toilet
- (3) Improve infrastructure for the FSTP
- (4) Refurbish the waste receiving platform and leachate drains and develop a layout of the SWM compound and zoning for smooth movement of trucks.
- (5) Conduct awareness sessions with multiple stakeholders on effective SWM operations
- (6) Develop a conceptual framework for O&M services to help TMC monitor performance of its water and waste management assets.

SLWM Plan for four wetlands of the Arkavathy River Basin (with WWF-India): Once the source of water to the city of Bengaluru, the last vestiges of the Arkavathy river can now only be seen as floodwater. This dire situation prompted the World Wide Fund for Nature, India (WWF-India) to take up restoration of the interlinkages between different wetlands in the river's basin. These include conservation and management of key wetlands in Bengaluru rural and urban district namely – Dandudasakodigehalli, Yelahanka Puttenahalli, Madiwala and Nagarkere – which are being affected by sewage inflow and solid waste dumping.

WWF-India approached us to develop a solid and liquid waste management plan for these wetlands. We have prepared and submitted: a consolidated data collection report for all four wetlands as well as a solid and liquid waste management plan for each of the wetlands. WWF-India will be implementing the same on-the-ground in collaboration with respective government authorities.



View of Nagarakere Lake, Doddabalapura

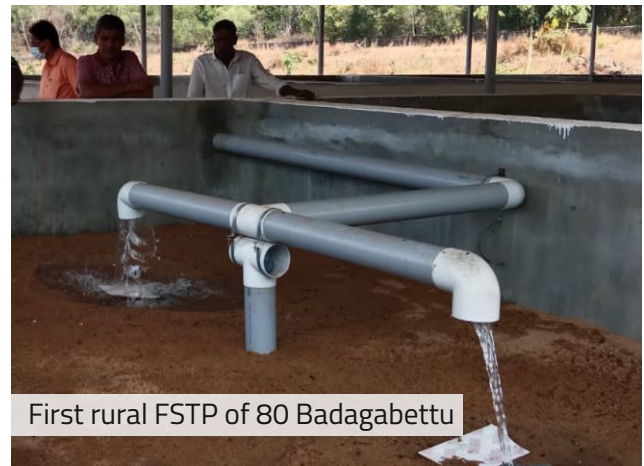
Our Rural Efforts

Liquid Waste Management in rural Karnataka:

We have been engaged with various efforts in liquid waste management in rural Karnataka since 2018. It started with being nominated as a member of the State-level Technical Committee for implementation of Liquid Waste Management (LWM) under *Swachh Bharat Mission (Gramin)* in the State. This was followed by a formal engagement for the preparation of a workable model and strategy for LWM (comprising only domestic wastewater) as a part of the Policy, Strategy and Model Byelaws developed by the Rural Drinking Water and Sanitation Department (RDW&SD).

Bhagamandala *Gram Panchayat* (GP) was selected as the first pilot GP to carry out a detailed liquid waste assessment. This was taken up on priority as there was a High Court order against a PIL submitted by a person against pollution of the Cauvery River. Our efforts included conducting the situation assessment, preparation of LWM action plan and detailed project report for all the suggested interventions. Post Bhagamandala LWM activities, we helped RDW&SD in selecting a few more on-ground pilots to serve as good examples across the different geo-climatic regions spread across the state. 16 rural areas across all four divisions of the State were selected for preparation of LWM plans and as a first priority in setting up FSTP pilots.

Our scope of work included GP-level liquid waste assessment, comprehensive LWM plans, detailed project reports, stakeholder consultations, expert monitoring support during construction and commissioning of these FSTPs. We conducted recce surveys for around 42 GPs, of which 21 GPs were taken up for sanitation situation assessment studies followed by LWM plans for 16 GPs addressing both grey and black water management issues. Further, based on confirmation from districts and subsequent changes in land parcels, FSTP DPRs were prepared for 18 GPs. Out of these, 12 FSTPs were tendered out for construction, of which 6 FSTPs have been commissioned.



First rural FSTP of 80 Badagabettu



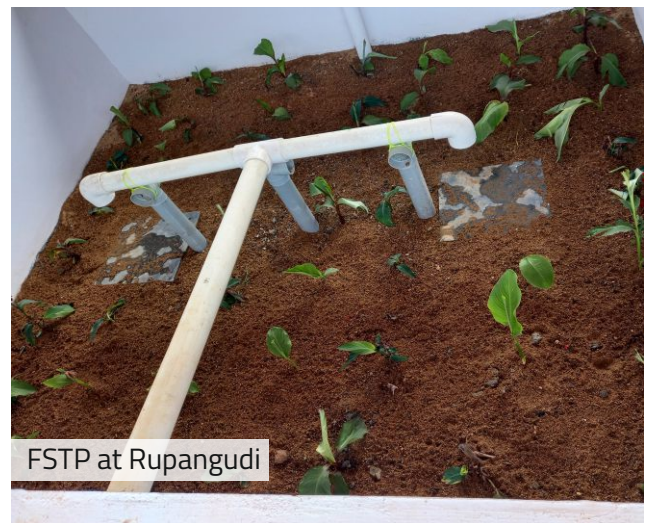
FSTP at Tajsulthanpur, Kalburgi

While the above-mentioned pilot projects would cover in total about 230+ GPs, there are still 5,792 GPs to be covered to achieve one of the goals of the State Sanitation Policy - 100% containment and treatment of faecal sludge and greywater in all the 6,021 GPs of the State. Therefore, subsequently, a scale-up plan was developed for the entire State and we were engaged as the Technical Partner of RDW&SD for helping in planning and roll out of this scale-up plan. This involved a proper roll out plan to be put in place, phasing of the implementation in a logical manner and proper budgetary allocation in order to cover all the GPs across the State. Once the projects have been implemented on ground, it is also essential to ensure that they operate smoothly and are sustainable over the long term.

