



Ministry of Housing and Urban Affairs
Government of India



**SWACHH
SURVEKSHAN
2020**

INNOVATIONS & BEST PRACTICES



CONTENTS

Abbreviations	3
Executive Summary	4
Introduction	10
Methodology	13
Innovations	19
Unique Initiatives	37

ABBREVIATIONS

SBM(U)	Swachh Bharat Mission – Urban
ULBs	Urban Local Bodies
ODF	Open Defecation Free
IEC	Information Education Communication
UT	Union Territories
MoHUA	Ministry of Housing and Urban Affairs
SWM	Solid Waste Management
SS-2020	Swachh Survekshan 2020
RWAs	Residential Welfare Associations
NGOs	Non-Government Organizations
SHGs	Self-Help Groups
CSR	Corporate Social Responsibility
OPEX	Operation Expenditure
RRC	Resource Recovery Centers
MCC	Micro Compost Centers
DUAC	Delhi Urban Arts Commission
PLC	Program Logic Controller
CLC	City Livelihood Centre
DEWATS	Decentralized Wastewater Treatment System
GMC	Gandhinagar Municipal Corporation
LLP	Limited Liability Partnership
MRF	Multi-Reuse Facility
OWC	Organic Waste Compost
GHMC	Greater Hyderabad Municipal Corporation
ICCC	Integrated Command and Control Centre

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The 5th edition of Swachh Survekshan, like its four predecessors was conducted to assess the progress of Swachh Bharat Mission – Urban (SBM-U) and rank the Urban Local Bodies (ULBs) in India on the basis of cleanliness and sanitation parameters. The Survekshan has evolved from being an assessment of 73 cities in 2016 to an evaluation of 4242 cities in 2020. Since Swachh Survekshan 2017, ULBs practicing ‘Innovation and Best Practices’ have been awarded.

As a part of Swachh Survekshan 2020 (SS-2020), to encourage the extra efforts put in by citizens and ULBs, ‘Innovation and Best Practices’ among the areas – Waste Management, Behaviour Change, sustainable sanitation or interventions contributing to proven improvement in air quality, water conservation, wastewater treatment and its re-use or storm water management were evaluated separately. Individually 3010 ULBs submitted the innovative projects undertaken among the areas of Waste Management, Behavior Change or Open Defecation Free (ODF) Sustainability. Separate scoring was done by the assessors under this category and awards were given accordingly. Following were major evaluation areas:

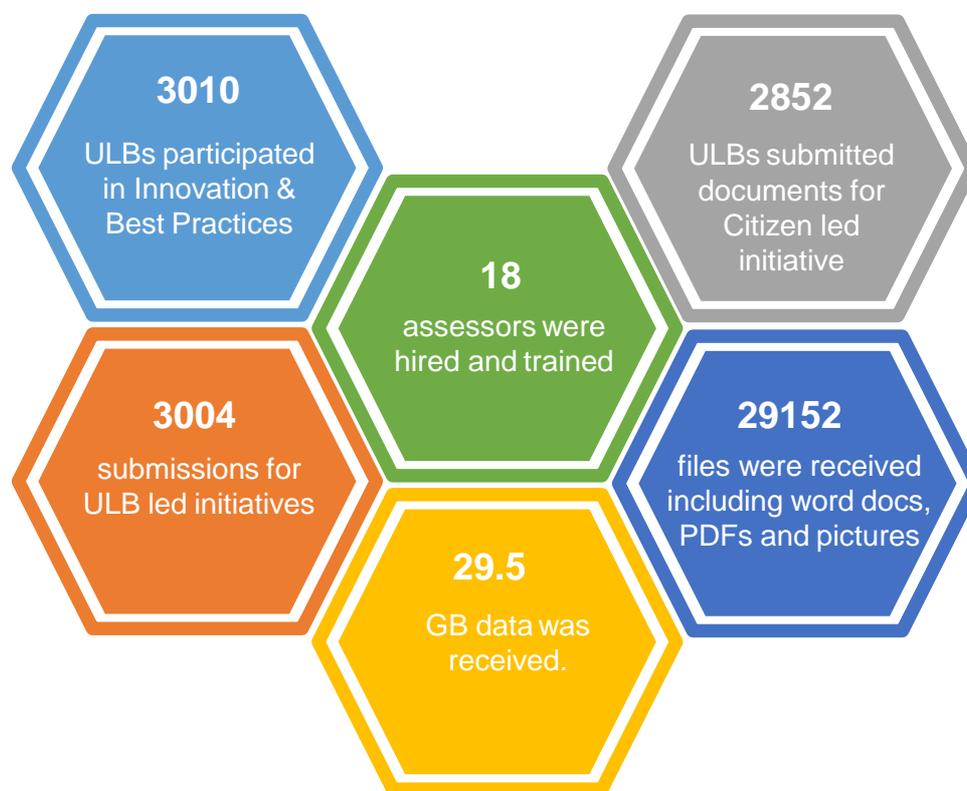


Under the category of “Innovation and Best Practices” in SS-2020, the stakeholders’ quality of projects is assessed on the criteria of implementation, novelty, scalability, financial sustainability and impact. Some of the ideas and suggestions are listed here. However, Innovation areas are not limited to following interventions only.

1. Sustainable Solutions
2. Public Private Partnership
3. Convergence across other flagship missions of the Government of India
4. Information Education Communication (IEC) & Behaviour Change
5. Community Engagement
6. Sale of by-products of processing
7. Robust faecal sludge management system
8. User friendly Community and Public Toilets

EXECUTIVE SUMMARY

Overall coverage of the 'Innovation and Best Practices' evaluation is given below:



List of National Level Awardees

Following is the list of National level award winning ULBs under 'Best Citizen led Initiative' title:

Name of Award	Population Category	State	Winning ULB
Best citizen led Initiative No. 1	All	Madhya Pradesh	Ujjain
Best citizen led Initiative No. 2	More than 1 Lakh	Telangana	Karimnagar
Best citizen led Initiative No. 3	Less than 1 Lakh	Madhya Pradesh	Sihora

EXECUTIVE SUMMARY

List of National Level Awardees

Given below is the list of National level award winning ULBs under Best City in 'Innovation & Best Practices', respective population category and states are mentioned along with ULB name & award name:

Name of Award	Population Category	State	Winning ULB
Best City in 'Innovation & Best Practices'	Mega City: More Than 40 Lakh	Tamil Nadu	Greater Chennai
	Big City: Between 10-40 Lakh	Punjab	Ludhiana
	Medium City: Between 3-10 lakh	Odisha	Brahmapur
	Small City: Between 1-3 Lakh	Kerala	Alappuzha
	State/National Capital & Union Territories (UT)	Gujarat	Gandhinagar

List of Zonal Level Awardees

Following is the list of award winning ULBs in North zone under Best City in 'Innovation & Best Practices' title::

Zone	Population Category	State	Winning ULB
North	Cities with >50 K – 1 Lakh	Uttar Pradesh	Muradnagar
North	Cities with >25K – 50K	Uttar Pradesh	Paliya Kalan
North	Cities upto 25K	Uttar Pradesh	Bakewar

EXECUTIVE SUMMARY

List of Zonal Level Awardees

Following is the list of award winning ULBs in East zone under Best City in 'Innovation & Best Practices' title::

Zone	Population Category	State	Winning ULB
East	Cities with >50 K – 1 Lakh	Chhattisgarh	Birgaon
East	Cities with >25K – 50K	Jharkhand	Jugsalai
East	Cities upto 25K	Chhattisgarh	Akaltara (M)

Following is the list of award winning ULBs in North-East zone under Best City in 'Innovation & Best Practices' title::

Zone	Population Category	State	Winning ULB
North - East	Cities with >50 K – 1 Lakh	Assam	Sivasagar
North - East	Cities with >25K – 50K	Assam	Hailakandi
North - East	Cities upto 25K	Nagaland	Pfutsero

Following is the list of award winning ULBs in South zone under Best City in 'Innovation & Best Practices' title::

Zone	Population Category	State	Winning ULB
South	Cities with >50 K – 1 Lakh	Karnataka	Ramanagara (CMC)
South	Cities with >25K – 50K	Karnataka	Kadur (TMC)
South	Cities upto 25K	Tamil Nadu	Melathiruppanthruithi

EXECUTIVE SUMMARY

List of Zonal Level Awardees

Following is the list of award winning ULBs in West zone under Best City in 'Innovation & Best Practices' title::

Zone	Population Category	State	Winning ULB
West	Cities with >50 K – 1 Lakh	Gujarat	Petlad
West	Cities with >25K – 50K	Maharashtra	Vita
West	Cities upto 25K	Maharashtra	Akole

The evaluation criteria, methodology and some initiatives have been detailed in subsequent chapters of the report.

INTRODUCTION

INTRODUCTION

Innovation and best practices in the areas of waste management, behavior change, sustainable sanitation etc.

Encouraging and promoting best sanitation practices & behaviour change, is not new to India. For decades, the Government of India has been trying to inculcate, promote & incentivise different bodies to encourage best sanitation practices and behaviour change practices; and SBM(U), has been one such initiative.

India, given its solid waste generation, needed an efficient waste management system which ensures waste segregation at source; and also to ensure that the waste goes through different streams of recycling and resource recovery.

Under the aegis of SBM(U), launched in 2014, aiming to make India Open Defecation Free (ODF), annual survey of cleanliness and sanitation, Swachh Survekshan, was conceptualized and rolled out. It was launched as part of the SBM(U). As per the MoHUA SBM portal, 1028.67 lakh toilets have been constructed in the constructed and 706 districts were ODF in the country.

Under the SBM programme, it was recognised that it is not only important to be able to manage the existing waste but also to find ways to generate less. Therefore, some of the focus areas of Survekshan were: Treat and re-use wastewater, 3R principle - reduce, reuse & recycle, etc. along with promoting 'Innovative and Best Practices' adopted across ULBs.

The environmental impact of 3R principle includes reduction in carbon footprint due reduced emissions from burning of waste, reduced use of non-biodegradables, etc.; improved health and well-being and quality of life of citizens. As per Swachh Survekshan 2020 key findings- over 1280 ULBs have undertaken initiatives that comply to the 3R principle. 2606 ULBs practice door-to-door garbage collection in more than 50% of wards. 438 ULBs process at least 80% of their collected wet waste. 377 ULBs process at least 80% of their collected dry waste.

As per the document "prevention usually results in the least environmental and economic life cycle costs because it does not require collection or processing of materials. It also typically produces significant benefits in terms of production efficiencies and use of resources". The next most desirable options are reduction, reuse and recycling.

The benefits of reduce, reuse and recycle principles are given in the 'SS-2020 Toolkit'¹ as **reduced** quantities of waste would decrease burden on collection services as well as treatment and final disposal facilities, **reuse** of waste will reduce the amount of waste reaching landfills and **recycling** of waste into value added products will encourage sustainable consumption while offering employment and entrepreneurship opportunities.

¹ https://www.swachhsurvekshan2020.org/Images/Toolkit/SS%202020%20Toolkit%20Book_22%20Aug.pdf

One of the important components of SS-2020 is 'Innovation and Best Practices' to recognise and reward the changes and improvement made by ULBs, Citizens, Residential Welfare Associations (RWAs), Non- Governmental Organisations (NGOs) and Private Sector in the areas like Waste management, Behaviour Change, sustainable sanitation, water conservation, reuse of treated waste water etc.

Innovation as a category includes rewarding different stakeholders for their innovative efforts to improve the waste management situation in their own area/region. The category has separate sub-section as 'ULB' and 'Citizens/RWAs/NGOs/ Self-Help Groups (SHGs) /Private Sector through Corporate Social Responsibility (CSR)' respectively to acknowledge the efforts made by everyone. During our field experience, it was seen how different bodies across the country are taking initiatives, (both tested and new ones) to participate, win and support SBM(U).

The sections ahead provide enough evidences to show the positive impact of such initiatives on states and citizens to improve the situation in the country. The sequence of following sections are:

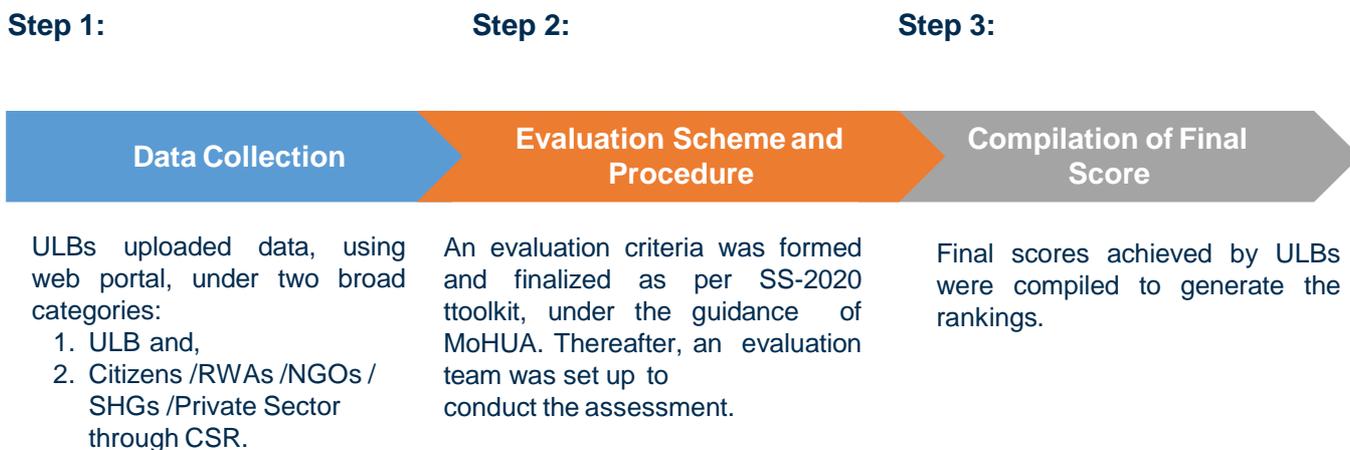
The next section '**Methodology**' present the methodology and evaluation process followed by Ipsos, the assessment agency. Methodology section explains the data collection process, scoring methods, evaluation criteria and procedure followed.

The subsequent section **Innovations** will present some of the ULB led initiatives, Citizen led initiatives and Initiatives by Civil Society and Corporates CSR based on their rankings supplemented by primary data. This is supported by the efforts by them for cleanliness through innovation, followed by section on **Unique Initiatives** which deserved special mention.

METHODOLOGY

METHODOLOGY

In order to collect data and evaluate the projects to generate the final rankings, following steps were undertaken:



All the above mentioned steps are presented in detailed in the subsequent sections of this chapter.

Step 1: Data Collection

Data was collected using an online platform. A dynamic dashboard (swachhsurvekshan2020.org) was created, where ULBs uploaded the data (e-documents and pictures) of initiatives undertaken respectively.

The data was collected for the following two categories of initiatives, based on 'who' initiated or led the practice:

1. Innovation & Best Practices by ULB.
2. Innovation & Best Practices by Citizens/RWAs/NGOs/SHGs/Private Sector through CSR.

The board areas under which intervention projects were undertaken are given below. However, all projects were not restricted to the given categories.



METHODOLOGY

Step 2: Evaluation Scheme and Procedure

After collecting the data, next step involved setting up an evaluation criteria and assessing the documents received from ULBs. The final evaluation criteria was decided by a team of subject matter experts under the guidance of MoHUA. Thereafter, a team of assessors was constituted for assessing and scoring the documents. The details on evaluation criteria and process are detailed below.

Evaluation Scheme

The definition of innovation is broad and is often viewed as the application of better solutions that meet new requirements, unarticulated needs or existing needs. Further an innovation is the realization of some new idea in actual concrete practice, whether commercially or in public and voluntary sphere. Perception of innovation varies from city to city, however, evaluation of innovation criteria were set from a perspective that it can lead to some common ground-for ranking.

ULBs were evaluated on the quality of project submitted under waste management, behavioral change, ODF sustainability etc. The following table gives an overview of the criteria on the basis of which each ULB was evaluated.