Such an initiative would therefore require building capacities of the existing State machinery involving all key stakeholders at both State and District levels, monitoring of the work progress and improving the knowledge base on-the-ground. We are supporting RDW&SD in building its institutional capacity as a Technical Partner. Our scope includes training and capacity building of relevant stakeholders like Engineers/ Consultants and officials of RDW&SD, PRED and MGNREGA; both in the State office as well as all districts across the State, District, Taluk and GP through a comprehensive training program.

Till date, over 3,200 stakeholders have been trained across RDW&SD, PRED and MGNREGA teams. (Details in Annexure 2). Our scope under scale-up initiatives also includes continued technical handholding support to the SLWM consultants and other concerned officials at State RDW&SD office under the guidance of the Commissioner.

In addition to the above support, we have also created knowledge content and enabling documents like manuals, guidance notes, templates for preparation of DPRs, memorandum of understandings, and video content on LWM facilities operation and maintenance.



State-level rural FSM strategy and Action Plan for West Bengal in collaboration with UNICEF: With a vision of a *Nirmal Bangla* that encompasses sustaining open defecation free (ODF) gains accrued in 2019, the Government of West Bengal (GoWB) is implementing a national flagship program of *Swachh Bharat Mission - Gramin* (SBM-G) also known as *Mission Nirmal Bangla* (MNB). The current focus, post the ODF achievement phase, includes addressing Solid & Liquid Waste management and faecal sludge management as part of sanitation planning in the state.

To achieve this target, the Department of Panchayats and Rural Development (P&RD), GoWB reached out to UNICEF, who in turn reached out to CDD Society. The project takes a holistic approach towards management of faecal sludge in rural areas inclusive of developing a strategy and action plan across the FSM value chain for rural areas of the state, building capacities of various stakeholders at State, District and Pilot GP level on FSM and developing a scalable model along with District Action Plan. This being a new area of intervention, P&RD Department intends to undertake pilot implementation in one District i.e. South 24 Parganas district in Pratapaditya Nagar GP which serves a cluster of surrounding GPs.



Capacity building of various stakeholders

Field surveys were conducted by our team to understand the existing sanitation scenario at various identified villages in different districts. Three villages were identified in three representative districts/blocks by the department of P&RD. The identified locations chosen are representative of the character of the northern, eastern and western regions of West Bengal. Additionally, a GP having a unique characteristics in terms of close proximity to ecologically sensitive areas of Sundarbans and at the same time, one of the floods- and cyclone-prone areas, was also visited. Based on the assessment, a State level rural FSM Strategy and action plan has been prepared by us.

We also prepared a DPR for setting up the first pilot FSTP in Pratapaditya Nagar GP for a cluster of 16 GPs in the State. The DPR is currently in the approval stage.

We have also conducted two sets of capacity building trainings involving State and District level stakeholders from all districts of the state. Additionally, a training for all the stakeholders from the pilot FSTP cluster was conducted – to make them ready to operate and run the system once it is ready. Besides trainings, we have prepared and circulated four knowledge documents covering content related to operating procedures for FSM, a technical guide for FSM designs, a planning guide for GPs and an exhaustive checklist for sanitation workers especially in the COVID-19 context.

For the second phase of the assignment (July 2022), we would be providing technical support for the preparation of a district action plan (for another district) and for the preparation of a DPR for the second FSTP pilot in the state; and conducting capacity building trainings for stakeholders in the selected district.



Group activity for various stakeholders

Other efforts:

Implementation strategy for rainwater harvesting at KIADB's Aerospace Park: The KIADB Aerospace park is a part of the industrial park developed by Karnataka Industrial Area Development Board (KIADB) near the Bengaluru International Airport. The industrial layout is spread over 2,989.48 acres, out of which the aerospace park alone constitutes 732.32 acres.

Earlier in 2020, we were selected by KIADB to prepare an Integrated Water Management Plan for the entire industrial park with the aim of making it more sustainable by promoting reuse of treated water within the premises. From the detailed studies and assessment conducted thereafter, we submitted a comprehensive plan which identifies potential areas where freshwater consumption can be replaced with the use of tertiary treated water.

This time round, we have developed an implementation strategy for rainwater recharge at stormwater drains in the Aerospace park, and recharge ponds in the vicinity of the area. The design, which will be implemented as a pilot, is aimed at maximum recharge of rainwater by trapping solid waste and removing silt more efficiently. Implementation work, which we are monitoring, is currently underway.



Rainwater recharging structure at KIADB, Bangalore

Co-treatment of faecal sludge with organic solid waste at biogas plants in Nepal: The Global Green Growth Institute (GGGI) is working in Nepal to develop climate-resilient, pro-poor and sustainable city-wide inclusive sanitation (CWIS) services that are optimized with respect to financial viability, affordability and public demand. Through an extensive scoping study, the co-treatment of faecal sludge with municipal solid waste in a bio-digester producing bio-CNG was identified as the most transformative and viable investment for the provision of sanitation services in Nepal.

GGGI approached Urban Waters Germany and us to undertake a financial-cum-technical feasibility study to examine the possibility of co-treatment of faecal sludge with organic solid waste at biogas plants in Nepal.

A pilot design and block cost estimates have been provided to GGGI to co-treat faecal sludge in one of the planned biogas plants in Nepal. This was done after undertaking market research, analyzing capital as well as operational expenditures of FSTPs and biogas plants, understanding various pasteurization options in practice in different parts of the globe.



Biogas plant in Nepal

Mainstreaming of the Citywide Inclusive Sanitation

Approach: The Citywide Inclusive Sanitation Technical Assistance Hub (CWIS-TA Hub) is an initiative of the Bill and Melinda Gates Foundation. We are working with the Hub and Innpact Solutions and Innovative Solutions Pvt. Ltd to mainstream the Citywide Inclusive Sanitation approach towards universal coverage of inclusive and sustainable sanitation. Combined, we form the Technical Advisory Team (TAT), whose mandate is to develop significant models that may be replicated and scaled out for the enhancement of urban livability in other towns of Madhya Pradesh. We are doing this by mainstreaming the approach into the planning, design, implementation, operation and maintenance of sanitation sub-projects in 8 project towns in the state of Madhya Pradesh – namely Dhamnodb, Sanchi, Khajuraho, Rajnagar, Nagda, Maihar, Betul and Raghogarh.

The project is funded by The Asian Development Bank (ADB) under Madhya Pradesh Urban Services Improvement Project Phase II (MPUSIP) and broadly includes a mandate to:

- (a) integrate non-sewered sanitation solutions (NSS) in the sanitation planning of six sewerage sub-project towns with a focus on Faecal Sludge Management and co-treatment approaches, and,
- (b) integrate urban development approach to improve urban service delivery and infrastructure in two urban local bodies.

The feasibility report with the investment plan of six sewerage towns – Khajuraho, Rajnagar, Maihar, Nagda, Dhamnodb and Sanchi – has been submitted. Currently, we are working on two IUAP towns (Betul and Raghogarh) where we are planning and preparing a CWIS feasibility report.



Technical support for the design of public toilets for 30 towns in Bangladesh: The Bangladesh Municipal Water Supply and Sanitation Project (BMWSSP) aims to increase water supply and sanitation services and strengthen institutional capacities of municipalities to deliver water and sanitation services in 30 municipalities in the country. It is being implemented by the Department of Public Health Engineering (DPHE) and supported by the World Bank and the Asian Infrastructure Investment Bank (AIIB).

Under the project, BMWSSP has to construct 90 public toilets across towns. All public toilets in Bangladesh use one kind of containment, which is a septic tank with soak away pits. They also have a variety of layout and architectural designs in Bangladesh which primarily depend on the land size and the locality.

BMWSSP has recognized the scope of improving containment systems by using advanced technologies like DEWATS™. Further, as a large number of public toilets will be constructed under BMWSSP, a need was felt for the preparation of standard designs.

We supported BMWSSP in improving the designs of the public toilets in terms of:

- (1) a layout considering functionality particularly the needs of women and differently-abled people
- (2) architectural design
- (3) faecal sludge containment and treatment.

Not all designs are the same. Each public toilet was considered individually.

We have prepared 5 standard design templates including designing of the methodology. On the basis of these standard designs, the BMWSSP consultant team is now in the process of preparing site-specific designs. We also reviewed existing public toilet designs used across Bangladesh and provided recommendations for improvement of the same.

Supply of safe drinking water at two government-run schools: CSS Corp is an IT services and premium tech support solutions company. Their CSR efforts focus on safe drinking water supply in government-run schools through the setup of drinking water filters at schools. They collaborated with us to set up Reverse Osmosis (RO) filters at two schools – Kengeri Government School and Government High School at Kumbalgodu.

We installed a RO system plant from Aqua Pure Technology at both schools. It is a 50 liters/hour RO plant that also includes a 200-liter storage tank. The project includes installation as well as a two-year annual maintenance. Both schools are no longer dependent on canned water as was the case earlier.



RO system plant at Government school, Kumbalgodu

Applied Research

National Accreditation Board for Testing and Calibration Laboratories (NABL): Our Laboratory received its first accreditation from NABL in September 2020. The validity of the accreditation was for 2 years. In order to assess the continuity of quality maintenance in the newly accredited laboratories, NABL undertakes additional auditing by the end of the first year of accreditation sanction, which is known as Desktop Surveillance.

Two auditors from NABL – one Lead Auditor and one Technical Auditor – assessed all the formats, procedures, and their implementation by the laboratory. Given the successful result of the surveillance, NABL assessors have recommended the continuation of accreditation status for the laboratory.