Metric	Evaluation Criteria
Implementation	<ul style="list-style-type: none">The innovation should have been implemented between 1st January 2019 to 31st October, 2019.The innovation should be easily implementable (i.e. should be economical-limited capital and OPEX/manpower required should be feasible/ any pre-condition should be existing and practical).
Novelty	<ul style="list-style-type: none">The innovation should be a one-of-its kind solutionThe exact same innovation/best practice should not have been implemented elsewhere in IndiaA part of the innovation could have been implemented elsewhere and then contextualized to the city's requirement
Scalability	<ul style="list-style-type: none">There should be evidence showcasing scalability of the innovation to other parts of the city (i.e., there should be existing demand for such a solution/requisite manpower/sufficient capex and OPEX/partner ecosystem/etc. depending on the innovation)
Financial Sustainability	<ul style="list-style-type: none">Projects OPEX should be covered by existing available finances/ revenue stream
Impact	<ul style="list-style-type: none">The project should have achieved the envisaged impact as per initial project plan (city should showcase evidence of this impact through quantitative data/newspaper coverage/citizen feedback etc).Evidence showcasing sustainable impact (i.e. innovation should have a long-term positive outcome on the city)

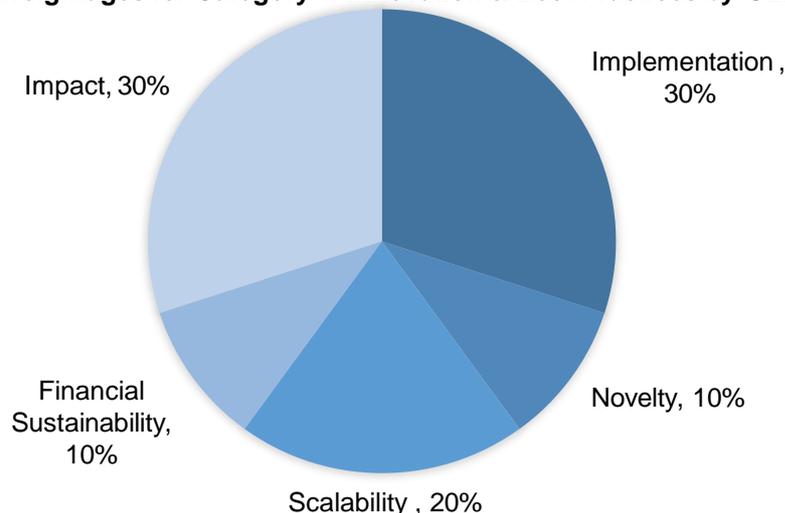
In conjunction with the abovementioned assessment criteria, the details on category-wise assigned weightages is briefed ahead.

METHODOLOGY

Category 1: Innovation & Best Practices by ULB

Here, the quality of project submitted by the ULB under 'Innovation & Best Practices' was assessed and the total marks assigned was 50. The 50 marks were further subdivided amongst 5 criteria, with weightage assigned to each criteria as follows:

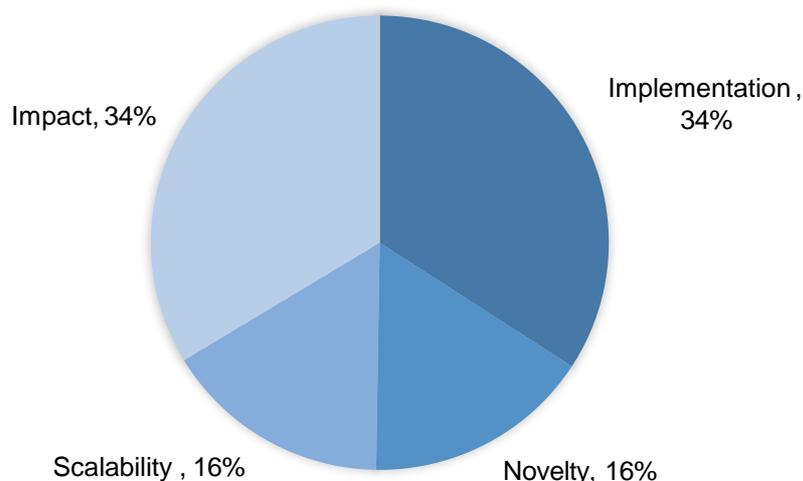
Weightages for Category 1: Innovation & Best Practices by ULB



Category 2: Innovation and Best Practices by Citizens/RWA/ NGOs/SHGs/Private Sector through CSR.

Here, the quality of project submitted by the ULB under the citizen led 'Innovation & Best Practices' was assessed and the total marks assigned was 30. The 30 marks were further subdivided amongst 4 criteria with weightage assigned to each criteria as follows:

Weightages for Category 2: Innovation and Best Practices by Citizens/RWA/ NGOs/SHGs/Private Sector through CSR.



All cities were requested to upload relevant files (write-up, pictures and videos) explaining details of the project in the categories mentioned on the Swachh Survekshan 2020 portal at the time of documentation upload. All these submissions were scrutinized and scored by the innovation cell experts. A total of 3010 ULBs submitted innovation entry.

METHODOLOGY

Evaluation Procedure

The final assessment areas were decided by two subject matter experts. An innovation cell of 18 assessors was constituted which was led by 2 subject experts for evaluation of the data. Assessors were hired considering the fact that documents were received indifferent regional languages. Different members of assessment team were proficient in reading and writing 11 different languages.

At first assessors were trained. For actual assessment, dashboard was used, separate logins were given to assessors. Thereafter, assessors were allocated ULBs, for which assessment had to be done.



Team Leaders

Two subject matter experts.



Assessors

A team of 18 members with proficiency in reading and writing different languages.

Assessment Team Structure

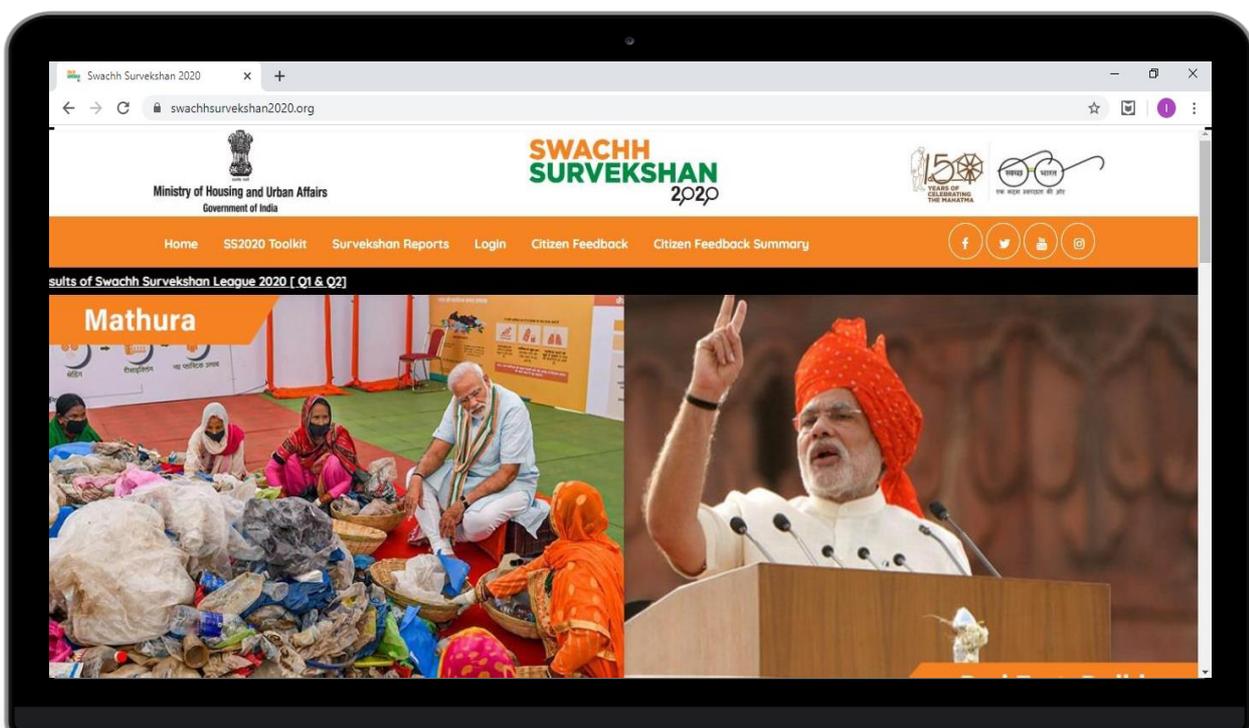
Step 3: Compilation of Final Score

Based on the the scores achieved by the ULBs for the innovation and best practices – a specific ranking was done only for this category- and awardees were selected.