Our laboratory is NABL accredited vide certificate No. TC-8990 valid until 8th September, 2022.



The Laboratory is NABL accredited according to ISO/IEC 17025-2017 by NABL with Certificate number TC-8990.

Understanding the efficiency of GHSD and heat pumps in reducing the drying time of sludge and pathogen inactivation: Most FSTPs in rural and peri-urban areas have adopted sludge drying beds to treat the solid portion of the faecal sludge as these are easy and economical to maintain. However, adopting the same in urban and developed peri-urban areas has been a challenge due to large land requirements of the technology. In coastal regions, there is an even greater requirement of land, as sludge tends to frequently get wet from rain in between the drying cycle.

Polycarbonate Green House Solar Driers (GHSD), which have been used at the FSTP at Devanahalli, have shown promising results in reducing the drying time of faecal sludge. The same technology has also been adopted at FSTPs at Angul & Karunguzhi; and at the FSTP at Dhenkanal, along with a solar pasteurizing unit. We are now experimented GHSD in combination with heat pumps – to understand the efficiency of GHSD in reducing drying time of sludge and pathogen inactivation.



Heat pumps installed at FSTP, Devanahalli

Testing wastewater for traces of the virus to identify the community spread of Covid-19: We continued to be part of the Covid Action Collaborative (CAC), a network of individuals, 285+ organizations and networks representing the public, private, civil society, academic and other sectors who believe in pooling expertise and resources, to address the current pandemic.

The collaborative was setup to establish an Indian protocol to test sewage and develop an action plan based on evidence to manage COVID-19 infections.

International and national efforts have indicated that testing sewage can be an effective tool for monitoring the spread of the SARS-CoV-2 virus in populations – especially given that this virus is first detected in faeces than it is in blood. Therefore, if sewage at strategic points is routinely monitored, the presence of the virus can be detected.

Wastewater surveillance cannot give information about the number of individuals currently infected with COVID-19. However, as data are collected and trends are identified, that information can be helpful to track the progression of the virus in communities and inform public health strategy.



Our team on field collecting wastewater samples

Systematic and regular testing of wastewater to detect the presence of degraded SARS-CoV-2 RNA in 46 open drain sites and 28 sewer sheds in Bengaluru, Karnataka is being conducted. This covers nearly 80% of the city's population by generating over 90 data points per week, signaling emerging COVID-19 clusters or even a COVID-19 cluster's exit from an area.



On site testing of wastewater samples

As Water and Sanitation Engineering partners, we are contributing through our sector expertise in wastewater by collecting and testing sewage samples. The samples are collected twice a week for each open-drain site and four times a month for each sewer shed site.

Results from the sampling are put up on a health surveillance platform, which serves as a city-wide early warning system through wastewater surveillance; for local governments/municipalities to regularly monitor sewage for the presence of the COVID-19 virus. This platform can also be used to monitor other pathogens of pandemic proportions, antimicrobial resistance, illicit opioid use etc.

Analyzing microbial consortiums in the market for better treatment performance of OSS: Nearly 60% of India's population is dependent on onsite sanitation systems, like septic tanks and pit latrines. However, such systems show high sludge build-up over time and frequent desludging is often not economically feasible. Several types of microbial consortiums (two or more bacterial or microbial groups co-habiting) are now available that claim to reduce the build-up of sludge and improve effluent quality by providing improved degradation of influent into the OSS. Against this background, Novozyme South Asia has collaborated with us for analyzing different microbial consortiums available in the market for better treatment performance of OSS.

Phase I of the research tested 6 different products and mainly focused on understanding the efficiency of these products in terms of sludge build-up, odor control, and effluent quality. It was studied on a pilot scale through the set up of small septic tanks receiving domestic wastewater at Beedi Workers Colony. This helped in the identification of the best products as well as dosage which gave optimum performance in terms of reducing sludge build-up and effluent quality.

During Phase II, multiple OSS will be identified on field, at different levels (households, public spaces etc.) and the effectiveness of the recommended product from phase I will be tested. The performance of these systems will be monitored for six months.

Validating the volaser in implementing the Q&Q methodology for worldwide use: Estimation of qualities and quantities (Q&Q) of faecal sludge plays a very crucial role in designing Faecal Sludge Management solutions for a city or town. Assessing Q&Q helps to understand what quality and how much of faecal sludge will need to be managed;

and this has a bearing on infrastructure design and financial resource requirement.

Until now, estimations were often based on literature values from other locations or standard values, which are not locally applicable. To address this deficiency, a method was developed by Eawag-SANDEC, based on using spatially analyzable demographic, environmental and technical data (SPA-DET) to make more accurate, localized predictions of faecal sludge Q&Q.

This method involves the use of a Volaser – a new equipment that can aid in implementing the Q&Q methodology. We were part of an international research study conducted by Eawag where they field tested the volaser in 7 cities around the world – Lusaka (Zambia), Kampala (Uganda), Bekaa Valley (Lebanon), Naivasha (Kenya), Freetown (Sierra Leone), Kumasi (Ghana) and Devanahalli (India). The aim was to collect data in the same format in each of the locations and compare the results, to validate the volaser in implementing the Q&Q methodology for worldwide use.