Web Portal

A dynamic web portal was used for the entire data collection and evaluation process. Different logins were available for team leaders, ULBs and assessors. Some glimpses of the same are given below:

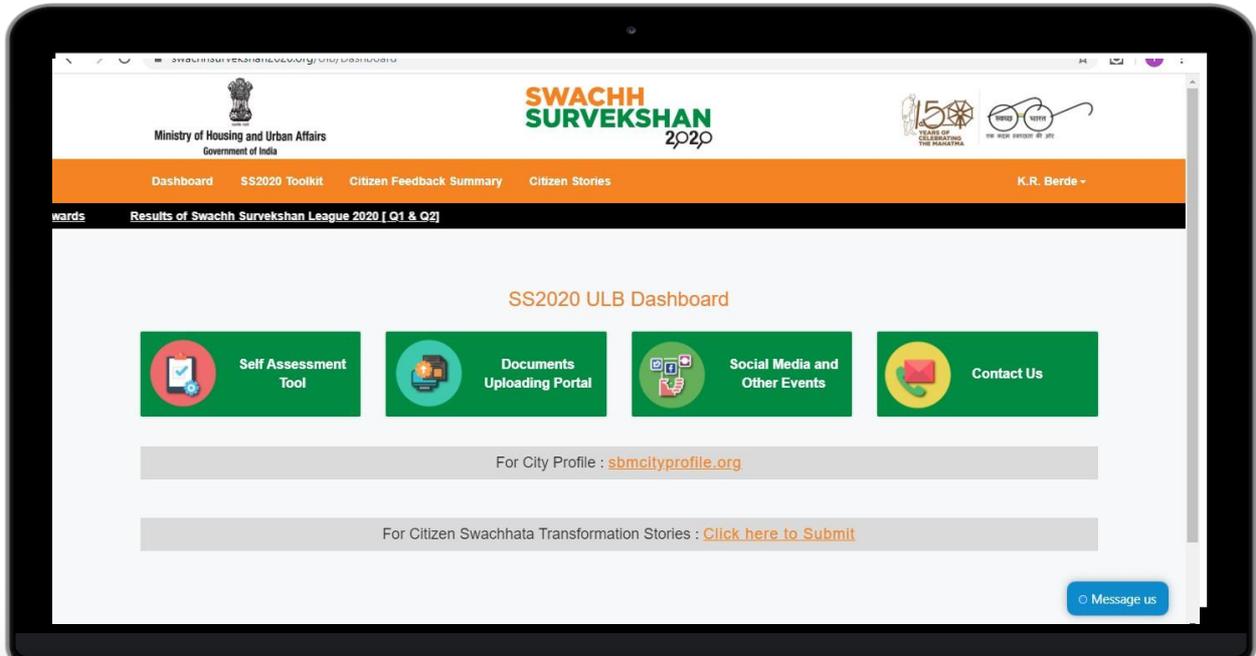
Login Screens of SS2020 Portal



METHODOLOGY

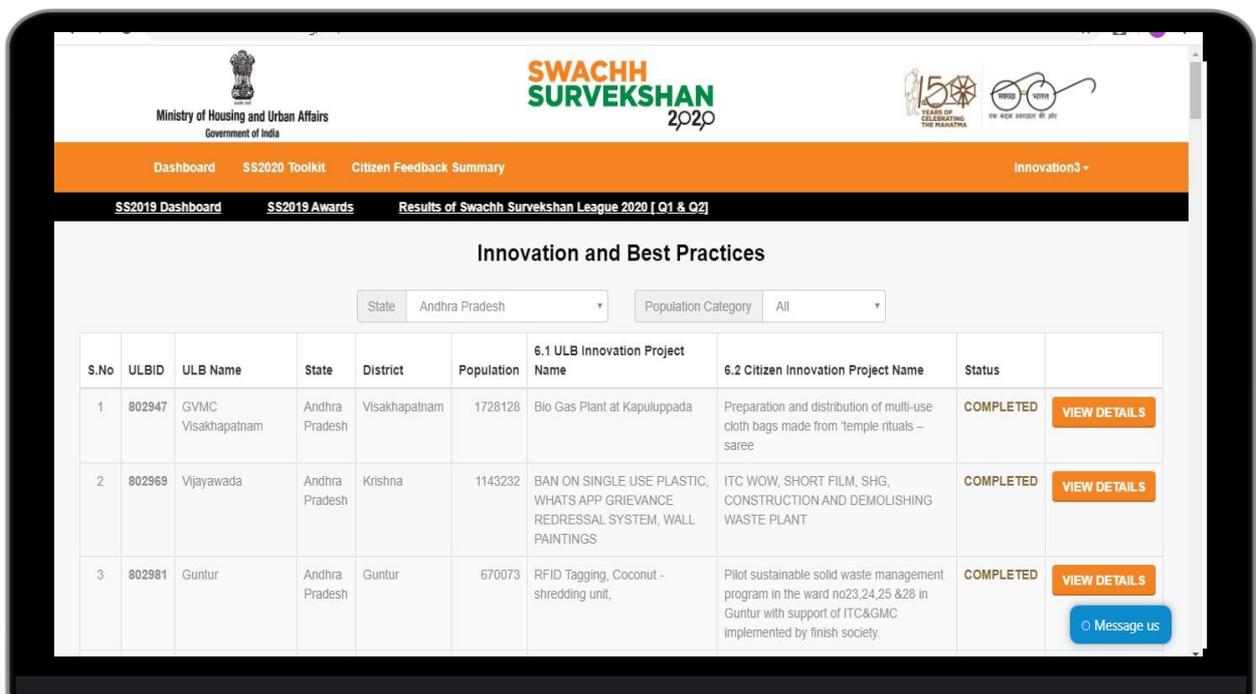
ULB Login Screens of SS2020 Portal

A login was provided to ULB where they could fill in required details for 'Innovation and Best Practices'. Once logged in - the dashboard was displayed, which consisted of a Self-Assessment Tool, City Profile, Documents Uploading Portal, Social Media and other events.



Assessor login Screen of SS2020 Portal

The members of the innovation cell were provided with a separate login where they could download all documents submitted under the indicators 6.1 (ULB led initiatives) and 6.2 (Citizen led initiatives). The assessment and could be done on the portal along with recording of the text based remarks.

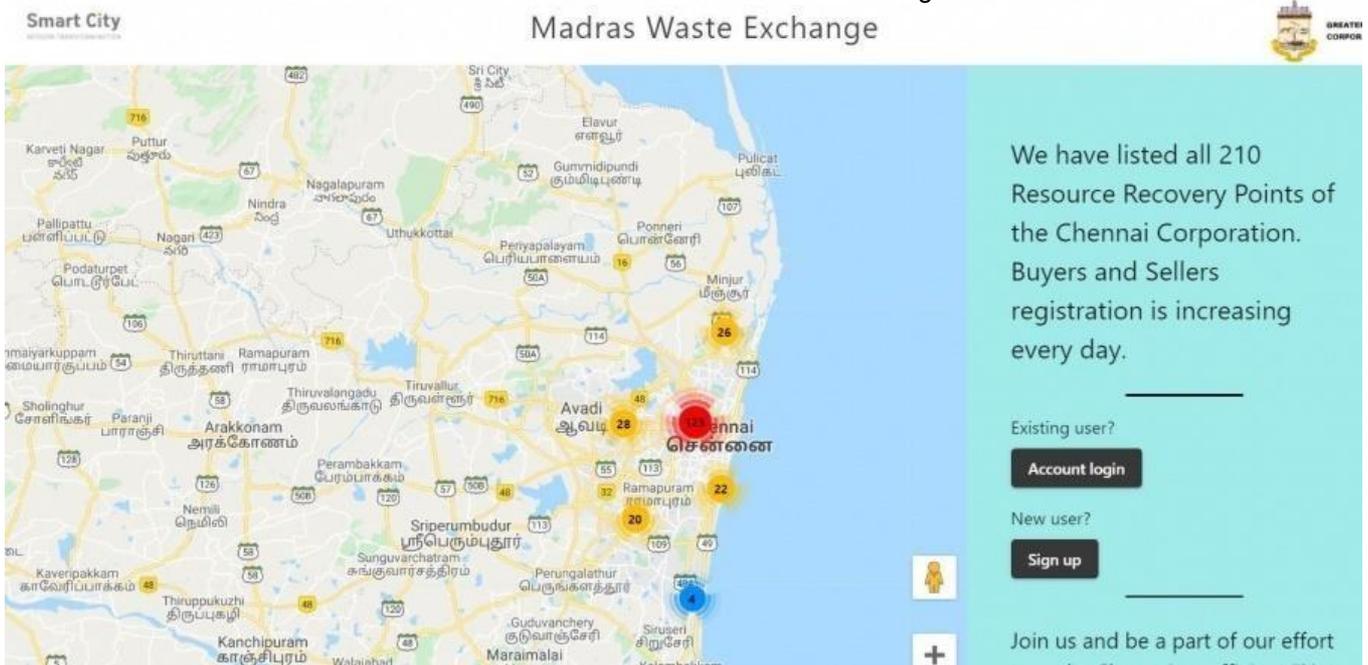


INNOVATIONS

Madras Waste Exchange – Online trading platform for segregated waste

The Greater Chennai Corporation has Resource Recovery Centers (RRC) and Micro Compost Centers (MCC) in all 15 Zones across Chennai. The RRC's perform segregation of waste collected from the households and markets of respective zones. There are around ten to fifteen categories of segregation depending upon waste produced in these zones. The MCC's produce compost from wet waste. The segregated waste in RRC's gets low value and selling them to market was becoming a challenge for corporation.