Sludge height measurement at OSS

Hybridization of nature-based and conventional solutions: Funded under the Bill and Melinda Gates grant, this research study involves implementation & monitoring of an aerobic system to treat the effluent coming from an anaerobic treatment system (i.e. ABR+AF setup) – for removal of solids, organics, and nutrients. Additionally, the final treatment effluent is being further purified using coagulants/filtration system so as to meet reuse standards. Learnings from this pilot-scale research project will guide us while implementing similar systems that require the hybridization of nature-based and conventional solutions at field scale.



Pilot setup of TT Modules at Beedi workers colony



Aeration system at Beedi workers colony

Research Setup for Biogas Treatment: Anaerobic systems tend to produce methane, carbon dioxide and nitrous oxide which are greenhouse gases (GHGs). These need to be monitored cautiously as they have adverse effects on the environment. For example, they trap heat thus contributing to smog, which causes air pollution and respiratory diseases and impacts climate change as well. It is imperative to find a solution to capture GHGs before disposing them into the atmosphere from the point of climate change mitigation.

Literatures show that when gases are passed through a filter with natural adsorbents, the GHGs can be captured, safely releasing filtered gas into the atmosphere. Some adsorbents in such naturally occurring mineral which possesses molecular sieve properties and thus has potential to serve as a natural adsorbent. Infact, it has proven to be of help in the purification of effluent gases.

In order to test the same, we setup a pilot filter at the Mahadevapura Lake DEWATS™ (where are actively involved in operation and maintenance) – as the capacity of the plant serves as a good representative for the study. We incorporated a Zeolite filter into the vent pipe, located above the ABR chamber of the system. GHGs emitted from the vent pipe are collected periodically and analysed to check the efficacy of the filter material in trapping the GHGs.



Testing of Biogas composition

Capacity Building and other dissemination activities

We continued with online trainings after the positive response from participants last year. Four training programmes for 103 participants were conducted – two on the design of DEWATS™ and two on faecal sludge treatment. Details are provided in annexure 3.

We also delivered sessions at trainings organized by Dhan Foundation and CEPT University. Details provided in annexure 4.

In addition, we undertook a key project – Training of Trainers to build FSM Capacity in Urban Local Bodies of Karnataka – under the grant from the Bill and Melinda Gates Foundation.

Training of Trainers to build FSM Capacity in Urban Local Bodies of Karnataka: The objective of this Capacity Building program is to embed knowledge of FSM within the functionaries of Urban Local Bodies of Karnataka. Once this knowledge is embedded into a critical mass of functionaries in the system, they will then become the key knowledge disseminators and go-to people for various aspects of FSM, helping in faster and smoother uptake of FSM across the State.

In order to achieve this, we interviewed 70+ ULB and Directorate of Municipal Administration (DMA) functionaries across the state of Karnataka. From this set, we (along with DMA and State Institute of

Urban Development (SIUD)) shortlisted 31 functionaries for trainings related to FSM planning and sustainability. Once trained, these 31 functionaries will build the capacities of 300+ ULBs in FSM across the State.

The 31 functionaries have undergone an orientation course through a combination of face-to-face interactions and site visit to the FSTP at Devanahalli. This will be followed up by focused training sessions on FSM planning and handholding support.

Guest Lectures: 3 Guest Lectures were delivered during the year. Details are provided in annexure 5.

Trainings/Conferences: Multiple technical and non-technical trainings over the last year have increased our staff's capacity and skill sets. Complete list is provided in annexure 6.

Peer Learning Sessions: Three peer-learning sessions were conducted during the year. List provided in annexure 7.

Visitors to the Sanitation Exhibition: Due to limitations imposed by the Pandemic, the exhibition had just 42 visitors this year. List provided in annexure 8.



Visitors at CASS Exhibition unit

Knowledge Publications: At the beginning of the year, we launched a key publication titled, *“Innovating | Demonstrating | Mainstreaming – Faecal Sludge Management – Our Journey from 2008 – 2021 and Beyond”*. This publication unveils our FSM journey through the approach of innovating, demonstrating and mainstreaming of solutions across the FSM value chain. It catalogues various initiatives over a decade (2008 – 2021) and highlights some of our key interventions in the FSM sector. We hope this publication is a useful effort in communicating how innovations can be thought through and scaled up over a period to achieve the desired environmental and social impact.



Media Mentions:

Date	Name of the Publication	Link
April 14, 2021	Swachh Bharat Abhiyan: Sanitation, purpose and the power of partnerships	https://www .financialexpress.com/lifestyle/swachh-bharat-abhiyan-sanitation-purpose-and-the-power-of-partnerships/2232767/
May 28, 2021	Karnataka launches city-wide sewage surveillance system to track virus early	https://www.deccanchronicle.com/nation/current-affairs/280521/karnataka-launches-city-wide-sewage-surveillance-system-to-track-virus.html
August 27, 2021	The Swachhta journey: New targets, new approaches	https://indianexpress.com/article/opinion/columns/swachh-bharat-mission-india-sanitation-amrut-7474128/lite/
Dec 12, 2021	Bengaluru waste water samples from 45 sites show 31% hike in Covid viral load	https://www.deccanherald.com/city/top-bengaluru-stories/bengaluru-waste-water-samples-from-45-sites-show-31-hike-in-covid-viral-load-1059940.html
2 February 2022	World Wetland Day on Radio city 91.1 FM	https://cddindia .org/wp-content/uploads/Radio-City-91.1FM-World-Wetland-Day.mp3
3 February 2022	Awareness on wetlands	https://www .cddindia.org/wp-content/uploads/Kannada-Prabha-Feb3-2022.jpg
March 24, 2022	Prerna Prasad wins Best Paper Award 2022	https://www.tudelft.nl/2022/global/prerna-prasad-wins-best-paper-award-2022