Screenshot of 'The Madras Waste Exchange'
Madras Waste Exchange



The Madras Waste Exchange (Online Platform) started as an idea to act as a platform to bridge the corporation's segregated waste to the potential buyers. The Waste Exchange acts as a connection between the following three entities:

- 1 Greater Chennai Corporation with Buyers of waste, Entrepreneurs.
- 2 Non-government entities like school, college, office and bulk waste generators with buyers.
- 3 Greater Chennai Corporation with non-government entities.

Madras Waste Exchange – Online trading platform for segregated waste

Newspaper Article about 'The Madras Waste Exchange'

Adding value to waste

Chennai Corporation has launched Madras Waste Exchange, an online waste trading platform

- The exchange is both a web portal as well as an application
- Currently a pilot, the initiative will go State-wide later
- Residents can use the platform to sell household waste
- Initially, only recyclable waste will be accepted
- Later, based on new initiatives by entrepreneurs, bio-degradable waste will also be accepted
- The Android app can be downloaded from Google Play and the link to the portal is www.madras-wasteexchange.com

HOW IT WORKS

- Buyers and sellers will have to register on the portal to trade; the portal has been integrated with the app
- On Day 1 itself, 30 buyers have registered
- Residents who want to sell a particular type of waste will be able to browse through a list of potential buyers and the prices quoted by them
- Buyers, including 2,600 scrap dealers in Chennai, will also be able to find a list of sellers who have waste products that they need
- The buyer and seller can decide a mutually convenient pick-up time
- Initially, the payment method will be cash-on-delivery; third-party payment gateways will be brought in later



Screenshot of 'The Madras Waste Exchange'

Madras Waste Exchange

We have listed all 210 Resource Recovery Points of the Chennai Corporation. Buyers and Sellers registration is increasing every day.

Existing user?

[Account login](#)

New user?

[Sign up](#)

Join us and be a part of our effort to make Chennai an efficient "Net Zero Waste City".

DUAC High Tech Toilets

The Municipal Corporation of Ludhiana took up the initiative under 'Smart City' Mission to install Delhi Urban Arts Commission (DUAC) High Tech Public Toilets. Presently eight DUAC High Tech Toilets have been handed over to Sulabh International for Operation and Maintenance for use of public and Rest work of Installation of High Tech Public Toilets is in progress.

The extensive use of stainless steel in interiors helps in maintenance and cleaning. Further, the use of bio-digesters is environment friendly and helps in disposal of waste even at places where there is no sewer connection. The high-tech toilets are equipped with Solar Panels & LED lightning; and have Program Logic Controller (PLC) aided working for better efficiency. It also provides the opportunity of revenue generation by the way of advertisement panels.

These toilets are manufactured using galvanized sheets and are strong, robust as well as zero - maintenance when compared with masonry toilets.

Glimpses of DUAC High Tech Toilets

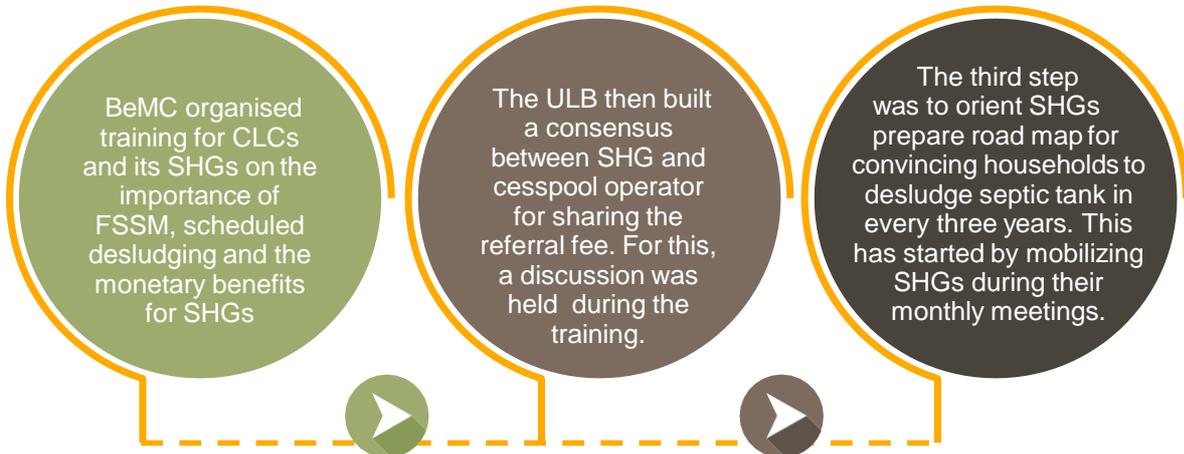


Malasur (faecal sludge demon)

The Brahmapur Municipal Corporation took a major initiative to orient SHGs registered under City Livelihood Centre (CLC) on safe sanitation practices. In line with SBM model of toilet construction, wherein the Swachhagrahis are provided an incentive of INR 150 for facilitating the construction of each toilet; a referral model for cesspool demand generation was created wherein the SHGs were provided an incentive of INR 20 per request generated from each household. The purpose was to increase mechanized emptying, reduced instances of manual scavenging, and generate alternate source of income for SHG through CLC on incentive mechanism.

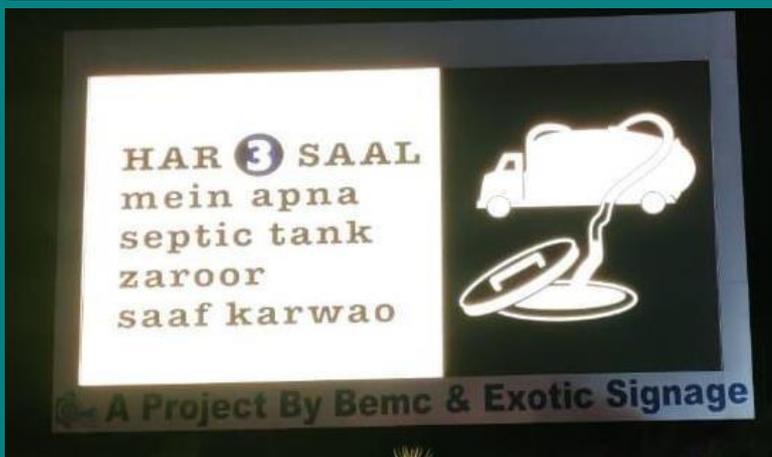
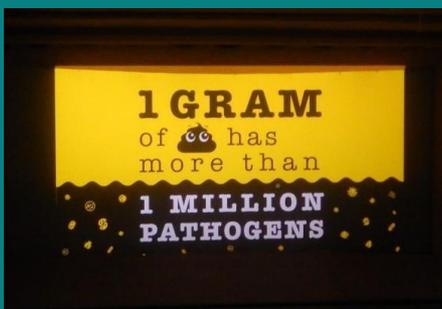


Launch of 'Malasur' Campaign



The objective of the initiative was to convince at least 10 neighboring households for desludging septic tanks. In total, the SHG acted as social pressure group for the households and persuade them for periodically desludging.

Glimpses of 'Malasur' Campaign Promotion



Septage Treatment Plant management by AGRATA CLF

Going ahead with the objective of bringing financial inclusions among women SHGs in the urban areas, Berhampur Municipal Corporations established a system for local SHG's to manage the Septage Treatment Plant in city.

The primary screening happened through a set of prequalification criteria which eliminated most of the SHGs and shortlisted final 4 SHGs along with CLF executive body went through a series of orientation and evaluation process. This initiative aims to promote women entrepreneurship in the state by ensuring their engagement in the sanitation value chain.

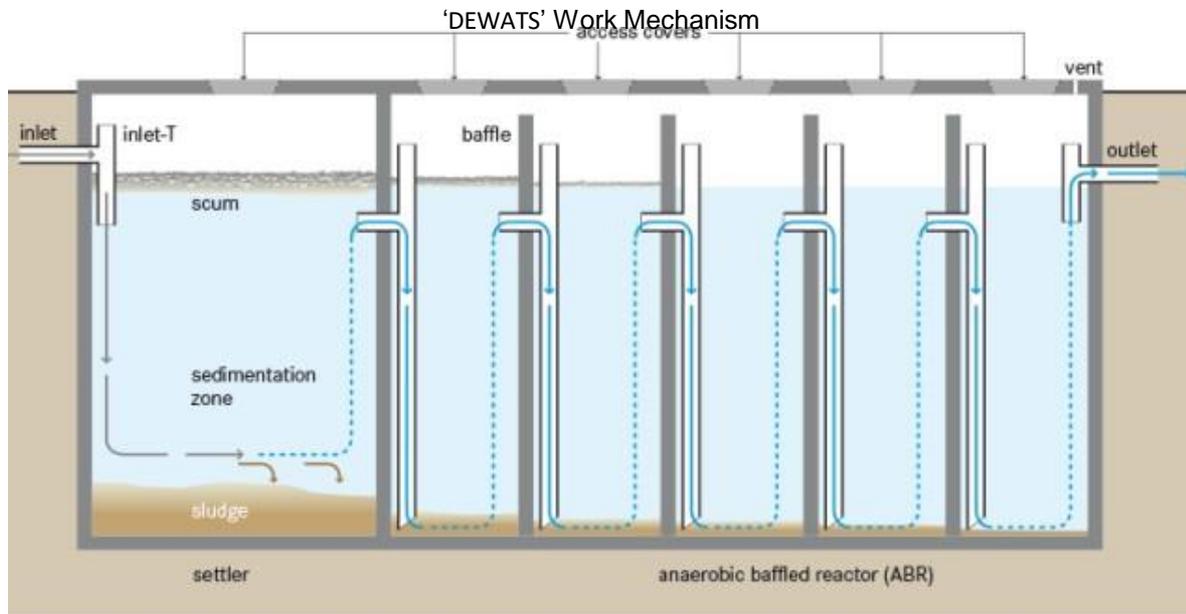


Glimpses of Women SHG members working on initiative



DEWATS (Decentralised Waste Water Treatment System)

Known as Venice of East in the state of Kerala and having a legacy of successfully practicing decentralized solid waste management for the last 4 years Alappuzha has taken a step in the direction of liquid waste management by working towards mitigating pollution of canals.



The aim of this project is to avoid flow of polluted water into the canal. The system includes individual toilet facility to each house and a centralized water treatment system. Grey water from every household is collected and sent to the settling tanks. The water gets purified when passing through the 6 chambers of baffle reactor. It is further treated to 90% purity by passing through a gravel bed and a planted filter. All the tanks are constructed using reinforced concrete and a sump pump is used to pump the water from the settling tank to the baffled reactor. The operations involved can be carried out with semi-skilled/ unskilled labour.

Glimpses of 'DEWATS' Initiative



Plastic Free Gandhinagar Initiative

Gandhinagar is the capital city of Gujarat and is among India's first & foremost architecturally integrated cities. Gandhinagar aims to be a zero-landfill city. Under the "Plastic Free Gandhinagar Initiative", Gandhinagar Municipal Corporation (GMC) has taken several steps to reduce, reuse, recycle and safely dispose the plastic waste. Gandhinagar Municipal Corporation has implemented a massive "Plastic Free" drive on ground level.

Gandhinagar Municipal Corporation already collects the segregate dry and wet waste from door to door collection activity. A plethora of this waste is the plastic waste.

GMC has appointed M/s Eco-vision Environmental Resources Limited Liability Partnership (LLP) for the same under the Plastic Free Gandhinagar initiative of the city. M/s Eco-vision collects various type of plastic waste from the waste generators, Multi-Reuse Facility (MRF) stations, Public and Social Events, legacy waste remediation and from the informal waste pickers. The Gandhinagar Municipal Corporation has initiated the process of creating a sustainable ecosystem where in the informal waste pickers and Eco Vision can collaborate to efficiently manage the plastic waste in Gandhinagar city. This is a first of its kind of ecosystem where a private agency is involved in the overall value chain for plastic waste management (collection, transportation, treatment and disposal).

The GMC has been organising creative events such as the Plogging events on weekly basis at several locations in the city. The plogging event involves collection (picking) of waste material the while jogging. Plastic waste collected during the plogging events are collected by the M/s Ecovision Environmental Resources LLP.

Glimpses of Plastic Free Gandhinagar Initiative





Their belief is that publicity in virtual world has not been proved very effective to transform the target community that is responsible for creating litter in the public places. Therefore, to address this issue, foundation started working with different stakeholders of the society like Paan Shops, Tea Shops, Auto Drivers, Nature Lovers and Students of School, College, Universities, Private education institutes and government organizations falling in the AOR (Area of Responsibility of the Municipal Corporation).

The foundation launched the project **PcanV** which focuses on engagement of communities and common man in bringing the change.

Project PcanV was launched on Sewa divas 17 September 2019 with mission to transform 10,000 citizens of Gandhinagar into Green warriors (स्वच्छता नायक).

PcanV is an abbreviation that stands for:



#PaanWalaGreen Warrior

#ChayWalaGreen Warrior

#AutoWalaGreen Warrior

#NatureLover GreenWarrior

#Volunteers HaiGreenWarrior

Glimpses of Initiatives by Gandhinagar



#PaanWalaGreenWarrior

#ChayWalaGreenWarrior

#AutoWalaGreenWarrior



#NatureLoverGreenWarrior

#VolunteersHaiGreenWarrior

“Mighty Mushroom Mycelia”

High concentration (up to pollution fuel) of heavy metal can disturb the normal ecosystem of natural waterbodies and sourced heavy metal treatment save ecosystem. Birgaon is using special Mushroom Compost Absorption' method for treating heavy metals. Mushroom mycelia is used as membrane for filtration of pollutants such as heavy metal using microorganism present in mushroom and slit. Implementation steps for the same are given below:



Chicken Wire/
Wire Mash



Wooden Chips
Mashroom
Mycelium/Bacteria
Wooden Chips

Sand Bag



Glimpses of Mighty Mushroom Mycelia

Petlad is a town situated in the Anand district in Gujarat.

Hazardous Waste

Deployed specialised yellow E-Riksha in Petlad Municipality area for the collection of domestic bio-hazards like sanitary pads and diapers on phone calls. Moreover, sanitary pad disposal bins have been placed in all the CT/PT's which are made from scrap material. On an average, 400+ service calls are being received for the collection of such waste.



E-Riksha in Petlad to collect domestic bio-hazards

Organic Waste Compost (OWC)

The Petlad Municipality has set up a fertilizer plant for the recycling of wet waste. On an average, around 6.5 ton of wet waste is being collected and processed resulting in the generation of 1.5 ton of manure each day. This manure is being used for revenue generation by sales in the market and is also being used for municipal gardens and tree plantations.

Glimpses of OWC plant

Additionally, the wet waste is also being segregated into two parts i.e., food waste and coconut waste. The green dried coconuts are then used for the creation of fibers and the coco-peat which help in maintaining the moisture of the soil in agriculture and horticulture.



Waste to energy

The Petlad Municipality has installed a Plastic conversion of 'Waste to Energy'. The waste plastic decomposes at high temperature in Pyrolysis plant and produces Petro Alternate Fuel. The town is practicing segregation of plastic at source. The segregated plastic is shredded into the Aglo machine and is then heated at a high temperature in a specialised chamber. The gas created from the heated plastic is condensed and transformed into oil. The Petlad Municipality Pyrolysis plant for makes use of this oil in low speed diesel engine such as de-watering pump set, mud-pump set, and generator. The calorific value of the oil is same as diesel. The plastic waste is well managed with this plant and turned into the energy.



Glimpses of 'Waste to Energy' initiative

Beautification Point

Petlad Municipality came with the idea to transform the garbage vulnerable points into the decorative point. It has drastically helped in the behaviour change of the people around.