Abridged Financials

CDD INDIA Statement of Income & Expenditure FY 2021-22		
S.No	Particulars	Amount (In Lacs)
A	Income	
A.1	Grants	745.93
A.2	Incomes in relation to Preservation of Environment	369.56
A.3	Other Incomes	46.7
	Total Income	1162.19
B	Application of Income	
B.1	Towards Objects of organization - Preservation of Environment	758.1
B.2	Towards Establishment and Administrative Expenses	85.27
B.3	Towards Acquisition of Capital Assets	9.09
	Total Application of Income	852.46

Annexures

Annexure 1 – List of FSTPs inaugurated in the year – with our direct/indirect support

Location of FSTP	Capacity – Technology	Partnered with
Jangaon (Telangana)	10 KLD – Anaerobic Stabilisation Reactor with Unplanted Drying Bed (UPDB)	Priyadhar Group
Medchal (Telangana)	15 KLD – ASR with UPDB	Priyadhar Group
Cox Bazaar (Bangladesh)	15 KLD – ASR with UPDB	British Red Cross, Urban Waters Germany
Amethi (Uttar Pradesh)	3 KLD – ASR with PDB	WaterAid
Mannargudi (Tamil Nadu)	30 KLD – ASR with UPDB	Indian Institute of Human Settlements (IIHS)
Pattukotai (Tamil Nadu)	30 KLD – ASR with UPDB	IIHS
Tenkasi (Tamil Nadu)	40 KLD – ASR with UPDB	IIHS
Sankarankoil (Tamil Nadu)	30 KLD – ASR with UPDB	IIHS
Aruppukottai (Tamil Nadu)	40 KLD – ASR with UPDB	IIHS

Annexure 2: Status update on RLWM workshops

	District	Date of training	Name of resource personnel	No. of participants
	Orientation module-	2-days		
1	Belagavi Taluk		Sandhya, Bilwa	45
2	Khanapur Taluk	15-02-2021	Santhosh, Divyashree	30
3	Hukkeri Taluk		Santhosh, Divyashree	85
4	Gokak Taluk	17-02-2021	Sandhya, Bilwa	37
5	Chikkodi Taluk		Santhosh, Divyashree	60
6	Athani Taluk	19-02-2021	Sandhya, Bilwa	40
7	Bailahongala Taluk		Sandhya, Bilwa	50
8	Savadatti Taluk	22-02-2021	Santhosh, Divyashree	60
9	Chamarajnagar Taluk	22-03-2021	Roopa, Divyashree	43
10	Gundlupet Taluk	24-03-2021	Andrews, Divyashree	34
11	Kollegala, Hanuru and Yelanduru Taluks	26-03-2021	Andrews, Divyashree	53
12	Mulabagilu and Srinivaspura Taluks	22-03-2021	Sandhya, Bilwa	70
13	Kolar and Malur Taluks	24-03-2021	Sandhya, Bilwa	60
14	Bangarpete and KGF Taluks	26-03-2021	Sandhya/Dr, Shobha, Bilwa	50
	Total			717