BEFORE



AFTER

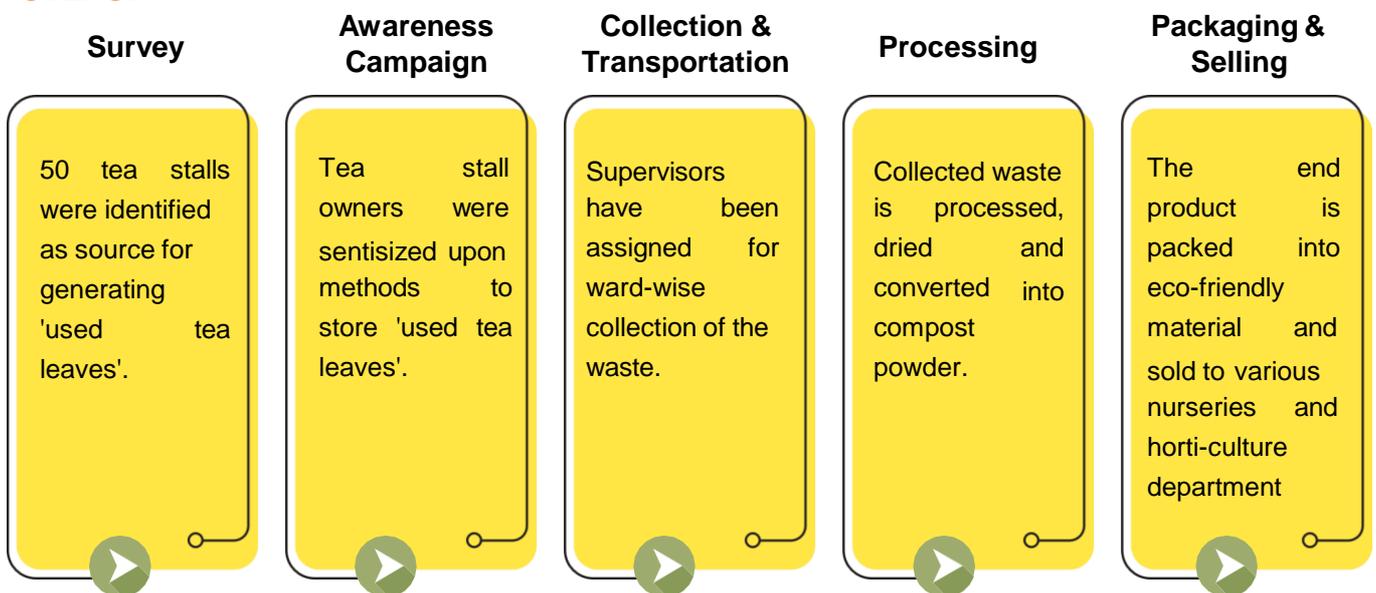


Grow+: Processing Waste Tea Leaves into Highly Nutritious Compost

Jugsalai is situated in Jamshedpur, spread across 1.29 sq. km of area with a population of 49,660. As a part of innovation in waste management domain, Jugsalai Nagar Parishad came upfront with an idea of processing used tea leaves into highly nutritious compost. With the help of a SHG – Prerna Mahila Samiti, a group of 10 women, the initiative is managed at ULB level.

In the form of compost, tea leaves are rich source of nitrogen compound for plants and soil. One tea stall, on an average, produces 5-8 kgs of used leaves per day, contributing to generation of wet waste. There are approx. 50 tea stalls in Jugsalai's premises. Collecting and converting this waste into compost has resulted into wet waste reduction. This whole process is executed in following steps:

STEPS:



Supervisor collecting 'Used Tea Leaves'



Dried compost, packed for further selling

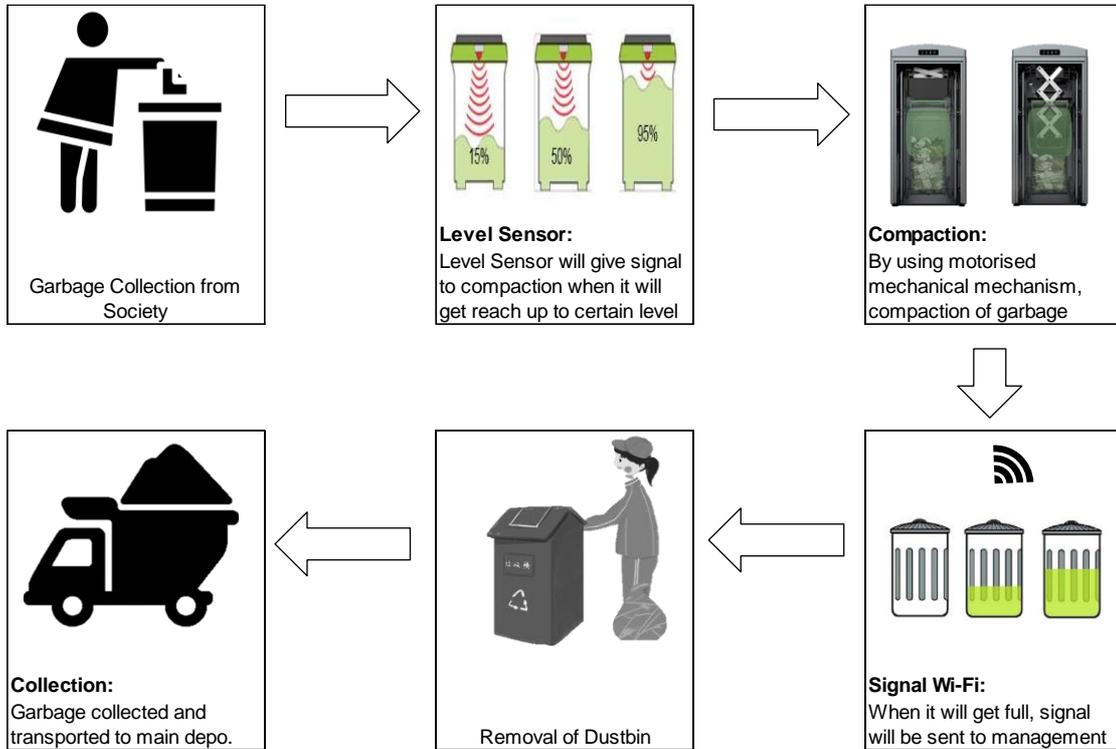


Training disseminated to SHG (constituting women) for the initiative

ICT Based Solar powered compactor – Twin Bins

Vita is a city in Sangli district of Maharashtra and is famously called as “City of Gold”. However, in the recent years its several initiatives towards waste management, commercial area waste management, city beautification, lake development, sanitation, slum and poverty eradication the city has gained a name as the “Harit City”.

Work Mechanism of ‘Technology based Twin Bins’



Vita council has installed technology based twin bins at 6 prominent places in commercial area of high foot-fall. The Twin Bins can compress the waste collected to 1/5th of its original size (80% reduction) by the way of mechanized motor. The motor can be powered by the way of solar sheet installed on the cover of the bin. When the bin is full, it automatically signals to the management (in this case, to Cleaning staff) who then can empty the bin. By the way of compression, there will be 5 times reduction in the trips made by the cleaning staff; also they can visit exactly at the time of bin getting almost full.



Technology based Twin Bin installed on a prominent location

Technology based Twin Bin installed on a prominent location



The installation of the solar compactor twin bins has resulted in several benefits such as:



Time savings



Power Saving



Vastly reduces waste collection expenses



Space for advertisement

Solar compactor bin
Solar estimates an 80 percent reduction in the number of trips required to be made by the garbage collection staff to pick up the garbage.

The compaction mechanism runs on a battery, which is charged by the solar panel. Fully charged, the battery reserve lasts for approximately 3-4 weeks depending on the compaction frequency and usage patterns.

Because it has five times greater capacity, the compactor can reduce the number of collection trips by 80%. Fewer collections mean 80% savings in fuel, labour and maintenance costs, and an 80% reduction in greenhouse gas emissions.

Space for advertisement In the developed solar dustbin, space for advertisement is provided. The lighting system and proper protection system has also been provided. And by using this we can generate the revenue from commercial market.

“Reuse of Milk pouch for sapling plantation”

In Dry waste, Milk pouch /oil pouch occupy major space. In Melathiruppanthruthi, Thoymai Arvalarkal Woman Self Help Group reuse such pouches for sapling plantation. The SHG offer 1 sapling to people in exchange of 30 used milk pouches. The initiative involves low / minimal cost as used milk pouches (as a part of dry waste) and fruit seeds (as a part of wet waste) are easily available. This initiative has a positive impact upon reduction of both dry and wet waste and also focuses on behavioural changes among citizens.

Glimpses of ‘Milk Pouch used for Sapling Plantation’ initiative



1:05

← மேலத்திருப்பூந்துருத்தி பேரூராட்சி



மேலத்திருப்பூந்துருத்தி பேரூராட்சி

Jul 29, 2019 at 04:14 ·

SBM- inovative project by SHG - Reuse of milk Oil pouch

கிளீன், கிரீன் மேலத்திருப்பூந்துருத்தி எனும் கனவு மெய்ப்பட..

குப்பையில் வரும் பால் பாக்கெட், எண்ணெய் கவர்களை வீணாக்காமல் அதில் மண், இயற்கை உரம் நிரப்பி... See More



Balamurugan Balamurugan and 141 others

142

15

24



மேலத்திருப்பூந்துருத்தி பேரூராட்சி

Jul 29, 2019 at 04:04 ·

நன்றி Namma thanjavur நம்ம தஞ்சாவூர்

நம்ம தஞ்சாவூர் முகநூல் நண்பர்கள் அளித்த 200 மரக்கன்றுகள் விருப்பமுள்ளவர்கள் வீடுகளில் பேரூராட்சி பணியாளர்கள் மூலம் இயற்கை உரம் வைத்து நடப்பட்டன.

UNIQUE INITIATIVES

UNIQUE INITIATIVES

This section discusses some of the unique and interesting initiatives run by different ULBs. These innovations were unique to deserve a special mention³.

GHMC, TELANGANA

Greater Hyderabad Municipal Corporation (GHMC) having current population of 87 lakh with a population density of 18,480 people per square kilometre (47,000/sq mi).

Various Initiatives by GHMC:

Green kiosks:

This is an eco-friendly initiative that is near zero-carbon and introduces recycling, reusing and renewable energy practices in the food industry. Each Kiosks has solar panels on top of the stalls. Key features:



Glimpses of Green kiosks

1. Use of plates made from corn starch; biodegradable plastic and dissolves in water.
2. Palm leaf made cutlery produced with sustainable resource (made from fallen leaves, 100% natural) through eco-friendly process
3. Suitable for Indian climate: . This zone is situated at an ideal geographical location and receives ample tropical sunlight. The tariff rates for rooftop solar in comparison to industrial and commercial tariff rates are cheaper by 17% and 27% respectively. For this kiosk rooftop solar installations can even help in cutting down electricity bills. Rooftop panels supply electricity to Shops/buildings, so they need to buy less electricity.
4. Rain Water Harvesting Pits: In order to make it on a sustainable source this vending zone has rainwater harvesting pits.

Usage of Plastic Waste in Roads Construction:

It is observed that over 40% of nullahs and drains in Hyderabad, which were built to ensure free flow of sewage and rain water in the city, are choked with plastic. The discarded plastic and carry bags clog drains, causes flooding and choke animals. Hence GHMC has come up with an innovative idea of usage of plastic waste in BT roads construction in the city. The usage of plastic in road will increase the life of the road. Plastic roads contain 8% of plastic waste in the bitumen mix, which helps the tar bind stronger with the metal or gravel, thereby holding the road steadily even under Vehicle or Monsoon pressure.

³ Please note that not all unique innovations could be listed in the section and only few are chosen to be presented.

India's first exclusive Dog Park: Footpath Tiles made by Recycled Plastic:



Park Footpath made of Plastic Tiles

India's first dog park is not just a heaven for dog lovers, but also a glimmer of hope for environmentalists fighting for a plastic-free world. As part of the step, 4,000 sq ft pavement right outside the park has been constructed out of 1,500 recycled plastic tiles. Installed by GHMC and Hyderabad-based start up Bamboo House India, these tiles are an eco-friendly alternative that offers a practical solution to the growing menace of plastic

GHMC installs Twin bins made from Recycled Plastic:

GHMC has installed a record-breaking number of 775 recycled plastic bins that are made using waste plastic bottles and other plastic waste such as poly bags, shampoo bottles. With this one initiative alone, the ULB has been able to utilise 23,500 kilograms of plastic waste.



Twin bins made from Recycled Plastic

Feed the Need:

Under the initiative, GHMC in association with Apple Homes, a non-profit based organization has setup food bank centers i.e. refrigerators in various locations of the city. The 530-litre capacity refrigerators are operated round the clock and a person is deployed to operate and clean the appliance daily. People, who wish to donate food can handover it to the personnel manning the refrigerators in their vicinity. The collected food is stored in the refrigerators so that the poor, who cannot afford a meal, can avail the facility. The idea is to serve the surplus food that generally end up being waste in hotels or in different function halls to feed the needy and hungry. 30 such units are installed at different high footfall areas. Currently, the facility is majorly being utilized by unemployed, auto and cab drivers who work day and night, and those travelling on the roads.

Glimpses of 'Need the Feed' Initiative



Online Mobile APP:

Apart from the step to setup refrigerators across the city as part of Feed the Need, GHMC has launched Feed the Need mobile phone app to ensure easy collection and distribution. The app has been developed by a startup Rathh founded by Raja Ashutosh Kumar Buddhiraju, an alumnus of IIT Kanpur. It allows the 5 5 users to register as a food donor and offers an option to collect or drop food at the nearest fridge. When a subscriber reports the availability of food, it is picked up by volunteers who deposit it in the refrigerators. The fridge locations are on a GIS platform allowing easy locating.

An SMS alert will be sent to the NGO partners who arrange for a pick up. Simultaneously, the NGOs also get requisitions from various institutions for food.

Ujjain, MADHYA PRADESH

Ujjain is known for its integral culture of welcoming all irrespective of their race, class, colour, gender and economical background, and has been successfully gaining a new identity of “**Social Inclusion**” for the past few years. After the introduction of the “*Kinnar Akhada*” the religious sect in the *Simhasth* or commonly known as ‘*Mahakumbh*’, world’s largest religious congregation, the city took another leap towards inclusion by the participation of transgender community in Ujjain Mission of cleanliness.

The campaign involved 4 separate teams of a total of 40 community members and covered 54 wards in a span of 14 days and brought about maximum impact on the ground level. The community members accompanied the waste collection vehicles and urged the people coming out of their homes for dumping the household waste in collection vehicle, to segregate their waste and further explained them about the benefits of waste segregation and its larger benefits to the locality, city, and the environment.

The involvement of the transgender community is a novel initiatives as it attempts to achieve behaviour change not by imposing penalties or fines but in the form of blessings which the citizens happily accept.



Glimpses of Initiative



Glimpses of Initiative





Raipur, CHHATISGARH

'Afsaro ki Gashti' and 'Shame By Fame' is a Novelty idea, easily implementable, sustainable and scalable. 'Afsaro Ki Gashti' is an innovative cleanliness drive which support the behavior change among the citizen. In this effort all the higher authority officer do morning visits by 6 A.M and verify whether sanitation activities are being performed satisfactorily.

Shame by fame is an innovation to monitor the offenders who create nuisance through a monitoring system called "DAKSHA". DAKSHA is basically an ICCC (Integrated Command and Control Centre) under which 372 cameras have been installed across the city to maintain smooth traffic and to track criminal activities within the city. This is a part of smart city project. Raipur Smart City is using DAKSHA as a monitoring system to highlight people "SPITTING" while standing at traffic signals, public place etc. and share the screen shot of offenders in public place by which they feel shame on their act and get fame for their bad habits.



372 cameras have been installed under Daksh scheme across the city to maintain smooth traffic and to track criminal activities in the city. This Intelligence Traffic system is part of smart city project. In order to maintain and promote a clean Raipur, pictures are being captured through this monitoring system of people who are spitting at public places with the help of Daksh team. Captured pictures are displayed in public for shaming for better cause so that this behavior of spitting and littering of waste changes without forcing penalty on the offenders.



Glimpses of Initiative taken up in Raipur getting implemented

Sailu, MAHARASHTRA

"Greeny" the great interactive mobile game has been developed to make the citizens understand segregation of waste. The game is easily available on playstore. Initially this game introduces about different types of wastes - wet, dry and domestic hazardous. It then gives details about the different components of dry, wet and domestic hazardous waste. In this game the player has to put different waste items into different dust bin, according to category i.e. wet, dry or domestic hazardous.

As the stage progresses, items comes appears speedily and the player has to segregate them in given timeframe. After each level it gives information about nature, segregation, its importance and sensitize upon the need of recycling. After certain stage at regular interval there are Quizzes about segregation and then generate a certificate with your score.



Glimpses of 'Greeny' App



SWACHH SURVEKSHAN 2020

Innovation and Best Practices