Advanced module-3 - days				
1	Ramanagara	26-07-2021	Shriram, Anantha, Veena	49
2	Chamrajanagar	15-07-2021	Andrews, Divyashree & Girija	58
3	Kodagu	23-09-2021	Andrews, Veena, Madhu	54
4	Dakshina Kannada	27-08-2021	Sandhya, Divyashree & Charles	68
5	Udupi	30-08-2021	Sandhya, Anwaar, Darshan	55
6	Shivamogga	05-08-2021	Andrews, Veena, Madhu	58
7	Bengaluru Urban	09-08-2021	Shriram, Anwaar, Kartik	55
8	Bengaluru Rural	12-08-2021	Rohini, Veena	60
9	Kolar	16-08-2021	Sandhya, Kartik, Kavya	51
10	Chikkaballapur	29-07-2021	Rohini, Veena, Anwaar	72
11	Tumkur	19-08-2021	Sandhya, Kartik, Rajashekhar	41
12	Tumkur	23-08-2021	Sandhya, Divyashree & Madhu	79
13	Chitradurga	02-09-2021	Sandhya, Anwaar, Darshan	52
14	Davangere	06-09-2021	Andrews, Divyashree, Madhu	102
15	Haveri	13-09-2021	Sandhya, Kartik, Kavya	56
16	Hassan	16-09-2021	Shriram, Veena & Madhu	69
17	Chikkamagaluru	28-09-2021	Andrews, Veena, Madhu	53
18	Mandya	02-08-2021	Sandhya, Kartik, Girija	68
19	Mysore	27-09-2021	Rohini, Sagar, Vinay	46
20	Mysore	30-09-2021	Chandranaik, Divyashree, Vinay	69
21	Ballari	12-07-2021	Sandhya, Kartik, Rishikesh	78
22	Vijaynagara	15-07-2021	Sandhya, Kartik, Rishikesh	72
23	Gadag	26-07-2021	Andrews, Divyashree, Madhu	40
24	Koppal	29-07-2021	Andrews, Divyashree, Madhu	74
25	Belgaum-B-1	02-08-2021	Rohini, Anwaar	102
26	Belgaum-B-2	02-08-2021	Sagar, Gopi	51
27	Belgaum-B-3	05-08-2021	Rohini, Anwaar, Gopi	97
28	Bagalkot	09-08-2021	Andrews, Divyashree, Madhu	53
29	Bagalkot	12-08-2021	Andrews, Divyashree, Madhu	49
30	Vijaypura	16-08-2021	Shriram, Veena	86
31	Kalburgi	06-09-2021	Veena, Kartik, Thimmesha	98
32	Bidar	30-08-2021	Veena, Gopi, Jeevan	85
33	Yadgir	02-09-2021	Veena, Gopi, Jeevan	43
34	Raichur	13-09-2021	Rohini, Rishikesh, Vinay	44
35	Raichur	16-09-2021	Rohini, Rishikesh, Vinay	58
36	Uttarakannada	16-09-2021	Chandranaik, Divyashree, Thimmesha	57
37	Uttarakannada	20-09-2021	Chandranaik, Divyashree, Thimmesha	76
38	Dharwad	23-09-2021	Chandranaik, Divyashree, Thimmesha	83
	Total			2,461

Annexure 3 – List of trainings conducted

S.No.	Title	Date	Days	No. of participants
1.	Online Course: Advanced Training for Design Engineers on Faecal Sludge Treatment	21 st April-4 th May, 2021	10	27
2.	Online Training: Design and Implementation of DEWATS™	23 rd August-3 rd September, 2021	10	30
3.	Online Training: Design and Implementation of DEWATS™	8 th -19 th November, 2021	10	28
4.	Online Training: Designing Faecal Sludge Treatment Plants	14 th – 28 th February & 2 nd March, 2022	10	18

Annexure 4 – Support to other organisations

Topic	Trainer	Event Organizer	Date
Environment -friendly treatment, disposal and reuse of faecal sludge – Madurai Symposium	Debisha Sharma	Dhan Foundation	27 th October, 2021
Decentralized approaches for liquid waste management: Progress, Status, Challenges and Opportunities in India	Debisha Sharma	CEPT University	16 th September, 2021
Introduction to FSM	Krishna Swaroop Konidena	CMAK (City Managers Association of Karnataka)	5 th March 2022
Economics and Life Cycle Resource Recovery of DWWTs	Sandhya Haribal		21 st -23 rd December, 2021
Linkage between water and sanitation - Importance of engaging with communities	Krishna Swaroop Konidena	NFSSM Alliance	21 st March 2022
Rapid action learning (RAL) workshop on greywater management under JJM & SBM(G)	Sandhya Haribal	UNOPS and MoJS	26th & 27th May 2022

Annexure 5 - Guest Lectures

Name	Designation	Topic	Date
Mr. Joydeep Gupta	South Asia Director of The Third Pole, Editor of India Climate Dialogue and India coordinator of Internews' Earth Journalism Network	Water Body Rejuvenation: Rivers and waterbody pollution with a special focus on India and South Asia	16 th April, 2021
Mr. J. Venkatesh, TIFMC, Chennai	Consultant, Tamil Nadu Infrastructure Fund Management Corporation Limited (TIFMC), Chennai	GIS Application in Water Quality Surveillance and Mapping	18 th June, 2021
Dr. Christian Zurbrugg	Head of the Department Sanitation, Water and Solid Waste for Development (Sandec), at the Swiss Federal Institute of Aquatic Science and Technology (Eawag)	Introduction to Solid Waste Management	17 th September, 2021

Annexure 6 - Training and conferences attended by CDD Society staff

Title	Resource Person	Staff who attended	Date	No. of persons
Solid Waste Management	Ashish Agarwal	Tanay, Gopi H, Archana P, Prerna P Kannan R, Sharon Sudhakar, Sushma S Patil, Karthik R, Raghav Kotabagi , Debisha S, Girija R, Hiranya T, Sagar Dattatray Patil, Vinay M	11th & 12th February, 2022	14
Online Training: Designing of FSTP - International	Anantha, Sagar, Rohini, Krishna, Debisha, Girija Dorai Narayana	Tanay, Archana, Vinay, Srinidhi, Raghav, Sagar Patil, Sharon	14th to 28th Feb 7 & 2nd March 2022	
Online Training: Getting Started with Drinking Water Quality Testing (DWQT).	Sehgel Foundation & CAWST	Ramya B	16th Feb to 23rd March 2022	1
Content Writing Workshop	Joydeep Gupta	Anthony Charles Monk, Anantha Moorthy Uttaramoorthy , Archana Abraham, Aditi Pandey, Debisha Sharma, Divyashree S Uchila, Girija R. Gopi Hanumantappa, Hiranya Tallam Kannan R, Karthik Ravichandran, Velukur Madhu , Mohan K, Praveen Raje Urs, Prerna Prasad, Raghav Kotabagi, Ramya B, Sagar Dattatray Patil, Sharon Sudhakar, Shrinidhi Kotian, Sushma S Patil, Tanay Timblo, Vinay M, Yogish L, Chandana G, Sourabh S Unnithan, Tanuja N, Roopa Bernardiner, Andrews Jacob, Sandhya Haribal, Parth Gohel, Rohini Pradeep	15th & 16th March 2022	32
Simplified Sewer Network Planning & Design	Andreas Smith	Rohini Pradeep, Anatha Moorthy, Andrews Jacob, Hiranya Tallam, Kannan R, Sagar Patil , Sandhya Haribal, Divyashree S Uchila, Gopi Hanumantappa, Karthik Ravichandran, Harshvardhan, Krishna Swaroop, Mohan K, Parth Goel, Yogish L	21-23 March	15
Workshop: Visioning and road mapping	Ms. Anita Ratnam, Samvada, Bangalore	Debisha Sharma, Geetika Chopra, Sandhya Haribal, Roopa Bernardiner, Krishna Swaroop, Parth Gohel, Harshvardhan, Ganapathy PG	25-06-2021	8

Annexure 7 - Peer Learning Sessions

Name of staff	Date	Topic
Sagar Patil	6/28/2021	Presentation on Hybridization of tertiary treatment
Ragasamyuktha Sanjay Deo	15/06/2021	Wastewater Treatment system for open channel flow

Annexure 8 – Visitors to the Sanitation Exhibition

Visitor	Number of visitors
From Dr. Ambedkar Institute of Technology	3
From University of Stuttgart at the Institute for Sanitary Engineering, Water Quality and Management	1
From Department of Management Studies & Centre for Sustainable Technologies IISC, Bangalore (AMRUT State Mission Management Team)	1
From Government of Kerala	2
From WIPRO Foundation, Bengaluru	3
From eGov Foundation Team, Bengaluru	2
From CMAK, Bengaluru (ULB officials exposure)	18
Others	12
	42

Annexure 9 – Human Resources

Current employee list:

S.No.	Names of the Employees	Designation/Title
1	Laxman J Gowda	Senior Associate, Office Support
2	Thimmesha R	Senior Associate, Prefab
3	Antony Charles Monk	Senior Associate, IT
4	Rohini Pradeep	Project Manager(PM)
5	Andrews Jacob	Project Manager(PM)
6	Swarna Lakshmi N.	Associate, Office Support
7	Molly DMello	Manager (Personnel and Administration)
8	Roopa Bernardiner	Senior Manager, CASS
9	Madhwaraj S Belgaumkar	Internal Auditor
10	Prashantha Y.K.	Senior Associate, Finance
11	Dene Godinho	Associate, Administration
12	Venkatachala Reddy K V	Manager, Prefab
13	Ravikumar A G	Senior Associate, Prefab
14	Manjunath K	Associate, Office Support
15	Regi Kollithadathil Joseph	Senior Manager, Finance
16	Susheel Sagar B S	Senior Associate, Communication
17	Rajashekara K S	Associate, Prefab
18	Nandeesh D	Associate, Prefab
19	Kumar N.	Senior Associate, Prefab

S.No.	Names of the Employees	Designation/Title
20	Rajesh D S	Associate, Prefab
21	Karthik Ravichandran	Senior Project Engineer
22	Divyashree S Uchila	Senior Project Engineer
23	Darshan B N	Senior Associate, IT
24	Debisha Sharma	Associate Project Manager
25	Tanay Sandesh Timblo	Associate Project Manager
26	Ratna S	Associate, Office Support
27	Prerna Prasad	Senior Project Associate
28	Krishna Swaroop	Senior Project Manager
29	Anantha Moorthy Uttaramoorthy	Senior Project Engineer
30	Anand Kumar K N	Associate, Office Support
31	Sandhya Haribal	Senior Project Manager
32	Praveen Raje Urs	Senior Associate, Laboratory
33	Archana Abraham	Senior Associate, Research
34	Mohan K.	Project Engineer
35	Sangama Parameshwar Bhat	Associate, Finance
36	Girija R.	Associate Project Manager
37	Yogish L	Senior Project Engineer
38	Sagar Dattatray Patil	Senior Project Engineer
39	Manoj Kumar T.	Senior Associate, Finance
40	Madhu Velukur	Senior Associate, Draughting
41	Jeevan Kumar S	Associate, Prefab
42	Parth Gohel	Project Manager
43	Subhashini Dnv	Senior Associate, Administration
44	Ramya B	Associate, Laboratory
45	Gopi H.	Senior Project Engineer
46	Jitender	Chief Finance Officer
47	Harshvardhan	Chief Executive Officer
48	Hiranya Tallam	Project Engineer
49	Sharon Sudhakar	Project Engineer
50	Kannan R	Senior Project Engineer
51	Aditi Pandey	Manager - Partnerships & Communication
52	Sourabh S Unnithan	Project Engineer

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